COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the matter of:

THE APPLICATION OF EAST KENTUCKY NETWORK, LLC FOR THE ISSUANCE OF A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO CONSTRUCT A TOWER IN ELLIOTT COUNTY, KENTUCKY	)))))	CASE NO 2019-00086

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 No. 2001-022. East Kentucky Network, LLC is a Kentucky Limited Liability Company that was organized on June 16, 1998. East Kentucky Network, LLC is in good standing with the state of Kentucky.

In an effort to improve service in Elliott County, pursuant to KRS 278.020 Subsection 1 and 807 KAR 5:001, East Kentucky Network, LLC is seeking the Commission's approval to construct a 180-foot telecommunications tower on a tract of land located at 9977 North KY 7, Sandy Hook, Elliott County, Kentucky (38°11'14.1923"N 83°01'33.8904"W). A map and detailed directions to the site can be found in Exhibit 7.

Construction of the proposed tower is required by public convenience and necessity. Due to increasing demand for telecommunications service, the proposed tower is necessary to provide adequate coverage. The proposed tower will improve service in Elliott County by providing an interconnection between East Kentucky Network, LLC's other sites thereby forming a cohesive network.

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 and all

property owners who own property contiguous to the property upon which construction is proposed in accordance with the Public Valuation Administrator's records.

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

Elliott County has no formal local planning unit. In absence of this unit, the Elliott County Judge Executive's office was notified by certified mail, return receipt requested of East Kentucky Network, LLC's proposal and informed of its right to intervene. The Elliott County Judge Executive's Office was also 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 Elliott County News, May 9, 2019 edition. Enclosed in Exhibit 3 is a copy of that notice. The Elliott County News is the newspaper with the largest circulation in Elliott County.

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

A copy of the tower design information is enclosed as Exhibit 5. The proposed tower has been designed by engineers at Rohn Products LLC 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 approvals are included as Exhibit 6.

No Federal Communications Commission approval is required prior to construction of this facility. Once service is established from this tower we must immediately notify the Federal Communications Commission of its operation. Prior approval is needed only if the proposed facility increases the size of the cellular geographic service area. This cell site will not expand the cellular geographic service area.

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

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

Two notice signs meeting the requirements prescribed by 807 KAR 5:063, Section 1(2), measuring at least two (2) feet in height and four (4) feet in width and containing all required language in letters of required height, have been posted, one at a visible location on the proposed site and one on the nearest public road. The two signs were posted on May 7, 2019, 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 Deed for the site location along with a lot description.

The proposed construction site is on a rugged mountaintop some feet from the nearest structure. Prior to construction, the site was wooded.

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

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

Exhibit 10 is a map in one (1) inch equals 200 feet scale identifying every structure and every owner of real estate within 500 feet of the proposed tower and all property owners who own contiguous property to the property upon which construction is proposed.

Exhibit 11 contains a vertical sketch of the tower supplied by Jonathan Newman, Kentucky registered professional engineer.

Enclosed as Exhibit 12 is a list of utilities, corporations, or persons with whom the tower is likely to compete.

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

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

SUBMITTED BY: Lynn Haney DATE: 5/9/19
Lynn Haney, Regulatory Compliance Director

APPROVED BY: W A Gillum DATE: 5/9/19
W.A. Gillum, General Manager

ATTORNEY: Krystal Branham DATE: 5/9/19
Hon. Krystal Branham, 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

Krystal Branham, Attorney
Phone: (606) 477-2355 ext. 1009
Email: kbranham@ekn.com

Mailing Address:

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

1. FCC License
2. Copies of Cell Site Notices to Land Owners
3. Notification of County Judge Executive and Newspaper Advertisement
4. Universal Soil Bearing Analysis
5. Tower Design
6. FAA and KAZC Approvals
7. Driving Directions from County Court House and Map to Suitable Scale
8. Deed 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. List of Competitors

1

2

3

4

5

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11

12

ULS License

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	09/04/2014	Cancellation	

Five Year Buildout Date

10/23/1996

Control Points

1 U.S. 23, HAROLD, KY

Licensee

FRN	0001786607	Type	Limited Liability Company

Licensee

East Kentucky Network, LLC d/b/a Appalachian Wireless
101 Technology Trail
Ivel, KY 41642
ATTN W.A. Gillum, General Manager / CEO

P:(606)477-2355

Contact

Lukas, Nace, Gutierrez & Sachs, LLP
Pamela L Gist Esq
8300 Greensboro Drive
McLean, VA 22102

P:(703)584-8665
F:(703)584-8696
E:pgist@fcclaw.com

Ownership and Qualifications

Radio Service Type Mobile

Regulatory Status Common Carrier Interconnected Yes

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

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

Demographics

Race

Ethnicity

Gender

EXHIBIT 2 – LIST OF PROPERTY OWNERS

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

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

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

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

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

LIST OF PROPERTY OWNERS

Donald Greene and Reba Greene
740 Horton Flats Rd.
Olive Hill, KY 41164

Johnny Ray Greene and Penny Greene
Donald Greene and Reba Greene
740 Horton Flats Rd.
Olive Hill, KY 41164

E.H Evans, Faye Evans, Pam Gollihue and Timothy Gollihue,
James Edward Crockett Jr., Earnest Crockett and Phyllis Crockett
Rt 1 Box 2106
Sandy Hook, KY 41171

Appalachian WIRELESS
www.appalachianwireless.com

EAST KENTUCKY NETWORK, LLC
www.ekn.com

VIA: U.S. CERTIFIED MAIL

PUBLIC NOTICE

May 9, 2019

Donald Greene and Reba Greene
740 Horton Flats Rd.
Olive Hill, KY 41164

RE: Public Notice-Public Service Commission of Kentucky (Case No. 2019-00086)

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 Elliott County. The facility will include a 180'-foot self-supporting tower with attached antennas extending upwards, and an equipment shelter located on a tract of land at 9977 N KY 7, Sandy Hook, Elliott County, Kentucky. A map showing the location of the proposed new facility is enclosed. This notice is being sent to you because you may own property within a 500' radius of the proposed tower or own property contiguous to the property upon which construction is proposed.

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

Your comments and request for intervention should be addressed to: Executive Director's Office, Public Service Commission of Kentucky, P.O. Box 615, Frankfort, KY 40602. Please refer to Case No. 2019-00086 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,

Lynn Haney

Lynn Haney, CPA
Regulatory Compliance Director
Enclosure 1

Appalachian WIRELESS
www.appalachianwireless.com

EAST KENTUCKY NETWORK, LLC
www.ekn.com

VIA: U.S. CERTIFIED MAIL

PUBLIC NOTICE

May 9, 2019

Johnny Ray Greene and Penny Greene
Donald Greene and Reba Greene
740 Horton Flats Rd.
Olive Hill, KY 41164

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Sincerely,

Lynn Haney

Lynn Haney, CPA
Regulatory Compliance Director
Enclosure 1

Appalachian WIRELESS
www.appalachianwireless.com

EAST KENTUCKY NETWORK, LLC
www.ekn.com

VIA: U.S. CERTIFIED MAIL

PUBLIC NOTICE

May 9, 2019

E.H Evans, Faye Evans, Pam Gollihue and Timothy Gollihue,
James Edward Crockett Jr., Earnest Crockett and Phyllis Crockett
Rt 1 Box 2106
Sandy Hook, KY 41171

RE: Public Notice-Public Service Commission of Kentucky (Case No. 2019-00086)

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 Elliott County. The facility will include a 180'-foot self-supporting tower with attached antennas extending upwards, and an equipment shelter located on a tract of land at 9977 N KY 7, Sandy Hook, Elliott County, Kentucky. A map showing the location of the proposed new facility is enclosed. This notice is being sent to you because you may own property within a 500' radius of the proposed tower or own property contiguous to the property upon which construction is proposed.

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

Your comments and request for intervention should be addressed to: Executive Director's Office, Public Service Commission of Kentucky, P.O. Box 615, Frankfort, KY 40602. Please refer to Case No. 2019-00086 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,

Lynn Haney

Lynn Haney, CPA
Regulatory Compliance Director
Enclosure 1


Horton Flats
Location:
9977 N KY 7
Sandy Hook, KY 41171
Coordinates:
38°11'14.1923"N
83°01'33.8904"W
Circle Rd
Chuck Horton Rd
Proposed Horton Flats Tower
Bruin
Horton Flats Rd
Google Earth
© 2018 Google
7
2000 ft
N

Appalachian WIRELESS
www.appalachianwireless.com

EAST KENTUCKY NETWORK, LLC
www.ekn.com

VIA: U.S. CERTIFIED MAIL

May 9, 2019

Myron Lewis, Judge Executive
P.O. Box 710
Sandy Hook, KY 41171

RE: Public Notice-Public Service Commission of Kentucky (Case No. 2019-00086)

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 Elliott County. The facility will include a 180-foot self-supporting tower with attached antennas extending upwards, and an equipment shelter located on a tract of land at 9977 N KY 7, Sandy Hook, Elliott County, Kentucky. A map showing the location of the proposed new facility is enclosed. This notice is being sent to you because you are the County Judge Executive of Elliott County.

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. 2019-00086 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,

Lynn Haney

Lynn Haney
Regulatory Compliance Director
Enclosure

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

EAST KENTUCKY NETWORK

To:	The Elliott County News Attn: Classifieds	**From:**	Raina Helton Regulatory Compliance Assistant
Email:	courier@mrtc.com	**Date:**	May 6, 2019
Re:	PUBLIC NOTICE ADVERTISEMENT	**Pages:**	1

Please place the following Public Notice Advertisement in The Elliott County News to be ran on May 9, 2019.

PUBLIC NOTICE:

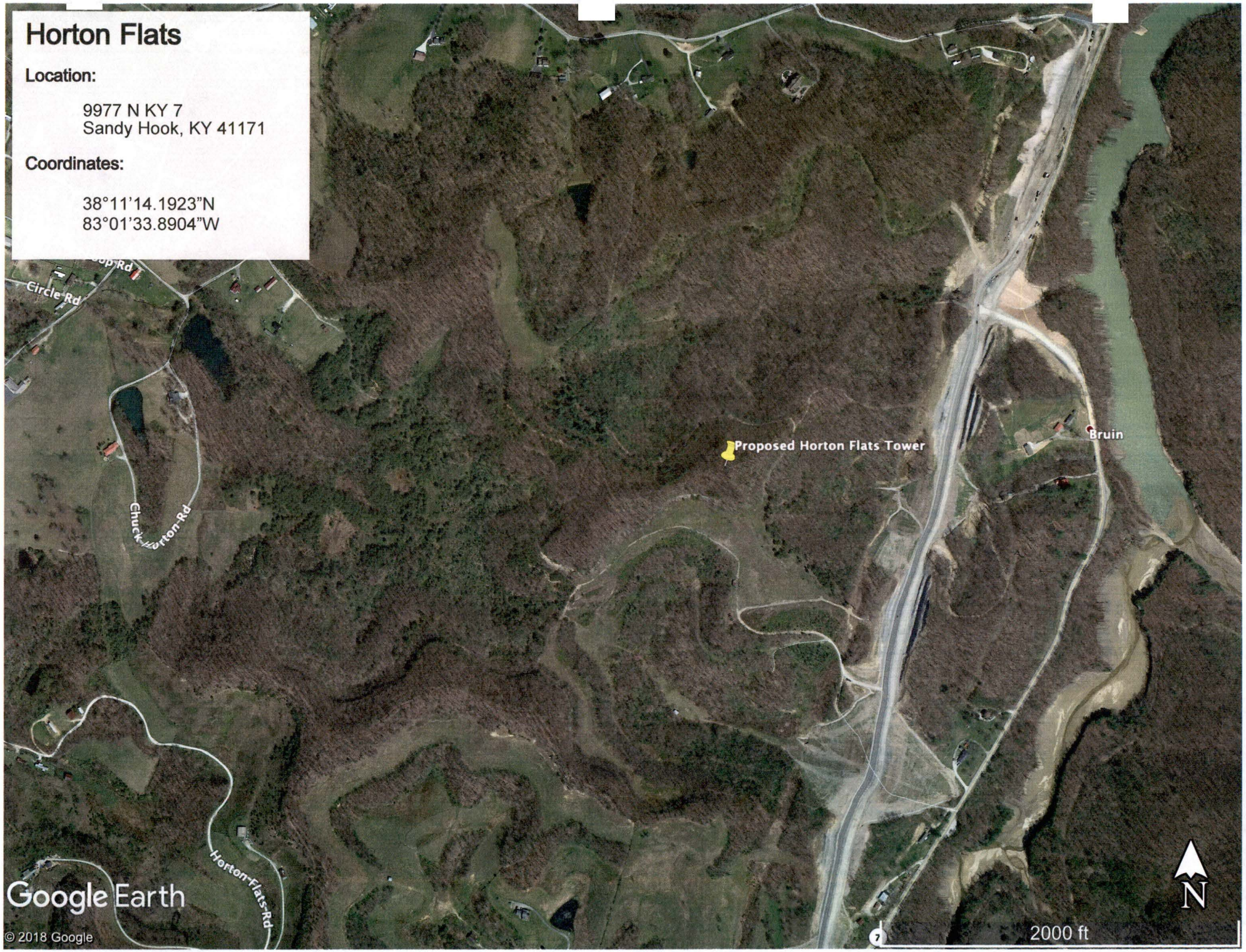
RE: Public Service Commission of Kentucky (CASE NO. 2019-00086)

Public Notice is hereby given that East Kentucky Network, LLC, dba Appalachian Wireless has applied to the Kentucky Public Service Commission to construct a cellular telecommunications tower on a tract of land located near 9977 N KY 7, Sandy Hook, Elliott County, Kentucky. The proposed tower will be a 180 foot self-supporting tower with attached antennas. If you would like to respond to this notice, please contact the Executive Director, Public Service Commission, 211 Sower Boulevard, PO Box 615, Frankfort, Kentucky 40602. Please refer to Case No. 2016-00412.

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


Horton Flats
Location:
9977 N KY 7
Sandy Hook, KY 41171
Coordinates:
38°11'14.1923"N
83°01'33.8904"W
Circle Rd
Chuck Horton Rd
Proposed Horton Flats Tower
Bruin
Horton Flats Rd
Google Earth
© 2018 Google
N
2000 ft

230 Swartz Drive • Hazard • Kentucky • 41701
Phone (606) 551-1050

EAST KENTUCKY ENGINEERING, LLC.

APPALACHIAN WIRELESS
Geotechnical Investigation on the Horton Flats Tower Site Elliott County, Kentucky EKYENG Project No. 165-000-0078

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

PREPARED BY:
Richard Dirk Smith PE, PLS
President
East Kentucky Engineering
230 Swartz Drive
Hazard, Kentucky 41701

STATE OF KENTUCKY
RICHARD D. SMITH
20215
LICENSED PROFESSIONAL ENGINEER

_____, 20215, February 15th, 2019

EXECUTIVE SUMMARY

A geotechnical investigation has been performed on the Horton Flats Tower Site, located in Elliott County, Kentucky. This site is not readily accessible. A location map is shown in Figure 1 of this report. Trenching was conducted with the assistance of Wendell Gay Construction. The following geotechnical considerations were identified:

- Trenching utilized for this study encountered soils and sandstone.
- A preliminary site plan was provided by the client for the location of the proposed tower.
- The estimated base elevation of tower mat foundation is 1,009 ft.
- This site is on a forested ridgeline in an unmined area.
- **The allowable bearing capacities of the underlying rock is estimated at 6 TSF.**
- The 2015 International Building Code seismic site classification for this site is "A".
- If during the foundation design it becomes necessary to change the base of the footer, alternate design recommendations can be provided.
- Three coal seams have been mined in the vicinity of this proposed tower by surface extraction methods. These seams are the Fireclay Seam, the Cannel City Seam and the Little Caney Seam. No mining has been conducted at the proposed tower location. No historical mining by augering was found in our research.
- Close monitoring of the construction operations discussed herein will be critical in achieving the design subgrade support. We, therefore, recommend that EKYENG is 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, recommendations, and all other concerns.

1. INTRODUCTION

East Kentucky Engineering (EKYENG) was retained by Mr. Marty Thacker of Appalachian Wireless to prepare a geotechnical engineering report for the proposed tower site located on the Horton Flats Property, in Elliott County, Kentucky. A site location map is shown in Figure No. 1.

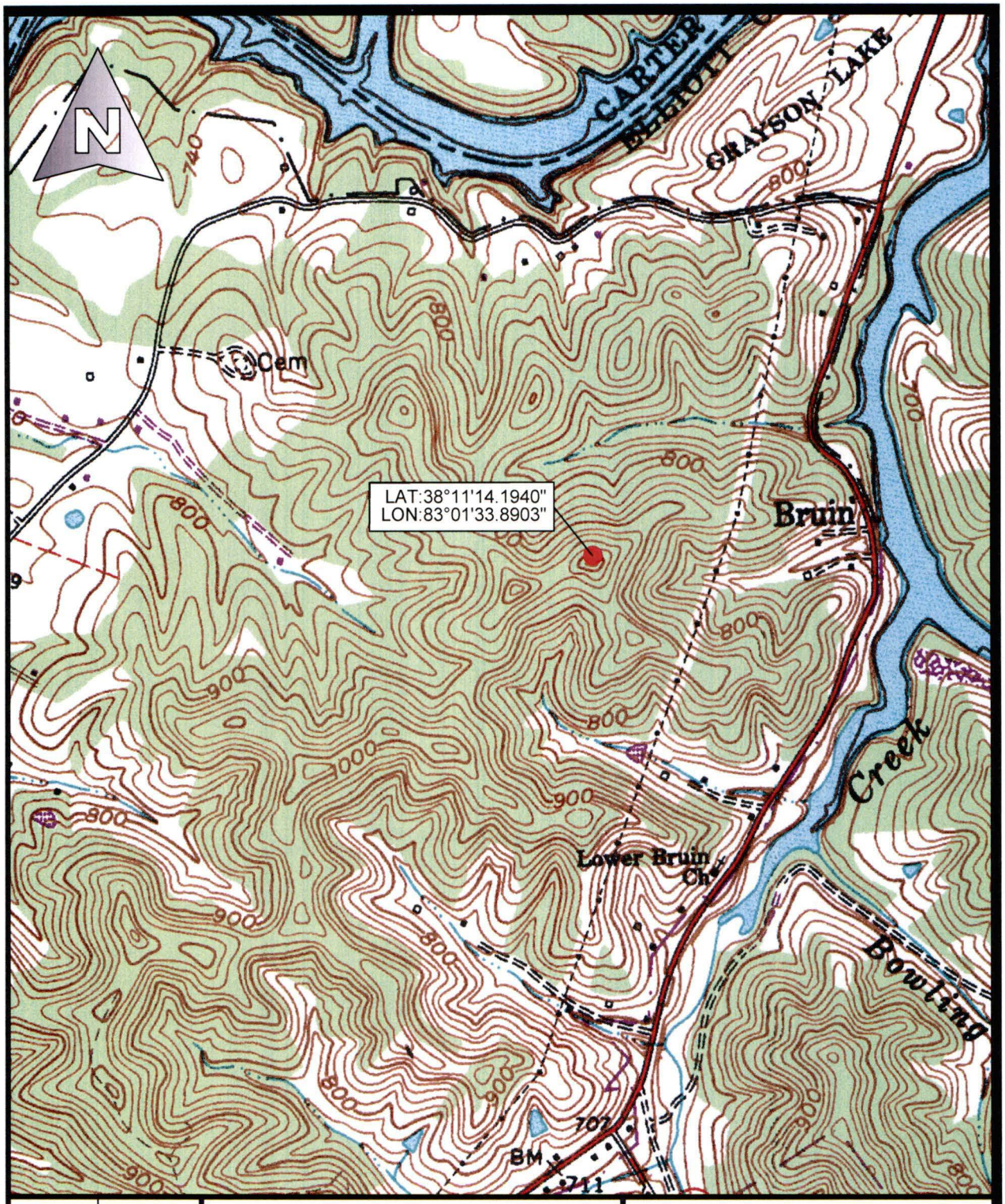
Trenching was conducted with the assistance from Wendall Gay Construction. The purpose of these services is to provide information and geotechnical engineering recommendations about subsurface conditions, earthwork, seismic considerations, groundwater conditions and foundation design.

2.0 PROJECT DESCRIPTION

The proposed communication facility will consist of a self-supporting tower of undetermined height and ancillary support areas. The footing area is estimated to be approximately 43.5 x 43.5 with an estimated base of the tower footer elevation at 1011.0 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 is significantly different than these expected values, EKYENG should be notified to re-evaluate the recommendations provided in this report.



Drawn: RDS	Date:2/15/2019
Job:165-078	Scale: 1"=1000'

APPALACHIAN WIRELESS
EXCERPT FROM USGS QUAD
LOCATION MAP
HORTON GAP
FIGURE NO 1

East Kentucky Engineering, LLC.
230 Swartz Drive
Hazard, KY 41701
(606) 551-1050

3.0 SITE DESCRIPTION

3.1 GENERAL INFORMATION

The site location is on a ridgeline. EKYENG reviewed available historical mine maps from the Kentucky Division of Mine Safety, Kentucky Mine Mapping Information System ("KMMIS"). Aerial satellite imagery and lidar mapping also were reviewed to determine the extents of mining near the proposed tower site.

3.2 SURFACE MINING

Surface mining has been conducted in the area by P & C Bituminous Coal. Surface mining was proposed surrounding the tower site in the Fireclay Seam, the Cannel City Seam and the Little Caney Seam. No proposed auger mining was found. Based upon our review the nearest mining activity appears to be approximately 220 feet away from the site in the Fireclay Seam at an approximate elevation of 900 ft. No evidence of auger mining was found reviewing historical mapping or seen during our site investigations.

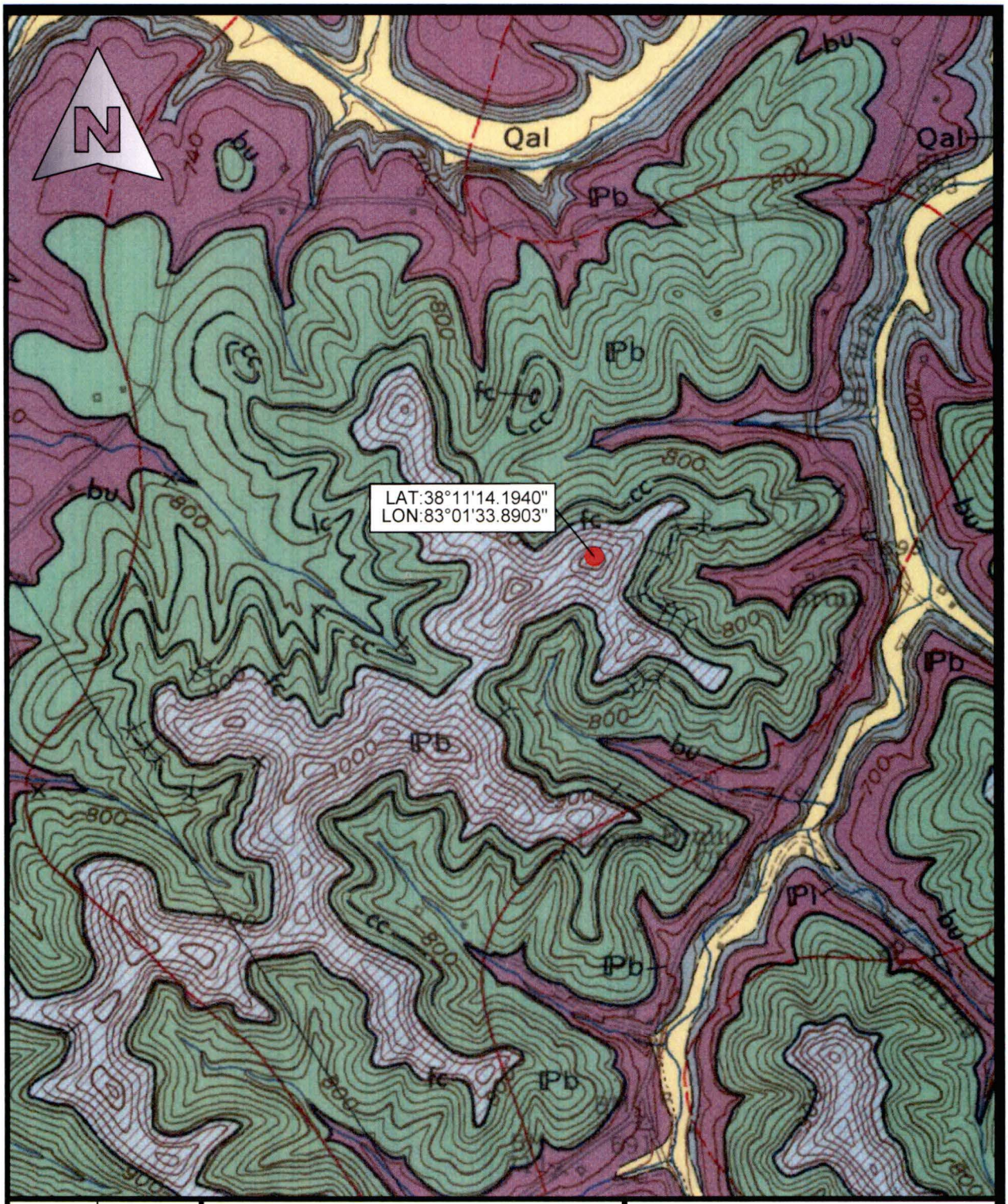
3.3 UNDERGROUND MINING

Our research found no underground mining below or near the proposed site. Given this information the potential for subsidence or impacts from mining at this site is unlikely.

4.0 FIELD EXPLORATION

4.1 SITE INFORMATION

A proposed tower pin location was placed on the Horton Flats property and provided to EKYENG. The proposed tower location was established and tied to the existing boundary. An estimated footer location was determined, and trenching was conducted through the slope at the proposed tower site.



Drawn: RDS	Date:02/15/18
Job:165-078	Scale: 1"=1000'

APPALACHIAN WIRELESS
EXCERPT FROM GEOLOGIC QUAD
LOCATION MAP
HORTON GAP
FIGURE NO 1

East Kentucky Engineering, LLC.
230 Swartz Drive
Hazard, KY 41701
(606) 551-1050

4.2 TRENCHING & TEST HOLE DATA

This investigation was conducted with trenching with an excavator. The combinations of trenching and visual inspections were used to evaluate the site lithology and type of materials immediately below the proposed tower site. The following soils and rock properties were found.

TABLE NO. 2

Depth (Ft.)	Base Elevation (Ft.)	Strata
0.0	1017.8	Surface
0.0 – 3.2	1014.6	Topsoil / Clays
3.2 – 19.8	994.8	Sandstone

A cross-section of this information is in Appendix C 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 the site investigation, no groundwater resources were observed.

4.4 SEISMIC SITE CLASSIFICATION

Based on the encountered soil conditions at the project site, the site classification was determined to be "Site Class A" per the 2015 Kentucky Building Code. In addition, an S_{DS} coefficient of 0.091 g was calculated, and an S_{D1} coefficient of 0.042 g 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 freestanding tri-pole tower. Due to wind loading, lattice tower foundations can experience both vertical loads and horizontal loads. The vertical loads act in both an upward and downward direction as the tower attempts to overturn and can act in any directions.

5.2 FOUNDATIONS

This report demonstrates the different expected bearing capacities based upon the type of material encountered from the trenching and visible observations at the site. The approximate elevation of the surface of the site is 1017.8 ft with an expected base of the footer at 1009.0 ft in elevation.

5.3 SHALLOW FOUNDATIONS

Based upon the laboratory and field testing, visual inspection of the materials, and practical experience we have estimated that the **allowable bearing capacity of the sandstone to be a minimum of 6 tsf,** between the elevations of 1009.0 ft and 999.0 ft. The upper limit is determined by the topography of the site to ensure that the entire footer is on the sandstone strata.

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

placed below the new slab-on-grade, a modulus of subgrade reaction (k30) of 100 lbs./cu. in. can be used for design of the slabs.

Support structure for this tower can be placed as needed. It is recommended that test pits are examined to ensure that any of these structures are on the competent materials. If pockets of soft, loose, or otherwise unsuitable material are encountered in the footing excavations and it is inconvenient to lower the footings, the proposed footing elevations may be re-established by backfilling after the undesirable material has been removed. The undercut excavation beneath each footing should extend to suitable bearing soils and the dimensions of the excavation base should be determined by imaginary planes extending outward and down on a 1 (vertical) to 1 (horizontal) slope from the base perimeter of the footing. The entire excavation should then be refilled with a well-compacted engineered fill, or lean concrete (Please note that the width of the lean concrete zone should be equal or wider than the width of the overlying footing element). Special care should be exercised to remove any sloughed, loose or soft materials near the base of the excavation slopes. In addition, special care should be taken to "tie-in" the compacted fill with the excavation slopes, with benches as necessary, to ensure that no pockets of loose or soft materials will be left in place along the excavation slopes below the foundation bearing level. All Federal, State, and Local regulations should be strictly adhered to relative to excavation side-slope geometry.

5.4 BURIED UTILITIES

Excavations for buried utility pipelines should follow the guidelines set forth in this report. Depending on the pipeline material, a minimum thickness of at least 0.5 feet of select fine-grained granular bedding material should be used beneath all below-grade pipes, with a minimum cover thickness of at least 3 feet to afford an "arching" effect and reduce stresses on the pipe. The cover thickness may be

reduced if the external loading condition on the pipe is relatively light or if the pipe is designed to withstand the external loading condition. It is not recommended that "pea-gravel" or other "open-work" aggregates be used for trench backfill since these materials are nearly impossible to compact and tend to pond water within their interstices.

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 EKYENG are a valuable and integral part of the design and construction teams, we do not warrant, guarantee, or insure the quality or completeness of services provided by other members of those teams, the quality, completeness, or satisfactory performance of construction plans and specifications which we have not prepared, nor the ultimate performance of building site materials.

6.1 SUBSURFACE EXPLORATION

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

The boring log includes sampling information, description of the materials recovered, approximate depth of boundaries between soil and rock strata and groundwater data. The boring log represents conditions specifically at the

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

6.2 LABORATORY AND FIELD TESTS

Laboratory and field tests are performed by specific ASTM standards unless otherwise indicated. All determinations included in each ASTM standard are not always required and performed. Each test report indicates the measurements and determinations 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 in 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 Horton Flats Property located in Elliott 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 conclusions regarding specific construction techniques and methods that were chosen. EKYENG 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 based on 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 now. 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 always.

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

In the construction of filled areas, starting layers shall be placed in the deepest portion of the fill, and as placement progresses, additional layers shall be constructed in horizontal planes. Original slopes shall be continuously, vertically benched to provide horizontal fill planes. The size of the benches shall be formed so that the base of the bench is horizontal, and the back of the bench is vertical. As many benches as are necessary to bring the site to final grade shall be constructed. Filling operations shall begin on the lowest bench, with the fill being placed in horizontal eight (8) inch thick loose lifts unless otherwise authorized. The filling shall progress in this manner until the entire first bench has been filled, before any fill is placed on the succeeding benches. Proper drainage shall be maintained always during benching and filling of the benches, to ensure 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 regarding 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 (always 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 lose 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 workers must not be exposed to fall hazards associated with excavations.

14. Protective walkways or bridges with standard guardrails must be provided.All wells, pits, shafts, etc. must be barricaded or covered. After completion of work, all wells, pits, shafts, etc. must be backfilled.

IV - GENERAL CONCRETE SPECIFICATIONS

1.0 GENERAL

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

2.0 SCOPE

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

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

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

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

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

3.0 MATERIALS

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

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

1. Fine Aggregate: Sand shall be composed essentially of clean, hard, strong, durable grains free of structurally weak grains, organic matter, loam, clay, silt, salt, mica or other fine materials that may 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, water stops, 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 to avoid washing the freshly deposited concrete.

3. Coal the forms prior to placing of reinforcing steel as required in formwork.

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 ensure 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 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 to be free from voids, pockets or honeycombing. Care shall be taken to provide impermeability.

E. Vibration Equipment: Vibration equipment shall be of the appropriate type and shall, always, 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 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 the 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 is 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 corrects, protrusions removed, and holes filled.

⚠ This is a beta release of the new ATC Hazards by Location website. Please contact us with feedback.

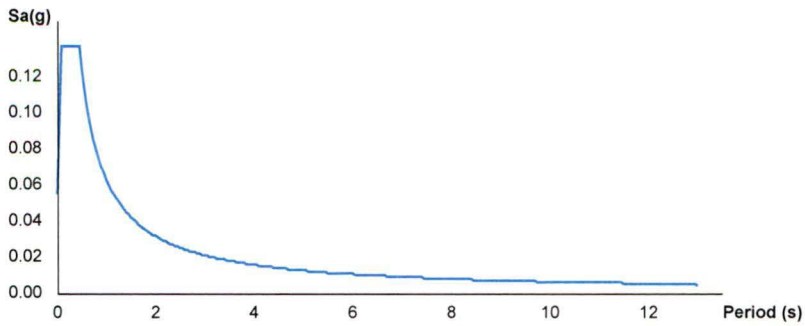
ATC Hazards by Location

Search Information

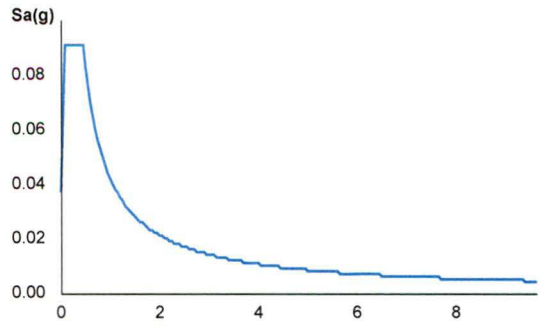
Coordinates:	38.187276, -83.026081
Elevation:	1020 ft
Timestamp:	2019-02-18T03:02:31.142Z
Hazard Type:	Seismic
Reference Document:	IBC-2015
Risk Category:	IV
Site Class:	A
Report Title:	Not specified

Map Results

MCER Horizontal Response Spectrum



Design Horizontal Response Spectrum



Text Results

Basic Parameters

Name	Value	Description
S_S	0.171	MCE_R ground motion (period=0.2s)
S_1	0.079	MCE_R ground motion (period=1.0s)
S_{MS}	0.137	Site-modified spectral acceleration value
S_{M1}	0.063	Site-modified spectral acceleration value
S_{DS}	0.091	Numeric seismic design value at 0.2s SA
S_{D1}	0.042	Numeric seismic design value at 1.0s SA

▾Additional Information

Name	Value	Description

SDC	A	Seismic design category
F_a	0.8	Site amplification factor at 0.2s
F_v	0.8	Site amplification factor at 1.0s
CR_S	0.922	Coefficient of risk (0.2s)
CR_1	0.903	Coefficient of risk (1.0s)
PGA	0.083	MCE_G peak ground acceleration
F_{PGA}	0.8	Site amplification factor at PGA
PGA_M	0.066	Site modified peak ground acceleration
T_L	12	Long-period transition period (s)
SsRT	0.171	Probabilistic risk-targeted ground motion (0.2s)
SsUH	0.186	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
SsD	1.5	Factored deterministic acceleration value (0.2s)
S1RT	0.079	Probabilistic risk-targeted ground motion (1.0s)
S1UH	0.088	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
S1D	0.6	Factored deterministic acceleration value (1.0s)
PGAd	0.6	Factored deterministic acceleration value (PGA)

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Disclaimer

Hazard loads are provided by the U.S. Geological Survey Seismic Design Web Services.

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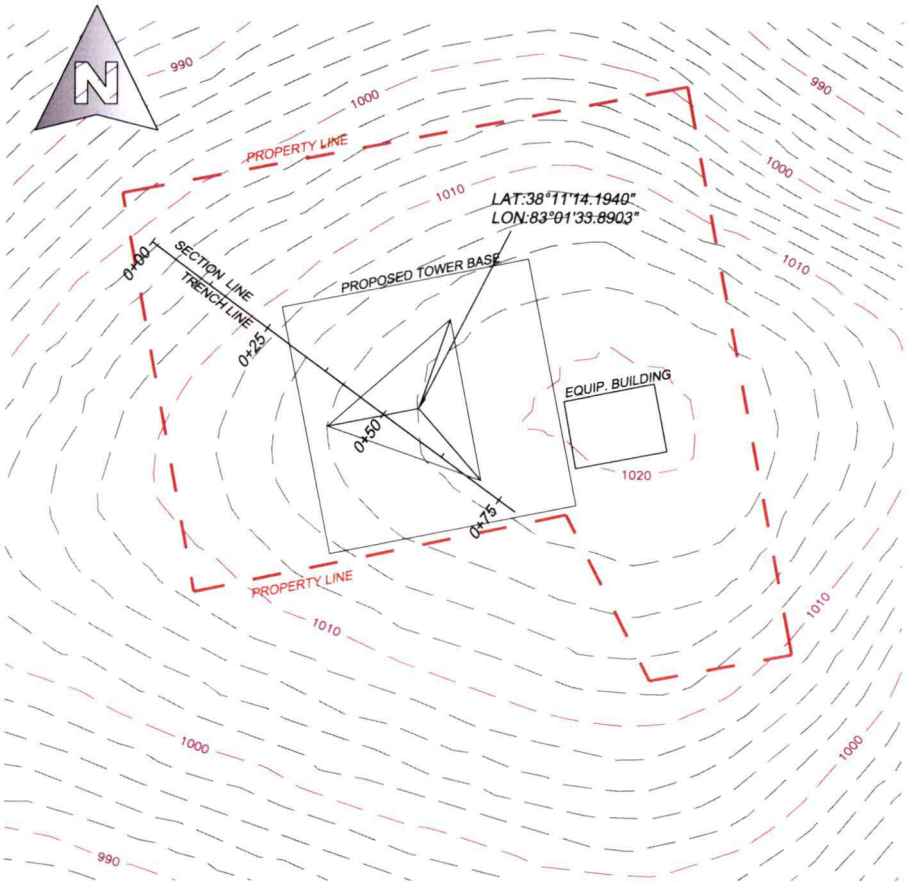
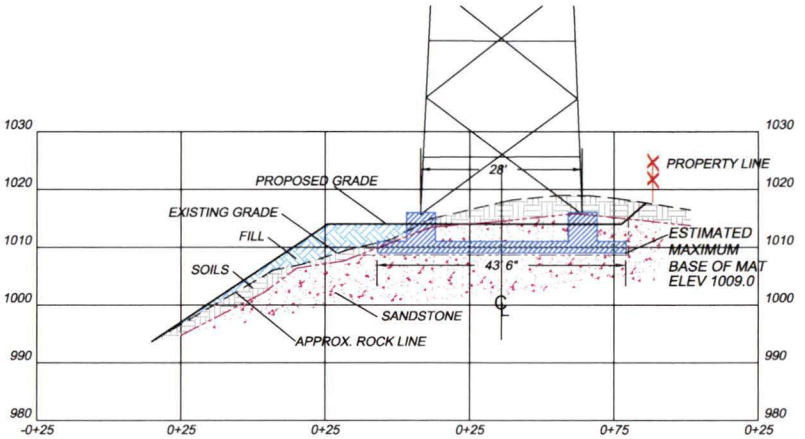
APPENDIX B PHOTOGRAPHS

Trench

Sandstone Bottom of Trench



PLAN VIEW
1" = 20'



SECTION
1" = 20'

East Kentucky Engineering, LLC

Hazard Location
230 Swartz
Hazard, KY 41701
(606) 551-1050
Email: rds@ekyeng.net

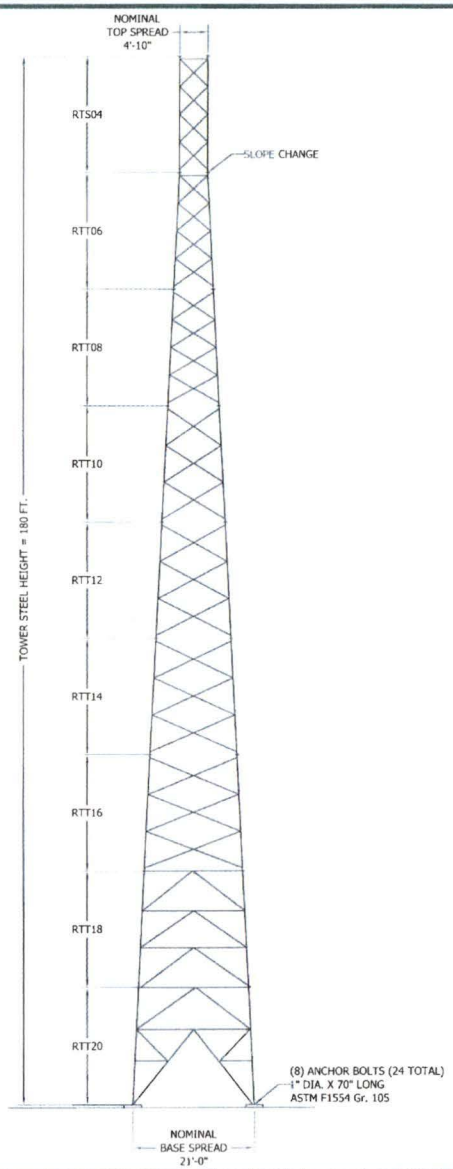
STATE OF KENTUCKY · RICHARD D. SMITH · 20215 · LICENSED PROFESSIONAL ENGINEER

2/15/2019

0' 20' 60'

Drawn by:RDS	Date: 2/15/2019
Job #:165-0078	Scale:1" = 20'
File Location:	

APPALACHIAN
WIRELESS
HORTON FLATS SITE
ELLIOT COUNTY, KENTUCKY



TOWER DESIGN LOADING		
DESIGN WIND LOAD PER ANSI/TIA-222-G: ASCE 7-10 ULTIMATE WIND SPEED (NO ICE) = 115 MPH BASIC WIND SPEED (ICE) = 30 MPH PER ASCE 7-10 DESIGN ICE THICKNESS = 0.75 IN. PER ASCE 7-10 STRUCTURE CLASS = II EXPOSURE CATEGORY = B TOPOGRAPHIC CATEGORY = 1 EARTHQUAKE SPECTRAL RESPONSE ACCELERATION: Ss = 0.171, S1 = 0.079 THIS TOWER IS DESIGNED TO SUPPORT THE FOLLOWING LOADS:		
ELEVATION (FT)	**ANTENNA TYPE**	**LINE SIZE (NOM)**
180	BEACON & LIGHTNING ROD	(1) 3/4" CONDUIT
175	(12) NN-65A-M ANT'S + (12) RRU ON (3) 12' SECTOR FRAMES	(6) 1 5/8" & (4) 7/8"
165	(12) NN-65A-M ANT'S + (12) RRU ON (3) 12' SECTOR FRAMES	(6) 1 5/8" & (4) 7/8"
155	(12) NN-65A-M ANT'S + (12) RRU ON (3) 12' SECTOR FRAMES	(4) 7/8"
145	(2) HP8 DISHES (AZ. 0 & 180 DEGREES, 6 GHZ)	(2) EW63
135	(12) NN-65A-M ANT'S + (12) RRU ON (3) 12' SECTOR FRAMES	(4) 7/8"
125	(12) NN-65A-M ANT'S + (12) RRU ON (3) 12' SECTOR FRAMES	(4) 7/8"
105	(12) NN-65A-M ANT'S + (12) RRU ON (3) 12' SECTOR FRAMES	(4) 7/8"

N O T E : ALL LINES ARE TO BE DUAL STACKED AND EQUALLY DISTRIBUTED ON (2) CABLE LADDERS LOCATED ON OPPOSITE TOWER FACES.

SECTION MAIN MEMBER SCHEDULE			
SECTION	**LEG**	**DIAGONAL**	**HORIZONTALS**
RTS04	PIPE 2.875x0.203	L1 3/4x1 3/4x3/16 (4)	L1 1/2x1 1/2x3/16 (1)
RTT06	PIPE 3.500x0.216	L1 3/4x1 3/4x3/16 (4)	L1 1/2x1 1/2x3/16 (1)
RTT08	PIPE 4x0.318	L2 1/2x2 1/2x3/16 (4)	N/A
RTT10	PIPE 4.500x0.337	L2 1/2x2 1/2x3/16 (3)	N/A
RTT12	PIPE 5.563x0.375	L3x3x3/16 (3)	N/A
RTT14	PIPE 5.563x0.375	L3x3x3/16 (3)	N/A
RTT16	PIPE 6.625x0.432	L3x3x1/4 (3)	N/A
RTT18	PIPE 6.625x0.432	L3x3x1/4 (3)	L3x3x3/16 (3)
RTT20	PIPE 6.625x0.432	L4x4x1/4 (2)	L3x3x1/4 (2)

NOTE: SECTION NUMBERS ARE FOR REFERENCE ONLY. FOR NOMINAL FACE WIDTH DIMENSIONS, REFER TO THE STRESS ANALYSIS.
THE NUMBERS SHOWN IN PARENTHESES INDICATE THE NUMBER OF BAYS FROM TOP TO BOTTOM.

MAXIMUM FACTORED REACTIONS			
COMPRESSION	=	321.2	KIPS
TENSION	=	274.5	KIPS
TOTAL SHEAR	=	48.4	KIPS
O.T.M.	=	5,480.6	FT-KIPS

GENERAL NOTES

1. ROHN PRODUCTS, LLC TOWER DESIGNS CONFORM TO ANSI/TIA-222-G UNLESS OTHERWISE SPECIFIED UNDER TOWER DESIGN LOADING.
2. THE DESIGN LOADING CRITERIA INDICATED HAS BEEN PROVIDED TO ROHN. THE DESIGN LOADING CRITERIA HAS BEEN ASSUMED TO BE BASED ON SITE-SPECIFIC DATA IN ACCORDANCE WITH ANSI/TIA-222-G AND MUST BE VERIFIED BY OTHERS PRIOR TO INSTALLATION.
3. ANTENNAS AND LINES LISTED IN TOWER DESIGN LOADING TABLE ARE PROVIDED BY OTHERS UNLESS OTHERWISE SPECIFIED.
4. STEP BOLTS WITH A SAFETY CLIMB SYSTEM ARE PROVIDED AS A CLIMBING FACILITY FOR THE INSTALLATION OF THE STRUCTURE.
5. TOWER MEMBER DESIGN DOES NOT INCLUDE STRESSES DUE TO ERECTION SINCE ERECTION EQUIPMENT AND CONDITIONS ARE UNKNOWN. DESIGN ASSUMES COMPETENT AND QUALIFIED PERSONNEL WILL ERECT THE TOWER.
6. WORK SHALL BE IN ACCORDANCE WITH ANSI/TIA-222-G, "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES".
7. THE MINIMUM YIELD STRENGTH OF STRUCTURAL STEEL MEMBERS SHALL BE 50 KSI .
8. FIELD CONNECTIONS SHALL BE BOLTED. NO FIELD WELDS SHALL BE ALLOWED.
9. STRUCTURAL BOLTS SHALL CONFORM TO GRADE A325 PER ASTM F3125, EXCEPT WHERE NOTED.
10. STRUCTURAL STEEL AND CONNECTION BOLTS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ANSI/TIA-222-G.
11. ALL HIGH STRENGTH BOLTS ARE TO BE TIGHTENED TO A "SNUG TIGHT" CONDITION AS DEFINED IN THE RCSC "SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS". NO OTHER MINIMUM BOLT TENSION OR TORQUE VALUES ARE REQUIRED.
12. PURCHASER SHALL VERIFY THE INSTALLATION IS IN CONFORMANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS FOR OBSTRUCTION MARKING AND LIGHTING.
13. TOLERANCE ON TOWER STEEL HEIGHT IS EQUAL TO PLUS 1 % OR MINUS 1/2 %.
14. DESIGN ASSUMES THAT, AS A MINIMUM, MAINTENANCE AND INSPECTION WILL BE PERFORMED OVER THE LIFE OF THE STRUCTURE IN ACCORDANCE WITH ANSI/TIA-222-G.
15. DESIGN ASSUMES LEVEL GRADE AT TOWER SITE.
16. DESIGN ASSUMES ALL ANTENNAS ARE MOUNTED SYMMETRICALLY TO MINIMIZE TORQUE, IF APPLICABLE.
17. FOUNDATIONS SHALL BE DESIGNED TO SUPPORT THE REACTIONS SHOWN FOR THE CONDITIONS EXISTING AT THE SITE.

FILE NO.
229460

REVISIONS

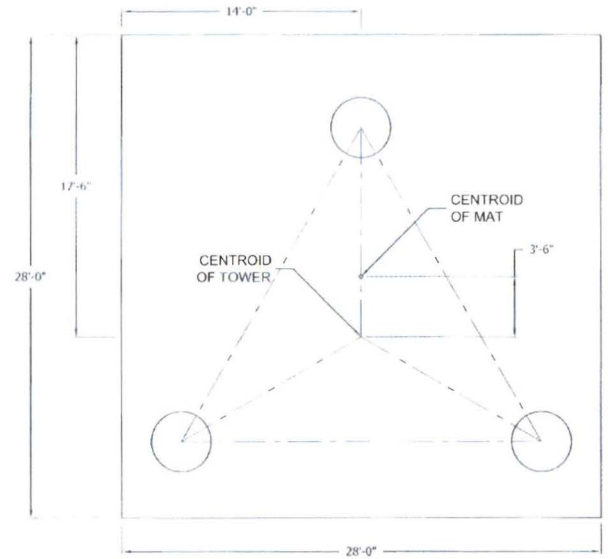
REV.	DESCRIPTION	DWN	CHK	APP

ROHN PRODUCTS LLC
PO BOX 5999
PEORIA, IL 61601-5999
TOLL FREE 800-727-ROHN

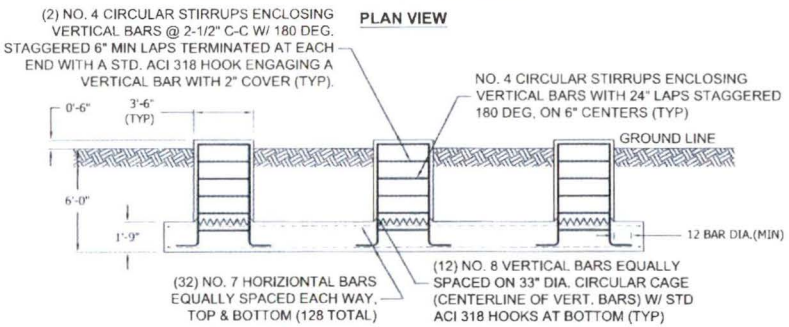
APPALACHIAN WIRELESS
DESIGN PROFILE
180 FT RT TOWER DESIGN
HORTONS FLAT- KY

DWN:	CHK'D:	DATE:
OH	HA	Mar/12/19
ENG'R: HA	SHEET # 1 OF 1	
PRJ. ENG'R: OH	PRJ. MANG'R:	
DRAWING NO: 229460-01-D1	REV 0	

Mar 12, 2019 @ 11:41 AM



PLAN VIEW



ELEVATION VIEW

FACTORED REACTIONS

Maximum O.T.M =	5,480.6 FT-K
Total Tower Wt =	50.2 KIPS
Total Shear =	48.4 KIPS
Max. Shear/Leg =	29.5 KIPS
Max. Ten./Leg =	274.5 KIPS
Max. Comp./Leg =	321.2 KIPS

CONCRETE VOLUME

ROUND PIER	5.1 CU.YDS
PAD	50.8 CU.YDS
TOTAL	55.9 CU.YDS

GENERAL NOTES

1. FOUNDATION DESIGN HAS BEEN DEVELOPED IN ACCORDANCE WITH GENERALLY ACCEPTED PROFESSIONAL ENGINEERING PRINCIPLES AND PRACTICES WITHIN THE LIMITS OF THE SUBSURFACE DATA PROVIDED. FOUNDATION DESIGN MODIFICATIONS MAY BE REQUIRED IN THE EVENT THE FOLLOWING DESIGN PARAMETERS ARE NOT APPLICABLE FOR THE SUBSURFACE CONDITIONS ENCOUNTERED.
   A) ULTIMATE SOIL BEARING PRESSURE AT 6 FT DEPTH = 6,000 PSF.
   B) GROUND WATER TABLE IS AT OR BELOW FOUNDATION DEPTH.
   C) MAXIMUM FROST PENETRATION DEPTH LESS THAN FOUNDATION DEPTH.
2. WORK SHALL BE IN ACCORDANCE WITH THE PROJECT CONSTRUCTION DOCUMENTS, LOCAL CODES, SAFETY REGULATIONS AND UNLESS OTHERWISE NOTED, THE LATEST REVISION OF ACI 318, "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE". PROCEDURES FOR THE PROTECTION OF EXCAVATIONS, EXISTING CONSTRUCTION AND UTILITIES SHALL BE ESTABLISHED PRIOR TO FOUNDATION INSTALLATION.
3. CONCRETE MATERIALS SHALL CONFORM TO THE APPROPRIATE STATE REQUIREMENTS FOR EXPOSED STRUCTURAL CONCRETE.
4. PROPORTIONS OF CONCRETE MATERIALS SHALL BE SUITABLE FOR THE INSTALLATION METHOD UTILIZED AND SHALL RESULT IN DURABLE CONCRETE FOR RESISTANCE TO LOCAL ANTICIPATED AGGRESSIVE ACTIONS. THE DURABILITY REQUIREMENTS OF ACI 318 SHALL BE SATISFIED BASED ON THE CONDITIONS EXPECTED AT THE SITE. AS A MINIMUM, CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 4,500 PSI IN 28 DAYS.
5. MAXIMUM SIZE OF AGGREGATE SHALL NOT EXCEED SIZE SUITABLE FOR INSTALLATION METHOD UTILIZED OR 3/4 CLEAR DISTANCE BEHIND OR BETWEEN REINFORCING. WORKABILITY AND METHODS OF CONSOLIDATION SUCH AS VIBRATING SHALL BE UTILIZED TO PREVENT HONEYCOMBS OR VOIDS.
6. REINFORCEMENT SHALL BE DEFORMED AND CONFORM TO THE REQUIREMENTS OF ASTM A615 GRADE 60 UNLESS OTHERWISE NOTED. SPLICES IN REINFORCEMENT SHALL NOT BE ALLOWED UNLESS OTHERWISE INDICATED.
7. WELDING IS PROHIBITED ON REINFORCING STEEL AND EMBEDMENTS.
8. MINIMUM CONCRETE COVER FOR REINFORCEMENT SHALL BE 3 INCHES UNLESS OTHERWISE NOTED. APPROVED SPACERS SHALL BE USED TO INSURE A 3 INCH MINIMUM COVER ON REINFORCEMENT.
9. CONCRETE COVER FROM TOP OF FOUNDATION TO ENDS OF VERTICAL REINFORCEMENT SHALL NOT EXCEED 3 INCHES NOR BE LESS THAN 2 INCHES.
10. FOUNDATION DESIGN ASSUMES STRUCTURAL BACKFILL TO BE COMPACTED IN 8 INCH MAXIMUM LAYERS TO 95% OF MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH ASTM D1557. ADDITIONALLY, STRUCTURAL BACKFILL MUST HAVE A MINIMUM COMPACTED UNIT WEIGHT OF 110 POUNDS PER CUBIC FOOT.
11. FOUNDATION DESIGN HAS BEEN BASED ON GEOTECHNICAL REPORT NO. **165-000-0078** DATED **2/15/2019** BY **EAST KENTUCKY ENGINEERING, LLC.**
12. FOUNDATION DEPTH INDICATED IS BASED ON THE GRADE LINE DESCRIBED IN THE REFERENCED GEOTECHNICAL REPORT. FOUNDATION MODIFICATION MAY BE REQUIRED IN THE EVENT CUT OR FILL OPERATIONS HAVE TAKEN PLACE SUBSEQUENT TO THE GEOTECHNICAL INVESTIGATION.
13. FOUNDATION DESIGN ASSUMES INSTALLATION ON A PROPERLY DRAINED LEVEL SITE.
14. FOUNDATION DESIGN ASSUMES THE RECOMMENDATIONS IN THE REFERENCED GEOTECHNICAL REPORT CONCERNING VERIFICATION OF SUBSURFACE CONDITIONS ARE IMPLEMENTED PRIOR TO PLACEMENT OF CONCRETE.
15. FOUNDATION INSTALLATION SHALL BE SUPERVISED BY PERSONNEL KNOWLEDGEABLE AND EXPERIENCED WITH THE PROPOSED FOUNDATION TYPE. CONSTRUCTION SHALL BE IN ACCORDANCE WITH GENERALLY ACCEPTED INSTALLATION PRACTICES.
16. ALL CONSTRUCTION AND SAFETY EQUIPMENT AND TEMPORARY SUPPORTS REQUIRED FOR CONSTRUCTION SHALL BE DETERMINED, FURNISHED AND INSTALL BY THE CONTRACTOR BASED ON THE MEANS AND METHODS CHOSEN BY THE CONTRACTOR. ALL CONSTRUCTION ACTIVITIES SHALL BE PERFORMED BY COMPETENT, QUALIFIED AND TRAINED PERSONNEL.
17. FOUNDATION DESIGN ASSUMES INSTALLATION PROCEDURES WILL INCORPORATE THE PROCEDURES RECOMMENDED IN THE REFERENCED GEOTECHNICAL REPORT.
18. FOUNDATION DESIGN ASSUMES FIELD INSPECTIONS WILL BE PERFORMED TO VERIFY THAT CONSTRUCTION MATERIALS, INSTALLATION METHODS AND ASSUMED DESIGN PARAMETERS ARE ACCEPTABLE BASED ON CONDITIONS EXISTING AT THE SITE.
19. FOR FOUNDATION AND ANCHOR TOLERANCES SEE ANCHOR ROD LAYOUT DRAWING.
20. LOOSE MATERIAL SHALL BE REMOVED FROM BOTTOM OF EXCAVATION PRIOR TO CONCRETE PLACEMENT. SIDES OF EXCAVATION SHALL BE ROUGH AND FREE OF LOOSE CUTTINGS.
21. CONCRETE SHALL BE PLACED IN A MANNER THAT WILL PREVENT SEGREGATION OF CONCRETE MATERIALS, INFILTRATION OF WATER OR SOIL AND OTHER OCCURRENCES WHICH MAY DECREASE THE STRENGTH OR DURABILITY OF THE FOUNDATION.
22. CONCRETE PREFERABLY SHALL BE PLACED AGAINST UNDISTURBED SOIL. WHEN FORMS ARE NECESSARY, THEY SHALL BE REMOVED PRIOR TO PLACING STRUCTURAL BACKFILL.
23. CONSTRUCTION JOINTS, IF REQUIRED AT THE BASE OF THE PIERS, SHALL BE INTENTIONALLY ROUGHENED TO A FULL AMPLITUDE OF 1/4 INCH. FOUNDATION DESIGN ASSUMES NO OTHER CONSTRUCTION JOINTS.
24. TOP OF FOUNDATION SHALL BE SLOPED TO DRAIN WITH A FLOATED FINISH.
25. EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4" X 3/4" MINIMUM.

NOTE: SEE STRUCTURE ASSEMBLY DRAWING FOR FOUNDATION LAYOUT AND ANCHORAGE EMBEDMENT DRAWING NUMBER.

FILE NO.

REVISIONS

REV	DESCRIPTION	DWN	CHK	APP

ROHN PRODUCTS LLC
PO BOX 5999
PEORIA, IL 61601-5999
TOLL FREE 800-727-ROHN

APPALACHIAN WIRELESS
MAT W/RAISED PIERS
FOUNDATION DESIGN
HORTONS FLAT- KY

DWN: SWG	CHK'D: HA	DATE: 3/13/2019
ENG'R: HA	SHEET #: 1 OF 1	
PRJ. ENG'R: SWG	PRJ. MANG'R:	
DRAWING NO: 229460-01-F1		REV: 0

File: W:\Jobs\2019\229460\229460.out
Contract:
Project: 180 FT RT TOWER DESIGN
Date and Time: 3/13/2019 11:27:45 AM

Revision: 0
Site: HORTONS FLAT- KY
Engineer: OH

Section A: PROJECT DATA

Project Title:	180 FT RT TOWER DESIGN
Customer Name:	APPALACHIAN WIRELESS
Site:	HORTONS FLAT- KY
Contract No.:	
Revision:	0
Engineer:	OH
Date:	Mar 13 2019
Time:	11:24:04 AM

Design Standard: ANSI/TIA-222-G-2005 Addendum 2

GENERAL DESIGN CONDITIONS

Start wind direction:	0.00 (Deg)
End wind direction:	330.00 (Deg)
Increment wind direction:	30.00 (Deg)
Elevation above ground:	0.00(ft)
Gust Response Factor Gh:	0.85
Structure class:	II
Exposure category:	B
Topographic category:	1
Material Density:	490.1(lbs/ft^3)
Young's Modulus:	29000.0(ksi)
Poisson Ratio:	0.30
Weight Multiplier:	1.25

Minimum Bracing Resistance as per 4.4.1

WIND ONLY CONDITIONS:

Ultimate Design Wind Speed (No Ice):	115.00(mph)
Nominal Design Wind Speed (No Ice):	89.08(mph)
Directionality Factor Kd:	0.85
Importance Factor I:	1.00
Wind Load Factor:	1.60
Dead Load Factor:	1.20
Dead Load Factor for Uplift:	0.90

WIND AND ICE CONDITIONS:

Basic Wind Speed (With Ice):	30.00(mph)
Directionality Factor Kd:	0.85
Wind Load Importance Factor Iw:	1.00
Ice Thickness Importance Factor Ii:	1.00
Ice Thickness:	0.75(in)
Ice Density:	56.19(lbs/ft^3)
Wind Load Factor:	1 00
Dead Load Factor:	1.20
Ice Load Factor:	1.00

WIND ONLY SERVICEABILITY CONDITIONS:

Serviceability Wind Speed:	60.00(mph)
Directionality Factor Kd:	0.85
Importance Factor I:	1.00
Wind Load Factor:	1.00
Dead Load Factor:	1.00

EARTHQUAKE CONDITIONS:

Site class definition:	D
Spectral response acceleration Ss:	0 171
Spectral response acceleration S1:	0 079
Accelaration-based site coefficient Fa:	1 600
Velocity-based site coefficient Fv:	2.400
Design spectral response acceleration Sds:	0.182

Design spectral response acceleration Sd1: 0.126
Seismic analysis method: 1
Fundamental frequency of structure f1: 0.854
Total seismic shear Vs (Kips) : 1.80

Analysis performed using: Robot Millenium Finite Element Analysis Software (by Robobat)

File: W:\Jobs\2019\229460\229460.out
Contract:
Project: 180 FT RT TOWER DESIGN
Date and Time: 3/13/2019 11:27:45 AM

Revision: 0
Site: HORTONS FLAT- KY
Engineer: OH

Section B: STRUCTURE GEOMETRY

TOWER GEOMETRY

Cross-Section	Height (ft)	Tot Height (ft)	# of Section	Bot Width (in)	Top Width (in)
Triangular	180.00	180.00	9	252.24	56.99

SECTION GEOMETRY

Sec #	Sec. Name	Elevation Bottom (ft)	Elevation Top (ft)	Widths Bottom (in)	Widths Top (in)	Legs (lbs)	Brcg. (lbs)	Masses Sec.Brc (lbs)	Masses Int.Brc (lbs)	Masses Sect. (lbs)	Masses DaLabase (lbs)	Brcg. Clear. (in)
9	RTS04	160.00	180.00	58	57	434	470	0	0	903	0	0.787
8	RTT06	140.00	160.00	82	58	570	518	0	0	1088	0	0.787
7	RTT08	120.00	140.00	106	82	941	856	0	0	1797	0	0.787
6	RTT10	100.00	120.00	131	106	1127	824	0	0	1951	0	0.787
5	RTT12	80.00	100.00	155	131	1562	1142	0	0	2704	0	0.787
4	RTT14	60.00	80.00	180	155	1562	1293	0	0	2855	0	0.787
3	RTT16	40.00	60.00	204	180	2150	1913	0	0	4063	0	0.787
2	RTT18*	20.00	40.00	228	204	2150	1989	0	305	4443	0	0.787
1	RTT20*	0.00	20.00	252	228	2150	2141	342	222	4855	0	0.787
Total Mass:						12646	11145	342	527	24660	0	

PANEL GEOMETRY

Sec#	Pnl#	Type	SecBrcg	Mid. Horiz Continuous	Horiz	Height (ft)	Bottom Width (in)	Top Width (in)	Plan Bracing	Hip Bracing	Gusset Plate Area (ft^2)	Gusset Plate Weight (lbs)
9	4	X	(None)		Yes	5.0	57.1	57.0	(None)	(None)	0.300	0.00
9	3	X	(None)		None	5.0	57.3	57.1	(None)	(None)	0.300	0.00
9	2	X	(None)		None	5.0	57.4	57.3	(None)	(None)	0.300	0.00
9	1	X	(None)		None	5.0	57.5	57.4	(None)	(None)	0.300	0.00
8	4	X	(None)		Yes	5.0	63.6	57.5	(None)	(None)	0.300	0.00
8	3	X	(None)		None	5.0	69.7	63.6	(None)	(None)	0.300	0.00
8	2	X	(None)		None	5.0	75.9	69.7	(None)	(None)	0.300	0.00
8	1	X	(None)		None	5.0	82.0	75.9	(None)	(None)	0.300	0.00
7	4	X	(None)		None	5.0	88.1	82.0	(None)	(None)	0.300	0.00
7	3	X	(None)		None	5.0	94.2	88.1	(None)	(None)	0.300	0.00
7	2	X	(None)		None	5.0	100.3	94.2	(None)	(None)	0.300	0.00
7	1	X	(None)		None	5.0	106.4	100.3	(None)	(None)	0.300	0.00
6	3	X	(None)		None	6.7	114.7	106.4	(None)	(None)	0.300	0.00
6	2	X	(None)		None	6.7	123.0	114.7	(None)	(None)	0.300	0.00
6	1	X	(None)		None	6.7	131.3	123.0	(None)	(None)	0.300	0.00
5	3	X	(None)		None	6.7	139.3	131.3	(None)	(None)	0.300	0.00
5	2	X	(None)		None	6.7	147.3	139.3	(None)	(None)	0.300	0.00
5	1	X	(None)		None	6.7	155.3	147.3	(None)	(None)	0.300	0.00
4	3	X	(None)		None	6.7	163.6	155.3	(None)	(None)	0.300	0.00
4	2	X	(None)		None	6.7	171.9	163.6	(None)	(None)	0.300	0.00
4	1	X	(None)		None	6.7	180.2	171.9	(None)	(None)	0.300	0.00
3	3	X	(None)		None	6.7	188.2	180.2	(None)	(None)	0.300	0.00
3	2	X	(None)		None	6.7	196.2	188.2	(None)	(None)	0.300	0.00
3	1	X	(None)		None	6.7	204.2	196.2	(None)	(None)	0.300	0.00
2	3	K	(None)		Yes	6.7	212.2	204.2	2-Subdiv.	(None)	0.000	0.00
2	2	K	(None)		Yes	6.7	220.2	212.2	2-Subdiv.	(None)	0.000	0.00
2	1	K	(None)		Yes	6.7	228.2	220.2	2-Subdiv.	(None)	0.000	0.00
1	2	K	(None)		Yes	6.7	236.2	228.2	2-Subdiv.	(None)	0.000	0.00
1	1	K	2-Subdiv.		Yes	13.3	252.2	236.2	2-Subdiv.	(None)	0.000	0.00

MEMBER PROPERTIES

Sec/ Pnl	Type	Description	Steel Grade	Conn. Type	Bolt #-Size	Bolt Grade	End Dist.	Edge Dist.	Gusset Thick.	Gusset Grade	Bolt Space	Dble Member Spacing

Stitch Bolt (ft)										Mem. (in)	(in)
9/4	Leg	PIPE 2.875x0.203	A500 gr.CSTension	4-0.750	A325X						
9/4	Diag	L1 3/4x1 3/4x3/16	A529 gr.50Bolted	1-0.500	A325X	1.250	0.875	0.250	A572 gr.50		2.000
9/4	Horiz	L1 1/2x1 1/2x3/16	A529 gr.50Bolted	1-0.500	A325X	1.250	0.690	0.250	A572 gr.50		2.000
9/3	Leg	PIPE 2.875x0.203	A500 gr.CSTension	4-0.750	A325X						
9/3	Diag	L1 3/4x1 3/4x3/16	A529 gr.50Bolted	1-0.500	A325X	1.250	0.875	0.250	A572 gr.50		2.000
9/2	Leg	PIPE 2.875x0.203	A500 gr.CSTension	4-0.750	A325X						
9/2	Diag	L1 3/4x1 3/4x3/16	A529 gr.50Bolted	1-0.500	A325X	1.250	0.875	0.250	A572 gr.50		2.000
9/1	Leg	PIPE 2.875x0.203	A500 gr.CSTension	4-0.750	A325X						
9/1	Diag	L1 3/4x1 3/4x3/16	A529 gr.50Bolted	1-0.500	A325X	1.250	0.875	0.250	A572 gr.50		2.000
8/4	Leg	PIPE 3.500x0.216	A500 gr.CSTension	4-0.875	A325X						
8/4	Diag	L1 3/4x1 3/4x3/16	A529 gr.50Bolted	1-0.500	A325X	1.250	0.870	0.250	A572 gr.50		2.000
8/4	Horiz	L1 1/2x1 1/2x3/16	A529 gr.50Bolted	1-0.500	A325X	1.250	0.690	0.250	A572 gr.50		2.000
8/3	Leg	PIPE 3.500x0.216	A500 gr.CSTension	4-0.875	A325X						
8/3	Diag	L1 3/4x1 3/4x3/16	A529 gr.50Bolted	1-0.500	A325X	1.250	0.870	0.250	A572 gr.50		2.000
8/2	Leg	PIPE 3.500x0.216	A500 gr.CSTension	4-0.875	A325X						
8/2	Diag	L1 3/4x1 3/4x3/16	A529 gr.50Bolted	1-0.500	A325X	1.250	0.870	0.250	A572 gr.50		2.000
8/1	Leg	PIPE 3.500x0.216	A500 gr.CSTension	4-0.875	A325X						
8/1	Diag	L1 3/4x1 3/4x3/16	A529 gr.50Bolted	1-0.500	A325X	1.250	0.870	0.250	A572 gr.50		2.000
7/4	Leg	PIPE 4x0.318	A500 gr.CSTension	5-0.875	A325X						
7/4	Diag	L2 1/2x2 1/2x3/16	A529 gr.50Bolted	1-0.500	A325X	1.250	1.250	0.250	A572 gr.50		2.000
7/3	Leg	PIPE 4x0.318	A500 gr.CSTension	5-0.875	A325X						
7/3	Diag	L2 1/2x2 1/2x3/16	A529 gr.50Bolted	1-0.500	A325X	1.250	1.250	0.250	A572 gr.50		2.000
7/2	Leg	PIPE 4x0.318	A500 gr.CSTension	5-0.875	A325X						
7/2	Diag	L2 1/2x2 1/2x3/16	A529 gr.50Bolted	1-0.500	A325X	1.250	1.250	0.250	A572 gr.50		2.000
7/1	Leg	PIPE 4x0.318	A500 gr.CSTension	5-0.875	A325X						
7/1	Diag	L2 1/2x2 1/2x3/16	A529 gr.50Bolted	1-0.500	A325X	1.250	1.250	0.250	A572 gr.50		2.000
6/3	Leg	PIPE 4.500x0.337	A500 gr.CSTension	5-1.000	A325X						
6/3	Diag	L2 1/2x2 1/2x3/16	A529 gr.50Bolted	1-0.625	A325X	1.500	1.250	0.250	A572 gr.50		2.000
6/2	Leg	PIPE 4.500x0.337	A500 gr.CSTension	5-1.000	A325X						
6/2	Diag	L2 1/2x2 1/2x3/16	A529 gr.50Bolted	1-0.625	A325X	1.500	1.250	0.250	A572 gr.50		2.000
6/1	Leg	PIPE 4.500x0.337	A500 gr.CSTension	5-1.000	A325X						
6/1	Diag	L2 1/2x2 1/2x3/16	A529 gr.50Bolted	1-0.625	A325X	1.500	1.250	0.250	A572 gr.50		2.000
5/3	Leg	PIPE 5.563x0.375	A500 gr.CSTension	5-1.000	A325X						
5/3	Diag	L3x3x3/16	A529 gr.50Bolted	1-0.625	A325X	1.500	1.620	0.250	A572 gr.50		2.000
5/2	Leg	PIPE 5.563x0.375	A500 gr.CSTension	5-1.000	A325X						
5/2	Diag	L3x3x3/16	A529 gr.50Bolted	1-0.625	A325X	1.500	1.620	0.250	A572 gr.50		2.000
5/1	Leg	PIPE 5.563x0.375	A500 gr.CSTension	5-1.000	A325X						
5/1	Diag	L3x3x3/16	A529 gr.50Bolted	1-0.625	A325X	1.500	1.620	0.250	A572 gr.50		

Section H: STRUCTURE DISPLACEMENT DATA

Load Combination: Wind Only - Serviceability

Wind Direction: Maximum displacements

Node	Elev. (ft)	N-S Disp (in)	W-E Disp (in)	Vert Disp (in)	N-S Rot (Deg)	W-E Rot (Deg)	Twist (Deg)
105	180.0	7.2	6.5	-0.1	0.39	0.34	-0.11
102	175.0	6.8	6.1	-0.1	0.40	0.35	-0.11
99	170.0	6.4	5.8	-0.1	0.39	0.34	0.10
96	165.0	6.0	5.4	-0.1	0.38	0.34	-0.10
93	160.0	5.6	5.1	-0.1	0.37	0.33	-0.10
90	155.0	5.2	4.7	-0.1	0.36	0.33	-0.09
87	150.0	4.8	4.4	-0.1	0.33	0.30	-0.07
84	145.0	4.5	4.1	-0.1	0.33	0.30	-0.09
81	140.0	4.1	3.8	-0.1	0.29	0.26	-0.05
78	135.0	3.8	3.5	-0.1	0.31	0.28	-0.07
75	130.0	3.5	3.2	-0.1	0.27	0.24	0.04
72	125.0	3.2	2.9	-0.1	0.28	0.25	-0.06
69	120.0	2.9	2.7	-0.1	0.24	0.22	0.04
66	113.3	2.6	2.4	-0.1	0.23	0.21	-0.04
63	106.7	2.3	2.1	-0.1	0.21	0.19	0.03
60	100.0	2.0	1.8	-0.1	0.19	0.18	-0.03
57	93.3	1.7	1.6	-0.1	0.18	0.16	-0.02
54	86.7	1.5	1.3	-0.1	0.16	0.15	-0.02
51	80.0	1.2	1.1	-0.1	0.15	0.13	-0.02
48	73.3	1.0	0.9	-0.1	0.13	0.12	-0.02
45	66.7	0.8	0.8	0.0	0.12	0.11	-0.01
42	60.0	0.7	0.6	0.0	0.10	0.09	-0.01
39	53.3	0.5	0.5	0.0	0.09	0.08	-0.01
36	46.7	0.4	0.4	0.0	0.08	0.07	-0.01
32	40.0	0.3	0.3	0.0	0.07	0.06	-0.01
26	33.3	0.2	0.2	0.0	0.06	0.05	-0.01
20	26.7	0.1	0.1	0.0	0.05	0.04	-0.01
14	20.0	0.1	-0.1	0.0	0.03	0.03	0.00
8	13.3	0.0	0.0	0.0	0.01	-0.01	0.00
3	0.0	0.0	0.0	0.0	0.00	0.00	0.00

Section J: ANTENNA DISPLACEMENT DATA

Load Combination: Wind Only - Serviceability

Wind Direction: Maximum displacements

Ant.	Elev. (ft)	N-S Disp (in)	W-E Disp (in)	Vert.Disp (in)	N-S Rot (Deg)	W-E Rot (Deg)	Twist Tot (Deg)	Allow. (Deg)
1	145.00	4.5	4.1	-0.1	0.33	0.30	-0.09	1.11
2	145.00	4.5	4.1	0.1	0.33	0.30	-0.09	1.11

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Revision: 0
Site: HORTONS FLAT- KY
Engineer: OH

Section L: STRENGTH ASSESSMENT SORTED DATA
Load Combination Max Envelope
Wind Direction Maximum

Sec	Pnl	Elev. (ft)	MType	Desc.	Len (ft)	kl/r	Gov. comp. cap. (Kips)	Gov. tens cap. (Kips)	Max Compr (Kips)	Max Tens. (Kips)	Asses. Ratio
9	4	175.00	Leg	PIPE 2.875x0.203	5.00	63.4	57.1	76.5	0.9	0.3	0.02
9	3	170.00	Leg	PIPE 2.875x0.203	5.00	63.4	57.1	76.5	5.3	2.0	0.09
9	2	165.00	Leg	PIPE 2.875x0.203	5.00	63.4	57.1	76.5	11.0	7.1	0.19
9	1	160.00	Leg	PIPE 2.875x0.203	5.00	63.4	57.1	76.5	19.9	13.4	0.35
8	4	155.00	Leg	PIPE 3.500x0.216	5.01	51.8	82.5	100.4	28.2	21.6	0.34
8	3	150.00	Leg	PIPE 3.500x0.216	5.01	51.8	82.5	100.4	41.8	31.5	0.51
8	2	145.00	Leg	PIPE 3.500x0.216	5.01	51.8	82.5	100.4	50.2	40.1	0.61
8	1	140.00	Leg	PIPE 3.500x0.216	5.01	51.8	82.5	100.4	61.5	50.1	0.75
7	4	135.00	Leg	PIPE 4x0.318	5.01	45.9	142.0	165.6	72.0	59.4	0.51
7	3	130.00	Leg	PIPE 4x0.318	5.01	45.9	142.0	165.6	84.5	68.2	0.60
7	2	125.00	Leg	PIPE 4x0.318	5.01	45.9	142.0	165.6	96.6	78.9	0.68
7	1	120.00	Leg	PIPE 4x0.318	5.01	45.9	142.0	165.6	108.8	87.8	0.77
6	3	113.33	Leg	PIPE 4.500x0.337	6.68	54.2	160.1	198.4	123.8	101.3	0.77
6	2	106.67	Leg	PIPE 4.500x0.337	6.68	54.2	160.1	198.4	136.4	113.4	0.85
6	1	100.00	Leg	PIPE 4.500x0.337	6.68	54.2	160.1	198.4	152.5	126.4	0.95
5	3	93.33	Leg	PIPE 5.563x0.375	6.68	43.6	239.4	275.0	166.5	138.9	0.70
5	2	86.67	Leg	PIPE 5.563x0.375	6.68	43.6	239.4	275.0	180.7	152.3	0.76
5	1	80.00	Leg	PIPE 5.563x0.375	6.68	43.6	239.4	275.0	193.2	163.9	0.81
4	3	73.33	Leg	PIPE 5.563x0.375	6.68	43.6	239.3	275.0	205.8	175.5	0.86
4	2	66.67	Leg	PIPE 5.563x0.375	6.68	43.6	239.3	275.0	216.9	185.6	0.91
4	1	60.00	Leg	PIPE 5.563x0.375	6.68	43.6	239.3	275.0	228.1	195.8	0.95
3	3	53.33	Leg	PIPE 6.625x0.432	6.68	36.4	343.5	330.3	238.7	205.2	0.70
3	2	46.67	Leg	PIPE 6.625x0.432	6.68	36.4	343.5	330.3	249.5	214.6	0.73
3	1	40.00	Leg	PIPE 6.625x0.432	6.68	36.4	343.5	330.3	259.8	223.5	0.76
2	3	33.33	Leg	PIPE 6.625x0.432	6.68	36.4	343.5	330.3	265.4	227.7	0.77
2	2	26.67	Leg	PIPE 6.625x0.432	6.68	36.4	343.5	330.3	275.3	236.2	0.80
2	1	20.00	Leg	PIPE 6.625x0.432	6.68	36.4	343.5	330.3	285.1	244.4	0.83
1	2	13.33	Leg	PIPE 6.625x0.432	6.68	36.4	343.5	378.5	294.6	252.2	0.86
1	1	0.00	Leg	PIPE 6.625x0.432	13.36	36.4	343.5	378.5	304.3	259.6	0.89
9	4	175.00	Diag	L1 3/4x1 3/4x3/16	6.90	109.5	9.7	9.7	0.8	1.0	0.10
9	3	170.00	Diag	L1 3/4x1 3/4x3/16	6.91	109.6	9.7	9.7	2.5	2.3	0.26
9	2	165.00	Diag	L1 3/4x1 3/4x3/16	6.92	109.7	9.7	9.7	2.4	2.6	0.27
9	1	160.00	Diag	L1 3/4x1 3/4x3/16	6.92	109.9	9.7	9.7	5.3	5.1	0.55
8	4	155.00	Diag	L1 3/4x1 3/4x3/16	7.11	115.6	9.7	9.7	4.7	4.3	0.49
8	3	150.00	Diag	L1 3/4x1 3/4x3/16	7.48	121.2	9.5	9.7	5.4	5.5	0.56
8	2	145.00	Diag	L1 3/4x1 3/4x3/16	7.86	128.4	8.5	9.7	5.1	5.0	0.60
8	1	140.00	Diag	L1 3/4x1 3/4x3/16	8.26	135.8	7.6	9.7	6.6	6.4	0.86
7	4	135.00	Diag	L2 1/2x2 1/2x3/16	8.67	103.7	9.7	9.7	6.0	6.2	0.63
7	3	130.00	Diag	L2 1/2x2 1/2x3/16	9.09	107.7	9.7	9.7	7.3	7.0	0.75
7	2	125.00	Diag	L2 1/2x2 1/2x3/16	9.52	111.8	9.7	9.7	6.7	7.0	0.72
7	1	120.00	Diag	L2 1/2x2 1/2x3/16	9.96	115.9	9.7	9.7	8.0	7.9	0.83
6	3	113.33	Diag	L2 1/2x2 1/2x3/16	11.37	131.4	11.8	14.1	8.0	8.2	0.68
6	2	106.67	Diag	L2 1/2x2 1/2x3/16	11.94	138.6	10.6	14.1	7.8	7.6	0.74
6	1	100.00	Diag	L2 1/2x2 1/2x3/16	12.52	145.9	9.6	14.1	8.3	8.4	0.86
5	3	93.33	Diag	L3x3x3/16	13.10	125.7	15.2	14.7	8.6	8.4	0.57
5	2	86.67	Diag	L3x3x3/16	13.68	131.7	14.2	14.7	8.2	8.3	0.58
5	1	80.00	Diag	L3x3x3/16	14.27	137.8	13.0	14.7	8.1	8.0	0.63
4	3	73.33	Diag	L3x3x3/16	14.87	144.2	11.8	14.7	7.7	7.7	0.65
4	2	66.67	Diag	L3x3x3/16	15.49	150.6	10.8	14.7	7.6	7.6	0.70
4	1	60.00	Diag	L3x3x3/16	16.12	157.1	10.0	14.7	7.5	7.5	0.75
3	3	53.33	Diag	L3x3x1/4	16.74	162.4	12.3	15.2	7.7	7.7	0.63
3	2	46.67	Diag	L3x3x1/4	17.35	168.7	11.4	15.2	7.7	7.7	0.67
3	1	40.00	Diag	L3x3x1/4	17.97	175.0	10.6	15.2	7.7	7.6	0.72
2	3	33.33	Diag	L3x3x1/4	11.08	167.8	11.6	29.5	9.1	9.1	0.79

2	2	26.67	Diag	L3x3x1/4	11.34	171.0	11.1	29.5	9.0	9.0	0.81
2	1	20.00	Diag	L3x3x1/4	11.62	174.4	10.7	29.5	8.9	8.9	0.83
1	2	13.33	Diag	L4x4x1/4	11.89	141.7	21.8	30.4	8.9	8.9	0.41
1	1	0.00	Diag	L4x4x1/4	16.98	147.6	20.1	30.4	12.3	12.3	0.61
9	4	175.00	Horiz	L1 1/2x1 1/2x3/16	4.75	172.6	4.0	8.5	0.6	0.5	0.16
8	4	155.00	Horiz	L1 1/2x1 1/2x3/16	4.79	172.3	4.0	8.5	2.0	2.0	0.48
2	3	33.33	Horiz	L3x3x3/16	8.51	146.2	11.5	22.2	7.3	7.3	0.63
2	2	26.67	Horiz	L3x3x3/16	8.84	150.3	10.9	22.2	7.3	7.2	0.67
2	1	20.00	Horiz	L3x3x3/16	9.18	154.5	10.3	22.2	7.3	7.3	0.71
1	2	13.33	Horiz	L3x3x1/4	9.51	158.7	12.9	28.1	7.4	7.3	0.57
1	1	0.00	Horiz	L3x3x1/4	9.84	162.4	12.3	30.4	7.6	7.6	0.62
2	3	33.33	PlanH1	L2 1/2x2 1/2x3/16	8.51	208.4	4.7	14.1	0.0	0.0	0.01
2	2	26.67	PlanH1	L2 1/2x2 1/2x3/16	8.84	216.6	4.3	14.1	0.0	0.0	0.01
2	1	20.00	PlanH1	L2 1/2x2 1/2x3/16	9.18	224.7	4.0	14.1	0.0	0.0	0.01
1	2	13.33	PlanH1	L2 1/2x2 1/2x3/16	9.51	232.9	3.8	8.8	0.0	0.0	0.01
1	1	0.00	SecH1	L2 1/2x2 1/2x3/16	4.92	120.5	14.0	14.1	5.2	5.2	0.37
1	1	0.00	SecD1	L2 1/2x2 1/2x3/16	8.10	198.2	5.2	14.1	4.6	4.6	0.89
1	1	0.00	PlanH1	L2 1/2x2 1/2x3/16	9.84	241.1	3.5	8.8	0.0	0.0	0.01

Section M: SECTION PROPERTIES DATA

Sec	Pan	Memb. Type	Steel Grade	Conn. Type	Bolts	Bolt Size (in)	Bolt Grade	End Dist (in)	Gusset Thick. (in)	kl/r	Comp Cap. (Kips)	Tens Cap. (Kips)	Bolt Cap. (Kips)	Bear. Cap. (Kips)	Block Shear (Kips)
9	4	Leg	A500 gr.CS	Tension	4	0.750	A325X	1.125	N/A	63.4	57.1	76.5	121.7T	N/A	N/A
9	4	Diag	A529 gr.50	Bolted	1	0.500	A325X	1.250	0.250	109.5	11.6	18.3	9.7S	11.7	10.2
9	4	Horiz	A529 gr.50	Bolted	1	0.500	A325X	1.250	0.250	172.6	4.0	15.0	9.7S	11.7	8.5
9	3	Leg	A500 gr.CS	Tension	4	0.750	A325X	1.125	N/A	63.4	57.1	76.5	121.7T	N/A	N/A
9	3	Diag	A529 gr.50	Bolted	1	0.500	A325X	1.250	0.250	109.6	11.6	18.3	9.7S	11.7	10.2
9	2	Leg	A500 gr.CS	Tension	4	0.750	A325X	1.125	N/A	63.4	57.1	76.5	121.7T	N/A	N/A
9	2	Diag	A529 gr.50	Bolted	1	0.500	A325X	1.250	0.250	109.7	11.6	18.3	9.7S	11.7	10.2
9	1	Leg	A500 gr.CS	Tension	4	0.750	A325X	1.125	N/A	63.4	57.1	76.5	121.7T	N/A	N/A
9	1	Diag	A529 gr.50	Bolted	1	0.500	A325X	1.250	0.250	109.9	11.5	18.3	9.7S	11.7	10.2
8	4	Leg	A500 gr.CS	Tension	4	0.875	A325X	1.313	N/A	51.8	82.5	100.4	167.9T	N/A	N/A
8	4	Diag	A529 gr.50	Bolted	1	0.500	A325X	1.250	0.250	115.6	10.5	18.3	9.7S	11.7	10.2
8	4	Horiz	A529 gr.50	Bolted	1	0.500	A325X	1.250	0.250	172.3	4.0	15.0	9.7S	11.7	8.5
8	3	Leg	A500 gr.CS	Tension	4	0.875	A325X	1.313	N/A	51.8	82.5	100.4	167.9T	N/A	N/A
8	3	Diag	A529 gr.50	Bolted	1	0.500	A325X	1.250	0.250	121.2	9.5	18.3	9.7S	11.7	10.2
8	2	Leg	A500 gr.CS	Tension	4	0.875	A325X	1.313	N/A	51.8	82.5	100.4	167.9T	N/A	N/A
8	2	Diag	A529 gr.50	Bolted	1	0.500	A325X	1.250	0.250	128.4	8.5	18.3	9.7S	11.7	10.2
8	1	Leg	A500 gr.CS	Tension	4	0.875	A325X	1.313	N/A	51.8	82.5	100.4	167.9T	N/A	N/A
8	1	Diag	A529 gr.50	Bolted	1	0.500	A325X	1.250	0.250	135.8	7.6	18.3	9.7S	11.7	10.2
7	4	Leg	A500 gr.CS	Tension	5	0.875	A325X	1.313	N/A	45.9	142.0	165.6	209.9T	N/A	N/A
7	4	Diag	A529 gr.50	Bolted	1	0.500	A325X	1.250	0.250	103.7	18.5	28.5	9.7S	11.7	13.6
7	3	Leg	A500 gr.CS	Tension	5	0.875	A325X	1.313	N/A	45.9	142.0	165.6	209.9T	N/A	N/A
7	3	Diag	A529 gr.50	Bolted	1	0.500	A325X	1.250	0.250	107.7	17.4	28.5	9.7S	11.7	13.6
7	2	Leg	A500 gr.CS	Tension	5	0.875	A325X	1.313	N/A	45.9	142.0	165.6	209.9T	N/A	N/A
7	2	Diag	A529 gr.50	Bolted	1	0.500	A325X	1.250	0.250	111.8	16.3	28.5	9.7S	11.7	13.6
7	1	Leg	A500 gr.CS	Tension	5	0.875	A325X	1.313	N/A	45.9	142.0	165.6	209.9T	N/A	N/A
7	1	Diag	A529 gr.50	Bolted	1	0.500	A325X	1.250	0.250	115.9	15.1	28.5	9.7S	11.7	13.6
6	3	Leg	A500 gr.CS	Tension	5	1.000	A325X	1.500	N/A	54.2	160.1	198.4	275.3T	N/A	N/A
6	3	Diag	A529 gr.50	Bolted	1	0.625	A325X	1.500	0.250	131.4	11.8	27.7	15.2S	14.7	14.1
6	2	Leg	A500 gr.CS	Tension	5	1.000	A325X	1.500	N/A	54.2	160.1	198.4	275.3T	N/A	N/A
6	2	Diag	A529 gr.50	Bolted	1	0.625	A325X	1.500	0.250	138.6	10.6	27.7	15.2S	14.7	14.1
6	1	Leg	A500 gr.CS	Tension	5	1.000	A325X	1.500	N/A	54.2	160.1	198.4	275.3T	N/A	N/A
6	1	Diag	A529 gr.50	Bolted	1	0.625	A325X	1.500	0.250	145.9	9.6	27.7	15.2S	14.7	14.1
5	3	Leg	A500 gr.CS	Tension	5	1.000	A325X	1.500	N/A	43.6	239.4	275.0	275.3T	N/A	N/A
5	3	Diag	A529 gr.50	Bolted	1	0.625	A325X	1.500	0.250	125.7	15.6	34.6	15.2S	14.7	17.5
5	2	Leg	A500 gr.CS	Tension	5	1.000	A325X	1.500	N/A	43.6	239.4	275.0	275.3T	N/A	N/A
5	2	Diag	A529 gr.50	Bolted	1	0.625	A325X	1.500	0.250	131.7	14.2	34.6	15.2S	14.7	17.5
5	1	Leg	A500 gr.CS	Tension	5	1.000	A325X	1.500	N/A	43.6	239.4	275.0	275.3T	N/A	N/A
5	1	Diag	A529 gr.50	Bolted	1	0.625	A325X	1.500	0.250	137.8	13.0	34.6	15.2S	14.7	17.5
4	3	Leg	A500 gr.CS	Tension	6	1.000	A325X	1.500	N/A	43.6	239.3	275.0	330.3T	N/A	N/A
4	3	Diag	A529 gr.50	Bolted	1	0.625	A325X	1.500	0.250	144.2	11.8	34.6	15.2S	14.7	17.5
4	2	Leg	A500 gr.CS	Tension	6	1.000	A325X	1.500	N/A	43.6	239.3	275.0	330.3T	N/A	N/A
4	2	Diag	A529 gr.50	Bolted	1	0.625	A325X	1.500	0.250	150.6	10.8	34.6	15.2S	14.7	17.5
4	1	Leg	A500 gr.CS	Tension	6	1.000	A325X	1.500	N/A	43.6	239.3	275.0	330.3T	N/A	N/A
4	1	Diag	A529 gr.50	Bolted	1	0.625	A325X	1.500	0.250	157.1	10.0	34.6	15.2S	14.7	17.5
3	3	Leg	A500 gr.CS	Tension	6	1.000	A325X	1.500	N/A	36.4	343.5	378.5	330.3T	N/A	N/A
3	3	Diag	A529 gr.50	Bolted	1	0.625	A325X	1.500	0.250	162.4	12.3	45.6	15.2S	19.5	24.8
3	2	Leg	A500 gr.CS	Tension	6	1.000	A325X	1.500	N/A	36.4	343.5	378.5	330.3T	N/A	N/A
3	2	Diag	A529 gr.50	Bolted	1	0.625	A325X	1.500	0.250	168.7	11.4	45.6	15.2S	19.5	24.8
3	1	Leg	A500 gr.CS	Tension	6	1.000	A325X	1.500	N/A	36.4	343.5	378.5	330.3T	N/A	N/A
3	1	Diag	A529 gr.50	Bolted	1	0.625	A325X	1.500	0.250	175.0	10.6	45.6	15.2S	19.5	24.8
2	3	Leg	A500 gr.CS	Tension	6	1.000	A325X	1.500	N/A	36.4	343.5	378.5	330.3T	N/A	N/A

2	3	Diag	A529 gr.50	Bolted	2	0.625	A325X	1.125	0.375	167.8	11.6	45.6	30.4S	34.1	29.5
2	3	Horiz	A529 gr.50	Bolted	2	0.625	A325X	1.125	0.375	146.2	11.5	34.6	30.4S	25.7	22.2
2	3	PlanH1	A529 gr.50	Bolted	1	0.625	A325X	1.500	0.250	208.4	4.7	27.7	15.2S	14.7	14.1
2	2	Leg	A500 gr.CS	Tension	6	1.000	A325X	1.500	N/A	36.4	343.5	378.5	330.3T	N/A	N/A
2	2	Diag	A529 gr.50	Bolted	2	0.625	A325X	1.125	0.375	171.0	11.1	45.6	30.4S	34.1	29.5
2	2	Horiz	A529 gr.50	Bolted	2	0.625	A325X	1.125	0.375	150.3	10.9	34.6	30.4S	25.7	22.2
2	2	PlanH1	A529 gr.50	Bolted	1	0.625	A325X	1.500	0.250	216.6	4.3	27.7	15.2S	14.7	14.1
2	1	Leg	A500 gr.CS	Tension	6	1.000	A325X	1.500	N/A	36.4	343.5	378.5	330.3T	N/A	N/A
2	1	Diag	A529 gr.50	Bolted	2	0.625	A325X	1.125	0.375	174.4	10.7	45.6	30.4S	34.1	29.5
2	1	Horiz	A529 gr.50	Bolted	2	0.625	A325X	1.125	0.375	154.5	10.3	34.6	30.4S	25.7	22.2
2	1	PlanH1	A529 gr.50	Bolted	1	0.625	A325X	1.500	0.250	224.7	4.0	27.7	15.2S	14.7	14.1
1	2	Leg	A500 gr.CS	Tension	8	1.000	A325X	1.500	N/A	36.4	343.5	378.5	440.4T	N/A	N/A
1	2	Diag	A529 gr.50	Bolted	2	0.625	A325X	1.125	0.375	141.7	21.8	63.9	30.4S	34.1	34.2
1	2	Horiz	A529 gr.50	Bolted	2	0.625	A325X	1.125	0.375	158.7	12.9	45.6	30.4S	34.1	28.1
1	2	PlanH1	A572 gr.50	Bolted	1	0.625	A325X	0.938	0.375	232.9	3.8	27.6	15.2S	8.8	11.0
1	1	Leg	A500 gr.CS	Tension	8	1.000	A325X	1.500	N/A	36.4	343.5	378.5	440.4T	N/A	N/A
1	1	Diag	A529 gr.50	Bolted	2	0.625	A325X	1.500	0.375	147.6	20.1	63.9	30.4S	39.0	36.9
1	1	Horiz	A529 gr.50	Bolted	2	0.625	A325X	1.500	0.375	162.4	12.3	45.6	30.4S	39.0	30.8
1	1	SecH1	A572 gr.50	Bolted	1	0.625	A325X	1.500	0.375	120.5	14.0	27.6	15.2S	14.7	14.1
1	1	SecD1	A572 gr.50	Bolted	1	0.625	A325X	1.500	0.375	198.2	5.2	27.6	15.2S	14.7	14.1
1	1	PlanH1	A572 gr.50	Bolted	1	0.625	A325X	0.938	0.375	241.1	3.5	27.6	15.2S	8.8	11.0

File: W:\Jobs\2019\229460\229460.out
Contract:
Project: 180 FT RT TOWER DESIGN
Date and Time: 3/13/2019 11:27:45 AM

Revision: 0
Site: HORTONS FLAT- KY
Engineer: OH

Section N: LEG REACTION DATA

Load Combination — Max Envelope
Wind Direction — Maximum

Force-Y Download (Kips)	Force-Y Uplift (Kips)	Shear-X (Kips)	Shear-Z (Kips)	Max Shear (Kips)
321.15	274.54			29.49

File: W:\Jobs\2019\229460\229460.out
Contract:
Project: 180 FT RT TOWER DESIGN
Date and Time: 3/13/2019 11:27:45 AM

Revision: 0
Site: HORTONS FLAT- KY
Engineer: OH

Section O: TOWER FOUNDATION DATA
Load Combination Max Envelope
Wind Direction Maximum

Axial Load (Kips)	Shear Load-X (Kips)	Shear Load-Z (Kips)	Total Shear (Kips)	Moment-X (Kipsft)	Moment-Y (Kipsft)	Moment-Z (Kipsft)	Total Moment (Kipsft)
60.25	-48.39	0.00	48.39	3.78	9.61	5480.58	5480.58
60.25	-48.39	0.00	48.39	-3.78	-9.61	5480.58	5480.58

Customer: APPALACHIAN WIRELESS
Project: 180 FT RT TOWER DESIGN
Site: HORTONS FLAT- KY
Engr. File:
Build Code: ANSI/TIA-222-G-2005

ROHN Products

Mat Foundation

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Design Parameters

	Load Case					
Description	1	2	3	4	5	Service
Total Moment, ft-kips	5,480.58	5,474.21	731.53	270.82	264.44	1,578.85
Total Shear, kips	48.39	48.39	5.76	1.79	1.79	13.90
Total Tower Wt, kips	60.25	45.19	153.55	60.25	45.19	50.21
Max. Uplift, kips	269.17	274.54	.00	.00	.00	65.11
Shear, kips	26.04	26.33	26.33	6.85	6.85	6.85
Max Download, kips	321.15	315.78	91.28	34.96	29.59	103.47
Shear	29.49	29.21	6.33	2.23	1.95	9.09
Soil L.F.	1.20	0.90	1.20	1.20	0.90	1.00
Concrete L.F.	1.20	0.90	1.20	1.20	0.90	1.00

Foundation	
Ht. AGL, ft	0.50
Depth, ft.	6.00
Tower	
Face Width, ft	21.02
Offset, in	42.00
Soil	N/A
Blow Count	N/A
Inplace Unit Wt, pcf	110.00
Submerged Unit Wt, pcf	60.00
Friction Angle, ϕ, deg.	30.00
Cohesion, ksf	N/A
Uplift Angle, deg.	30.00
Water Depth, ft	None
Ult Bearing Capacity, ksf	6.00

Mat	
Thickness, ft	1.75
Width, ft	28.00
EA, in	15.00
Batter, in/ft	0.00

Anchor Bolts	
Diameter, in	1.0000
No.	8
Length, in	70.00
Bolt Circle, in	13.75
Projection, in	6.00
Concrete	
28 Day Strength, ksi	4.50
Dry Unit Wt, pcf	150.00
Wet Unit Wt, pcf	88.00

Pier	
Height, ft	4.75
Diameter, ft	3.50
No. Piers	3
Shape	Round

Pocket	
Diameter, in	N/A
Thickness, ft	N/A

Rebar Fy	
Vertical, ksi	60.00
Circular, ksi	60.00
Horizontal, ksi	60.00

Results

ϕM_N – Parallel Axis	7,029.23	ft-kips
ϕM_N – Diagonal Axis	7,328.22	ft-kips
Moment – Interaction Ratio	0.850	
ϕV_N – Lateral Load	148.74	kips
Lateral Load – Interaction Ratio	0.325	

Final Mat Dimension : 28.00 x 28.00 x 1.75 ft. thick w/ (3) 3.50 ft. Dia. Piers

Final Pocket Dimension : Pockets not required

Total Volume of Concrete : 55.9 yd^3

Designed By: SWG
Date: 13 Mar.19 @ 11:40 AM

Checked By: HA
Date: 3/13/19

Customer: APPALACHIAN WIRELESS
Project: 180 FT RT TOWER DESIGN
Site: HORTONS FLAT- KY
Engr. File:
Build Code: ANSI/TIA-222-G-2005

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OTM Capacity

Controlling Load Case: 2 [Wind w/Min. Dead Load]
Foundation Width = 28.00 ft
M_U = 5,971.7 ft-kips

	ϕM_N, ft-kips	x, ft	N	σ_{ur}
Parallel	7,029.2	4.682	0.167	6.00
Diagonal	7,328.2	11.450	0.289	6.00

ϕM_N= 7,029.23 ft-kips IRatio = 0.850
ϕV_N = 148.74 kips IRatio = 0.325

Mat Design

γ_e = 121.67 pcf

Exterior Slab	x, ft	N	σ_R, ksf	P_s kips	P_{su} kips	Moment, ft-kips/ft		Shear, kips/ft	
						DownLoad Side	Uplift Side	Download Side	Uplift Side
Parallel	8.018	0.286	2.61	23.31	0.00	12.77	8.46	7.07	3.92
Diagonal	14.712	0.372	2.71	23.31	0.00	57.44	29.44	15.10	7.47

Interior Slab	Moment, ft-kips/ft		Shear, kips/ft		
	DownLoad Side	Uplift Side	Download Side	Uplift Side	Soil Pressure Termination
	16.72	43.37	4.75	6.29	4.99

Punching Shear	Download			Uplift			Description
	Interior	Edge	Corner	Interior	Edge	Corner	
b_{av}, ft	17.74	15.85	12.36	15.08	14.52	11.69	2-Way Shear
Vsu, psi	107.58	126.39	169.80	106.01	114.77	150.61	
ϕVc, psi	228.08	228.08	228.08	228.08	228.08	228.08	
IR	0.47	0.55	0.74	0.46	0.50	0.66	
M_{ut}, ft-kips	84.0			75.0			Moment transfer to slab
B_e, ft	7.9			7.5			
M_u, ft-kips/ft	10.7			10.0			
Edge Distances: a = 5.36 ft. b = 3.49 ft. c = 4.43 ft.							

Summary	Max. Value	Utilization
Slab Moment, ft-kips/ft	57.44	0.967
Slab Shear, kips/ft	15.10	0.690
Punching Shear, psi	169.80	0.744
Soil Bearing Required, σ_{UR}, ksf	3.61	0.602

Mat Reinforcement	
Min. Steel Area (Strength)	.662 in^2/ft.
Min. Steel Area (Temperature)	.227 in^2/ft.
Steel Strain Actual	0.019
Minimum Steel Strain Required	0.005

32 - #7 Horizontal bars equally spaced @10.65 in., each way, top and bottom, total of 128, A_s = 0.687 in^2/ft

Designed By: SWG
Date: 13 Mar.19 @ 11:40 AM

Checked By: HA
Date: 3/13/19

Customer: APPALACHIAN WIRELESS
Project: 180 FT RT TOWER DESIGN
Site: HORTONS FLAT- KY
Engr. File:
Build Code: ANSI/TIA-222-G-2005

ROHN Products

Mat Foundation

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Pier Design

Controlling Load Case: 2 [Wind w/Min. Dead Load]

C = 315.78 kips	Vc = 29.21 kips	Mc = 138.75 ft-kips
T = 274.54 kips	Vt = 26.33 kips	Mt = 125.07 ft-kips
Fy = 60.00 ksi	Fyt = 60.00 ksi	L.F. = 1.00
H = 42.00 in.	Ds = 33.00 in.	F'c = 4.50 ksi
U = 1.00	Irs = Round	

*** **NOTE**: Pier cross section is Round ***

SUMMARY OF ANALYSIS

Minimum area of steel required	= 9.060 in^2	(Rhomin = 0.0065)
Area of steel provided.	= 9.425 in^2	(Rhoactual = 0.0068)
Maximum steel area limit	= 110.836 in^2	(Rhomax = 0.0800)

(12) #8 Vertical Bars equally spaced w/ #4 Circular Ties @ 6" on center.

CIRCULAR TIE DATA

Vu < 0.85*Vc/2, shear reinforcement is not required

Use maximum tie spacing specified in ACI 318,
Section 7.10.5 for compression reinforcement.

DEVELOPMENT LENGTH MODIFIERS FOR BAR DEVELOPMENT

Modifier for tension development = 1.000
Modifier for compression development = 0.160
REQUIRED Ld = MODIFIER * BASIC Ld * ACI 318 MODIFIERS, (12 in. min.)

Designed By: SWG
Date: 13 Mar.19 @ 11:40 AM

Checked By: HA
Date: 3/13/19

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

Aeronautical Study No.
2019-ASO-545-OE

Issued Date: 03/04/2019

Ali Kuzehkanani
East Kentucky Network, LLC
8300 Greensboro Drive, Suite 1200
Tysons, 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 Bruin (Horton Flats)
Location:	Bruin, KY
Latitude:	38-11-14.19N NAD 83
Longitude:	83-01-33.89W
Heights:	1011 feet site elevation (SE) 190 feet above ground level (AGL) 1201 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:

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)
__X__ Within 5 days after the construction reaches its greatest height (7460-2, Part 2)

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/ lighting are accomplished on a voluntary basis, we recommend it be installed in accordance with FAA Advisory circular 70/7460-1 L Change 2.

This determination expires on 09/04/2020 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, except those frequencies specified in the Colo Void Clause Coalition; Antenna System Co-Location; Voluntary Best Practices, effective 21 Nov 2007, 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 includes all previously filed frequencies and power for this structure.

If construction or alteration is dismantled or destroyed, you must submit notice to the FAA within 5 days after the construction or alteration is dismantled or destroyed.

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.

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 (718) 553-2611, or angelique.eersteling@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2019-ASO-545-OE.

Signature Control No: 394755849-398669407 (DNE)
Angelique Eersteling
Technician

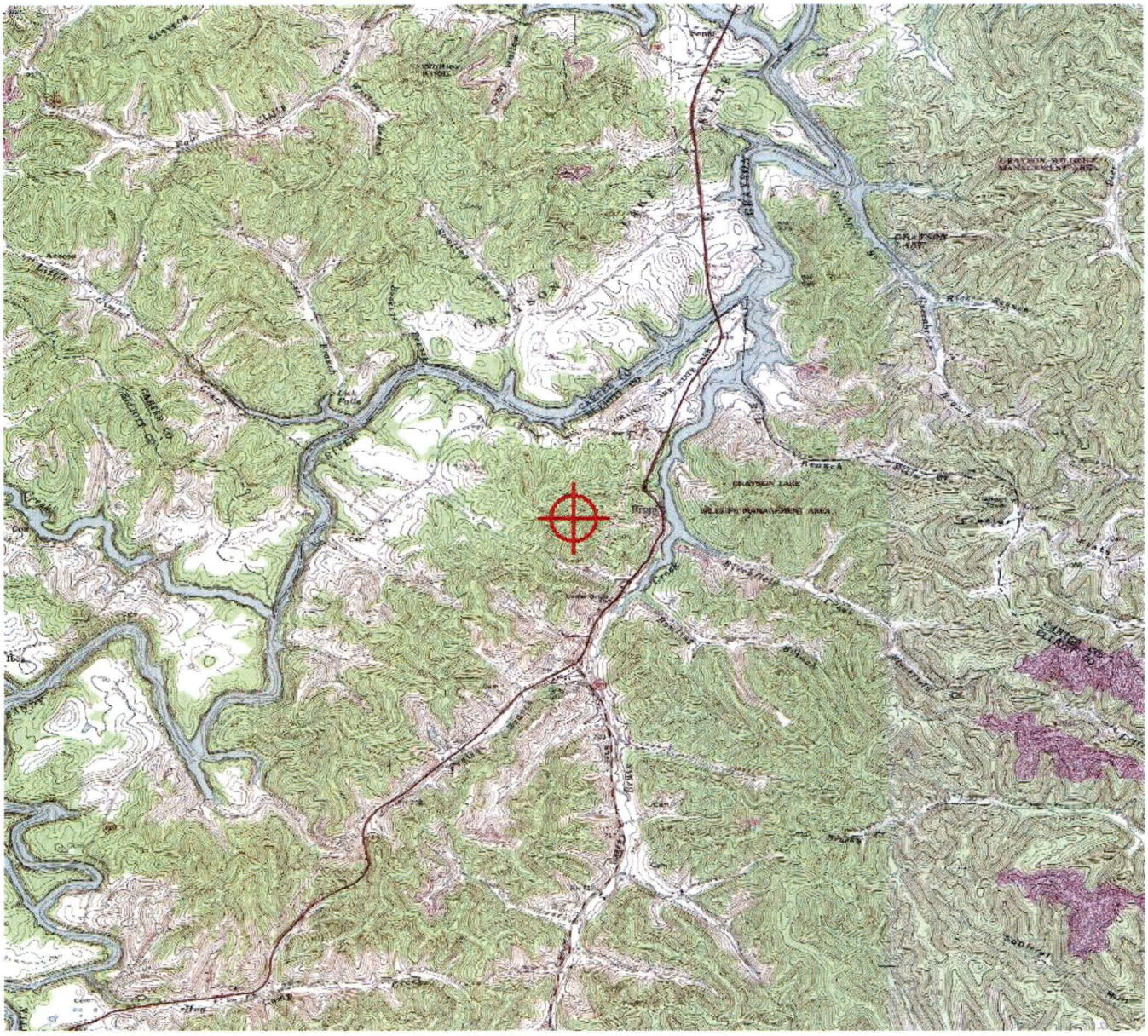
Attachment(s)
Frequency Data
Map(s)

cc: FCC

Frequency Data for ASN 2019-ASO-545-OE

LOW FREQUENCY	HIGH FREQUENCY	FREQUENCY UNIT	ERP	ERP UNIT
6	7	GHz	55	dBW
6	7	GHz	42	dBW
10	11.7	GHz	55	dBW
10	11.7	GHz	42	dBW
17.7	19.7	GHz	55	dBW
17.7	19.7	GHz	42	dBW
21.2	23.6	GHz	55	dBW
21.2	23.6	GHz	42	dBW
614	698	MHz	1000	W
614	698	MHz	2000	W
698	806	MHz	1000	W
806	901	MHz	500	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
929	932	MHz	3500	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
1670	1675	MHz	500	W
1710	1755	MHz	500	W
1850	1910	MHz	1640	W
1850	1990	MHz	1640	W
1930	1990	MHz	1640	W
1990	2025	MHz	500	W
2110	2200	MHz	500	W
2305	2360	MHz	2000	W
2305	2310	MHz	2000	W
2345	2360	MHz	2000	W
2496	2690	MHz	500	W

TOPO Map for ASN 2019-ASO-545-OE



From: Ali Kuzehkanani <akuzehkanani@fcclaw.com>
Subject: RE: 638 - KAZC study request for a construction of a new site near Bruin
Date: January 31, 2019 at 2:26:00 PM EST
To: "Houlihan, John F (KYTC)" <John.Houlihan@ky.gov>
Cc: Raina Helton <rhelton@ekn.com>, Lynn Haney <lhaney@ekn.com>, "m.thacker@tgtel.com" <m.thacker@tgtel.com>, Pamela Gist <pgist@fcclaw.com>

Thank you, John.

From: Houlihan, John F (KYTC) <John.Houlihan@ky.gov>
Sent: Thursday, January 31, 2019 2:13 PM
To: Ali Kuzehkanani <akuzehkanani@fcclaw.com>
Subject: RE: 638 - KAZC study request for a construction of a new site near Bruin

No permit is required from the KAZC. Thank you

Kentucky Airport Zoning Commission (KAZC)
John Houlihan, Administrator
Department of Highways, District Six
421 Buttermilk Pike
Covington, KY 41017
Office 859-341-2700, Office 1-800-928-2700, Desk 859-341-2707 Ext. 277, Cell 502-330-3955
KAZC webpage: https://transportation.ky.gov/Aviation/Pages/airportzoning.aspx

From: Ali Kuzehkanani <akuzehkanani@fcclaw.com>
Sent: Wednesday, January 30, 2019 9:38 AM
To: Houlihan, John F (KYTC) <John.Houlihan@ky.gov>

Cc: Raina Helton <rhelton@ekn.com>; Lynn Haney <lhaney@ekn.com>; m.thacker@tgtel.com; Pamela Gist <pgist@fcclaw.com>
Subject: 638 - KAZC study request for a construction of a new site near Bruin

Dear John:

Forwarded herewith in accordance with KRS 183.990 and Chapter 50 of Title 602 of the Kentucky Administrative Regulations, is an "Application for Permit to Construct or Alter a Structure" (Form TC 56-50) for a 190-foot communications support structure (Horton Flats) proposed near Bruin (Elliot), KY. The site is located at Horton Flats, approximately 0.4 miles W of Bruin (Elliot), KY at geographic coordinates (**NAD83**) N 38-11-14.19; W 83-01-33.89.

Attached is a copy of the electronic FAA 7460-1 filing. A copy of the final FAA determination will be provided to you as soon as it is issued.

Please let me know if you have any questions or require any additional information.

Thank you in advance for your help in this matter.

Regards,

Ali Kuzehkanani

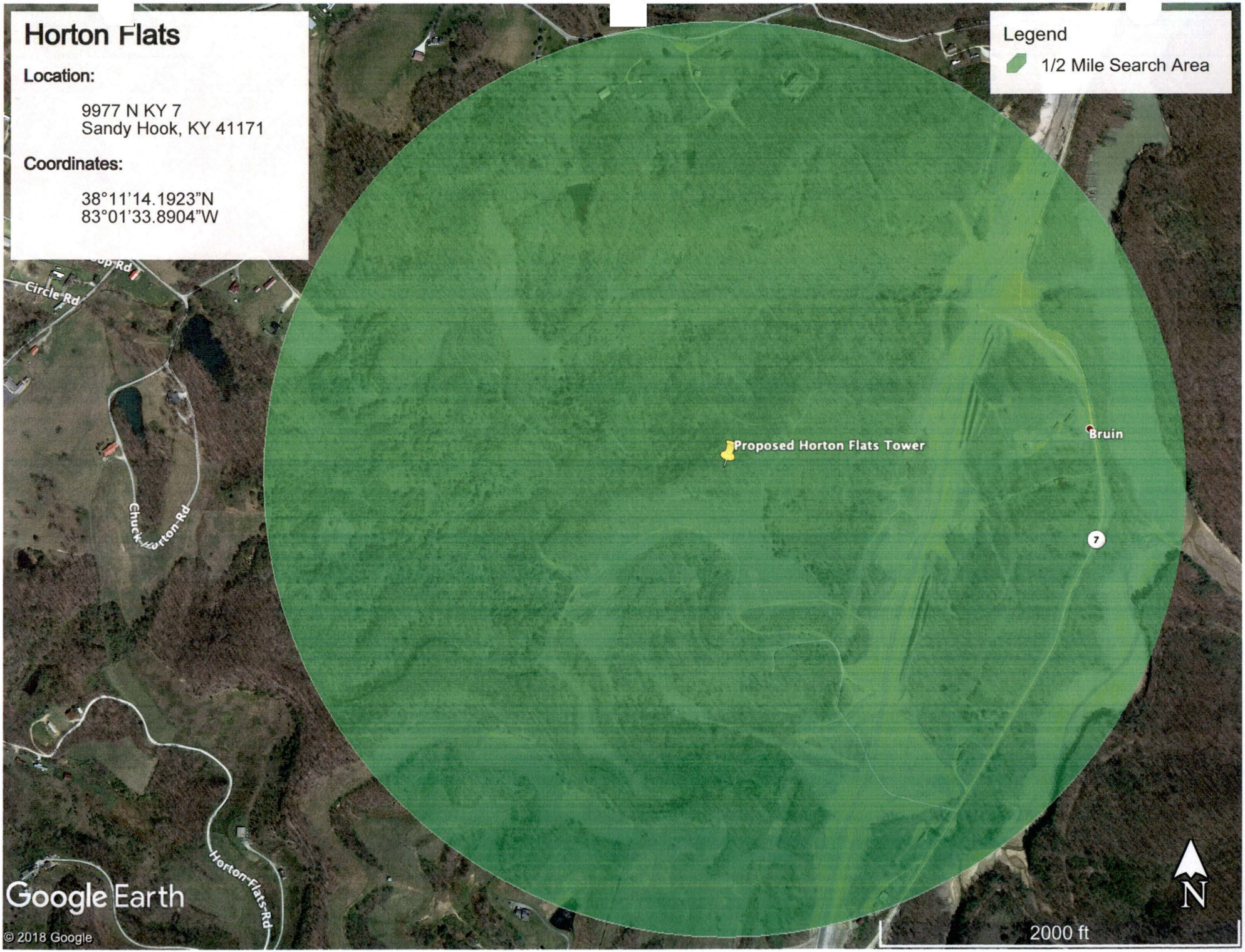
Director of Engineering
Lukas, LaFuria, Gutierrez & Sachs, LLP
8300 Greensboro Drive, Suite 1200
Tysons, VA 22102

Direct (703) 584-8667
Mobile (703) 927-1961
Fax (703) 584-8696
Email ali@fcclaw.com
Email akuzehkanani@fcclaw.com

Horton Flats Driving Directions

Beginning in Sandy Hook, Kentucky in front of the Elliott County Courthouse on Main Street, pointing north, drive approximately seven hundred feet to the intersection of Main Street and Route 7 and Route 32. Turn left onto route 7 North and drive nine miles and seven tenths of a mile. Turn left onto a black top approach leading you into the woods (sign posted). Proposed road will begin here. Continue on the dirt path for approximately a mile (sign posted).

Prepared by:
Daryl Bartley
CELL SITE COMPLIANCE AGENT
East Kentucky Network, LLC
D/b/a Appalachian Wireless
(606) 791-0310 (cell)
dbartley@ekn.com


Horton Flats
Location:
9977 N KY 7
Sandy Hook, KY 41171
Coordinates:
38°11'14.1923"N
83°01'33.8904"W
Legend
1/2 Mile Search Area
Proposed Horton Flats Tower
Bruin
7
Circle Rd
Chuck Horton Rd
Horton Flats Rd
Google Earth
© 2018 Google
N
2000 ft

DEED

THIS DEED OF CONVEYANCE is made and entered into this 7th day of November, 2018, by and between Donald R. Greene and Reba Greene, husband and wife, who address is 740 Horton Flats Road, Olive Hill, Kentucky 41164, and Johnny Ray Greene and Penny Greene, husband and wife, whose address is 960 Horton Flat Road, Sandy Hook, KY 41171 (hereinafter referred to as "**Grantors**"), and **EAST KENTUCKY NETWORK, LLC D/B/A APPALACHIAN WIRELESS**, a Kentucky limited liability company (hereinafter referred to as "**Grantee**"), whose address is 101 Technology Trail, Ivel, Kentucky 41642, which is also the "in care of" address to which the property tax bill for 2018 should be sent.

W I T N E S S E T H

That for and in consideration of the sum of Three Thousand Three Hundred and 00/100 Dollars ($3,300.00), cash in hand paid, the receipt and sufficiency of which are hereby acknowledged, Grantors do hereby GRANT, SELL, and CONVEY to the Grantee, its successors and assigns, that certain real property on the waters of Bruin Creek in Bruin, Elliott County, Kentucky, which is more particularly described in the Lot Description **attached** hereto and made a part herein as **Exhibit A** and depicted on the plat **attached** hereto and made a part herein as **Exhibit B**, prepared by Steven E. Haywood, Licensed Professional Land Surveyor (hereinafter referred to as the "Property").

Being a portion of the same property conveyed to Grantors by Norieta Sue (Greene) Dickerson and others by Deed dated September 14, 2011, and recorded in the Elliott County Clerk's Office in Deed Book 111, Page 276.

TO HAVE AND TO HOLD the same with all appurtenances and privileges thereunto belonging unto the Grantee, its successors and assigns forever, with covenant of GENERAL

WARRANTY.

CONSIDERATION CERTIFICATE

The parties to this deed certify that the consideration reflected in this deed is the full consideration paid for the property and understand that falsification of the stated consideration is a class D felony, subject to one to five years imprisonment and fines up to $10,000.00.

IN TESTIMONY WHEREOF, the parties have hereunto subscribed their names as of the date set forth herein.

GRANTORS:

Donald R. Greene

Donald R. Greene

Reba Greene

Reba Greene

Johnny Ray Greene

Johnny Ray Greene

Penny Greene

Penny Greene

COMMONWEALTH OF KENTUCKY
COUNTY OF Elliott:

The foregoing instrument was acknowledged before me on this 7th day of November, 2018, by Donald R. Greene, Grantor.

Raina L. Helton
Notary Public

My Commission Expires: Feb 6, 2020

RAINA L. HELTON NOTARY PUBLIC ID NO. 549406 MY COMMISSION EXPIRES 2-6-2020 STATE AT LARGE, KY.

COMMONWEALTH OF KENTUCKY
COUNTY OF Elliott:

The foregoing instrument was acknowledged before me on this 7th day of November, 2018, by Reba Greene, Grantor.

Raina L. Helton
Notary Public

My Commission Expires: Feb 6, 2020

RAINA L. HELTON NOTARY PUBLIC ID NO. 549406 MY COMMISSION EXPIRES 2-6-2020 STATE AT LARGE, KY.

COMMONWEALTH OF KENTUCKY
COUNTY OF Elliott:

The foregoing instrument was acknowledged before me on this 7th day of November, 2018, by Johnny Ray Greene, Grantor.

Raina L. Helton
Notary Public

My Commission Expires: Feb 6, 2020

RAINA L. HELTON NOTARY PUBLIC ID NO. 549406 MY COMMISSION EXPIRES 2-6-2020 STATE AT LARGE, KY.

COMMONWEALTH OF KENTUCKY
COUNTY OF Elliott:

The foregoing instrument was acknowledged before me on this 7th day of November, 2018, by Penny Greene, Grantor.

Raina L. Helton
Notary Public

My Commission Expires: Feb 6, 2020

RAINA L. HELTON NOTARY PUBLIC ID NO. 549406 MY COMMISSION EXPIRES 2-6-2020 STATE AT LARGE, KY.

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

W A Gillum

By: W.A. Gillum
Its: CEO/General Manager

COMMONWEALTH OF KENTUCKY
COUNTY OF Floyd

The foregoing instrument was acknowledged before me on this 14th day of November, 2018, by W.A. Gillum, CEO/General Manager of East Kentucky Network, LLC d/b/a Appalachian Wireless, Grantee.

Raina S. Hatton

Notary Public

My Commission Expires Feb 6, 2020

This is to certify that this
instrument was prepared by:

Krystal Branham

Krystal Branham, Attorney
101 Technology Trail
Ivel, Kentucky 41642
606-339-1006

East Kentucky Network
d/b/a Appalachian Wireless
Description of Donald and Reba Green
Track of Land

A certain tract of land located on the waters of Bruin Creek in the community of Bruin in Elliott County, Kentucky and more particularly described as follows.

Unless stated otherwise any monument referred to herein as a Re-Bar and Cap is a set ½" steel re-bar eighteen (18") in length with a yellow plastic cap stamped Summit L.S. #2661. All bearings stated herein are referred to Grid North based on Kentucky Single Zone State Plane NAD 83 coordinates.

Beginning at a set Re-Bar and cap in the remains of a fence line near the ridge and being on the line between Donald Green (D.B. 109 P. 202) and property now or formerly owned by E. H. Evans Heirs (D.B. 46 P. 589) and having NAD 83 Kentucky Single Zone Coordinates of N: 3,967,278.73 E: 5,703,971.08.

Thence, leaving the line of E. H. Evans and running down the hill serving the land of Donald and Reba Greene N 10°39'15" W a distance of 70.15' to a set Re-Bar and Cap; Thence, around the hill N 79°20'45" E a distance of 100.00' to a set Re-Bar and Cap; Thence, up the hill S 10°39'15" E a distance of 52.56' to a set Re-Bar and Cap near the ridge line; Thence, down the hill S 10°39'15" E a distance of 10.32' to a on the center of the ridge and being a corner to Donald Greene and Reba Greene, his wife, and Johnny Ray Greene and Penny Greene, his wife (D.B. 111 P. 276); Thence, up the ridge with line between Donald and Reba Greene (D.B. 109 P. 202) and Donald & Reba Greene and Johnny Ray and Penny Greene (D.B. 111P. 276) S 68°39'16" a distance of 34.20' to a found 22" Oak with the remains of fence; Thence, S 79°20'45" W a distance of 48.86' to a found 14" Oak with the remains of a fence; Thence, S 76°20'42" W a distance of 17.56' to the point of beginning and containing 6,823.30' square feet and 0.16 acres more or less according to a survey conducted by persons under the direct supervision of Steven E. Haywood, PLS 2661 with Summit Engineering, Inc. by August 8th, 2018 and being a portion of the tracts of land conveyed to Donald Greene and Reba Greene, husband and wife, by William A. Rice and Sue Rice, husband and wife, by deed of conveyance dated March 4th, 2010 and recorded in Deed Book 109 Page 202 which is in the records in the Elliott County Court Clerk's office.

Steven E. Haywood, PLS #2661

Date: 11/05/2018

Filename: EKN_Horton Flats_3.DWG

N

Grid North
KY Single Zone

LINE	BEARING	DISTANCE
L1	S 10°39'15" E	10.32'
L2	S 76°20'42" W	17.56'
L3	N 79°20'45" E	25.11'

Area of the Donald & Reba Greene tract 6,824.3 sq.ft. 0.16 acres+/-

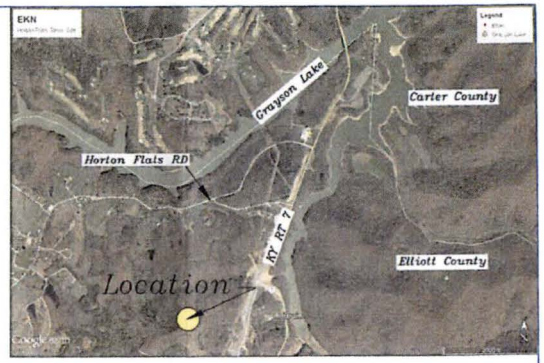
Area of the Donald & Reba Greene, and Johnny Ray & Penny Greene tract 1,010 sq.ft. 0.02 acres+/-

Total Area 7,834.3 sq.ft. 0.18 Acres+/-

Flood Hazard Information:
The site shown hereon does not lie within a Flood Hazard area.
FIRM Panel 100 of 275
Elliott County, Kentucky
Map # 21063C0100A
Map Effective Date: August 5, 2010

Proposed Tower Location
N: 3,967,310.31
E: 5,704,010.16
EL: 1018+/-(Existing Ground)
LAT: 38°11'14.1923"
LON: 83°01'33.8904"

The contours shown hereon are based on NAD83 LIDAR Mapping



Vicinity Map
Not to Scale
Google Image

0 30 60 90

Donald Greene
D.B. 109 P. 202
PVA #049-00-00-007.01
D.B. 111 Page 276
PVA #049-00-00-005.01

Client Infomation:
East Kentucky Network
d/b/a Appalachian Wireless
101 Technology Trail
Ivel, KY 41642

N 79°20'45" E 100.00'
S 10°39'15" E 52.56'
N 10°39'15" W 70.15'
S 68°39'16" W 34.20'
N 10°39'15" W 37.12'
S 26°04'41" E 31.92'
S 79°20'45" W 48.86'
L1
L2
L3
1010
1000
990
Proposed tower location
22" Oak with remains of Barbed Wire Fence
14" Oak with remains of Barbed Wire Fence
Existing 4 Wheeler Trail/Road
Donald Green and Reba Green
D.B. 109 P. 202
PVA #049-00-00-007.01
Donald Greene and Reba Greene
Johnny Ray Greene and Penny Greene
D.B. 111 Page 276
PVA #049-00-00-005.01

Point of Beginning
N: 3,967,278.73
E: 5,703,971.08

E. H. Evans (Deceased)
Faye Evans (Decease)
Pam Collihue & Timothy Collihue
James Edward Crockett JR. - Divorced
Earnest Crockett & Phyllis Crockett
Rt 1 Box 2106
Sandy Hook, KY 41171
PVA # 042-00-00-011.00
D.B. 46 P. 589

Owner Information
Donald & Reba Greene
and
Johnny Ray & Penny Greene
740 Horton Flats Road
Olive Hill, Kentucky 41164

The tracts of land shown hereon is a portion of the tract of land conveyed to Donald Greene by William A. Rice and Sue Rice, husband and wife by deed of conveyance dated March 4th, 2010 and recorded in Deed Book 109 Page 202 and a portion of the tract of land conveyed to Donald Greene by Norieta Sue (Greene) Dickerson and others by deed of conveyance dated September 14th, 2011 and recorded in Deed Book 111 Page 279.
Deeds of Reference are recorded in the records of the Elliott County Court Clerk's office.

Legend
- ◎ 1/2" re-bar set with a plastic cap stamped Summit Engineering, L.S. #2661 unless otherwise noted.
- ○ Corner - No monument set
- ◇ Fence Post
- Tree (Type Noted)
- Boundary Line
- x — x — Boundary Line With Fence Line
- x — x — Adjoining Property Lines With Fence
- E — Electric Line
- △ Proposed Tower Location

Surveyor Information:
Steven E. Haywood, PLS #2661
Summit Engineering, Inc.
265 Hambley Boulevard
Pikeville, KY 41501

Survey Dates:
7/13/2018
8/07/2018

STATE of KENTUCKY
STEVE HAYWOOD
2661
LICENSED PROFESSIONAL LAND SURVEYOR
Surveyors Seal

SURVEYOR'S STATEMENTS

1. The survey shown hereon was conducted under my direct supervision.
2. The method used was by random traverse with sideshots.
3. The mathematical error of closure was 1:50,916.60.
4. The bearings and distances were not adjusted for closure.
5. The basis for the bearings: Grid North, KY Single Zone NAD 83
6. This is a Class "B" Rural survey.
7. This plat of survey represents a Boundary Survey and complies with 201 KAR 18:150

Steven E. Haywood PLS No. 2661 Date: 11-5-18

EXHIBIT B

DATE: 11/05/2018	FILENAME:
SCALE: 1"=30'	DISK NO.
DRAWN BY: seh.dm	

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

Plat Map of Lease Area
Proposed Horton Flats Tower Site
near Bruin, Elliot County, Kentucky

SUMMIT ENGINEERING INC.
265 Hambley BLVD
PO Box 3007
Pikeville, KY 41502
606-432-1447
Pikeville, KY
Lexington, KY
Henderson, KY
S. Charleston, WV

DEED

THIS DEED OF CONVEYANCE is made and entered into this 7th day of November, 2018, by and between Donald R. Greene and Reba Greene, husband and wife, who address is 740 Horton Flats Road, Olive Hill, Kentucky 41164 (hereinafter referred to as "**Grantors**"), and **EAST KENTUCKY NETWORK, LLC D/B/A APPALACHIAN WIRELESS**, a Kentucky limited liability company (hereinafter referred to as "**Grantee**"), whose address is 101 Technology Trail, Ivel, Kentucky 41642, which is also the "in care of" address to which the property tax bill for 2018 should be sent.

WITNESSETH

That for and in consideration of the sum of Twenty-Six Thousand Seven Hundred and 00/100 Dollars ($26,700.00), cash in hand paid, the receipt and sufficiency of which are hereby acknowledged, Grantors do hereby GRANT, SELL, and CONVEY to the Grantee, its successors and assigns, that certain real property on the waters of Bruin Creek in Bruin, Elliott County, Kentucky, which is more particularly described in the Lot Description **attached** hereto and made a part herein as **Exhibit A** and depicted on the plat **attached** hereto and made a part herein as **Exhibit B**, prepared by Steven E. Haywood, Licensed Professional Land Surveyor (hereinafter referred to as the "Property").

Being a portion of the same property conveyed to Grantors by William A. Rice and Sue Rice by Deed dated March 4, 2010, and recorded in the Elliott County Clerk's Office in Deed Book 109, Page 202.

TO HAVE AND TO HOLD the same with all appurtenances and privileges thereunto belonging unto the Grantee, its successors and assigns forever, with covenant of GENERAL WARRANTY.

CONSIDERATION CERTIFICATE

The parties to this deed certify that the consideration reflected in this deed is the full consideration paid for the property and understand that falsification of the stated consideration is a class D felony, subject to one to five years imprisonment and fines up to $10,000.00.

IN TESTIMONY WHEREOF, the parties have hereunto subscribed their names as of the date set forth herein.

GRANTORS:

Donald R. Greene

Donald R. Greene

Reba Greene

Reba Greene

COMMONWEALTH OF KENTUCKY
COUNTY OF Elliott:

The foregoing instrument was acknowledged before me on this 7th day of November, 2018, by Donald R. Greene, Grantor.

Raina L. Helton

Notary Public

RAINA L. HELTON NOTARY PUBLIC ID NO. 549406 MY COMMISSION EXPIRES 2-6-2020 STATE AT LARGE, KY.

My Commission Expires: Feb 6, 2020

COMMONWEALTH OF KENTUCKY
COUNTY OF Elliott:

The foregoing instrument was acknowledged before me on this 7th day of November, 2018, by Reba Greene, Grantor.

Raina L. Helton

Notary Public

RAINA L. HELTON NOTARY PUBLIC ID NO. 549406 MY COMMISSION EXPIRES 2-6-2020 STATE AT LARGE, KY.

My Commission Expires: Feb 6, 2020

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

W A Gillum

By: W.A. Gillum
Its: CEO/General Manager

COMMONWEALTH OF KENTUCKY
COUNTY OF Floyd

The foregoing instrument was acknowledged before me on this 14th day of November, 2018, by W.A. Gillum, CEO/General Manager of East Kentucky Network, LLC d/b/a Appalachian Wireless, Grantee.

Raina L. Helton
Notary Public

My Commission Expires Feb 6, 2020

This is to certify that this
instrument was prepared by:

Krystal Branham
Krystal Branham, Attorney
101 Technology Trail
Ivel, Kentucky 41642
606-339-1006

Filename: EKN_Horton Flats_3.DWG

N

Grid North
KY Single Zone

LINE	BEARING	DISTANCE
L1	S 10°39'15" E	10.32'
L2	S 76°20'42" W	17.56'
L3	N 79°20'45" E	25.11'

Area of the Donald & Reba Greene tract 6,824.3 sq.ft. 0.16 acres+/-

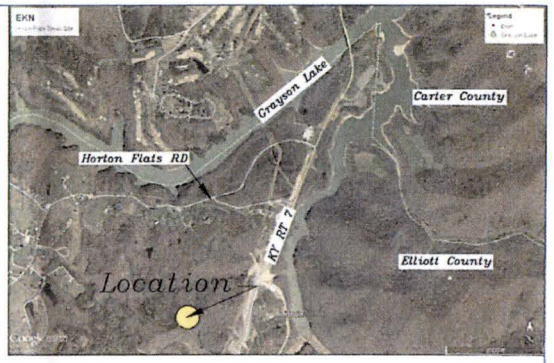
Area of the Donald & Reba Greene, and Johnny Ray & Penny Greene tract 1,010 sq.ft. 0.02 acres+/-

Total Area 7,834.3 sq.ft. 0.18 Acres+/-

Flood Hazard Information:
The site shown hereon does not lie within a Flood Harard area.

FIRM Panel 100 of 275
Elliott County, Kentucky
Map # 21063C0100A
Map Effective Date: August 5, 2010

Proposed Tower Location
N: 3,967,310.31
E: 5,704,010.16
EL: 1018+/-(Existing Ground)
LAT:38°11'14.1923"
LON:83°01'33.8904"



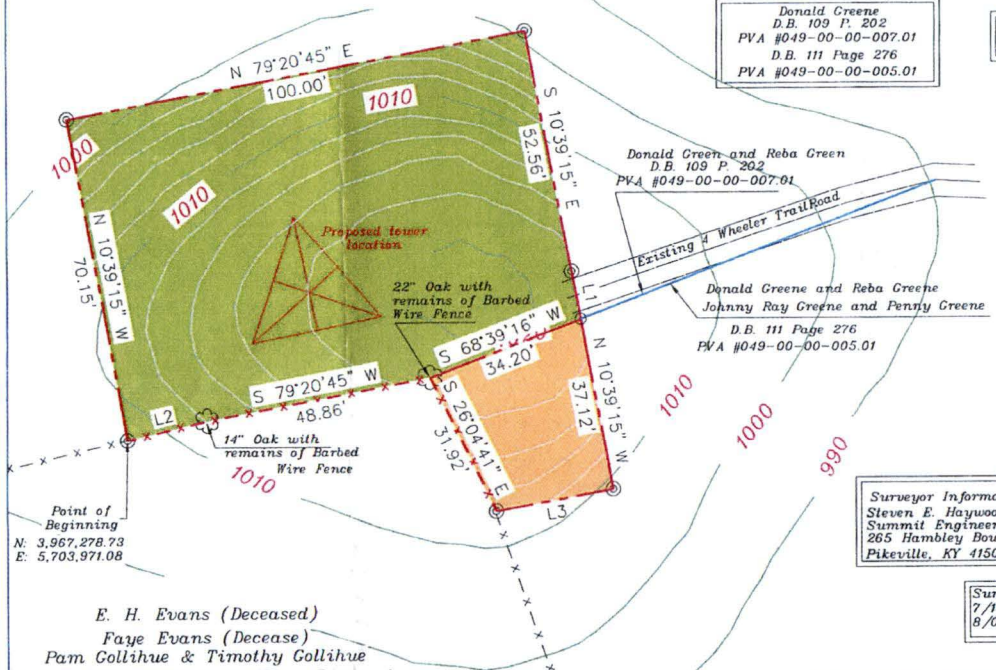
Vicinity Map
Not to Scale
Google Image

0 30 60 90

Donald Greene
D.B. 109 P. 202
PVA #049-00-00-007.01
D.B. 111 Page 276
PVA #049-00-00-005.01

The contours shown hereon are based on NAD83 LIDAR Mapping

Client Infomation:
East Kentucky Network
d/b/a Appalachian Wireless
101 Technology Trail
Ivel, KY 41642



The tracts of land shown hereon is a portion of the tract of land conveyed to Donald Greene by William A. Rice and Sue Rice, husband and wife by deed of conveyance dated March 4th, 2010 and recorded in Deed Book 109 Page 202 and a portion of the tract of land conveyed to Donald Greene by Norieta Sue (Greene) Dickerson and others by deed of conveyance dated September 14th, 2011 and recorded in Deed Book 111 Page 279.
Deeds of Reference are recorded in the records of the Elliott County Court Clerk's office.

Legend
- ◎ 1/2" re-bar set with a plastic cap stamped Summit Engineering, L.S. #2661 unless otherwise noted.
- ○ Corner - No monument set
- ◇ Fence Post
- Tree (Type Noted)
- Boundary Line
- Boundary Line With Fence Line
- Adjoining Property Lines With Fence
- Electric Line
- △ Proposed Tower Location

Surveyor Information:
Steven E. Haywood, PLS #2661
Summit Engineering, Inc.
265 Hambley Boulevard
Pikeville, KY 41501

Survey Dates:
7/13/2018
8/07/2018

STATE of KENTUCKY
STEVE HAYWOOD
2661
LICENSED PROFESSIONAL LAND SURVEYOR

Surveyors Seal

SURVEYOR'S STATEMENTS

1. The survey shown hereon was conducted under my direct supervision.
2. The method used was by random traverse with sideshots.
3. The mathematical error of closure was 1:50,916.60.
4. The bearings and distances were not adjusted for closure.
5. The basis for the bearings: Grid North, KY Single Zone NAD 83
6. This is a Class "B" Rural survey.
7. This plat of survey represents a Boundary Survey and complies with 201 KAR 18:150

Steven E. Haywood PLS No. 2661 Date: 11-5-18

E. H. Evans (Deceased)
Faye Evans (Decease)
Pam Collihue & Timothy Collihue
James Edward Crockett JR. - Divorced
Earnest Crockett & Phyllis Crockett
Rt 1 Box 2106
Sandy Hook, KY 41171
PVA # 042-00-00-011.00
D.B. 46 P. 589

Owner Information
Donald & Reba Greene
and
Johnny Ray & Penny Greene
740 Horton Flats Road
Olive Hill, Kentucky 41164

EXHIBIT
tabbies
B

DATE: 11/05/2018
SCALE: 1"=30'
DRAWN BY: seh.dm
FILENAME:
DISK NO.

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

Plat Map of Lease Area
Proposed Horton Flats Tower Site
near Bruin, Elliot County, Kentucky

SUMMIT ENGINEERING INC.
265 Hambley BLVD
PO Box 3007
Pikeville, KY 41502
606-432-1447

Pikeville, KY
Lexington, KY
Henderson, KY
S. Charleston, WV

East Kentucky Network
d/b/a Appalachian Wireless
Description of Donald and Reba Green
Johnny Ray and Penny Greene
Tract of Land

A certain tract of land located on the waters of Bruin Creek in the community of Bruin in Elliott County, Kentucky and more particularly described as follows.

Unless stated otherwise any monument referred to herein as a Re-Bar and Cap is a set ½" steel re-bar eighteen (18") in length with a yellow plastic cap stamped Summit L.S. #2661. All bearings stated herein are referred to Grid North based on Kentucky Single Zone State Plane NAD 83 coordinates.

Beginning at a found 22" Oak with the remains of a fence near the ridge and being a corner a tract of land owned by Donald Green and Reba Greene, husband and wife (D.B. 109 P. 202) and a tract of land owned by Donald Greene and Reba Greene, husband and wife (D.B. 111 P. 276) and a tract of land now or formerly owned by E. H. Evans Heirs (D.B. 46 P. 589).

Thence, leaving the land of Donald and Reba Greene and running down the ridge with the fence line on the property line between Donald Greene and Reba Green, husband and wife, and Johnny Ray Greene and Penny Greene, husband and wife, and E. H. Evans Heirs S 26°04'41" E a distance of 31.92' to a set Re-Bar and Cap; Thence, leaving the line of E.H. Evans Heirs and severing the land of Donald Greene and Reba Green, husband and wife, and Johnny Ray Greene and Penny Greene, husband and wife, N 79°20'45" E a distance of 25.11' to a set Re-Bar and Cap; Thence, up the hill N 10°39'15" W a distance of 37.12' to a point on the ridge and a corner to Donald Green and Reba Greene, husband and wife (D.B. 109 P. 202); Thence, up the ridge S 68°39'16" W a distance of 34.20' to the point of beginning and containing 1,010.00' square feet and 0.02 acres more or less according to a survey conducted by persons under the direct supervision of Steven E. Haywood, PLS 2661 with Summit Engineering, Inc. by August 8th, 2018 and being a portion of the tract of land conveyed to Donald Greene and Reba Green, husband and wife, and Johnny Ray Greene and Penny Greene, husband and wife, by Norieta Sue (Greene) Dickerson and others by deed of conveyance dated September 14, 2011 and recorded in Deed Book 111 Page 276. Both deeds of reference are in the records in the Elliott County Court Clerk's office.

Steven E. Haywood, PLS #2661

Date: 11/05/2018

DOCUMENT NO: 12286
RECORDED ON:11/26/2018 1:22:00 PM
COUNTY CLERK: JENNIFER CARTER
COUNTY: ELLIOTT COUNTY
BOOK: D123 PAGE: 499 - 503 DEED

Signed: JT Janet Jackett

Filing

CONTAINS

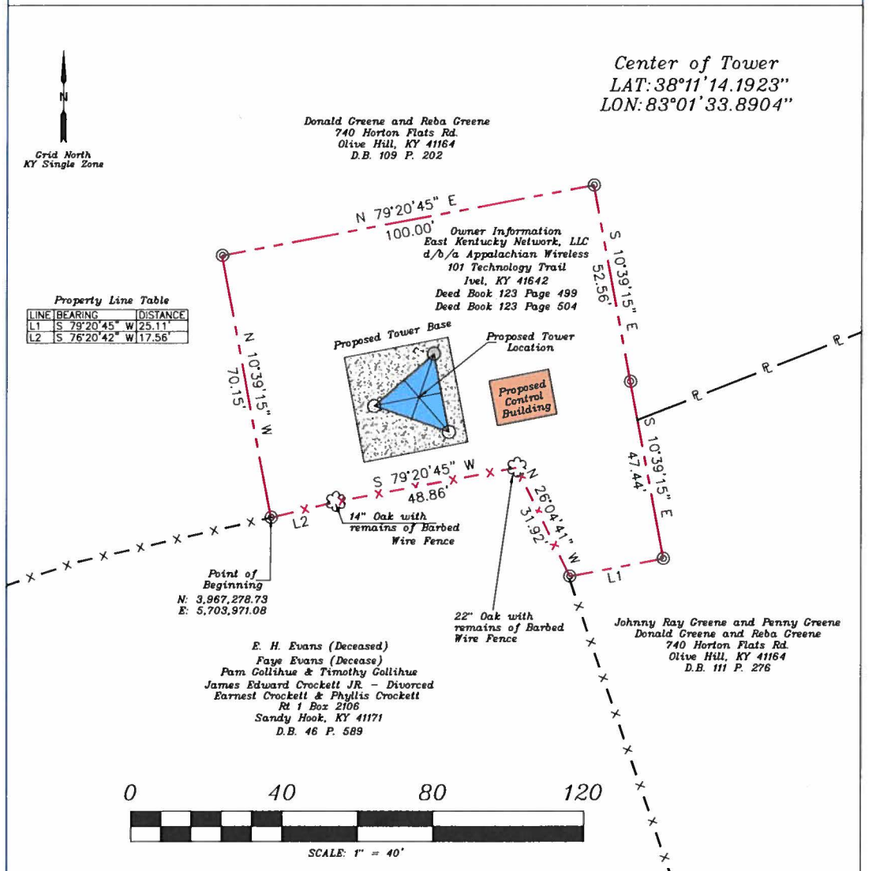
LARGE OR OVERSIZED

DRAWINGS

RECEIVED ON:
5/10/2019

HORTON FLATS TOWER

SITE SURVEY WITH PROPOSED TOWER & BUILDING LOCATION



Property Line Table

LINE	BEARING	DISTANCE
L1	S 79°20'45" W	25.11'
L2	S 76°20'42" W	17.56'

Legend

- 1/2" re-bar set with a plastic cap Stamped Summit Engineering, L.S. #2661 Unless otherwise noted.
- Monument - Found - Type Noted
- Tree (Type Noted)
- Boundary Line
- Property Line
- Barb Wire Fence
- Concrete
- G — Generator
- Proposed Tower Location

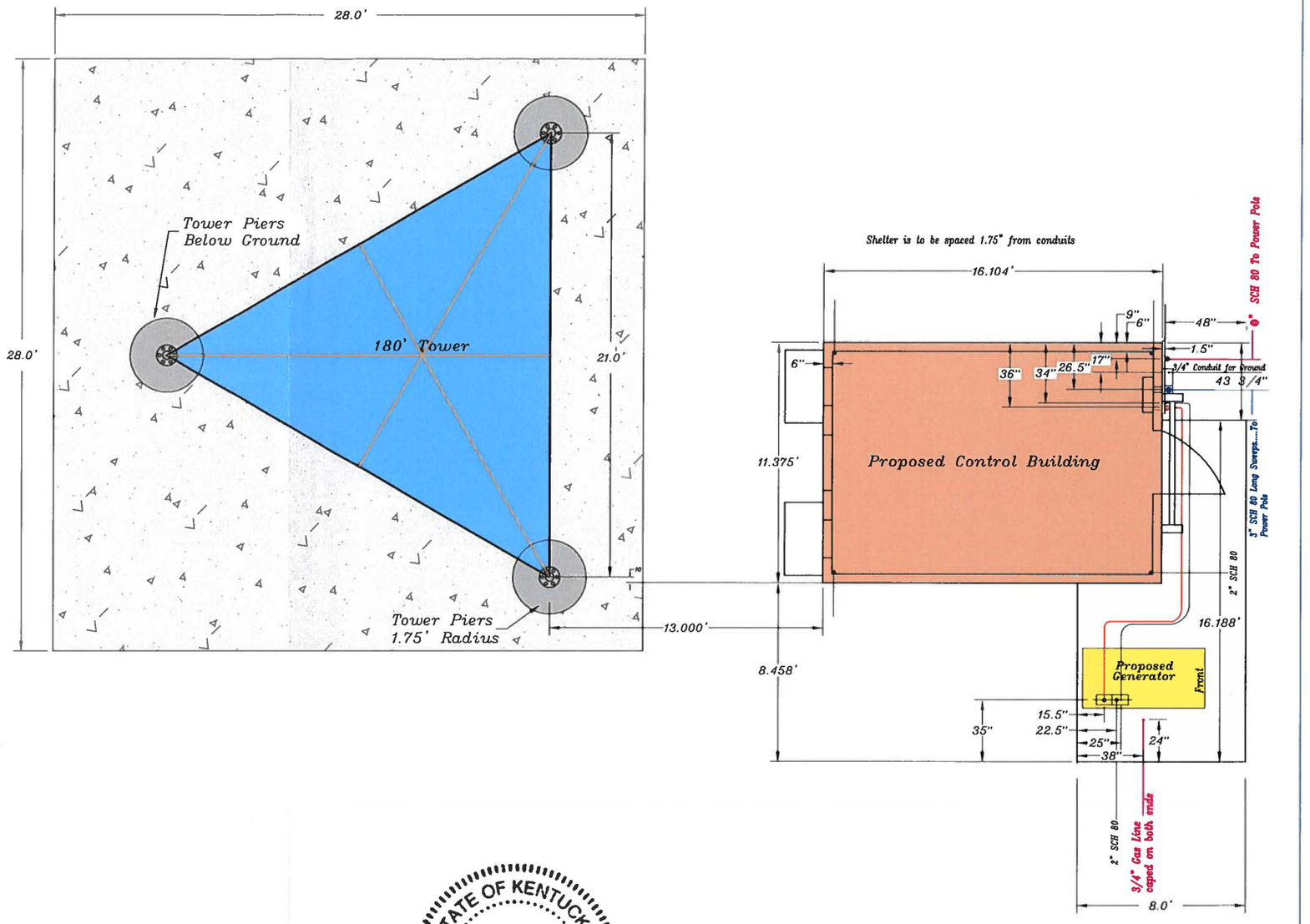
Steven E. Haywood, PLS #2661
265 Hambley Blvd.
Pikeville, KY 41501
606-432-1447

STATE of KENTUCKY
STEVE HAYWOOD
2661
LICENSED PROFESSIONAL LAND SURVEYOR

FAA Certification

In Accordance with FAA Order 8260.19G, Appendix C, I hereby certify that the Obstacle Accuracy Codes for the proposed Tower meets or exceeds accuracy 2C (+50 ft Horizontal and +20 ft Vertical).

Steven E. Haywood, PLS #2661 — Date 4-25-2019



0' 6' 12' 18'

SCALE: 1" = 6'

STATE OF KENTUCKY
JONATHAN R. NEWMAN
29118
LICENSED PROFESSIONAL ENGINEER

Jonathan Newman PE# 29118 — Date 4-26-19

EAST KENTUCKY NETWORK
d/b/a Appalachian Wireless
101 Technology Trail, Ivel, KY 41642

Horton Flats Tower
Site Map
Near Bruin in Elliott County, Kentucky

SUMMIT ENGINEERING, INC.
265 HAMBLEY BLVD.
PIKEVILLE, KY. 41501
(606) 432-1447
PIKEVILLE, LEXINGTON, KY & SOUTH CHARLESTON, WV

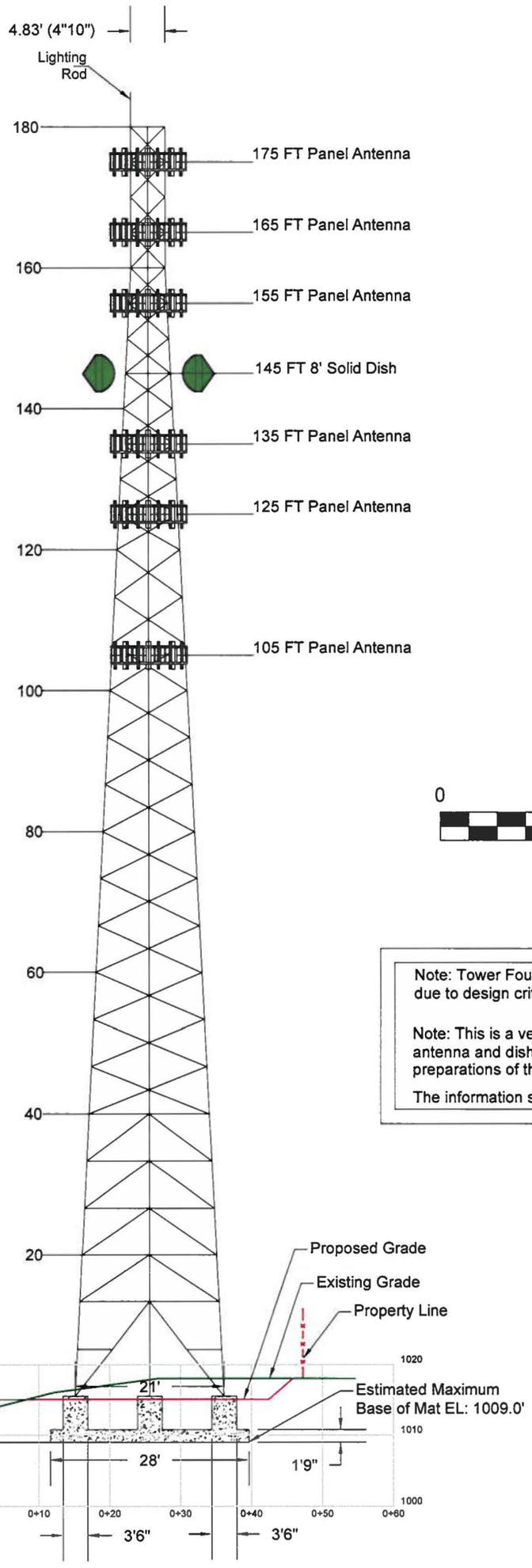
Scale: As Noted	Drawn By: DLM	Chk By: SEH	Apprvd. By: SEH	PER. NO:
Plot Date: 26 APRIL 2019 - 9:59 AM				ATT:

File Name: Z:\East Ky Network\Horton Flats\Site Three\Site Plan\EKN_Horton Flats Site Plan Map.dwg

Horton Flats Tower

VERTICAL PROFILE SKETCH
EAST KENTUCKY NETWORK
d/b/a APPALACHIAN WIRELESS

Vicinity Map
Not to Scale
Google Image



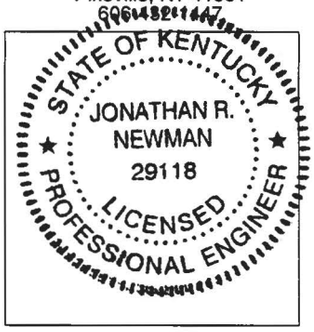
Graphic Scale
1" = 20'

Note: Tower Foundation & distance between Tower Legs may change due to design criteria, by others.

Note: This is a vertical sketch of the tower indicating the proposed antenna and dish elevations. No design criteria was considered in the preparations of this drawing.

The information shown hereon is correct to the best of my knowledge

Jonathan Newman, PE #29118
265 Hambley Blvd.
Pikeville, KY 41501
606 432 1447



Jonathan Newman PE #29118 4-26-19
Jonathan Newman PE #29118 Date

DATE: 04/26/19	FILENAME:	East Kentucky Network d/b/a Appalachian Wireless 101 Technology Trail, Ivel, KY 41642
SCALE: 1"=20'	DISK NO.	Vertical Profile Sketch Horton Flats Tower Elliott County, Kentucky
DRAWN BY: DLM		

SUMMIT ENGINEERING INC.
265 Hambley BLVD
PO Box 3007
Pikeville, KY 41502
606-432-1447
Pikeville, KY
Lexington, KY
S. Charleston, WV

Utility ID	Utility Name	Utility Type	Class	City	State
4107900	365 Wireless, LLC	Cellular	D	Atlanta	GA
4109300	Access Point, Inc.	Cellular	D	Cary	NC
4108300	Air Voice Wireless, LLC	Cellular	A	Bloomfield Hill	MI
4110650	Alliant Technologies of KY, L.L.C.	Cellular	C	Morristown	NJ
44451184	Alltel Communications, LLC	Cellular	A	Basking Ridge	NJ
4110850	AltaWorx, LLC	Cellular	C	Fairhope	AL
4107800	American Broadband and Telecommunications Company	Cellular	C	Toledo	OH
4108650	AmeriMex Communications Corp.	Cellular	D	Dunedin	FL
4105100	AmeriVision Communications, Inc. d/b/a Affinity 4	Cellular	D	Virginia Beach	VA
4110700	Andrew David Balholm dba Norcell	Cellular	C	Clayton	WA
4108600	BCN Telecom, Inc.	Cellular	D	Morristown	NJ
4110550	Blue Casa Mobile, LLC	Cellular	D	Santa Barbara	CA
4108750	Blue Jay Wireless, LLC	Cellular	C	Carrollton	TX
4111050	BlueBird Communications, LLC	Cellular	C	New York	NY
4202300	Bluegrass Wireless, LLC	Cellular	A	Elizabethtown	KY
4107600	Boomerang Wireless, LLC	Cellular	B	Hiawatha	IA
4105500	BullsEye Telecom, Inc.	Cellular	D	Southfield	MI
4110050	CampusSims, Inc.	Cellular	D	Boston	MA
4100700	Cellco Partnership dba Verizon Wireless	Cellular	A	Basking Ridge	NJ
4106600	Cintex Wireless, LLC	Cellular	D	Rockville	MD
4111000	ComApp Technologies LLC	Cellular	C	Melrose	MA
4101900	Consumer Cellular, Incorporated	Cellular	A	Portland	OR
4106400	Credo Mobile, Inc.	Cellular	A	San Francisco	CA
4108850	Cricket Wireless, LLC	Cellular	A	San Antonio	TX
4001900	CTC Communications Corp. d/b/a EarthLink Business I	Cellular	D	Grand Rapids	MI
10640	Cumberland Cellular Partnership	Cellular	A	Elizabethtown	KY
4101000	East Kentucky Network, LLC dba Appalachian Wireless	Cellular	A	Ivel	KY
4002300	Easy Telephone Service Company dba Easy Wireless	Cellular	D	Ocala	FL
4109500	Enhanced Communications Group, LLC	Cellular	D	Bartlesville	OK
4110450	Excellus Communications, LLC	Cellular	D	Chattanooga	TN
4105900	Flash Wireless, LLC	Cellular	C	Concord	NC
4104800	France Telecom Corporate Solutions L.L.C.	Cellular	D	Oak Hill	VA
4109350	Global Connection Inc. of America	Cellular	D	Norcross	GA
4102200	Globalstar USA, LLC	Cellular	B	Covington	LA
4109600	Google North America Inc.	Cellular	A	Mountain View	CA
33350363	Granite Telecommunications, LLC	Cellular	D	Quincy	MA
4106000	GreatCall, Inc. d/b/a Jitterbug	Cellular	A	San Diego	CA
10630	GTE Wireless of the Midwest dba Verizon Wireless	Cellular	A	Basking Ridge	NJ
4110600	Horizon River Technologies, LLC	Cellular	C	Atlanta	GA
4103100	i-Wireless, LLC	Cellular	A	Newport	KY
4109800	IM Telecom, LLC d/b/a Infiniti Mobile	Cellular	D	Tulsa	OK
22215360	KDDI America, Inc.	Cellular	D	New York	NY
10872	Kentucky RSA #1 Partnership	Cellular	A	Basking Ridge	NJ
10680	Kentucky RSA #3 Cellular General	Cellular	A	Elizabethtown	KY
10681	Kentucky RSA #4 Cellular General	Cellular	A	Elizabethtown	KY
4109750	Konatel, Inc. dba telecom.mobi	Cellular	D	Johnstown	PA
4110900	Lunar Labs, Inc.	Cellular	C	Detroit	MI
4107300	Lycamobile USA, Inc.	Cellular	D	Newark	NJ
4108800	MetroPCS Michigan, LLC	Cellular	A	Bellevue	WA
4109650	Mitel Cloud Services, Inc.	Cellular	D	Mesa	AZ
4202400	New Cingular Wireless PCS, LLC dba AT&T Mobility, PCS	Cellular	A	San Antonio	TX
10900	New Par dba Verizon Wireless	Cellular	A	Basking Ridge	NJ
4000800	Nextel West Corporation	Cellular	D	Overland Park	KS
4001300	NPCR, Inc. dba Nextel Partners	Cellular	D	Overland Park	KS

4001800	OnStar, LLC	Cellular	A	Detroit	MI
4110750	Onvoy Spectrum, LLC	Cellular	C	Plymouth	MN
4109050	Patriot Mobile LLC	Cellular	D	Southlake	TX
4110250	Plintron Technologies USA LLC	Cellular	D	Bellevue	WA
33351182	PNG Telecommunications, Inc. dba PowerNet Global Communications	Cellular	D	Cincinnati	OH
4202100	Powertel/Memphis, Inc. dba T-Mobile	Cellular	A	Bellevue	WA
4107700	Puretalk Holdings, LLC	Cellular	A	Covington	GA
4106700	Q Link Wireless, LLC	Cellular	A	Dania	FL
4108700	Ready Wireless, LLC	Cellular	B	Hiawatha	IA
4110500	Republic Wireless, Inc.	Cellular	D	Raleigh	NC
4111100	ROK Mobile, Inc.	Cellular	C	Culver City	CA
4106200	Rural Cellular Corporation	Cellular	A	Basking Ridge	NJ
4108550	Sage Telecom Communications, LLC dba TruConnect	Cellular	D	Los Angeles	CA
4109150	SelecTel, Inc. d/b/a SelecTel Wireless	Cellular	D	Freemont	NE
4106300	SI Wireless, LLC	Cellular	A	Carbondale	IL
4110150	Spectrotel, Inc. d/b/a Touch Base Communications	Cellular	D	Neptune	NJ
4200100	Sprint Spectrum, L.P.	Cellular	A	Atlanta	GA
4200500	SprintCom, Inc.	Cellular	A	Atlanta	GA
4109550	Stream Communications, LLC	Cellular	D	Dallas	TX
4110200	T C Telephone LLC d/b/a Horizon Cellular	Cellular	D	Red Bluff	CA
4202200	T-Mobile Central, LLC dba T-Mobile	Cellular	A	Bellevue	WA
4002500	TAG Mobile, LLC	Cellular	D	Carrollton	TX
4109700	Telecom Management, Inc. dba Pioneer Telephone	Cellular	D	South Portland	ME
4107200	Telefonica USA, Inc.	Cellular	D	Miami	FL
4108900	Telrite Corporation dba Life Wireless	Cellular	D	Covington	GA
4108450	Tempo Telecom, LLC	Cellular	D	Kansas City	MO
4109950	The People's Operator USA, LLC	Cellular	D	New York	NY
4109000	Ting, Inc.	Cellular	A	Toronto	ON
4110400	Torch Wireless Corp.	Cellular	D	Jacksonville	FL
4103300	Touchtone Communications, Inc.	Cellular	D	Whippany	NJ
4104200	TracFone Wireless, Inc.	Cellular	D	Miami	FL
4002000	Truphone, Inc.	Cellular	D	Durham	NC
4110300	UVNV, Inc.	Cellular	D	Costa Mesa	CA
4105700	Virgin Mobile USA, L.P.	Cellular	A	Atlanta	GA
4110800	Visible Service LLC	Cellular	C	Lone Tree	CO
4106500	WiMacTel, Inc.	Cellular	D	Palo Alto	CA
4110950	Wing Tel Inc.	Cellular	C	New York	NY
4109900	Wireless Telecom Cooperative, Inc. dba theWirelessFreeway	Cellular	D	Louisville	KY