

**COMMONWEALTH OF KENTUCKY  
BEFORE THE PUBLIC SERVICE COMMISSION**

RECEIVED  
JAN 21 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 2015-00366  
NECESSITY TO CONSTRUCT A TOWER IN MORGAN )  
COUNTY, KENTUCKY).

East Kentucky Network, LLC, d/b/a Appalachian Wireless, was granted authorization to provide cellular service in the KY-9 Cellular Market Area (CMA451) by the Federal Communications Commission (FCC). FCC license is included as Exhibit 1. East Kentucky Network, LLC merger documents were filed with the Commission on February 2, 2001 in Case # 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 Morgan County, East Kentucky Network, LLC pursuant to KRS 278.020 Subsection 1 and 807 KAR 5:001 Section 9 is seeking the Commission's approval to construct a 300 foot self-supporting tower on a tract of land located on Fyffe Branch, West Liberty, Morgan County, Kentucky (37°57'09.7078"N 82°59'40.5220"W). A map and detailed directions to the site can be found in Exhibit 7.

Exhibit 2 is a list of all Property owners or residents according to the property valuation administrator's record who reside or own property within 500 feet of the proposed tower in accordance with the Public Valuation Administrator. No other properties are contiguous with East Kentucky Network's property.

Pursuant to 807 KAR 5:063 Section 1 (1)(L) and Section 1(1)(n)(1) all affected property owners according to the property valuation administrator's record who reside or own property

within 500 feet of the proposed Tower 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.

Morgan County has no formal local planning unit. In absence of this unit the Morgan County Judge Executive's office was notified by certified mail, return receipt requested of East Kentucky Network Limited Liability Company'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 The Licking Valley Courier, January 21, 2016, edition. Enclosed is a copy of that notice in Exhibit 3. The Licking Valley Courier is the newspaper with the largest circulation in Morgan County.

Environmental Resources Management Consulting Company 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 Company, Inc. 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 approval is 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 December 23, 2015, 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 very rugged 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.

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 respectfully requests 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 proposed tower.

The foregoing document was prepared by staff at East Kentucky Network, LLC d/b/a Appalachian Wireless, and reviewed by William S. Kendrick, Attorney at Law. 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: 1/14/2016  
Lynn Haney, Regulatory Compliance Director

APPROVED BY: W.A. Gillum DATE: 1/20/2016  
W.A. Gillum, General Manager

ATTORNEY: William S. Kendrick DATE: 1/14/16  
Hon. William S. Kendrick, 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**

**William S. Kendrick, Attorney**  
**Phone: (606) 263-4943**  
**Email: [wkendrick@pennstuart.com](mailto:wkendrick@pennstuart.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 Approvals
7	Driving Directions from County Court House and Map to Suitable Scale
8	Memorandum 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	

# Cellular License - KNKN880 - East Kentucky Network, LLC d/b/a Appalachian Wireless

Call Sign	KNKN880	Radio Service	CL - Cellular
Status	Active	Auth Type	Regular

**Market**

Market	CMA451 - Kentucky 9 - Elliott	Channel Block	B
Submarket	0	Phase	2

**Dates**

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

**Five Year Buildout Date**

10/23/1996

**Control Points**

**1** U.S. 23, HAROLD, KY

**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	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.

**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.

LIST OF PROPERTY OWNERS

Laden and Joann Ferguson  
584 Fyffe Branch  
West Liberty, KY 41472

Richard Fyffe  
19419 Hwy 32  
Blaine, KY 41124

Dewey E. Brown, Jr  
22929 Hwy 172  
West Liberty, KY 41472

Clinton Lee and Eunice Lois Hurst  
8242 North Mission Rd.  
Clare, MI 48617



VIA: U.S. CERTIFIED MAIL

PUBLIC NOTICE

January 11, 2016

Laden and Joann Ferguson  
584 Fyffe Branch  
West Liberty, KY 41472

RE: Public Notice-Public Service Commission of Kentucky (Case No. 2015-00366)

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 Morgan 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 on Fyffe Branch, West Liberty, Morgan 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 or reside within a 500' radius of the proposed tower.

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. 2015-00366 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 blue ink that reads "Lynn Haney". The signature is written in a cursive, flowing style.

Lynn Haney  
Regulatory Compliance Director  
Enclosure 1



VIA: U.S. CERTIFIED MAIL

PUBLIC NOTICE

January 11, 2016

Richard Fyffe  
19419 Hwy 32  
Blaine, KY 41124

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Lynn Haney  
Regulatory Compliance Director  
Enclosure 1



VIA: U.S. CERTIFIED MAIL

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January 11, 2016

Dewey E. Brown, Jr.  
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Lynn Haney  
Regulatory Compliance Director  
Enclosure 1



VIA: U.S. CERTIFIED MAIL

PUBLIC NOTICE

January 11, 2016

Clinton Lee and Eunice Lois Hurst  
8242 North Mission Rd.  
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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,

Lynn Haney  
Regulatory Compliance Director  
Enclosure 1

# Appalachian Wireless Location Map



Site Name

Relief Site

Location

Fyffe Br. Rd. West Liberty, KY. 41472

GPS Location

N 37 57 09.70

W 82 59 40.52



VIA: U.S. CERTIFIED MAIL

January 11, 2016

Stanley Franklin, Judge Executive  
450 Prestonsburg Street  
West Liberty, KY 41472

RE: Public Notice-Public Service Commission of Kentucky (Case No. 2015-00366)

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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.

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. 2015-00366 in your correspondence.

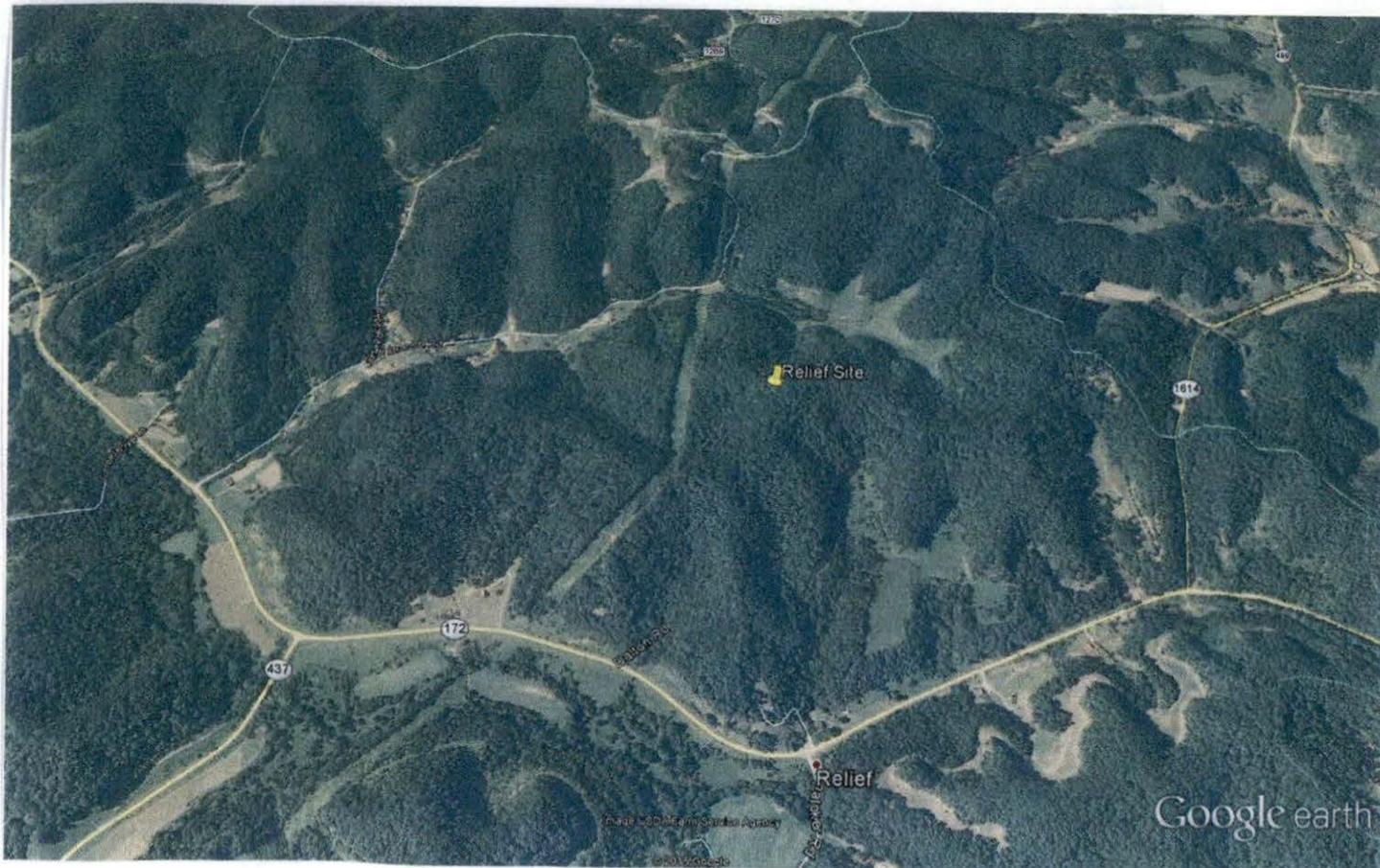
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Lynn Haney  
Regulatory Compliance Director  
Enclosure

# Appalachian Wireless Location Map



Site Name

Relief Site

Location

Fyffe Br. Rd. West Liberty, KY. 41472

GPS Location

N 37 57 09.70

W 82 59 40.52

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

EAST KENTUCKY  
NETWORK



**To:** The Licking Valley Courier

**From:** Raina Helton

Attn: Classifieds

Regulatory Compliance Assistant

**Email:** courier@mrtc.com

**Date:** January 11, 2016

**Re:** PUBLIC NOTICE ADVERTISEMENT

**Pages:** 1

Please place the following Public Notice Advertisement in The Licking Valley Courier to be ran on January 21, 2016.

PUBLIC NOTICE:

RE: Public Service Commission of Kentucky (CASE NO. 2015-00366)

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 on Fyffe Branch, West Liberty, Morgan County, 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. 2015-00366.

If you have any questions about the placement of the above mentioned notice, please call me at 606-477-2375, ext. 1005.

Thank you,

Raina Helton  
Regulatory Compliance Assistant

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**  
**Relief Site**  
**Morgan County, Kentucky**  
**ERMC<sup>2</sup> Project No. 165-000-0014**

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

  
 20215, October 25<sup>th</sup> 2015



**EXECUTIVE SUMMARY**

- 1.0 INTRODUCTION**
- 2.0 PROJECT DESCRIPTION**
- 3.0 SITE DESCRIPTION**
  - 3.1 GENERAL INFORMATION
- 4.0 FIELD EXPLORATION**
  - 4.1 SITE INFORMATION
  - 4.2 TRENCHING DATA
  - 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 FOUNDATION
- 6.0 WARRANTY**
  - 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 - DRILLED PEIR INSTALATIONS**
- III - ENGINEERED FILL BENEATH STRUCTURES**
- IV - GUIDELINES FOR EXCAVATIONS AND TRENCHING**
- V - GENERAL CONCRETE SPECIFICATIONS**

**APPENDIX A – TRENCHING DATA**

**APPENDIX B – SITE MAPS, BOUNDARY MAPS & EARTHWORK**

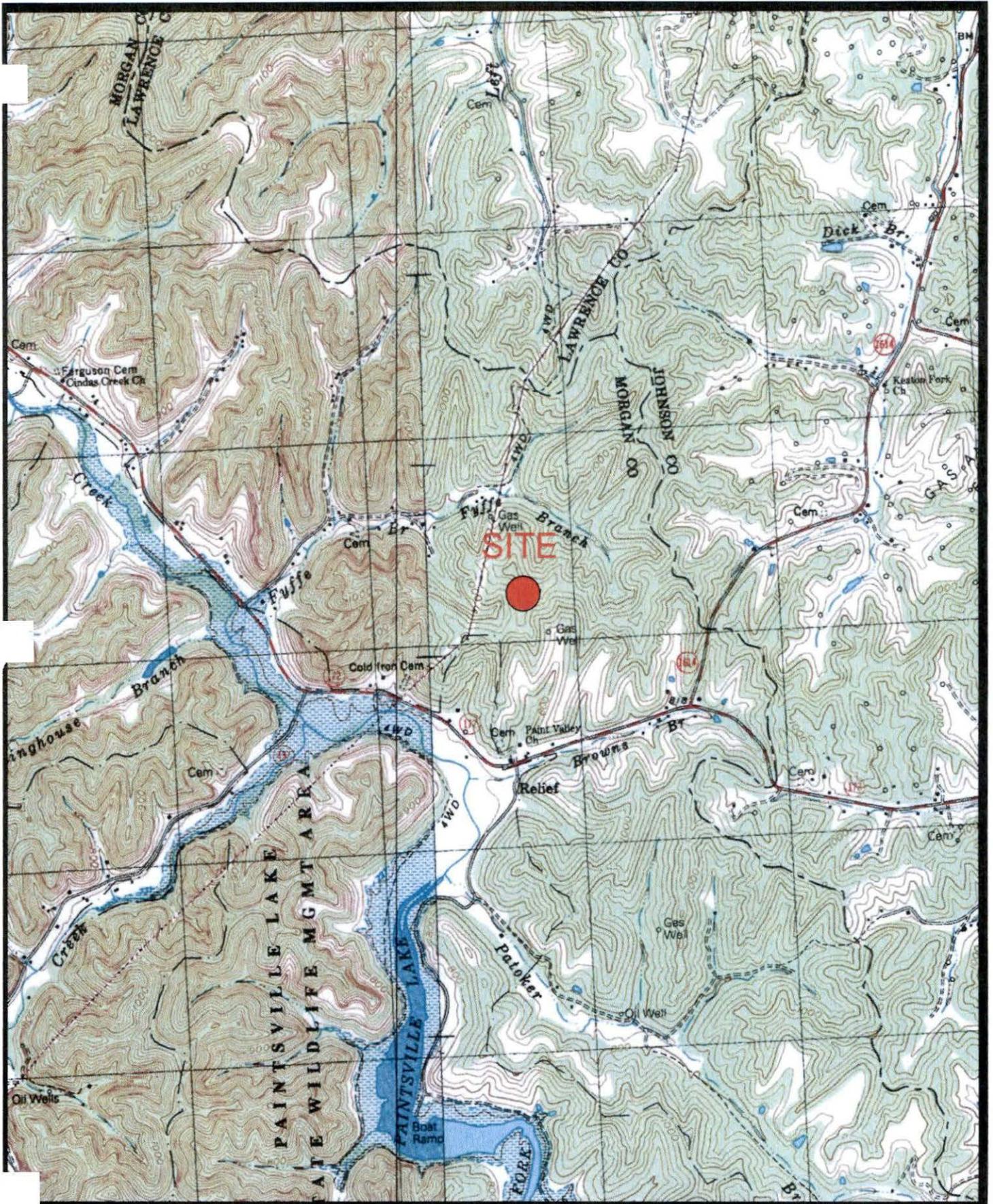


## EXECUTIVE SUMMARY

- A geotechnical investigation has been performed on the proposed Relief Tower site, located at Fyffe, near Relief off Kentucky Highway 72, in Morgan County Kentucky. This site is not readily accessible and is steep terrain in forested area. A location map is shown in Figure 1 of this report. Trenching was conducted with a small Kubota Excavator on the site. One trench was excavated through the center of the site at the proposed tower pad location. Additional data was taken near the proposed tower site to determine the lithology of the rock structures immediately below the tower surface. The following geotechnical considerations were identified:
- Topsoil and clays were found averaging depth of nine (9) feet. Hard brown weathered sandstone was encountered at a depth of nine (9) feet. The trench exposed fifteen (15) vertical feet of sandstone below the topsoil and clay. Immediately adjacent to the site, the rock outcrop consisted of brown sandstone for a minimum of twenty (20) feet vertically below the excavated trench. We estimate this sandstone to have a bearing capacity of approximately six (6) tons per square foot.
- This area is forested. The site has not been previously disturbed.
- Due to the site consisting of shallow clays, only the bearing capacity of the sandstone is evaluated.
- The 2009 International Building Code seismic site classification for this site is "B".
- Close monitoring of the construction operations discussed herein will be critical in achieving the design subgrade support. We therefore recommend that ERMC<sup>2</sup> 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: 11/1/15
Job:	Scale: 1"=2000'
Drawing: USGS SITE MAP	

APPALACHIAN WIRELESS  
RELIEF SITE MAP  
FIGURE 1



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

## 1. INTRODUCTION

Environmental Resources Management Consultant Company (ERMC<sup>2</sup>) was retained by Mr. Marty Thacker of Appalachian Wireless to prepare a geotechnical engineering report for the proposed tower site located near Fyffe Branch. A site location map is shown in Figure No. 1.

A Kubota Excavator was used for trenching at 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 foundation area to be 40 ft. x 40 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 loading are significantly different than these expected values, ERMC<sup>2</sup> should be notified to reevaluate the recommendations provided in this report.



## **3.0 SITE DESCRIPTION & HISTORICAL MINING**

### **3.1 GENERAL INFORMATION**

The site location is near the ridge on an undisturbed forested site. The current surface elevation is approximately 1215 ft. in elevation. Top soil and underlying soft clays average approximately nine (9) feet in depth.

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. Our researched revealed no historic mining in the area. The Redbush Geologic Quadrangle was evaluated for potential of coal seams being near the proposed base of the proposed tower foundation. The nearest coal seam shown was the Mud Seam located at approximately 1040 ft. in elevation. This is approximately 175 feet in elevation below the expected tower base elevation. The Magoffin Bed is located approximately at 1000 ft. in elevation. It is approximately 215 ft. in elevation below the expected tower base (See Figure 2).

## **4.0 FIELD EXPLORATION**

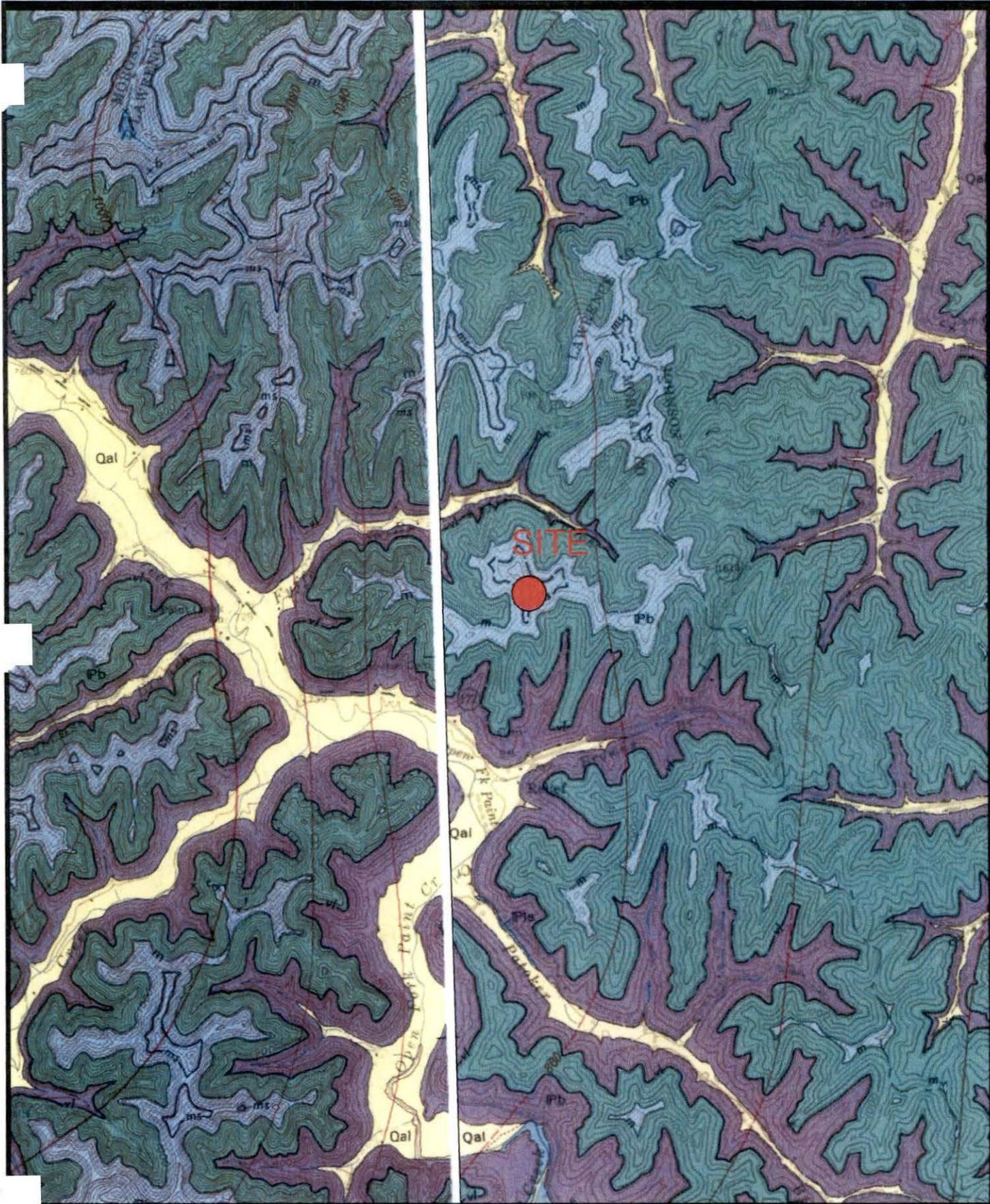
### **4.1 SITE INFORMATION**

The proposed site is located in the Redbush area in Morgan County, Kentucky. The proposed site lies within the Redbush Quad and is located east of Kentucky Highway Route 172. The site is in mountainous terrain and is currently forestland. An estimated pad location was determined for our evaluation.

### **4.2 TRENCHING DATA**

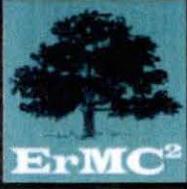
Trenching was conducted through the center of the proposed tower site. The trenching found approximately nine (9) feet of clay material, fifteen (15) feet of underlying Brown Sandstone. This sandstone is a minimum of thirty five (35) feet in thickness. This was determined by evaluating the immediately adjacent exposed rock adjacent to the





Drawn:	Date: 11/1/15
Job:	Scale: 1"=2000'
Drawing: GQ SITE MAP	

APPALACHIAN WIRELESS  
 RELIEF SITE MAP  
 GEOLOGIC MAP  
 FIGURE2



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

proposed tower site. Trenching data is included in the attached, Maps Section of this report.

### **4.3 GROUNDWATER**

Groundwater 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 B- Hard Rock" per the Kentucky Building Code. In addition, a  $S_{DS}$  coefficient of 0.117g was calculated, and a  $S_{D1}$  coefficient of 0.054g 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 attempt to overturn and can act in any directions.

### **5.2 FOUNDATIONS**

This report demonstrates the different expected bearing capacities based upon the type of material encountered from the trenching information taken at the site.

The approximate elevation of the surface of the site is 1215 ft. Approximately nine (9) feet of clays and topsoil are present at this proposed location. Immediately below this



is approximately fifteen (15) feet of brown competent sandstone that was encountered during trenching. This sandstone is a minimum of thirty eight (38) feet in thickness. This was determined by evaluating the immediately adjacent exposed rock adjacent to the proposed tower site. Due to the limited depth to the bedrock we recommend that the tower support foundation be placed upon this structure. The bearing capacity of the sandstone is estimated to be 6 tons per square foot.

### **5.3 SUBSIDENCE**

The nearest coal seam shown was the Mud Seam Bed located at approximately one thousand and forty ft. (1040) in elevation. This is approximately 175 feet in elevation below the expected tower base elevation. Based upon our research there has been no historical underground mining in or near the area. Therefore, subsidence should not be an issue at this site.

### **5.4 SHALLOW FOUNDATIONS**

We recommend shallow foundations due to competent sand stone being located at a shallow depth. If shallow foundations are used it should be noted that the material type and bearing capacity can vary significantly due to the inconsistency of the underlying material. These inconsistencies should be limited due to thick material on sandstone found during the site investigation. Based upon the laboratory and field testing, visual inspection of the materials and practical experience we have estimated that the bearing capacity of the rock to be at eight **(6) tsf**.

We recommend that the foundation for this structure be placed on the underlying sandstone bedrock. In order to achieve this we advise to excavate through the top soil and clay. This will require lowering the proposed foundation approximately ten (10) ft. based on our observation and review of provided design drawings. Once the footer thickness has been determined we recommend lowering the existing grade of the adjacent areas on the site to provide positive drainage away from the supporting structures.



## **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 ERMC<sup>2</sup> 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 trenching is noted in the report, and is presented on the site drawing and trenching report. The location and elevation of the trench should be considered accurate only to the degree inherent with the method used.

The trenching includes a description of the materials, approximate depth of boundaries between soil and rock strata and groundwater data. These logs represents conditions specifically at the location and time the observations were made.

### **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 Fyffe Branch Property in Morgan 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. ERMC<sup>2</sup> 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 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 disked 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 authorize 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 handles 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 affect 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 TRENCHING DATA**





**APPENDIX B SEISMIC DATA**



# USGS Design Maps Summary Report

## User-Specified Input

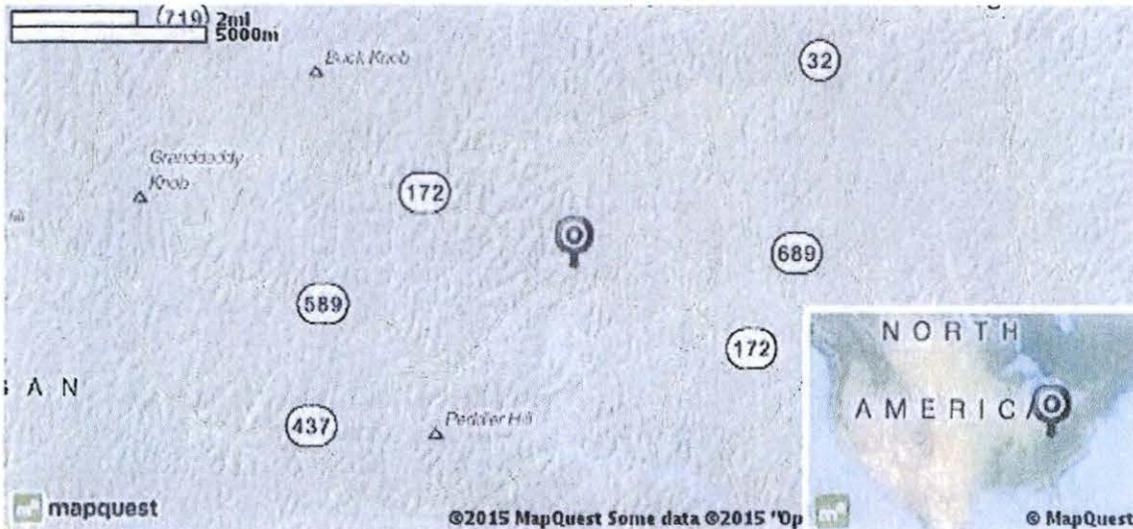
**Report Title** Relief Site  
 Mon November 2, 2015 02:12:20 UTC

**Building Code Reference Document** 2009 NEHRP Recommended Seismic Provisions  
 (which utilizes USGS hazard data available in 2008)

**Site Coordinates** 37.9527°N, 82.9946°W

**Site Soil Classification** Site Class B – "Rock"

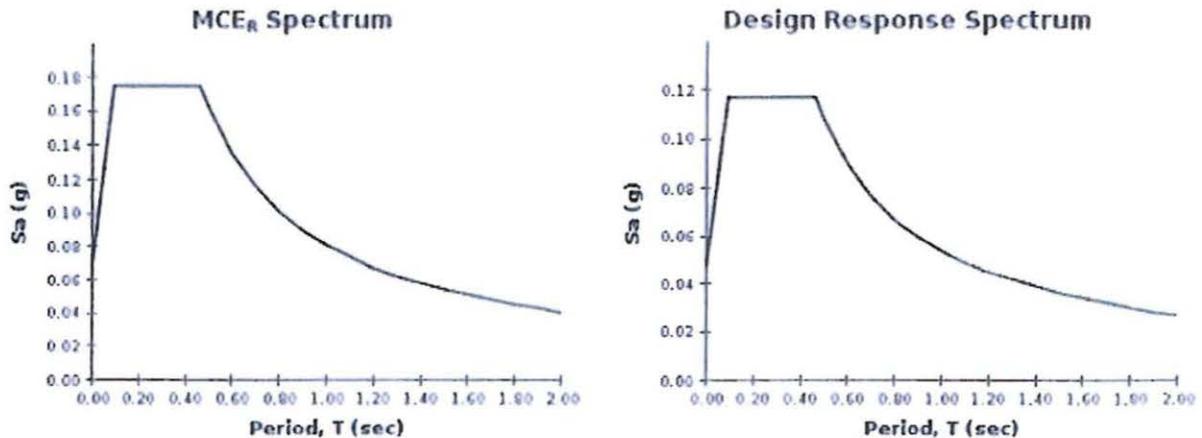
**Risk Category** IV (e.g. essential facilities)



## USGS-Provided Output

$S_s = 0.175 \text{ g}$	$S_{Hs} = 0.175 \text{ g}$	$S_{Ds} = 0.117 \text{ g}$
$S_1 = 0.081 \text{ g}$	$S_{H1} = 0.081 \text{ g}$	$S_{D1} = 0.054 \text{ g}$

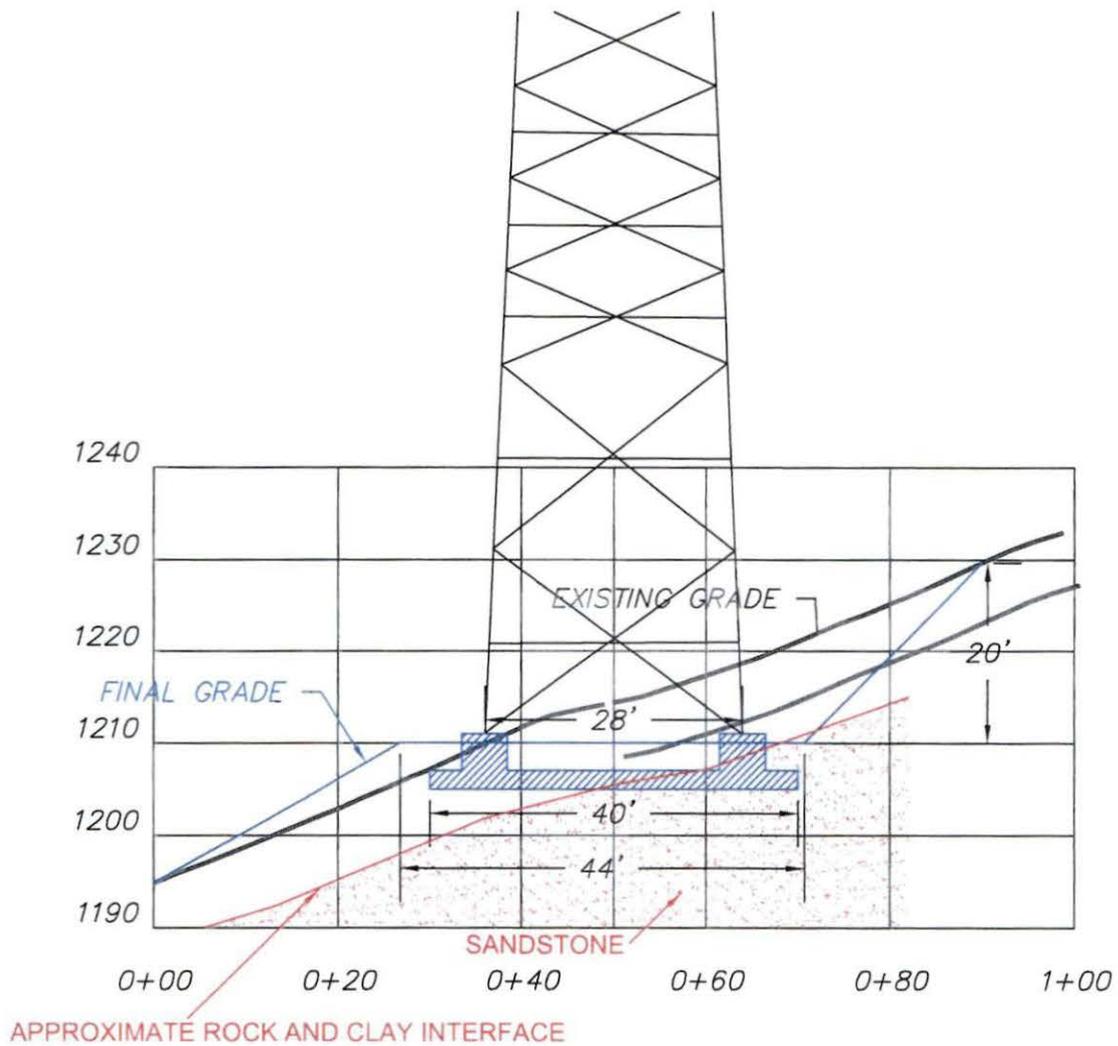
For information on how the  $S_s$  and  $S_1$  values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please [view the detailed report](#).



For  $PGA_v$ ,  $T_v$ ,  $C_{R5}$ , and  $C_{R1}$  values, please [view the detailed report](#).

**APPENDIX C    MAPS**





Drawn: JWC	Date: 10/08/15
Job: 165-0014	Scale: 1" = 20'
Drawing: RELIEFSITE20	

APPALACHIAN WIRELESS  
RELIEF TOWER  
CROSS-SECTION

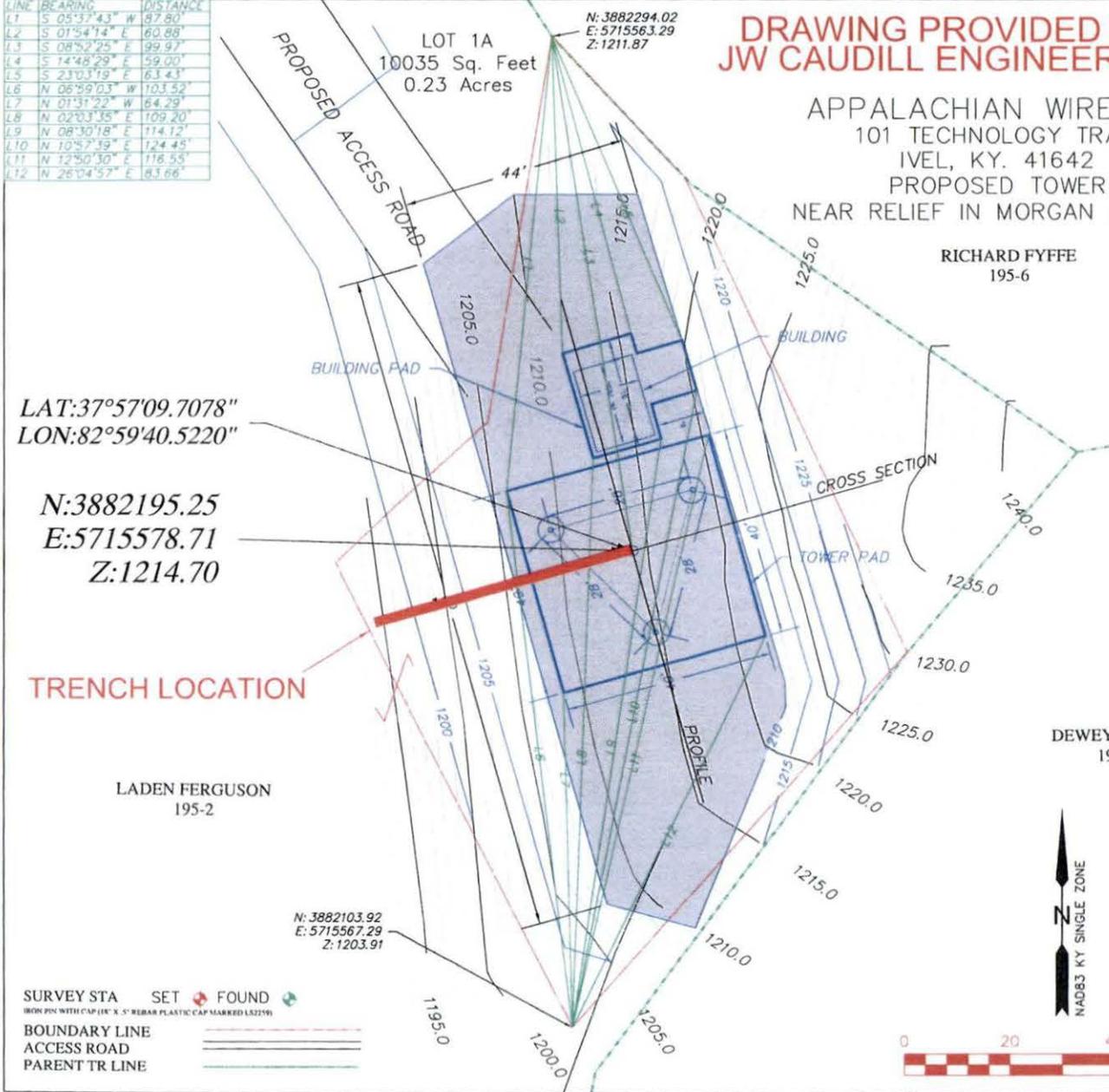


921 Beasley Street, Suite 145  
Lexington, KY 40509  
(859)381-1000  
engineering@ermc2.us

LINE	BEARING	DISTANCE
L1	S 05°37'43" W	87.80
L2	S 01°54'14" E	60.88
L3	S 08°52'25" E	99.97
L4	S 14°48'29" E	59.00
L5	S 23°03'19" E	63.43
L6	N 06°59'03" W	103.52
L7	N 01°31'22" W	64.29
L8	N 02°03'35" E	109.20
L9	N 08°30'18" E	114.12
L10	N 10°57'39" E	124.45
L11	N 12°50'30" E	116.55
L12	N 26°04'57" E	83.66

# DRAWING PROVIDED BY JW CAUDILL ENGINEERING

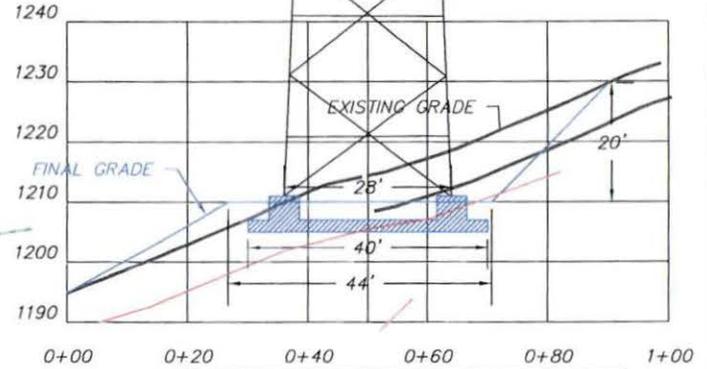
APPALACHIAN WIRELESS  
101 TECHNOLOGY TRAIL  
IVEL, KY. 41642  
PROPOSED TOWER  
NEAR RELIEF IN MORGAN COUNTY



LAT: 37°57'09.7078"  
LON: 82°59'40.5220"

N: 3882195.25  
E: 5715578.71  
Z: 1214.70

N: 3882103.92  
E: 5715567.29  
Z: 1203.91



-THE PROPOSED TOWER HAS BEEN LOCATED USING DUAL FREQUENCY GPS UNIT PROCESSED BY "OPUS"  
-STATE PLANE COORDINATES NAD 83 KY SINGLE ZONE N: 3882195.25 E: 5715578.71 EL: 1214.70 EXISTING GR PLAN-- FOUNDATION EL1211.0'-TOP TOWER EL 1511.0'  
-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.

I HEREBY CERTIFY THAT THIS DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECTION.

JAMES W. CAUDILL PE# DATE

PROPOSED SITE PLAN AND STRUCTURE LOCATION RELIEF TOWER APPALACHIAN WIRELESS		
DRAWN JWC	DATE 10/08/15	RELIEF TOWER LADEN FERGUSON
APPROVED	DATE	FYFFE BRANCH NEAR RELIEF IN MORGAN CO
SCALE 1" = 20'	SHEET 2 OF 3	PROJECT NO. RELIEF/RELIEFSITE20

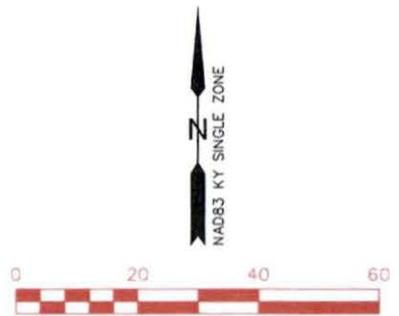
**SURVEY STA** **SET** **FOUND**

IRON PIN WITH CAP (1" X 5" REBAR PLASTIC CAP MARKED L1219)

**BOUNDARY LINE**

**ACCESS ROAD**

**PARENT TR LINE**





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](mailto:worldtower@worldtower.com)  
Web: [www.worldtower.com](http://www.worldtower.com)

---

300' MODEL WSST TOWER  
FOR: APPALACHIAN WIRELESS  
SITE: RELIEF, KY  
DESIGN PACKAGE



11-24-2015

# 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.

11-24-2015

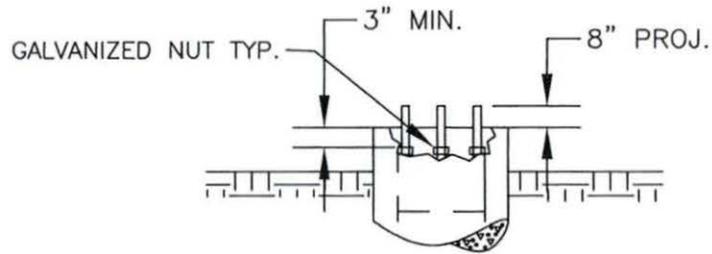


## WORLD TOWER

TITLE:

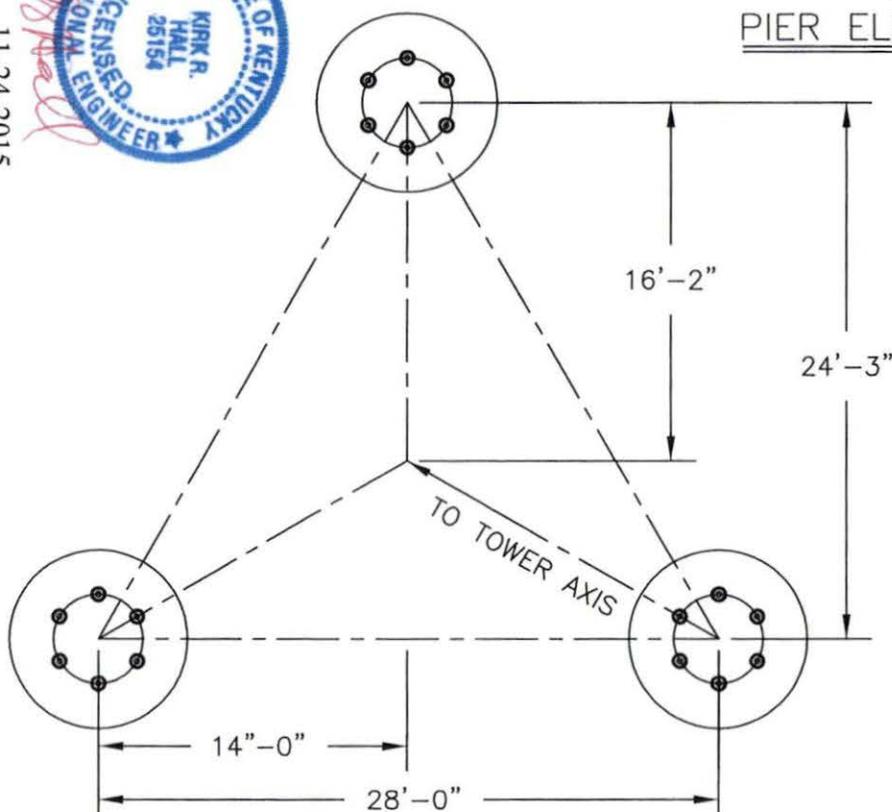
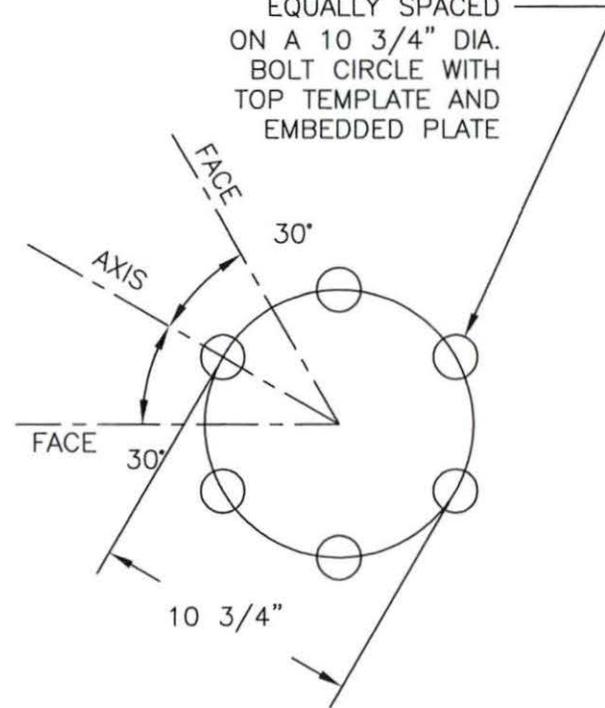
300' MODEL WSST TOWER  
FOR: APPALACHIAN WIRELESS  
SITE: RELIEF, KY

SCALE	DWN.	LKG	CKD.	DATE 11-24-15
FILE	DWG. NO.			Q15800N



PIER ELEVATION

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

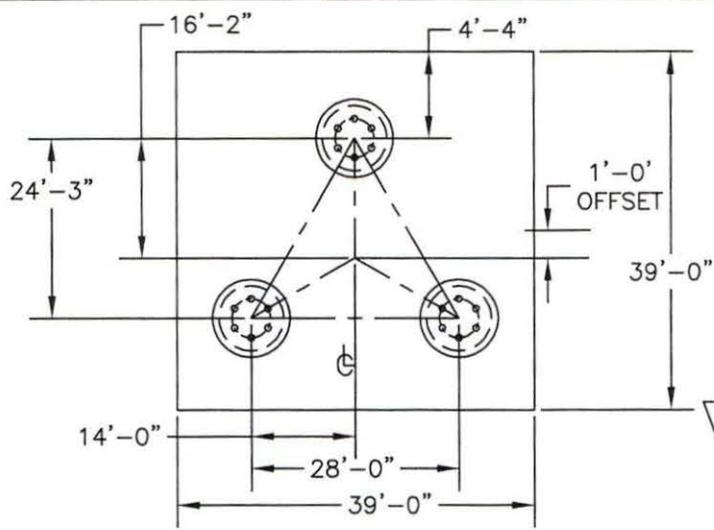


11-24-2015

TITLE:  
 300' MODEL WSST TOWER  
 FOR: APPALACHIAN WIRELESS  
 SITE: RELIEF, KY

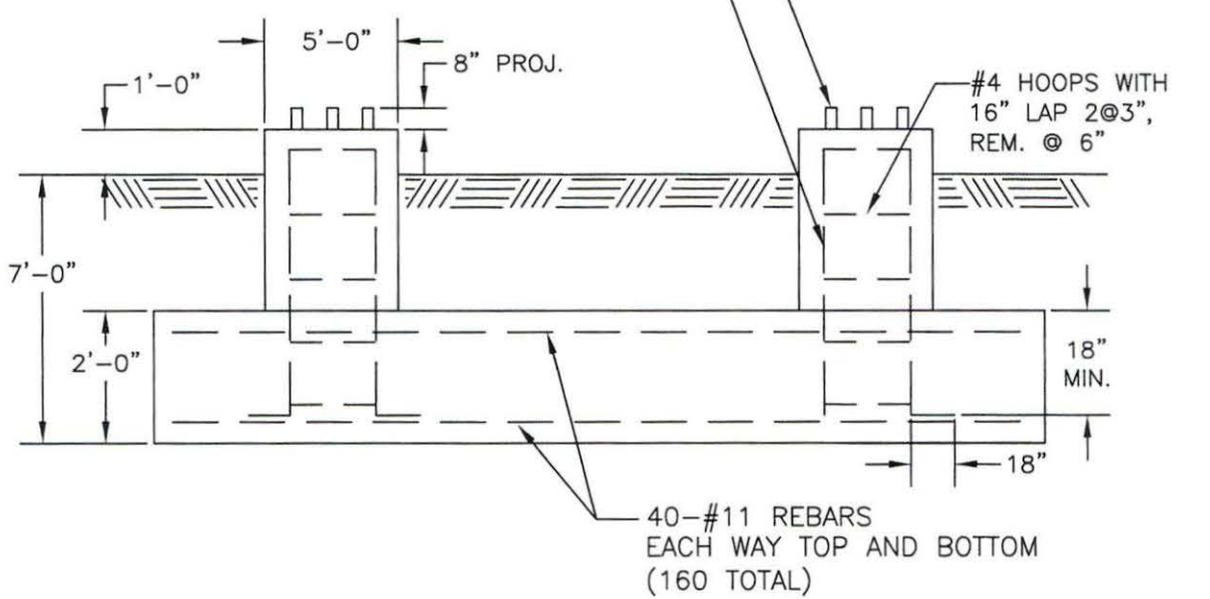
# WORLD TOWER

SCALE	NONE	DWN.	LKG	CKD.	DATE	11-24-15
FILE				DWG. NO.	Q15800AB	



125.8 CU. YDS.  
CONCRETE REQ'D.

BASE REACTIONS	
OTM:	13612.0 FT. KIPS
COMP.	595.0 KIPS
UPLIFT	501.0 KIPS
SHEAR (3 LEGS)	87.0 KIPS
WT. NO ICE	100.0 KIPS
WT. 1/2" ICE	247.0 KIPS



40-#11 REBARS  
EACH WAY TOP AND BOTTOM  
(160 TOTAL)



11-24-2015

GENERAL NOTES

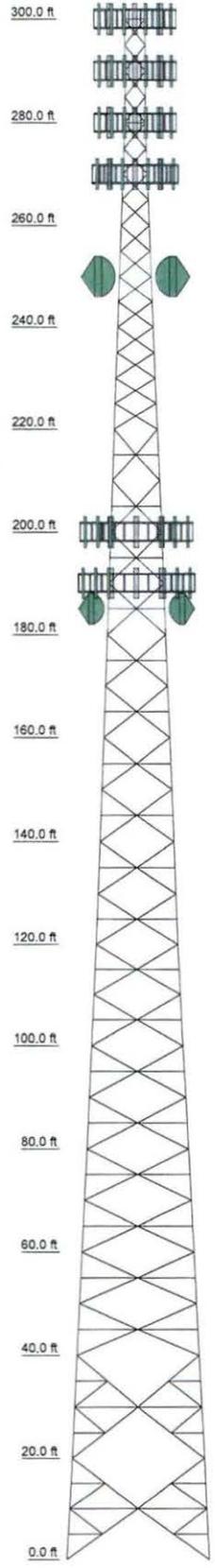
1. CONCRETE TO HAVE 4000 PSI MIN. COMPRESSIVE STRENGTH AFTER 28 DAYS.
2. ALL REINFORCEMENT STEEL IS DEFORMED AND MEETS THE STRENGTH REQUIREMENTS OF ASTM A615 GRADE 60.
3. EMBEDDED STEEL TO HAVE 3" MIN. CONCRETE COVER.
4. FOUNDATION DESIGN IS BASED ON CUSTOMER SUPPLIED SOIL DATA FROM ERM2. PROJECT NUMBER 165-000-0014 DATED OCTOBER 25, 2015.

TITLE: FOUNDATION DETAIL  
300' WSST TOWER  
FOR: APPALACHIAN WIRELESS  
SITE: RELIEF, KY

**WORLD TOWER**

SCALE NONE	DWN. LKG	CKD.	DATE 11-24-15
FILE	DWG. NO. Q15800F		

Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14	T15
Grade	SR 1 3/4	SR 2	SR 2 1/2	SR 2 3/4	SR 3	SR 3 1/4	SR 3 1/2	SR 3 3/4	SR 4	SR 4 1/4	SR 4 1/2				
Top Girts	L1 3/4x1 3/4x1/8	L1 3/4x1 3/4x1/8	N.A.	L2x2x3/16	A	L3x3x3/16	L3x3x1/4	A572-50	L3 1/2x3	L4x4x1/4	L4x4x1/4	L4x4x5/16	L3 1/2x3 1/2x1/4	L4x4x1/4	L4x4x1/4
Horizontals															
Red Horizontals															
Red Diagonals															
Inner Bracing															
Face Width (ft)	5.5	7	8.5	10	11.5	13	14.5	16	18	20	22	24	26	28	28
# Panels @ (ft)															4 @ 10
Weight (K)	0.8	1.3	1.5	1.9	2.2	2.7	3.4	4.0	4.1	4.6	5.3	5.9	7.0	6.4	57.6



**DESIGNED APPURTENANCE LOADING**

TYPE	ELEVATION	TYPE	ELEVATION
Beacon Lighting	300	(2) WPA800102/4CF w/ mt pipe	270
(2) WPA800102/4CF w/ mt pipe	300	BXA-70063-6CF w/ mt pipe	270
(2) WPA800102/4CF w/ mt pipe	300	BXA-70063-6CF w/ mt pipe	270
(2) WPA800102/4CF w/ mt pipe	300	BXA-70063-6CF w/ mt pipe	270
BXA-70063-6CF w/ mt pipe	300	WD13X53 Antenna Mounting Frame	270
BXA-70063-6CF w/ mt pipe	300	WD13X53 Antenna Mounting Frame	270
BXA-70063-6CF w/ mt pipe	300	WD13X53 Antenna Mounting Frame	270
WD13X53 Antenna Mounting Frame	300	(3) RRU-11	269.5
WD13X53 Antenna Mounting Frame	300	8 FT DISH	250
WD13X53 Antenna Mounting Frame	300	8 FT DISH	250
(3) RRU-11	299.5	(2) WPA800102/4CF w/ mt pipe	200
(2) WPA800102/4CF w/ mt pipe	290	BXA-70063-6CF w/ mt pipe	200
(2) WPA800102/4CF w/ mt pipe	290	BXA-70063-6CF w/ mt pipe	200
(2) WPA800102/4CF w/ mt pipe	290	BXA-70063-6CF w/ mt pipe	200
BXA-70063-6CF w/ mt pipe	290	WD13X53 Antenna Mounting Frame	200
BXA-70063-6CF w/ mt pipe	290	WD13X53 Antenna Mounting Frame	200
BXA-70063-6CF w/ mt pipe	290	WD13X53 Antenna Mounting Frame	200
WD13X53 Antenna Mounting Frame	290	(2) WPA800102/4CF w/ mt pipe	200
WD13X53 Antenna Mounting Frame	290	(2) WPA800102/4CF w/ mt pipe	200
WD13X53 Antenna Mounting Frame	290	(3) RRU-11	199.5
(3) RRU-11	289.5	(2) WPA800102/4CF w/ mt pipe	190
(2) WPA800102/4CF w/ mt pipe	280	BXA-70063-6CF w/ mt pipe	190
(2) WPA800102/4CF w/ mt pipe	280	BXA-70063-6CF w/ mt pipe	190
(2) WPA800102/4CF w/ mt pipe	280	BXA-70063-6CF w/ mt pipe	190
BXA-70063-6CF w/ mt pipe	280	WD13X53 Antenna Mounting Frame	190
BXA-70063-6CF w/ mt pipe	280	WD13X53 Antenna Mounting Frame	190
BXA-70063-6CF w/ mt pipe	280	WD13X53 Antenna Mounting Frame	190
WD13X53 Antenna Mounting Frame	280	(2) WPA800102/4CF w/ mt pipe	190
WD13X53 Antenna Mounting Frame	280	(2) WPA800102/4CF w/ mt pipe	190
WD13X53 Antenna Mounting Frame	280	(3) RRU-11	189.5
(3) RRU-11	279.5	6 FT DISH	185
(2) WPA800102/4CF w/ mt pipe	270	6 FT DISH	185
(2) WPA800102/4CF w/ mt pipe	270		

**SYMBOL LIST**

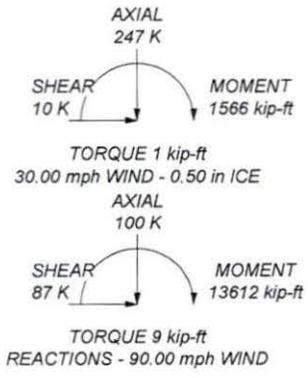
MARK	SIZE	MARK	SIZE
A	L2 1/2x2 1/2x3/16		

**MATERIAL STRENGTH**

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

**TOWER DESIGN NOTES**

1. Tower designed for Exposure C to the TIA-222-G Standard.
  2. Tower designed for a 90.00 mph basic wind in accordance with the TIA-222-G Standard.
  3. Tower is also designed for a 30.00 mph basic wind with 0.50 in ice. Ice is considered to increase in thickness with height.
  4. Deflections are based upon a 60.00 mph wind.
  5. Tower Structure Class II.
  6. SHEAR: 556. Topographic Category 1 with Crest Height of 0.00 ft
  7. TOWER RATING: 99.6%
- UPLIFT: -501 K  
SHEAR: 47 K



11-24-2015

<b>World Tower Company</b>		Job: <b>300' WSSST Tower / Job Q15-797 to 800</b>	
1213 Compressor Drive Mayfield, KY 42066		Project: <b>Std Ky</b>	Client: <b>Appalachian Wireless</b>
Phone: (270) 247-3642	FAX: <b>www.worldtower.com</b>	Drawn by: <b>kirk</b>	App'd:
		Code: <b>TIA-222-G</b>	Date: <b>11/02/15</b>
		Scale: <b>NTS</b>	Path: <b>C:\Tower\PE Run\2015\Q15-797to800\appalachian\Q15-797to800.en</b>
		Dwg No: <b>E-1</b>	



Mail Processing Center  
 Federal Aviation Administration  
 Southwest Regional Office  
 Obstruction Evaluation Group  
 10101 Hillwood Parkway  
 Fort Worth, TX 76177

Aeronautical Study No.  
 2015-ASO-16662-OE

Issued Date: 12/03/2015

Ali Kuzehkanani  
 East Kentucky Network, LLC  
 8300 Greensboro Drive, Suite 1200  
 McLean, VA 22102

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

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

Structure:           Antenna Tower Relief ( Tower)  
 Location:           Relief, KY  
 Latitude:           37-57-09.70N NAD 83  
 Longitude:         82-59-40.52W  
 Heights:           1211 feet site elevation (SE)  
                       310 feet above ground level (AGL)  
                       1521 feet above mean sea level (AMSL)

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

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

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

- At least 10 days prior to start of construction (7460-2, Part 1)
- Within 5 days after the construction reaches its greatest height (7460-2, Part 2)

This determination expires on 06/03/2017 unless:

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

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

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

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

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

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

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

If we can be of further assistance, please contact our office at (817) 222-5932. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2015-ASO-16662-OE.

**Signature Control No: 268539584-274133609**

( DNE )

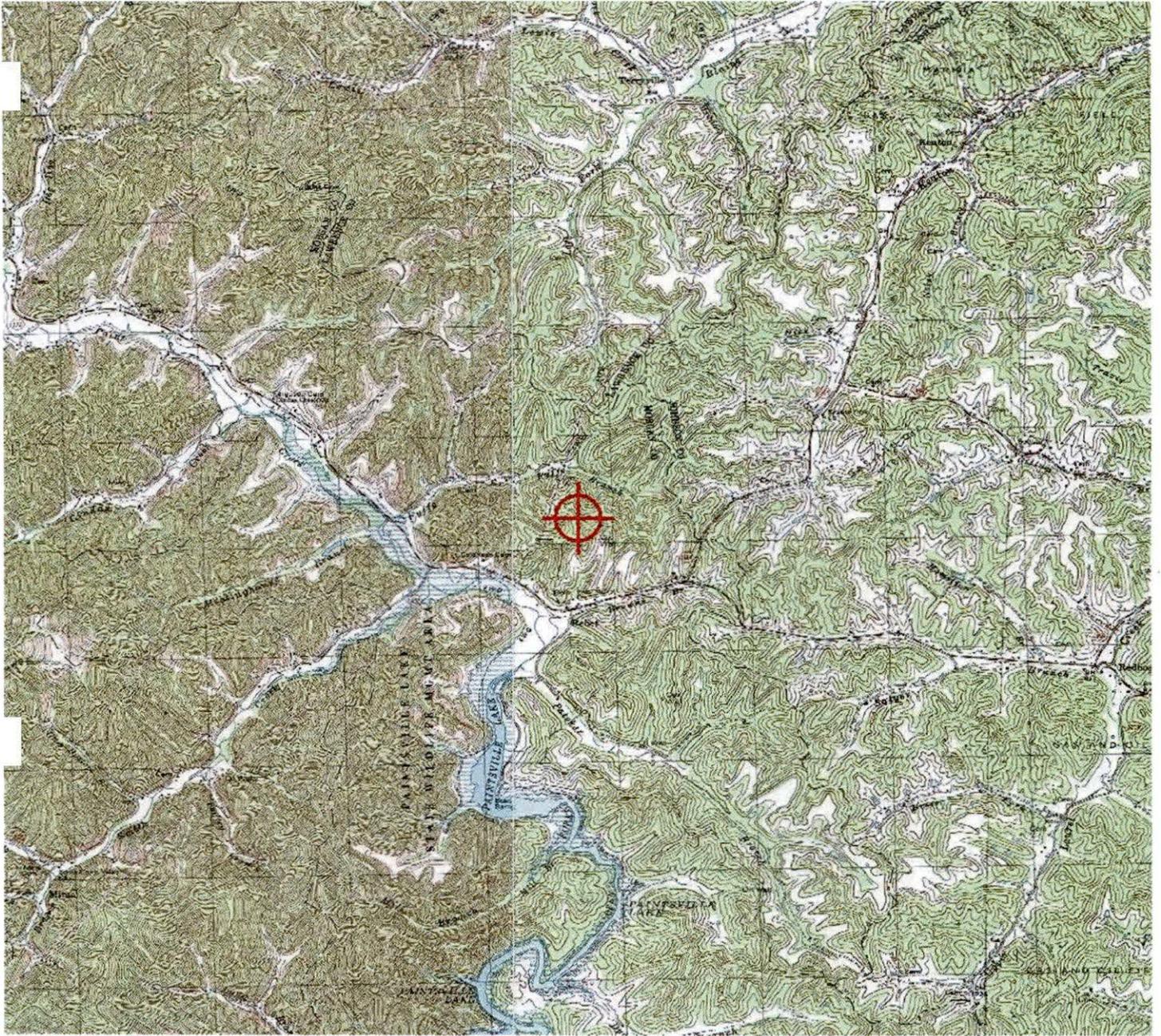
Joan Tengowski  
Technician

Attachment(s)  
Frequency Data  
Map(s)

cc: FCC

Frequency Data for ASN 2015-ASO-16662-OE

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





## KENTUCKY AIRPORT ZONING COMMISSION

STEVEN BESHEAR  
Governor

90 Airport Road, Bldg 400  
Frankfort, KY 40601  
[www.transportation.ky.gov/aviation](http://www.transportation.ky.gov/aviation)  
502 564-4480

December 21, 2015

### APPROVAL OF APPLICATION

#### APPLICANT:

East Kentucky Network, LLC.  
East Kentucky Network, LLC.  
8300 Greensboro Drive|Suite 1200  
McLean, VA 22102

SUBJECT: AS-088-913-2015-107

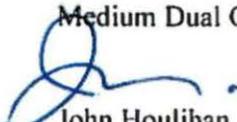
STRUCTURE: Antenna Tower  
LOCATION: Relief, KY  
COORDINATES: 37° 57' 9.70" N / 82° 59' 40.52" W  
HEIGHT: 310' AGL/1521' AMSL

The Kentucky Airport Zoning Commission has approved your application for a permit to construct 310'AGL/ 1521'AMSL Antenna Tower near Relief, KY 37° 57' 9.70" N / 82° 59' 40.52" W.

This permit is valid for a period of 18 Month(s) from its date of issuance. If construction is not completed within said 18-Month period, this permit shall lapse and be void, and no work shall be performed without the issuance of a new permit.

A copy of the approved application is enclosed for your files.

Medium Dual Obstruction Lighting is required in accordance with 602 KAR 50:100.

  
John Houlihan  
Administrator



An Equal Opportunity Employer M/F/D



**KENTUCKY AIRPORT ZONING COMMISSION**

STEVEN BESHEAR  
Governor

90 Airport Road, Bldg 400  
Frankfort, KY 40601  
www.transportation.ky.gov/aviation  
502 564-4480

**CONSTRUCTION/ALTERATION STATUS REPORT**

December 21, 2015

AERONAUTICAL STUDY NUMBER: AS-088-913-2015-107

East Kentucky Network, LLC.  
East Kentucky Network, LLC.  
8300 Greensboro Drive|Suite 1200  
McLean, VA 22102

This concerns the permit which was issued to you by the Kentucky Airport Zoning Commission on December 21, 2015. This permit is valid for a period of 18 Month(s) from its date of issuance. If construction is not completed within the said 18-Month period, this permit shall lapse and be void, and no work shall be performed without the issuance of a new permit. When appropriate, please indicate the status of the project in the place below and return this letter to John Houlihan, Administrator, Kentucky Airport Zoning Commission, 90 Airport Road, Bldg 400, Frankfort, KY, 40601. 502 564-4480.

STRUCTURE: Antenna Tower  
LOCATION: Relief, KY  
COORDINATES: 37° 57' 9.70" N / 82° 59' 40.52" W  
HEIGHT: 310' AGL /1521'AMSL

**CONSTRUCTION/ALTERATION STATUS**

1. The project ( ) is abandoned. ( ) is not abandoned.

2. Construction status is as follows:

Structure reached its greatest height of \_\_\_\_\_ ft. AGL  
\_\_\_\_\_ ft. AMSL on \_\_\_\_\_ (date).

Date construction was completed. \_\_\_\_\_

Type of obstruction marking/painting. \_\_\_\_\_

Type of obstruction lighting. \_\_\_\_\_

As built coordinates. \_\_\_\_\_

Miscellaneous Information. \_\_\_\_\_

DATE \_\_\_\_\_

SIGNATURE/TITLE \_\_\_\_\_





## KENTUCKY AIRPORT ZONING COMMISSION

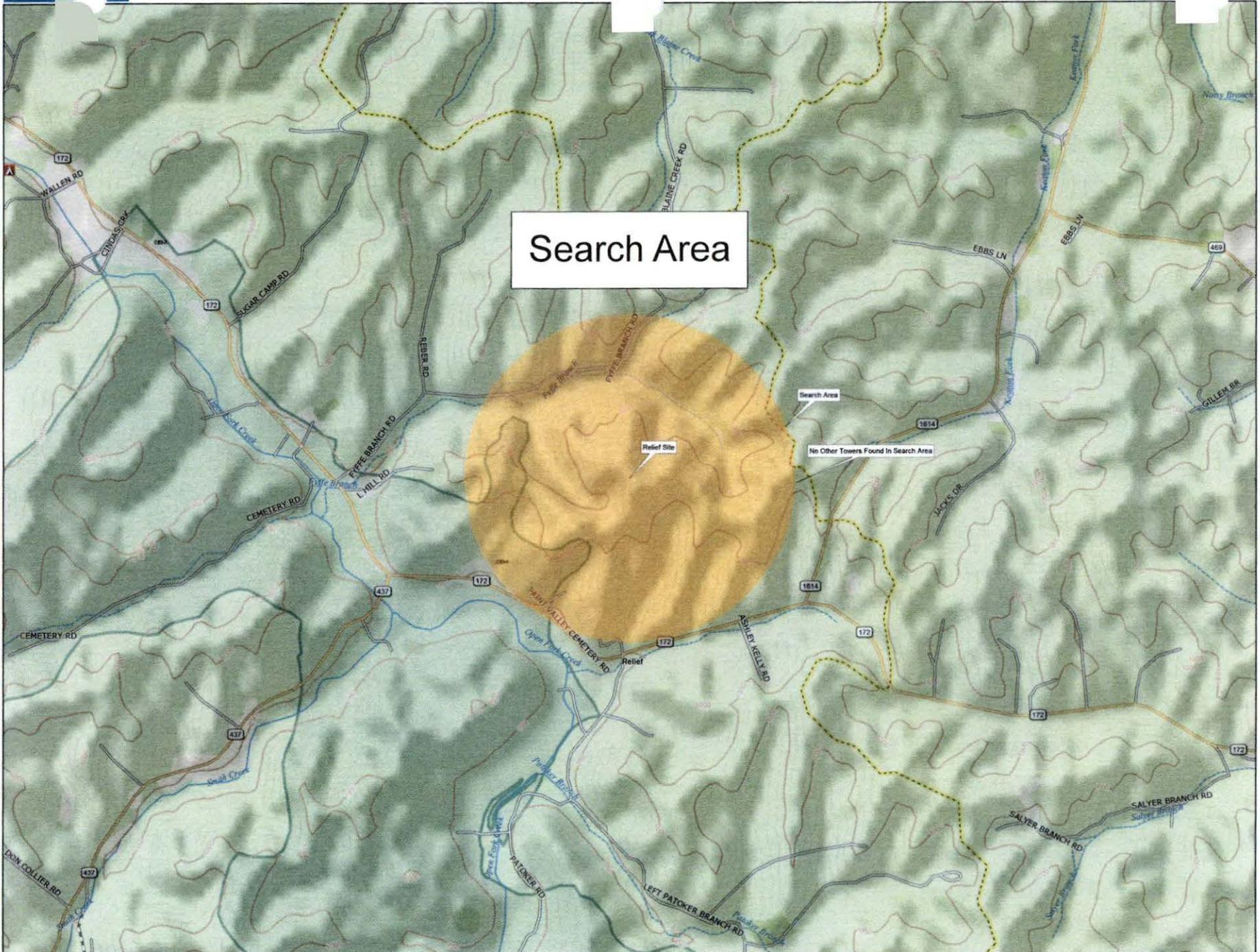
## APPLICATION FOR PERMIT TO CONSTRUCT OR ALTER A STRUCTURE

APPLICANT (name) East Kentucky Network, LLC c/o LNGS		PHONE 703-584-8667	FAX 703-584-8692	KY AERONAUTICAL STUDY # 13-088-9E3-2015-167
ADDRESS (street) 8300 Greensboro Dr, #1200		CITY McLean		STATE VA
ADDRESS (street) 8300 Greensboro Dr, #1200		CITY McLean		STATE VA
APPLICANT'S REPRESENTATIVE (name) Ali Kuzehkanani		PHONE 703-584-8667	FAX 703-584-8692	ZIP 22102
APPLICANT'S REPRESENTATIVE (name) Ali Kuzehkanani		PHONE 703-584-8667	FAX 703-584-8692	ZIP 22102
ADDRESS (street) 8300 Greensboro Dr, #1200		CITY McLean		STATE VA
ADDRESS (street) 8300 Greensboro Dr, #1200		CITY McLean		STATE VA
APPLICATION FOR <input type="checkbox"/> New Construction <input checked="" type="checkbox"/> Alteration <input type="checkbox"/> Existing		DURATION <input type="checkbox"/> Permanent <input type="checkbox"/> Temporary (months days )		WORK SCHEDULE Start 11/25/15 End 11/30/15
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 37°57'09.70"		LONGITUDE 82°59'40.52"		DATUM <input checked="" type="checkbox"/> NAD83 <input type="checkbox"/> NAD27 <input type="checkbox"/> Other
NEAREST KENTUCKY City Relief County Morgan ✓		NEAREST KENTUCKY PUBLIC USE OR MILITARY AIRPORT West Liberty Airport		
SITE ELEVATION (AMSL, feet) 1211		TOTAL STRUCTURE HEIGHT (AGL, feet) 310		CURRENT (FAA aeronautical study #)
OVERALL HEIGHT (site elevation plus total structure height, feet) 1521		PREVIOUS (FAA aeronautical study #)		
DISTANCE (from nearest Kentucky public use or Military airport to structure) 14.3 mi		PREVIOUS (KY aeronautical study #)		
DIRECTION (from nearest Kentucky public use or Military airport to structure) West				
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. 0.6 mi N of Relief (Morgan), KY				
DESCRIPTION OF PROPOSAL An 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? 10/14/15				
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 10/14/15	
COMMISSION ACTION <input checked="" type="checkbox"/> Approved <input type="checkbox"/> Disapproved				
SIGNATURE 		DATE 12-21-15		

## Driving Directions for Relief

Starting in front of the Morgan County Courthouse, on the corner of Court Street and Main Street, go .1 mile, turn right on Prestonsburg Street (Rt. 460 East), then go .9 miles and turn left on HWY 172 East. Then go 19.0 miles, turn left on Fyffe Branch, and go .3 miles, turn right on Right Fork of Fyffe Branch, then go .3 miles, tower access road on right (signs will be posted here).

Prepared By:  
Jack Adkins  
Appalachian Wireless  
606-339-0531

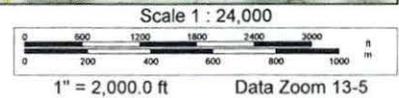


Search Area

Relief Site

Search Area

No Other Towers Found In Search Area



MEMORANDUM OF LEASE

THIS MEMORANDUM OF LEASE is made and entered into on this the 25<sup>th</sup> day of September, 2015, with a commencement date of October 1, 2015 by and between Laden Ferguson and Joann Ferguson, his wife, with the mailing address of 584 Fyffe Branch, West Liberty, KY, 41472, hereinafter referred to as "Lessors" and East Kentucky Network, LLC d/b/a Appalachian Wireless, with a mailing address of 101 Technology Trail, Ivel, Kentucky, 41642, hereinafter referred to as "Lessee."

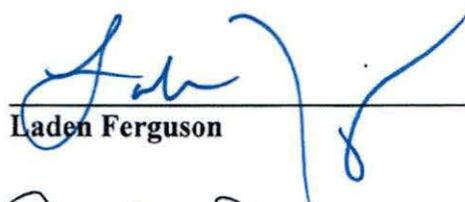
WITNESSETH:

1. **Demised Premises:** For good and valuable consideration, Lessors do hereby lease to Lessee, and Lessee does hereby lease from Lessors, a portion of that certain tract of real estate located in Morgan County, Kentucky, and being a portion of the same land conveyed to Lessors by Deed of Conveyance referenced in Deed Book 206, Page 723, in the Morgan County Clerk's Office. Said property is more particularly described in the description and plat attached hereto and made a part hereof as Exhibits A and B, prepared by James W. Caudill, Licensed Professional Land Surveyor (hereinafter referred to as the "Premises");
2. **Term:** The term of the Lease shall be for a period of five (5) years from the commencement date of the Lease Agreement.
3. **Option to Renew:** Lessee shall have the option to renew the Lease for an additional six (6) terms of five (5) years each.
4. **Binding Effect:** All of the terms, conditions, and covenants hereof shall be binding and shall inure to the benefit of the heirs, representatives, successors, and assigns of the parties hereto.

5. **Purpose:** This Memorandum of Lease is prepared solely for the purpose of recordation, and is not intended, 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 thereunder.

In Witness Whereof, Lessors and Lessee have executed this Memorandum of Lease as of the day, month and year first written above.

**LESSORS:**

  
Laden Ferguson

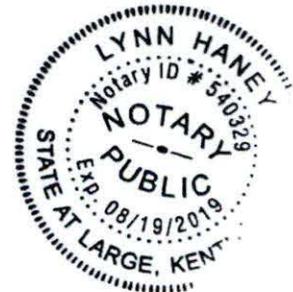
  
Joann Ferguson

COMMONWEALTH OF KENTUCKY  
COUNTY OF Floyd

The foregoing instrument was acknowledged before me on this 25<sup>th</sup> day of September, 2015, by Laden and Joann Ferguson, Lessors.

  
Notary Public

My Commission Expires August 19, 2019



**LESSEE:**

**EAST KENTUCKY NETWORK, LLC**

By WA Gillum

Its CEO/GM

COMMONWEALTH OF KENTUCKY  
COUNTY OF Floyd

The foregoing instrument was acknowledged before me on this 25<sup>th</sup> day of September, 2015, by W.A. Gillum, CEO/General Manager of East Kentucky Network, LLC, d/b/a Appalachian Wireless.

Lynn Haney  
Notary Public

My Commission Expires August 19, 2019

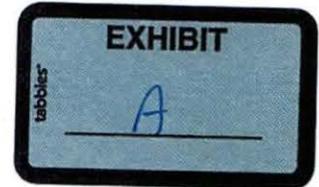


This instrument was prepared by:

Frank K. Nall

Frank K. Nall, Attorney at Law  
225 Second Street  
Pikeville, KY 41501

**LOT DESCRIPTION**  
Property of  
Laden and Joann Ferguson  
584 Fyffe Branch  
West Liberty, KY 41472  
Near Relief in Morgan County  
August 28, 2015



A portion of the property lying on Fyffe Branch off Open Fork off HWY 172 in Morgan County of Kentucky, near the community of Relief. Being a part of the same land conveyed by deed from Susie Ferguson, Paul Ferguson and Mary Ferguson, Corlis Ferguson and Barbara Ann Ferguson, Bennie Blair and Olena Blair, Jerald Ferguson and Patricia Ferguson, Laden Ferguson and Joann Ferguson, Samuel Brown and Vonja Brown, Donnie Wayne Bush and Clotena Bush, Okel Ferguson and Rhonda Ferguson, and Orville and Nina Beculhimer, to Laden and Joann Ferguson, by deed dated September 04, 2006 and recorded in Deed Book 206 Page 723 of the Morgan County Court Clerk. Also a portion of the property lying on Fyffe Branch off Open Fork off HWY 172 in Morgan County of Kentucky, near the community of Relief. Being a part of the same land conveyed by deed from Susie Ferguson to Laden and Joann Ferguson, by deed dated November 26, 2008 and recorded in Deed Book 213 Page 539 of the Morgan County Court Clerk.

Unless stated otherwise, any monument referred to herein as "set iron pin with cap" is a set ½" 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 North. This survey performed by James W. Caudill, LS2259, on August 28, 2015.

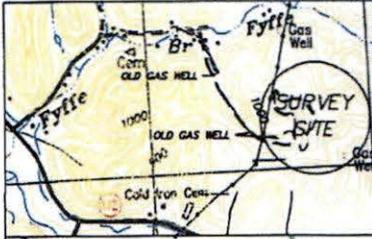
Lot 1A

Beginning on set iron pin with cap marked LS-2259 (N: 3882175.92, E: 5715631.36) on the ridge and on the property line between Laden and Joann Ferguson (Deed Book 206 Page 723) and Dewey E. Brown (Deed Book 157 Page 53), said point being South 40 deg 02 min 27 sec West, 50.19 feet from a point on top of the knob; thence running South 41 deg 40 min 02 sec West, 96.38 feet to a set iron pin with cap marked LS-2259 at the base of a 24" hickory and 10 feet west of the Dewey E. Brown property line; thence running around and down the hill North 27 deg 07 min 51 sec West, 99.98 feet to a set iron pin with cap marked LS-2259 below proposed tower location; thence running up the hill North 47 deg 19 min 25 sec East, 40.05 feet to a set iron pin with cap marked LS-2259 on the hillside; thence running around the hill North 09 deg 19 min 43 sec East, 74.97 feet to a set iron pin with cap marked LS-2259 set on the ridge at a fence bordering the property line of Richard Fyffe (Deed Book 24 Page 174); thence running, with the property line of Richard Fyffe, South 42 deg 49 min 21 sec East, 37.36 feet to a set iron pin with cap marked LS-2259 on the ridge; thence, leaving the property line of Richard Fyffe and severing the property of Laden Ferguson, South 25 deg 12 min 02 sec East, 100.25 feet to a set iron pin with cap on the ridge, which is the point of beginning. Containing a calculated area of 10033 square feet, or 0.23 acres.

This survey was performed on August 28, 2015 by James W. Caudill, a Kentucky Licensed Professional Land Surveyor No. 2259.

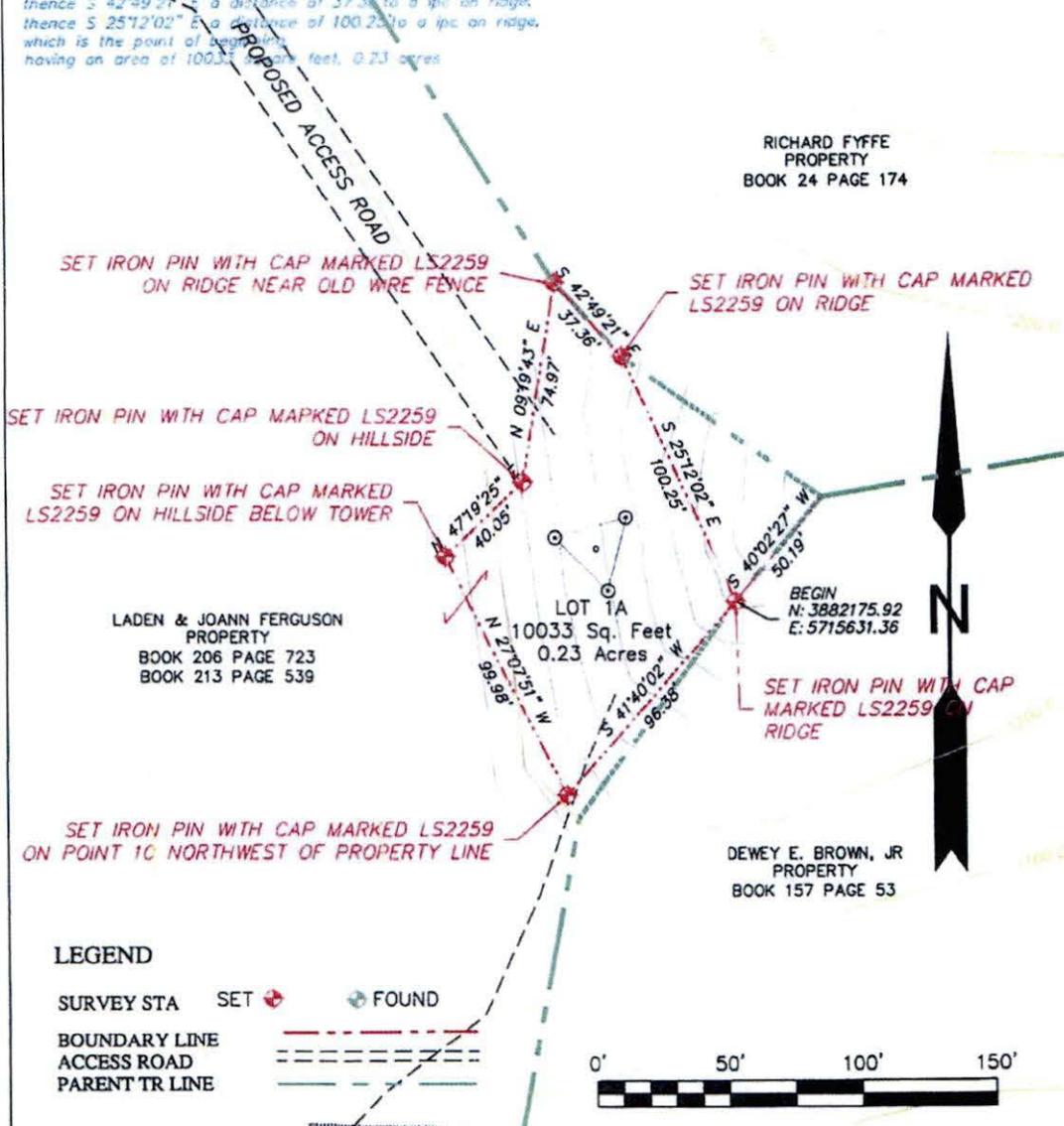
*James W. Caudill*  
James W. Caudill, PLS #2259  
8-28-15

A rectangular seal for a Licensed Professional Land Surveyor in the State of Kentucky. The seal contains the text: "STATE of KENTUCKY", "JAMES W. CAUDILL", "LS 2259", and "LICENSED PROFESSIONAL LAND SURVEYOR". The seal is surrounded by a decorative border.



APPALACHIAN WIRELESS  
 101 TECHNOLOGY TRAIL  
 IVEL, KY. 41642  
 PROPOSED TOWER SITE  
 RELIEF IN MORGAN COUNTY

beginning at a ipridge at nad83 ky single zone coords n: 3882175.92, e: 5715631.36,  
 thence S 41°40'21" W a distance of 96.38' to a ipc on pt by 24' h/c,  
 thence N 27°07'51" W a distance of 99.98' to a ipc below tower,  
 thence N 47°19'25" E a distance of 40.05' to a ipc on hillside,  
 thence N 08°10'43" E a distance of 74.97' to a ipc on ridge/inc,  
 thence S 42°19'27" E a distance of 37.36' to a ipc on ridge,  
 thence S 25°12'02" E a distance of 100.25' to a ipc on ridge,  
 which is the point of beginning,  
 having an area of 10033 square feet, 0.23 acres



**LEGEND**

- SURVEY STA SET FOUND
- BOUNDARY LINE
- ACCESS ROAD
- PARENT TR LINE

STATE OF KENTUCKY  
 JAMES W. CAUDILL  
 LS 2259  
 LICENSED PROFESSIONAL LAND SURVEYOR

RURAL CLASS SURVEY  
 I HEREBY CERTIFY THAT THIS PLAT DEPICTS A SURVEY MADE BY ME BY THE METHOD OF RANDOM TRAVERSE. THE BEARINGS SHOWN HEREON HAVE NOT BEEN ADJUSTED FOR CLOSURE. THIS SURVEY AND PLAT MEETS OR EXCEEDS THE MINIMUM STANDARDS OF GOVERNING AUTHORITIES. THE UNADJUSTED ERROR OF CLOSURE WAS 1 IN 12210

*James W. Caudill*  
 NAME PLS# DATE LS2259 8-28-15

**PLAT OF SURVEY**

DRAWN BY JWC	SURVEY DATE 08/28/15	SUB DIVISION PROPERTY OF LADEN & JOANN FERGUSON 584 FYFFE BRANCH WEST LIBERTY, KY 41472 NEAR RELIEF IN MORGAN CO DEED BOOK 206 PAGE 723 DEED BOOK 213 PAGE 539
CHECKED BY JWC	DRAWING DATE 08/28/15	
SCALE 1" = 50'	SHEET 1 OF 1	SURVEYED BY JAMES W. CAUDILL LS2259 2999 PERKINS/MADSEN ROAD AMBURGEY, KY 41774 PHONE: 606-642-3217

LINE	BEARING	DISTANCE
L1	S 05°50'25" W	87.66'
L2	S 01°54'14" E	60.88'
L3	S 08°52'25" E	99.97'
L4	S 14°48'29" E	59.00'
L5	S 23°03'19" E	63.43'
L6	N 07°08'30" W	103.73'
L7	N 01°41'05" W	63.98'
L8	N 02°03'35" E	109.20'
L9	N 08°30'18" E	114.12'
L10	N 10°57'39" E	124.45'
L11	N 12°53'26" E	116.89'
L12	N 26°19'27" E	83.64'

APPALACHIAN WIRELESS  
 101 TECHNOLOGY TRAIL  
 IVEL, KY. 41642  
 PROPOSED TOWER  
 NEAR RELIEF IN MORGAN COUNTY

LOT 1A  
 10035 Sq. Feet  
 0.23 Acres

N: 3882294.02  
 E: 5715563.29  
 Z: 1211.87

RICHARD FYFFE  
 195-6

LAT: 37°57'09.7078"  
 LON: 82°59'40.5220"

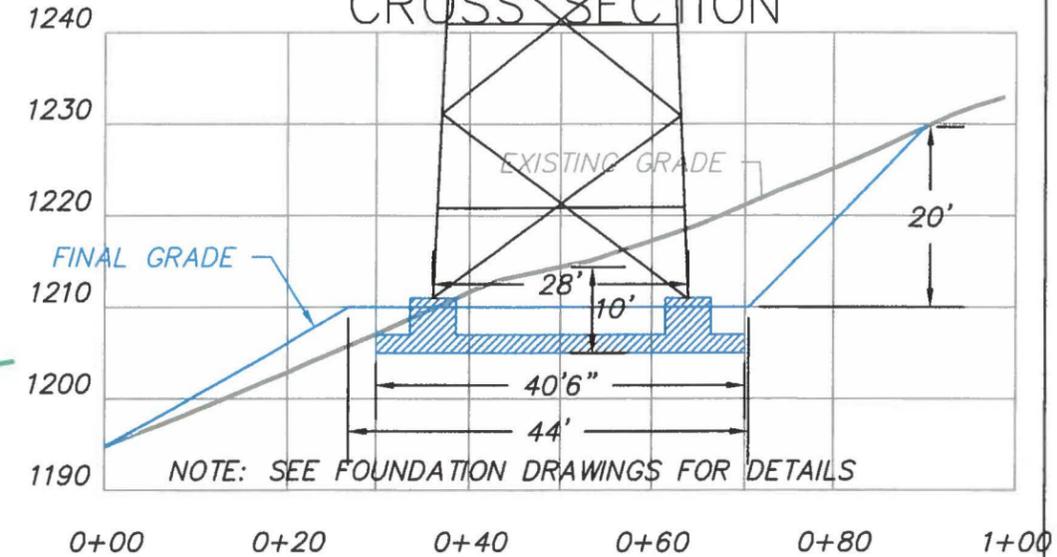
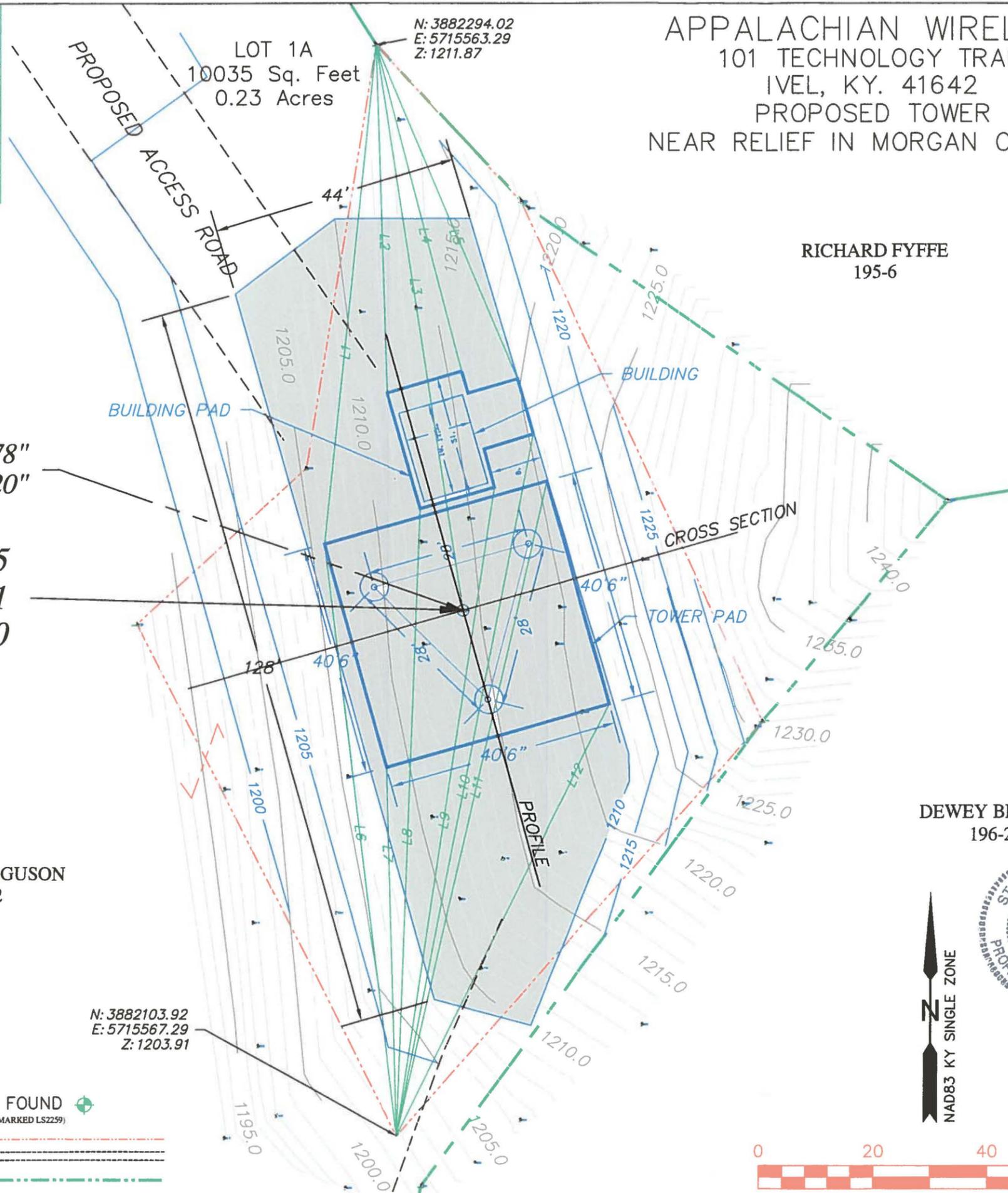
N: 3882195.25  
 E: 5715578.71  
 Z: 1214.70

LADEN FERGUSON  
 195-2

N: 3882103.92  
 E: 5715567.29  
 Z: 1203.91

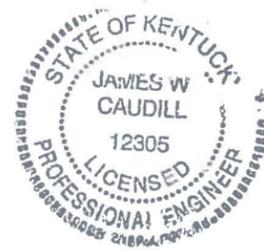
SURVEY STA SET FOUND

BOUNDARY LINE  
 ACCESS ROAD  
 PARENT TR LINE



-THE PROPOSED TOWER HAS BEEN LOCATED USING DUAL FREQUENCY GPS UNIT PROCESSED BY "OPUS"  
 -STATE PLANE COORDINATES NAD 83 KY SINGLE ZONE N: 3882195.25 E: 5715578.71 EL: 1214.70 EXISTING GR PLAN- FOUNDATION EL1211.0'-TOP TOWER EL 1511.0'  
 -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.

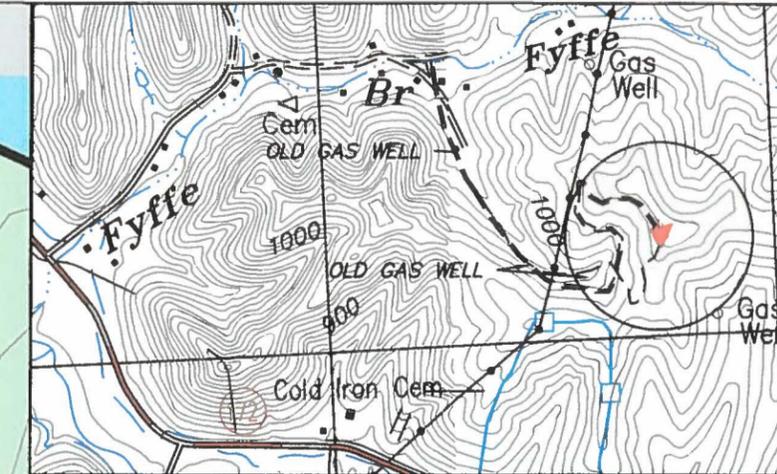
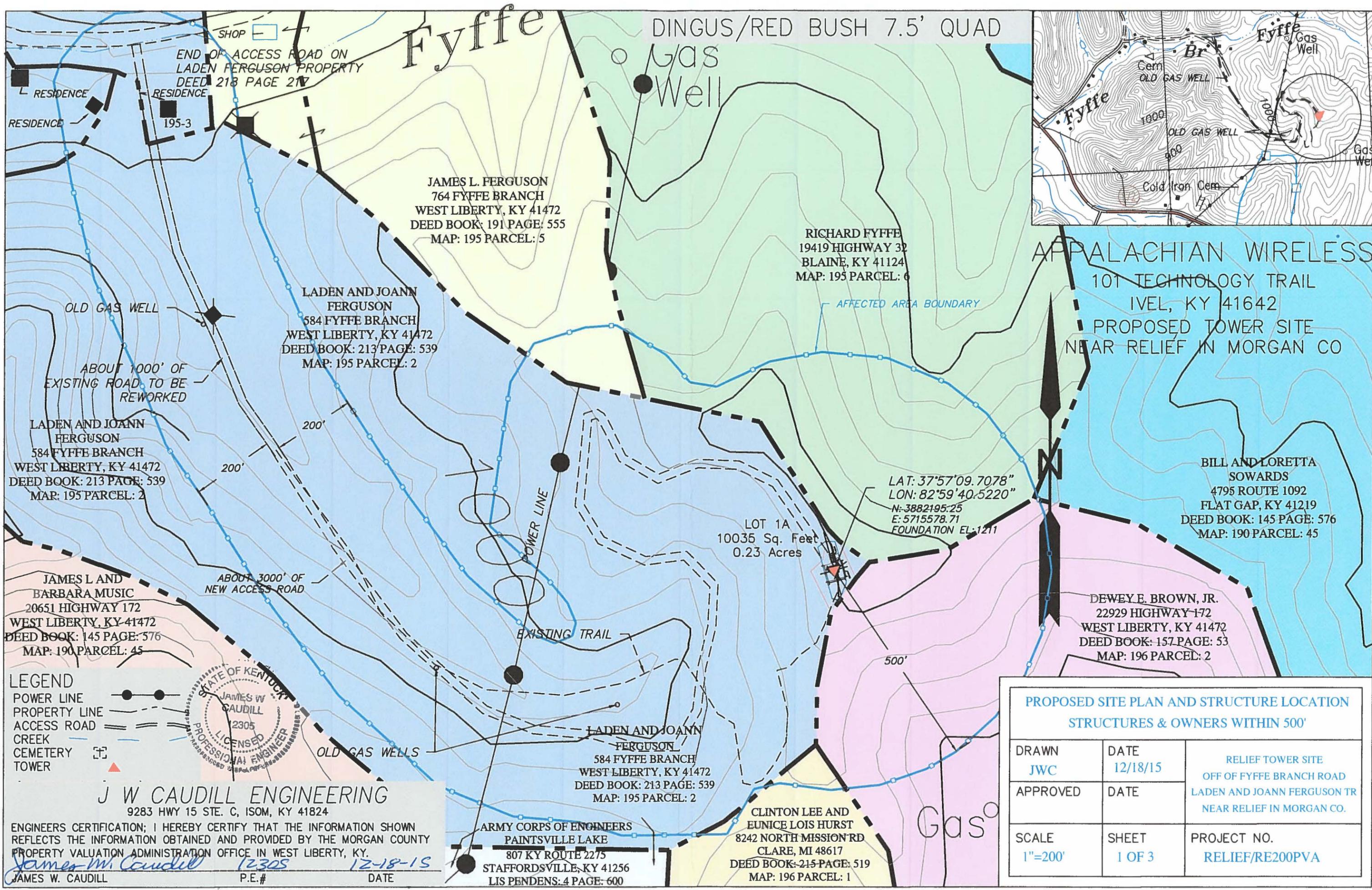
DEWEY BROWN  
 196-2



I HEREBY CERTIFY THAT THIS DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECTION.  
 James W. Caudill 12305 12-18-15  
 JAMES W. CAUDILL PE# DATE

PROPOSED SITE PLAN AND STRUCTURE LOCATION RELIEF TOWER APPALACHIAN WIRELESS		
DRAWN JWC	DATE 12/18/15	RELIEF TOWER LADEN FERGUSON FYFFE BRANCH NEAR RELIEF IN MORGAN CO
APPROVED	DATE	
SCALE 1" = 20'	SHEET 2 OF 3	PROJECT NO. RELIEF/RELIEFSITE20





**APPALACHIAN WIRELESS**  
 101 TECHNOLOGY TRAIL  
 IVEL, KY 41642  
 PROPOSED TOWER SITE  
 NEAR RELIEF IN MORGAN CO

SHOP  
 END OF ACCESS ROAD ON  
 LADEN FERGUSON PROPERTY  
 DEED 218 PAGE 217  
 RESIDENCE  
 RESIDENCE  
 RESIDENCE  
 195-3

**Fyffe**  
 DINGUS/RED BUSH 7.5' QUAD  
 Gas Well

JAMES L. FERGUSON  
 764 FYFFE BRANCH  
 WEST LIBERTY, KY 41472  
 DEED BOOK: 191 PAGE: 555  
 MAP: 195 PARCEL: 5

RICHARD FYFFE  
 19419 HIGHWAY 32  
 BLAINE, KY 41124  
 MAP: 195 PARCEL: 6

LADEN AND JOANN  
 FERGUSON  
 584 FYFFE BRANCH  
 WEST LIBERTY, KY 41472  
 DEED BOOK: 213 PAGE: 539  
 MAP: 195 PARCEL: 2

LADEN AND JOANN  
 FERGUSON  
 584 FYFFE BRANCH  
 WEST LIBERTY, KY 41472  
 DEED BOOK: 213 PAGE: 539  
 MAP: 195 PARCEL: 2

JAMES L AND  
 BARBARA MUSIC  
 20651 HIGHWAY 172  
 WEST LIBERTY, KY 41472  
 DEED BOOK: 145 PAGE: 576  
 MAP: 190 PARCEL: 45

LAT: 37°57'09.7078"  
 LON: 82°59'40.5220"  
 N: 3882195.25  
 E: 5715578.71  
 FOUNDATION EL: 1211

LOT 1A  
 10035 Sq. Feet  
 0.23 Acres

BILL AND LORETTA  
 SOWARDS  
 4795 ROUTE 1092  
 FLAT GAP, KY 41219  
 DEED BOOK: 145 PAGE: 576  
 MAP: 190 PARCEL: 45

DEWEYE E. BROWN, JR.  
 22929 HIGHWAY 172  
 WEST LIBERTY, KY 41472  
 DEED BOOK: 157 PAGE: 53  
 MAP: 196 PARCEL: 2

**LEGEND**  
 POWER LINE  
 PROPERTY LINE  
 ACCESS ROAD  
 CREEK  
 CEMETERY  
 TOWER

STATE OF KENTUCKY  
 JAMES W CAUDILL  
 12305  
 LICENSED PROFESSIONAL ENGINEER

**J W CAUDILL ENGINEERING**  
 9283 HWY 15 STE. C, ISOM, KY 41824  
 ENGINEERS CERTIFICATION; I HEREBY CERTIFY THAT THE INFORMATION SHOWN  
 REFLECTS THE INFORMATION OBTAINED AND PROVIDED BY THE MORGAN COUNTY  
 PROPERTY VALUATION ADMINISTRATION OFFICE IN WEST LIBERTY, KY.  
 James W. Caudill 12305  
 JAMES W. CAUDILL P.E.# 12305 DATE 12-18-15

LADEN AND JOANN  
 FERGUSON  
 584 FYFFE BRANCH  
 WEST LIBERTY, KY 41472  
 DEED BOOK: 213 PAGE: 539  
 MAP: 195 PARCEL: 2

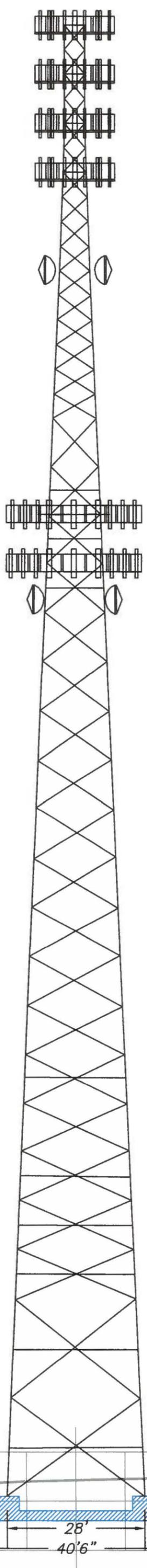
ARMY CORPS OF ENGINEERS  
 PAINTSVILLE LAKE  
 807 KY ROUTE 2275  
 STAFFORDSVILLE, KY 41256  
 LIS PENDENS: 4 PAGE: 600

CLINTON LEE AND  
 EUNICE LOIS HURST  
 8242 NORTH MISSION RD  
 CLARE, MI 48617  
 DEED BOOK: 215 PAGE: 519  
 MAP: 196 PARCEL: 1

PROPOSED SITE PLAN AND STRUCTURE LOCATION STRUCTURES & OWNERS WITHIN 500'		
DRAWN JWC	DATE 12/18/15	RELIEF TOWER SITE OFF OF FYFFE BRANCH ROAD LADEN AND JOANN FERGUSON TR NEAR RELIEF IN MORGAN CO.
APPROVED	DATE	
SCALE 1"=200'	SHEET 1 OF 3	PROJECT NO. RELIEF/RE200PVA

APPALACHIAN WIRELESS  
 101 TECHNOLOGY TRAIL  
 IVEL, KY. 41642  
 PROPOSED TOWER SITE  
 RELIEF IN MORGAN COUNTY

300 ft  
 280 ft  
 260 ft  
 240 ft  
 220 ft  
 200 ft  
 180 ft  
 160 ft  
 140 ft  
 120 ft  
 100 ft  
 80 ft  
 60 ft  
 40 ft  
 20 ft



PROFILE  
 WITH TOWER

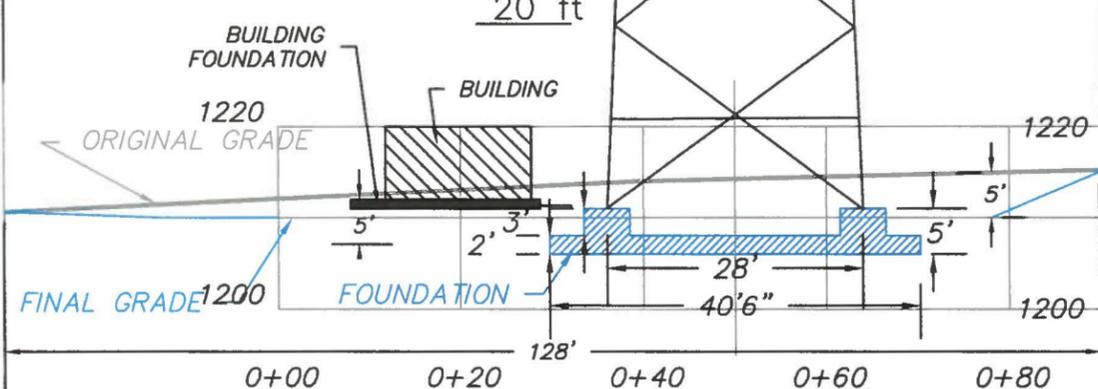
THIS IS A VERTICAL PROFILE SKETCH OF THE TOWER INDICATING THE PROPOSED ANTENNA AND DISH ELEVATIONS. NO DESIGN CRITERIA WAS CONSIDERED IN THE PREPARATION OF THIS DRAWING.



*James W. Caudill* 12305 12-18-15  
 JAMES W. CAUDILL PE # DATE

NOTE: SEE FOUNDATION DRAWINGS FOR DETAILS

12/18/15  
 SCALE 1" = 20'



PROPOSED SITE PLAN AND STRUCTURE LOCATION RELIEF TOWER APPALACHIAN WIRELESS		
<b>DRAWN</b> JWC	<b>DATE</b> 12/18/15	RELIEF TOWER LADEN FERGUSON FYFFE BRANCH NEAR RELIEF IN MORGAN CO
<b>APPROVED</b>	<b>DATE</b>	
<b>SCALE</b> 1" = 20'	<b>SHEET</b> 3 OF 3	<b>PROJECT NO.</b> RELIEF/RELIEFPRO20