

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

**APPLICATION OF KENTUCKY RSA #4 CELLULAR
GENERAL PARTNERSHIP FOR ISSUANCE OF A
CERTIFICATE OF PUBLIC CONVENIENCE AND
NECESSITY TO CONSTRUCT A CELL SITE
(WEBB) IN RURAL SERVICE AREA #4
(GREEN) OF THE COMMONWEALTH
OF KENTUCKY**

CASE NO. 2008-00079

RECEIVED

APR 11 2008

PUBLIC SERVICE
COMMISSION

**APPLICATION FOR A CERTIFICATE
OF PUBLIC CONVENIENCE AND NECESSITY (WEBB)**

Kentucky RSA #4 Cellular General Partnership ("Kentucky RSA #4"), through counsel, pursuant to KRS 278.020 and 278.040 and 807 KAR 5:063, hereby submits this application for a certificate of public convenience and necessity to construct a cell site to be known as the Webb cell site in and for rural service area ("RSA") #4 of the Commonwealth of Kentucky, namely the counties of Anderson, Green, Hardin, Larue, Marion, Mercer, Nelson, Spencer, Taylor and Washington, Kentucky.

1. As required by 807 KAR 5:001 Sections 8(1) and (3), and 807 KAR 5:063, Kentucky RSA #4 states that it is a Kentucky general partnership whose full name and post office address are:
Kentucky RSA #4 Cellular General Partnership, 2902 Ring Road, Elizabethtown, Kentucky, 42701.
2. Pursuant to 807 KAR § 1 (1)(b), a copy of the applicant's applications to and approvals from the Federal Aviation Administration and Kentucky Airport Zoning Commission are Exhibit "A".
3. Pursuant to 807 KAR 5:063 §1(1)(d), applicant is submitting as Exhibit "B" a geotechnical investigation report, signed and sealed by a professional engineer registered in Kentucky, that includes boring logs, foundation design recommendations, and a finding as to the susceptibility of the area surrounding the proposed site to flood hazard.
4. Pursuant to 807 KAR 5:063 §1(1)(e), clear directions from the county seat to the proposed site, including highway numbers and street names, if applicable, with the telephone number of the person who prepared the directions are Exhibit "C".

5. Pursuant to 807 KAR 5:063 §1(1)(f), a copy of the lease for the property on which the tower is proposed to be located, is Exhibit “D”.

6. Pursuant to 807 KAR §1(1)(g), experienced personnel will manage and operate the Webb cell site. The President of Bluegrass Cellular Inc., Mr. Ron Smith, is ultimately responsible for all construction and operations of the cellular system of Kentucky RSA #4, of which system the Webb cell site will be a part. Bluegrass Cellular Inc. provides management services to Kentucky RSA #4 under a management contract, just as it does with three (3) other wireless carriers in the Commonwealth. And, Bluegrass Cellular Inc. has been providing these management services to these other wireless carriers for well over a decade. This extensive management experience with Bluegrass Cellular demonstrates that Bluegrass Cellular Inc.'s management and technical ability to supervise the operations of a wireless carrier.

7. Pursuant to 807 KAR 5:063 §1(1)(g), Eastpointe Engineering Group, LLC is responsible for the design specifications of the proposed tower (identified in Exhibit “B”).

8. Pursuant to 807 KAR 5:063 §1(1)(h), a site development plan or survey, signed and sealed by a professional engineer registered in Kentucky, that shows the proposed location of the tower and all easements and existing structures within 500 feet of the proposed site on the property on which the tower will be located, and all easements and existing structures within 200 feet of the access drive, including the intersection with the public street system, is Exhibit “B”.

9. Pursuant to 807 KAR 5:063 §1(1)(i), a vertical profile sketch of the tower, signed and sealed by a professional engineer registered in Kentucky, indicating the height of the tower and the placement of all antennas is Exhibit “B”.

10. Pursuant to 807 KAR 5:063 §1(1)(j), the tower and foundation design plans and a description of the standard according to which the tower was designed, signed and sealed by a professional engineer registered in Kentucky, is Exhibit “B”.

11. Pursuant to 807 KAR 5:063 § 1 (1)(k), a map, drawn to a scale no less than one (1) inch equals 200 feet, that identifies every structure and every owner of real estate within 500 feet of the proposed tower, is Exhibit "E".

12. Pursuant to 807 KAR 5:063 § 1 (1)(l), applicant's legal counsel hereby affirms that every person who owns property within 500 feet of the proposed tower has been: (i) notified by certified mail, return receipt requested, of the proposed construction; (ii) given the commission docket number under which the application will be processed; and (iii) informed of his right to request intervention.

13. Pursuant to KRS 278.665(2), applicant's legal counsel hereby affirms that every person who, according to the records of the property valuation administrator, owns property contiguous to the property where the proposed cellular antenna tower will be located has been: (i) notified by certified mail, return receipt requested, of the proposed construction; (ii) given the commission docket number under which the application will be processed; and (iii) informed of his right to request intervention.

14. Pursuant to 807 KAR 5:063 § 1(1)(m), a list of the property owners who received the notice together with copies of the certified letters sent to listed property owners, is Exhibit "F".

15. Pursuant to 807 KAR 5:063 § 1 (1)(n), applicant's legal counsel hereby affirms that the Green County Judge Executive has been: (i) notified by certified mail, return receipt requested, of the proposed construction; (ii) given the commission docket number under which the application will be processed; and (iii) informed of its right to request intervention.

16. Pursuant to 807 KAR 5:063 § 1(1)(o), a copy of the notice sent to the Green County Judge Executive is Exhibit "G".

17. Pursuant to 807 KAR 5:063 § 1 (1)(p), applicant's legal counsel hereby affirms that (i) two written notices meeting subsection two (2) of this section have been posted, one in a visible location on the proposed site and one on the nearest public road; and (ii) the notices shall remain posted for at least two weeks after the application has been filed.

18. Pursuant to 807 KAR 5:063 § 1 (2)(a), applicant's legal counsel affirms that:

(a) A written notice, of durable material at least two (2) feet by four (4) feet in size, stating that "***Kentucky RSA #4 Cellular General Partnership proposes to construct a telecommunications tower on this site,***" including the addresses and telephone numbers of the applicant and the Kentucky Public Service Commission, has been posted and shall remain in a visible location on the proposed site until final disposition of the application; and

(b) A written notice, of durable material at least two (2) feet by four (4) feet in size, stating that "***Kentucky RSA #4 Cellular General Partnership proposes to construct a telecommunications tower near this site,***" including the addresses and telephone numbers of the applicant and the Kentucky Public Service Commission, has been posted on the public road nearest the site.

A copy of each sign is attached as Exhibit "H".

19. Pursuant to 807 KAR 5:063 § 1 (1)(q), a statement that notice of the location of the proposed construction has been published in a newspaper of general circulation in the county in which the construction is proposed is attached as Exhibit "I".

20. Pursuant to 807 KAR 5:063 § 1(1)(r), the cell site, which has been selected, is in a relatively undeveloped area in Magnolia, Kentucky.

21. Pursuant to 807 KAR 5:063 §1(1)(s), Kentucky RSA #4 has considered the likely effects of the installation on nearby land uses and values and has concluded that there is no more suitable location reasonably available from which adequate service to the area can be provided, and that there is no reasonably available opportunity to co-locate. Kentucky RSA #4 has attempted to co-locate on towers designed to host multiple wireless service providers' facilities or existing structures, such as a telecommunications tower, or another suitable structure capable of supporting the utility's facilities.

22. Pursuant to 807 KAR 5:063 § 1(1)(t), attached as Exhibit "J" is a map of the area in which the tower is proposed to be located, that is drawn to scale and that clearly depicts the search area in which a site should, pursuant to radio frequency requirements, be located.

23. Pursuant to KRS 100.987(2)(a), a grid map, that is drawn to scale, that shows the location of all existing cellular antenna towers and that indicates the general position of proposed construction sites for new cellular antenna towers is Exhibit "K".

24. No reasonably available telecommunications tower, or other suitable structure capable of supporting the cellular facilities of Kentucky RSA #4 Cellular and which would provide adequate service to the area exists.

25. Correspondence and communication with regard to this application should be addressed to:

John E. Selent
Holly C. Wallace
DINSMORE & SHOHL LLP
1400 PNC Plaza
500 West Jefferson Street
Louisville, KY 40202
(502) 540-2300
john.selent@dinslaw.com
holly.wallace@dinslaw.com

WHEREFORE, Kentucky RSA #4 Cellular General Cellular Partnership requests the Commission to enter an order:

1. Granting a certificate of public convenience and necessity to construct the Webb cell site;
- and
2. Granting all other relief as appropriate.

Respectfully submitted,



John E. Selent
Holly C. Wallace
DINSMORE & SHOHL LLP
1400 PNC Plaza
500 West Jefferson Street
Louisville, KY 40202
(502) 540-2300
john.selent@dinslaw.com
holly.wallace@dinslaw.com

Notice of Proposed Construction or Alteration (7460-1)

Project Name: BLUEG-000081472-07 **Sponsor:** Bluegrass Cellular, Inc.

Details for Case : Webbs

Show Project Summary

Case Status																					
ASN: 2007-ASO-6328-OE	Date Accepted: 11/05/2007																				
Status: Accepted	Date Determined:																				
	Letters: None																				
Construction / Alteration Information																					
Notice Of: Construction	Structure Summary																				
Duration: Permanent	Structure Type: Antenna Tower																				
<i>if Temporary :</i> Months: Days:	Structure Name: Webbs																				
Work Schedule - Start: 01/15/2008	FCC Number:																				
Work Schedule - End: 01/20/2008	Prior ASN:																				
State Filing: Filed with State																					
Structure Details																					
Latitude: 37° 15' 19.8" N	Common Frequency Bands																				
Longitude: 85° 35' 11.9" W	<table border="1"> <thead> <tr> <th>Low Freq</th> <th>High Freq</th> <th>Freq Unit</th> <th>ERP</th> <th>ERP Unit</th> </tr> </thead> <tbody> <tr> <td>824</td> <td>849</td> <td>MHz</td> <td>500</td> <td>W</td> </tr> <tr> <td>851</td> <td>866</td> <td>MHz</td> <td>500</td> <td>W</td> </tr> <tr> <td>869</td> <td>894</td> <td>MHz</td> <td>500</td> <td>W</td> </tr> </tbody> </table>	Low Freq	High Freq	Freq Unit	ERP	ERP Unit	824	849	MHz	500	W	851	866	MHz	500	W	869	894	MHz	500	W
Low Freq	High Freq	Freq Unit	ERP	ERP Unit																	
824	849	MHz	500	W																	
851	866	MHz	500	W																	
869	894	MHz	500	W																	
Horizontal Datum: NAD83	Specific Frequencies																				
Site Elevation (SE): 709 (nearest foot)																					
Structure Height (AGL): 255 (nearest foot)																					
Marking/Lighting: Dual-red and medium intensity																					
<i>Other :</i>																					
Nearest City: Greensburg																					
Nearest State: Kentucky																					
Description of Location: 5986 Highway 1464 Greensburg, KY 42743																					
Description of Proposal: To Construct a tower with top-mounted antennas for overall height of 255'.																					



Federal Aviation Administration
 Air Traffic Airspace Branch, ASW-520
 2601 Meacham Blvd.
 Fort Worth, TX 76137-0520

Webbs
 Aeronautical Study No.
 2007-ASO-6328-OE

Issued Date: 11/27/2007

Scott McCloud
 Bluegrass Cellular, Inc.
 2902 Ring Road
 Elizabethtown, KY 42701

**** 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 Webbs
 Location: Greensburg, KY
 Latitude: 37-15-19.800N NAD 83
 Longitude: 85-35-11.900W
 Heights: 255 feet above ground level (AGL)
 964 feet above mean sea level (AMSL)

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

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

It is required that the enclosed FAA Form 7460-2, Notice of Actual Construction or Alteration, be completed and returned to this office any time the project is abandoned or:

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

This determination expires on 05/27/2009 unless:

- (a) extended, revised or terminated by the issuing office.
- (b) 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 POSTMARKED OR DELIVERED TO THIS OFFICE AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE.

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

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

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

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

If we can be of further assistance, please contact our office at (817) 838-1995. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2007-ASO-6328-OE.

Signature Control No: 546429-100869010

(DNE)

Alice Yett
Technician

Attachment(s)
Frequency Data

7460-2 Attached

Frequency Data for ASN 2007-ASO-6328-OE

LOW FREQUENCY	HIGH FREQUENCY	FREQUENCY UNIT	ERP	ERP UNIT
824	849	MHz	500	W
851	866	MHz	500	W
869	894	MHz	500	W



Kentucky Airport Zoning Commission
90 Airport Road, Bldg 400
Frankfort, KY 40601

Webb 5

No.: AS-044-I96-07-213

January 23, 2008

APPROVAL OF APPLICATION

APPLICANT:
BLUEGRASS CELLULAR
SCOTT MCCLOUD
2902 RING ROAD
Elizabethtown, KY 42702

SUBJECT: AS-044-I96-07-213

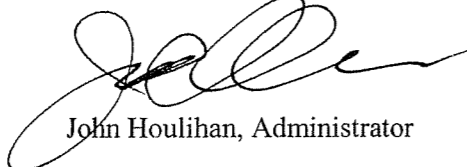
STRUCTURE: Antenna Tower
LOCATION: Greensburg, KY
COORDINATES: 37-15-19.8 N / 85-35-11.9 W
HEIGHT: 255'AGL/964'AMSL

The Kentucky Airport Zoning Commission has approved your application for a permit to construct 255'AGL/964'AMSL Antenna Tower near Greensburg, KY 37-15-19.8 N / 85-35-11.9 W.

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

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

Dual obstruction lighting is required in accordance with 602 KAR 50:100.


John Houlihan, Administrator

Kentucky Transportation Cabinet, Kentucky Airport Zoning Commission, 125 Holmes Street, Frankfort KY 40622

Kentucky Aeronautical Study Number

APPLICATION FOR PERMIT TO CONSTRUCT OR ALTER A STRUCTURE

AS-044-196-07-213

1. APPLICANT - Name, Address, Telephone, Fax, etc.
Scott McCloud
Bluegrass Cellular
2902 Ring Road
Elizabethtown, KY 42702
Tel: 270-769-0339
Fax: 270-737-0580

9. Latitude: 37 ° 15 ' 19 " 8 "
10. Longitude: 85 ° 35 ' 11 " 9 "
11. Datum: NAD 83 NAD 27 Other _____
12. Nearest Kentucky City Greensburg County: Green

2. Representative of Applicant - Name, Address, Telephone, Fax
Leila Rezanavaz
Lukas, Nace, Gutierrez & Sachs, Chartered
1650 Tysons Blvd., Suite 1500
McLean, VA 22102
T: 703-584-8668

13. Nearest Kentucky public use or Military airport:
AAS- Taylor County Airport
14. Distance from #13 to Structure: 16.8 miles
15. Direction from #13 to Structure: WSW
16. Site Elevation (AMSL): 709 Feet
17. Total Structure Height (AGL): 255 Feet

3. Application for: New Construction Alteration Existing
4. Duration: Permanent Temporary (Months _____ Days _____)
5. Work Schedule: Start 1/15/07 End 1/20/07

18. Overall Height (#16 + #17) (AMSL): 964 Feet
19. Previous FAA and/or Kentucky Aeronautical Study Number(s):
N/A

6. Type: Antenna Tower Crane Building Power Line
 Landfill Water Tank Other _____
7. Marking/Painting and/or Lighting Preferred:
 Red Lights and Paint Dual - Red & Medium Intensity White
 White - Medium Intensity Dual - Red & High Intensity White
 White - High Intensity Other _____
8. FAA Aeronautical Study Number 2007-ASO-6328-OE

20. Description of Location: (Attach a USGS 7.5 minute Quadrangle Map or an Airport Layout Drawing with the precise site marked and any certified survey)

Site is located at :
5986 Highway 1464
Greensburg, KY 42743

21. Description of Proposal:
Structure: Tower with top-mounted antennas for overall height of 255' AGL.

ERP: 200 watts

Frequency: Cellular Band B

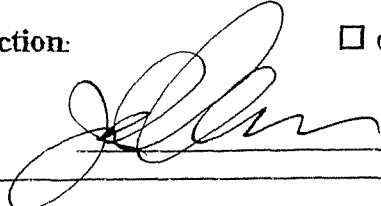
NOV 7 2007

22. Has a "NOTICE OF CONSTRUCTION OR ALTERATION" (FAA Form 7460-1) been filed with the Federal Aviation Administration? No Yes, When 11/5/07

CERTIFICATION: I hereby certify that all the above statements made by me are true, complete and correct to the best of my knowledge and belief

Leila Rezanavaz/ Consulting Engineer Leila Rezanavaz 11/06/07
Printed Name Signature Date

PENALTIES: Persons failing to comply with Kentucky Revised Statutes (KRS 183.861 through 183.990) and Kentucky Administrative Regulations (602 KAR 050: Series) are liable for fines and/or imprisonment as set forth in KRS 183.990(3). Non-compliance with Federal Aviation Administration Regulations may result in further penalties.

Commission Action: Chairman, KAZC Administrator, KAZC
 Approved Disapproved
 Date 1/23/08



Kentucky Airport Zoning Commission
90 Airport Road, Bldg 400
Frankfort, KY 40601

No.: AS-044-196-07-213

CONSTRUCTION/ALTERATION STATUS REPORT

January 23, 2008

AERONAUTICAL STUDY NUMBER: AS-044-196-07-213

BLUEGRASS CELLULAR
SCOTT MC CLOUD
2902 RING ROAD
Elizabethtown, KY 42702

This concerns the permit which was issued to you by the Kentucky Airport Zoning Commission on January 10, 2008. This permit is valid for a period of 18 Month(s) from its date of issuance. If construction is not completed within the said 18-Month period, this permit shall lapse and be void, and no work shall be performed without the issuance of a new permit. When appropriate, please indicate the status of the project in the place below and return this letter to John Houlihan, Administrator, Kentucky Airport Zoning Commission, 90 Airport Road, Bldg 400, Frankfort, KY 40601.

STRUCTURE: Antenna Tower
LOCATION: Greensburg, KY
COORDINATES: 37-15-19.8 N / 85-35-11.9 W
HEIGHT: 255'AGL/964'AMSL

CONSTRUCTION/ALTERATION STATUS

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

2. Construction status is as follows:

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

Date construction was completed. _____

Type of obstruction marking/painting. _____

Type of obstruction lighting. _____

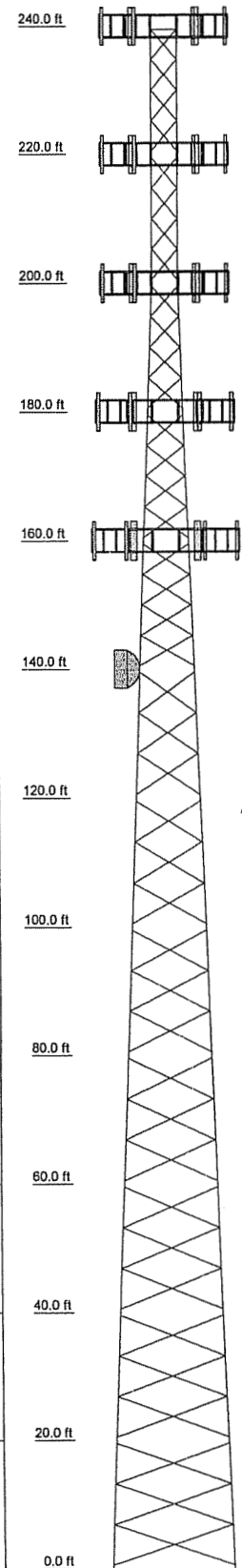
As built coordinates. _____

Miscellaneous Information: _____

DATE _____

SIGNATURE/TITLE _____

Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	
Legs	SR 1 3/4	SR 2 1/4	SR 2 1/2	SR 2 3/4	SR 3	SR 3 1/2	SR 3 3/4	SR 3 3/4	SR 4	SR 4 1/4	SR 4 1/4	SR 4 1/4	
Leg Grade						A572-50							
Diagonals				L1 3/4x1 3/4x3/16	L2x3/16	L2 1/2x2 1/2x3/16	L3x3x3/16	L3x3x1/4	L3 1/2x3 1/2x1/4	L3 1/2x3 1/2x1/4	L3 1/2x3 1/2x1/4	L3 1/2x3 1/2x1/4	
Diagonal Grade						A36							
Top Girts						N.A.							
Face Width (ft)					5.5	7	10	11.5	13	14.5	16	17.5	19
# Panels @ (ft)					20 @ 4.75				21 @ 6.3333				
Weight (K)	0.8	1.1	1.3	1.5	2.0	2.5	2.7	3.2	3.6	4.1	4.5	4.9	32.8



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(2) D100-0042-0041 (Initial)	240	T frame sector Mount (Future Carrier 2)	200
(2) D100-0042-0041 (Initial)	240	(2) RWB 80014/120 (Future)	180
(2) D100-0042-0041 (Initial)	240	(2) RWB 80014/120 (Future)	180
Lightning Rod 1"x10"	240	(2) RWB 80014/120 (Future)	180
Flash Beacon Lighting (Initial)	240	(2) RWB 80014/120 (Future)	180
T frame sector Mount (Initial)	240	T frame sector Mount (Future Carrier 3)	180
T frame sector Mount (Initial)	240	T frame sector Mount (Future Carrier 3)	180
(2) RWB 80014/120 (Future)	220	T frame sector Mount (Future Carrier 3)	180
(2) RWB 80014/120 (Future)	220	(2) RWB 80014/120 (Future)	160
(2) RWB 80014/120 (Future)	220	(2) RWB 80014/120 (Future)	160
(2) RWB 80014/120 (Future)	220	(2) RWB 80014/120 (Future)	160
T frame sector Mount (Future Carrier 1)	220	(2) RWB 80014/120 (Future)	160
T frame sector Mount (Future Carrier 1)	220	T frame sector Mount (Future Carrier 4)	160
(2) RWB 80014/120 (Future)	200	T frame sector Mount (Future Carrier 4)	160
(2) RWB 80014/120 (Future)	200	T frame sector Mount (Future Carrier 4)	160
(2) RWB 80014/120 (Future)	200	HP6-122	140
T frame sector Mount (Future Carrier 2)	200		
T frame sector Mount (Future Carrier 2)	200		

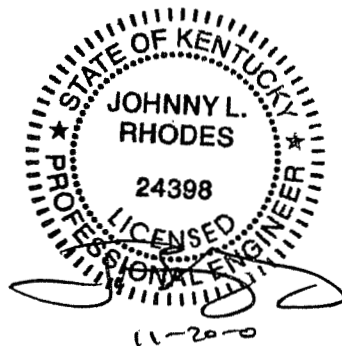
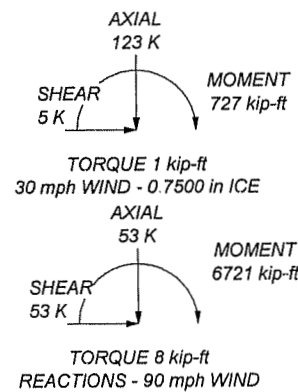
MATERIAL STRENGTH

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

TOWER DESIGN NOTES

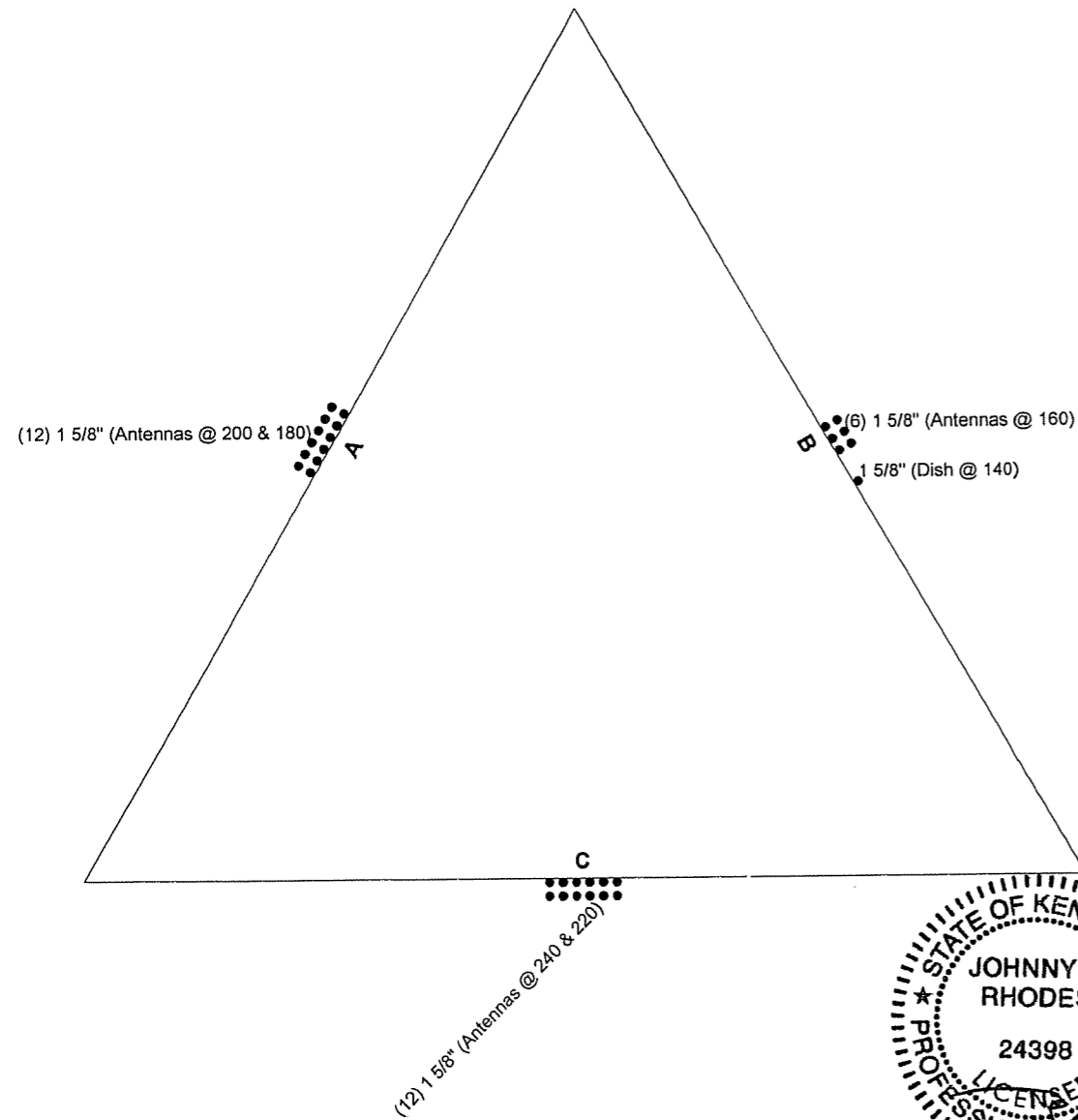
1. Tower is located in Green County, Kentucky.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 90 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 30 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower designed as Structure Class II
7. In no case shall more than (6) lines be exposed to wind. Feedlines may be stacked in up to (2) rows on the inside and outside face of the tower.
8. Final Design 11/19/07. JLR

MAX. CORNER REACTIONS AT BASE:
 DOWN: 426 K
 UPLIFT: -377 K
 SHEAR: 31 K



Eastpointe Engineering Group, LLC 4020 Tull Ave. Muskogee, OK 74403 Phone: 918.683.2169 FAX: 918.682.7618	Job: EII Job #2714--Webbs
	Project: 240' SST/Green County, KY
	Client: Bluegrass Cellular Drawn by: Johnny L. Rhodes, P.E. App'd:
	Code: TIA-222-G Date: 11/20/07 Scale: NTS
	Path: <small>Z:\Project Files\2700 Series\2714 Webbs\Engineering\Final\Tower\Design\2714 240sai Webbs.ari</small> Dwg No: E-1

revenue plan

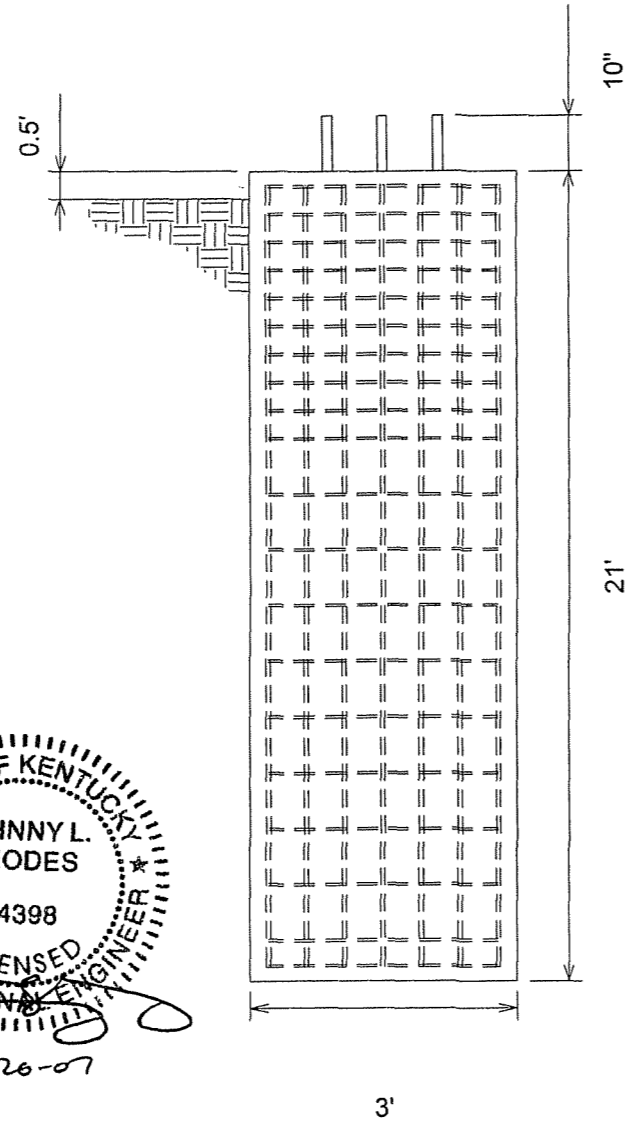


STATE OF KENTUCKY
 JOHNNY L. RHODES
 24398
 LICENSED PROFESSIONAL ENGINEER
 11-20-07

Eastpointe Engineering Group, LLC 4020 Tull Ave. Muskogee, OK 74403 Phone: 918.683.2169 FAX: 918.682.7618	Job: EII Job #2714--Webbs		
	Project: 240' SST/Green County, KY		
	Client: Bluegrass Cellular	Drawn by: Johnny L. Rhodes, P.E.	App'd:
	Code: TIA-222-G	Date: 11/20/07	Scale: NTS
	Path: Z:\Project Files\2700 Series\2714 Webbs\Engineering\Final\Tower\Design\2714_240sst_Webbs.dwg	Dwg No E-7	

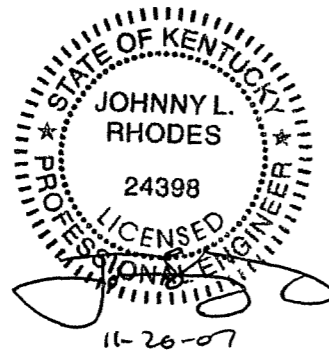
CAISSON DESIGN

Vertical Bars	(14) #9 bars, 20.5' long
Ties	#5 bars @ 6" c/c for the first 6.5' then 12" c/c thereafter



General Notes

1. Concrete shall be placed in accordance with ACI318-02, latest revision.
2. Concrete shall have a minimum 28 day compressive strength of 4000 PSI.
3. Rebar to conform to ASTM A615 grade 60.
4. Rebar used for ties may be A615 grade 40.
5. All rebar to have a minimum of 3" clear cover.
6. All exposed concrete corners to have 3/4" chamfer.
7. Bottom and side surfaces to rest on undisturbed soil.
8. Contractor shall be responsible to review and follow all recommendations of the geotechnical report.



Supplemental Notes

Soil values obtained from Terracon soils report #57077357 Dated 09/14/07.
Use (6) 1 1/4" F1554 Grade 105 Anchor Bolts w/ min 60" embedment.

EASTPOINTE ENGINEERING GROUP, LLC

4020 Tull Ave. Muskogee, OK 74403--Phone 918.683.2169--Fax:918.682.7618.

Client:	Bluegrass Cellular	
Site:	Webbs	
Job:	2714	Drawn by: JLR
Scale:	NTS	Date: 11/20/07

GEOTECHNICAL ENGINEERING REPORT

**WEBBS TELECOMMUNICATION TOWER
6450 HIGHWAY 1464
GREENSBURG, KENTUCKY**

**TERRACON PROJECT NO. 57077357
September 14, 2007**

Prepared For:

**BLUEGRASS CELLULAR PARTNERSHIP
Elizabethtown, Kentucky**

Prepared by:

Terracon
Louisville, Kentucky

Terracon

September 14, 2007

Bluegrass Cellular Partnership
2902 Ring Road
Elizabethtown, Kentucky 42702

Attention: Mr. Doug Updegraff

**Re: Geotechnical Engineering Report
Webbs Telecommunication Tower
6450 Highway 1464
Greensburg, Kentucky
Terracon Project No. 57077357**

Terracon
Consulting Engineers & Scientists

4545 Bishop Lane, Suite 101
Louisville, Kentucky 40218
Phone 502.456.1256
Fax 502.456.1278
www.terracon.com

Dear Mr. Updegraff:

The results of our subsurface exploration are attached. The purpose of this exploration was to obtain information on subsurface conditions at the proposed project site and, based on this information, to provide recommendations regarding the design and construction of the foundations for the proposed tower.

The design parameters and recommendations within this report apply to the existing planned tower height and adjustments up to 20% increase or decrease in tower height, as long as the type of tower does not change. If changes in the height of the tower dictate a change in tower type (i.e. – monopole to a self-support, self-support to a guyed tower), Terracon should be contacted to evaluate our recommendations with respect to these changes.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report, or if we may be of further service to you in any way, please feel free to contact us.

Sincerely,

Terracon

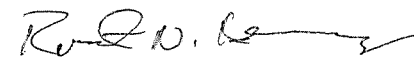

Timothy M. Hitchcock, E.I.T.
Staff Engineer


Timothy G. LaGrow, P.E.
Regional Manager

n:\projects\2007\57077357\geo57077357.doc

Attachments: Geotechnical Engineering Report

Copies: (4) Addressee



Robert N. Kennedy, P.E.
Kentucky No. 23117



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GEOTECHNICAL ENGINEERING REPORT

WEBBS TELECOMMUNICATION TOWER
6450 HIGHWAY 1464
GREENSBURG, KENTUCKY
TERRACON PROJECT NO. 57077357
September 14, 2007

1.0 INTRODUCTION

The purpose of this report is to describe the subsurface conditions encountered in the boring, analyze and evaluate the test data, and provide recommendations regarding the design and construction of foundations and earthwork for the proposed tower. One boring extending to a depth of about 26½ feet below the existing ground surface was drilled at the site. An individual boring log and a boring location plan are included with this report.

2.0 PROJECT DESCRIPTION

Terracon understands the proposed project will consist of the construction of a 240-foot self supporting lattice tower. Exact tower loads are not available, but based on our past experience are anticipated to be as follows:

Vertical Load:	600 kips
Horizontal Shear:	80 kips
Uplift:	500 kips

A small, lightly loaded equipment building will also be constructed. Wall and floor loads for this building are not anticipated to exceed 1 kip per linear foot and 100 pounds per square foot, respectively. The subject site consists of an approximate 100- by 100-foot parcel of land located at 6450 Highway 1464. The site is located in a grass covered field with about 8 feet of elevational relief. Based on the provided drawings and site information, the approximate elevation at the center of tower is EL. 720. We have assumed cuts and/or fills up to 4 feet will be required to reach the planned site grades.

3.0 EXPLORATION PROCEDURES

3.1 Field Exploration

The subsurface exploration consisted of drilling and sampling one boring at the site to a depth of about 26½ feet below existing grade. The boring was advanced at the center of the tower, staked by the project surveyor. The ground surface elevation at the boring location was obtained from drawings and information provided by the client. The location and elevation of the boring should be considered accurate only to the degree implied by the means and methods used to define them.

The boring was drilled with a truck-mounted rotary drill rig using hollow stem augers to advance the borehole. Representative soil samples were obtained by the split-barrel sampling procedure in general accordance with the appropriate standard. In the split-barrel sampling procedure, the number of blows required to advance a standard 2-inch O.D. split-barrel sampler the last 12 inches of the typical total 18-inch penetration by means of a 140-pound hammer with a free fall of 30 inches, is the standard penetration resistance (SPT) value (N-Value). This value is used to estimate the in-situ relative density of cohesionless soils and the consistency of cohesive soils. The sampling depths, penetration distance, and SPT N-Values are shown on the boring log. The samples were sealed and delivered to the laboratory for testing and classification.

Auger refusal was encountered at a depth of about 16½ feet below the existing ground surface. The boring was extended into the refusal materials using a diamond bit attached to the outer barrel of a double core barrel. The inner barrel collected the cored material as the outer barrel was rotated at high speeds to cut the rock. The barrel was retrieved to the surface upon completion of each drill run. Once the core samples were retrieved, they were placed in a box and logged. The rock was later classified by an engineer and the "percent recovery" and rock quality designation (RQD) were determined.

The "percent recovery" is the ratio of the sample length retrieved to the drilled length, expressed as a percent. An indication of the actual in-situ rock quality is provided by calculating the sample's RQD. The RQD is the percentage of the length of broken cores retrieved which have core segments at least 4 inches in length compared to each drilled length. The RQD is related to rock soundness and quality as illustrated below:

Table 1 – Rock Quality Designation (RQD)

Relation of RQD and In-situ Rock Quality	
RQD (%)	Rock Quality
90 - 100	Excellent
75 - 90	Good
50 - 75	Fair
25 - 50	Poor
0 - 25	Very Poor

A field log of the boring was prepared by a subcontract driller. This log included visual classifications of the materials encountered during drilling as well as the driller's interpretation of the subsurface conditions between samples. The final boring log included with this report represents an interpretation of the driller's field log and a visual classification of the soil samples made by the Geotechnical Engineer.

3.2 Laboratory Testing

The samples were classified in the laboratory based on visual observation, texture and plasticity. The descriptions of the soils indicated on the boring log are in accordance with the enclosed General Notes and the Unified Soil Classification System. Estimated group symbols according to the Unified Soil Classification System are given on the boring log. A brief description of this classification system is attached to this report.

The laboratory testing program consisted of performing water content tests and an Atterberg Limits test on representative soil samples. Information from these tests was used in conjunction with field penetration test data to evaluate soil strength in-situ, volume change potential, and soil classification. Results of these tests are provided on the boring log.

Classification and descriptions of rock core samples are in accordance with the enclosed General Notes, and are based on visual and tactile observations. Petrographic analysis of thin sections may indicate other rock types. Percent recovery and rock quality designation (RQD) were calculated for these samples and are noted at their depths of occurrence on the boring log.

4.0 EXPLORATORY FINDINGS

4.1 Subsurface Conditions

Conditions encountered at the boring location are indicated on the boring log. Stratification boundaries on the boring log represent the approximate location of changes in soil types and the transition between materials may be gradual. Water levels shown on the boring log represent the conditions only at the time of our exploration. Based on the results of the boring, subsurface conditions on the project site can be generalized as follows.

Underlying approximately 4 inches of topsoil, the boring encountered lean clay (CL) to a depth of about 3½ feet below existing grade. The lean clay exhibited a very stiff consistency based on an SPT N-value of 18 blows per foot (bpf). Below the lean clay the boring encountered fat clay (CH) to the auger refusal depth of about 16½ feet below existing grade. The fat clay exhibited a stiff to very stiff consistency based on SPT N-values ranging from 11 to 24 bpf.

Below a depth of about 16½ feet, rock coring techniques were used to advance the borehole. The recovered sample consisted of very slightly weathered, very close to closely jointed, dark gray and hard limestone. The bedrock at the site appears to be relatively continuous based on a core recovery of 95 percent. The quality of the rock is rated at fair based on a RQD value of 55 percent. Considering the height of the tower and the quality of the bedrock, coring operations were terminated at a depth of 26½ feet below grade.

4.2 Site Geology

A review of the Geologic Map of the Summersville Quadrangle published by the United States Geological Survey (USGS) indicates that the site is underlain by Saint Louis Limestone of the Carboniferous age. The Saint Louis Limestone is comprised of limestone, limestone with dolomitic siltstone and limestone with shale. The unit is typically medium gray to dark gray and frequently contains chert and fossils.

It should be noted that the site is underlain by a limestone formation that is highly susceptible to dissolution along joints and bedding planes in the rock mass. This results in voids and solution channels within the rock strata and a highly irregular bedrock surface. The weathering of the bedrock and subsequent collapse or erosion of the overburden into these openings results in what is referred to as a karst topography. Any construction in karst topography is accompanied by some degree of risk for future internal soil erosion and ground subsidence that could affect the stability of the proposed structures. Our review of the available topographic and geologic mapping noted sinkholes within a 1 mile radius of the property. However, the boring drilled at the site did not disclose any obvious signs of impending overburden collapse..

4.3 Groundwater Conditions

No groundwater was encountered during the auger drilling portion of the borehole. Water was used to advance the borehole during rock coring operations. The introduction of water into the borehole precluded obtaining accurate groundwater level readings at the time of drilling operations. Long term observation of the groundwater level in monitoring wells, sealed from the influence of surface water, would be required to obtain accurate groundwater levels on the site.

It should be recognized that fluctuations of the groundwater table may occur due to seasonal variations in the amount of rainfall, runoff and other factors not evident at the time the boring was performed. Therefore, groundwater levels during construction or at other times in the life of the structure may be higher or lower than the levels indicated on the boring log. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.

5.0 ENGINEERING RECOMMENDATIONS

Based on the encountered subsurface conditions, the tower can be constructed on drilled piers or a mat foundation. The lightly loaded equipment building can be supported on shallow spread footings. Drilled pier and shallow foundation recommendations are presented in the following paragraphs.

5.1 Tower Foundation

Drilled Pier Alternative: Based on the results of the boring, the following tower foundation design parameters have been developed:

Table 2 - Drilled Pier Foundation Design Parameters

Depth * (feet)	Description **	Allowable Skin Friction (psf)	Allowable End Bearing Pressure (psf)	Allowable Passive Pressure (psf)	Internal Angle of Friction (Degree)	Cohesion (psf)	Lateral Subgrade Modulus (pci)	Strain, &sub50 (in/in)
0 - 3	Topsoil and Lean Clay	Ignore	Ignore	Ignore	-	-	Ignore	Ignore
3 - 16½	Lean to Fat Clay	425	Ignore	1,500	0	1,500	125	0.007
16½ - 26½	Limestone	5,000***	20,000	10,000***	0	100,000***	3,000	0.00001

* Pier inspection is recommended to adjust pier length if variable soil/rock conditions are encountered.

** A total unit weight of 120 and 150 pcf can be estimated for the lean clay and competent limestone, respectively.

*** The pier should be embedded a minimum of 3 feet into limestone to mobilize these higher rock strength parameters. Furthermore, it is assumed the rock socket will be extended using coring techniques rather than blasting/shooting.

The above indicated cohesion, friction angle, lateral subgrade modulus and strain values have no factors of safety, and the allowable skin friction and the passive resistances have factors of safety of 2. The cohesion, internal friction angle, lateral subgrade modulus and strain values given in the above table are based on the boring, published correlation values and Terracon's past experience with similar soil/rock types. These values should, therefore, be considered approximate. To mobilize the higher rock strength parameters, the pier should be socketed at least 3 feet into bedrock. Furthermore, it is assumed that the rock socket is developed using coring rather than blasting techniques. The allowable end bearing pressure provided in the table has an approximate factor of safety of at least 3. Total settlement of drilled piers designed using the above parameters is not anticipated to exceed ½ inch.

The upper 3 feet of topsoil and lean clay should be ignored due to the potential affects of frost action and construction disturbance. To avoid a reduction in uplift and lateral resistance caused by variable bedrock depths and bedrock quality, it is recommended that a minimum pier length and minimum rock socket length be stated on the design drawings. Bedrock was encountered in our boring below a depth of about 16½ feet, but could vary between tower legs, or if the tower is moved from the location of our boring. Considering the site geology, variable rock depths should be anticipated if the tower location is moved from the location of the boring. If the tower center is moved from the planned location, Terracon should be notified to review the recommendations and determine whether an additional boring is required. To facilitate pier length adjustments that may be necessary because of variable rock conditions, it is recommended that a Terracon representative observe the drilled pier excavation.

A drilled pier foundation should be designed with a minimum shaft diameter of 30 inches to facilitate clean out and possible dewatering of the pier excavation. Temporary casing may be required during the pier excavation in order to control possible groundwater seepage and support the sides of the excavation in weak soil zones. Care should be taken so that the sides and bottom of the excavations are not disturbed during construction. The bottom of the shaft should be free of loose soil or debris prior to reinforcing steel and concrete placement.

A concrete slump of at least 6 inches is recommended to facilitate temporary casing removal. It should be possible to remove the casing from a pier excavation during concrete placement provided that the concrete inside the casing is maintained at a sufficient level to resist any earth and hydrostatic pressures outside the casing during the entire casing removal procedure.

Mat Foundation Alternative: The mat foundation can be designed using the following natural soil/engineered fill parameters. These parameters are based on the findings of the boring, a review of published correlation values and Terracon's experience with similar soil conditions. These design parameters also assume that the base of the mat foundation will rest on natural soils or well-graded crushed stone that is compacted and tested on a full time basis.

It is important to note that potentially expansive high plasticity clay was encountered beneath the surficial topsoil and lean clay from a depth of about 3½ feet below existing grade. Assuming the concrete mat is at least 2 feet thick with ample steel reinforcement, we anticipate that ground movement associated with shrinkage and swelling of the clay will have minimal influence on the mat foundation. It is however recommended that the mat bear at least 3 feet below final exterior grade to minimize the effects of seasonal changes in soil water content. Consideration could also be given to excavating the fat clay to a depth of at least 3 feet and backfilling the excavation with crushed stone fill up to the planned bearing elevation.

Table 3 - Mat Foundation Design Parameters

Depth (feet)	Description	Allowable Contact Bearing Pressure (psf)	Allowable Passive Pressure (psf)	Coefficient of Friction, Tan δ	Vertical Modulus of Subgrade Reaction (pci)
0 - 3	Topsoil and Lean Clay	Ignore	Ignore	-	
≥ 3	Lean to Fat Clay or Crushed Stone Fill	3,000	Ignore	0.35	150

To assure that soft soils are not left under the mat foundation, it is recommended that a geotechnical engineer observe the foundation subgrade prior to concrete placement. Provided the above recommendations are followed, total mat foundation settlements are not anticipated to exceed about 1 inch. Differential settlement should not exceed 50 percent of the total settlement.

5.2 Equipment Building Foundations

The proposed equipment shed may be supported on shallow footings bearing on stiff natural soils. The equipment building foundations should be dimensioned using a net allowable soil bearing pressure of 3,000 pounds per square foot (psf). In using net allowable soil pressures for footing dimensioning, the weight of the footings and backfill over the footings need not be considered. Furthermore, the footings should be at least 12 inches wide and a minimum of 2 feet square.

The geotechnical engineer or a qualified representative should observe the foundation excavations to verify that the bearing materials are suitable for support of the proposed loads. If, at the time of such observation, any soft soils are encountered at the design foundation elevation, the excavations should be extended downward so that the footings rest on stiff soils. If 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 recommended soil bearing value should be considered an upper limit, and any value less than that listed above would be acceptable for the foundation system. Using the value given, total settlement would be about 1 inch or less with differential settlements being less than 75 percent of total settlement. Footings should be placed at a depth of 2 feet, or greater, below finished exterior grade for protection against frost damage.

5.3 Parking and Drive Areas

The drive that accesses the site will be surfaced with crushed stone. Parking and drive areas that are surfaced with crushed stone should have a minimum thickness of 6 inches and be properly placed and compacted as outlined herein. The crushed stone should meet Kentucky Transportation Cabinet specifications and applicable local codes.

A paved section consisting only of crushed graded aggregate base course should be considered a high maintenance section. Regular care and maintenance is considered essential to the longevity and use of the section. Site grades should be maintained in such a manner as to allow for adequate surface runoff. Any potholes, depressions or excessive rutting that may develop should be repaired as soon as possible to reduce the possibility of degrading the soil subgrade.

5.4 Site Preparation

Site preparation should begin with the removal of any topsoil, loose, soft or otherwise unsuitable materials from the construction area. The geotechnical engineer should evaluate the actual stripping depth, along with any soft soils that require undercutting at the time of construction.

Any fill and backfill placed on the site should consist of approved materials that are free of organic matter and debris. Suitable fill materials should consist of well graded crushed stone below the tower foundation and well graded crushed stone or low plasticity cohesive soil elsewhere. Low-plasticity cohesive soil should have a liquid limit of less than 45 percent and a plasticity index of less than 25 percent. The on-site lean clay is considered suitable for re-use as fill. The on-site fat clay soils are considered unsuitable for re-use as fill due to their high plasticity. It is recommended that during construction these soils be further tested and evaluated prior to use as fill. Fill should not contain frozen material and it should not be placed on a frozen subgrade.

The fill should be placed and compacted in lifts of 9 inches or less in loose thickness. Fill placed below structures or used to provide lateral resistance should be compacted to at least 98 percent of the material's maximum standard Proctor dry density (ASTM D-698). Fill should be placed, compacted, and maintained at moisture contents within minus 1 to plus 3 percent of the optimum value determined by the standard Proctor test.

The geotechnical engineer should be retained to monitor fill placement on the project and to perform field density tests as each lift of fill is placed in order to evaluate compliance with the design requirements. Standard Proctor and Atterberg limits tests should be performed on the representative samples of fill materials before their use on the site.

5.5 Resistivity Analysis

Resistivity of the subsurface soils was measured at the site using a Nilsson Model 400 soil resistivity meter. The Wenner Vertical Profiling Method was used. With this array, potential electrodes are centered on a traverse line between the current electrodes and an equal "A" spacing between electrodes is maintained. Resistivity measurements were taken along 2 traverses located along the perimeter of the staked tower compound. Individual resistivity values at 5, 10, 15, 20, 30 and 40 foot spacings are presented on the soil resistivity test sheet in the Appendix.

6.0 GENERAL COMMENTS

Terracon should be retained to review the final design plans and specifications so comments can be made regarding interpretation and implementation of our geotechnical recommendations in the design and specifications. Terracon also should be retained to provide testing and observation during excavation, grading, foundation and construction phases of the project.

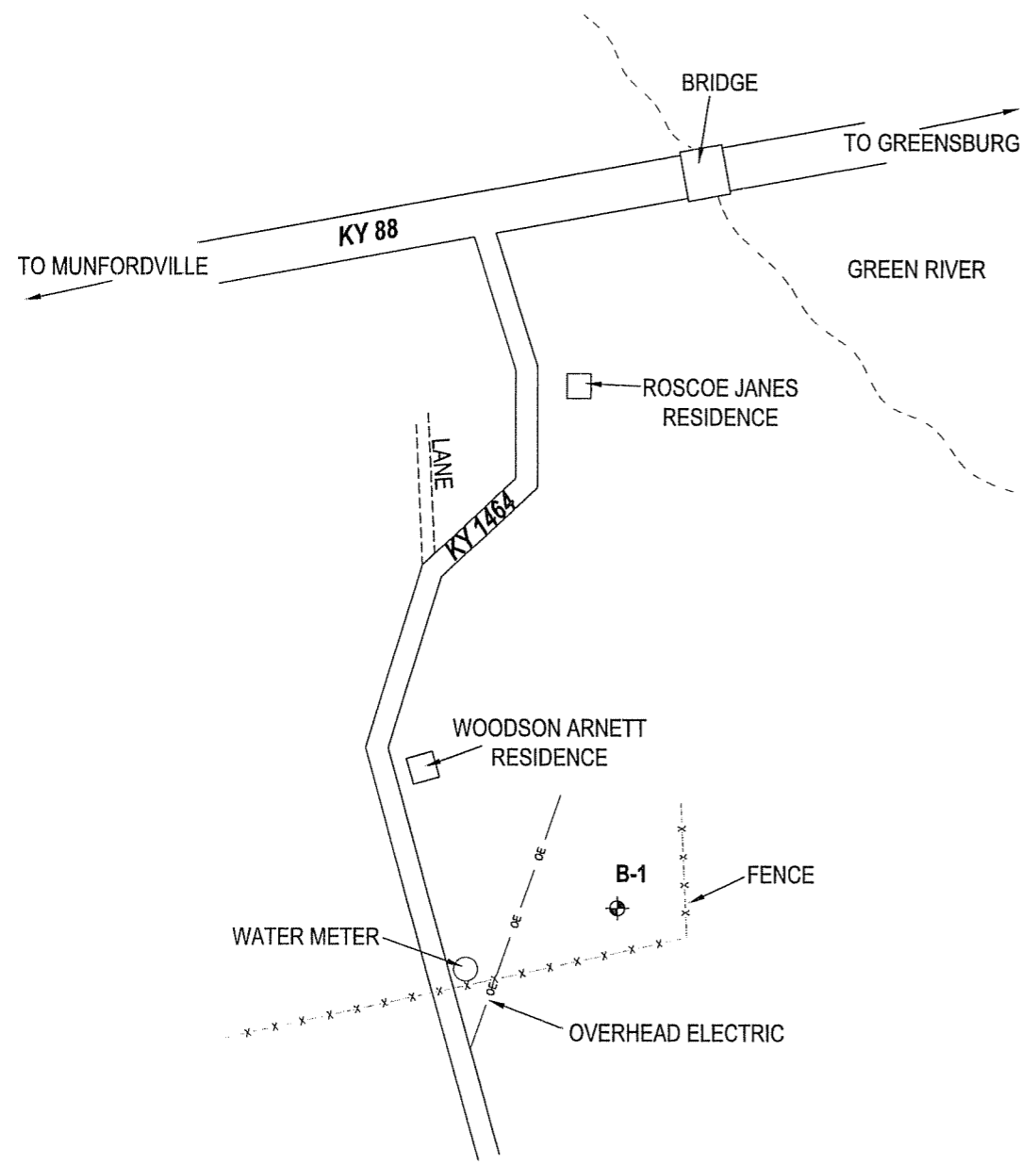
The analysis and recommendations presented in this report are based upon the data obtained from the boring performed at the indicated location and from other information discussed in this report. This report does not reflect variations that may occur across the site, or due to the modifying effects of weather. The nature and extent of such variations

may not become evident until during or after construction. If variations appear, we should be immediately notified so that further evaluation and supplemental recommendations can be provided.

The scope of services for this project does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranties, either express or implied, are intended or made. Site safety, excavation support, and dewatering requirements are the responsibility of others. In the event that changes in the nature, design, or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless Terracon reviews the changes and either verifies or modifies the conclusions of this report in writing.

APPENDIX



NOT TO SCALE

LEGEND

⊕ APPROXIMATE BORING LOCATION

THIS DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Mngr: TMH	Project No. 57077357	<p>4545 Bishop Lane, Suite 101 Louisville, KY 40218 (502) 456-1256 (502) 456-1278</p>	<p align="center">BORING LOCATION DIAGRAM</p> <p align="center">GEO TECHNICAL ENGINEERING REPORT WEBBS TELECOMMUNICATION TOWER</p> <p align="center">64550 HIGHWAY 1461 GREENSBURG, KY</p>	FIG. No.
Drawn By: DWD	Scale: AS SHOWN			1
Checked By: TMH/MRF	File No. GEO57077357-1			
Approved By: EH	Date: SEPT. 2007			

LOG OF BORING NO. B-1

CLIENT Bluegrass Cellular Partnership	PROJECT Proposed Webbs Telecommunication Tower
SITE 6450 Highway 1464 Greensburg, Kentucky	

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	SAMPLES					TESTS	
			USCS SYMBOL	NUMBER	TYPE	RECOVERY, in.	SPT - N BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf
	Approx. Surface Elev.: 720 ft								
	0.3' TOPSOIL	719.5							
	LEAN CLAY with roots, brown, very stiff		CL	1	SS	14	18	16	
	3.5'	716.5							
	FAT CLAY , brown & reddish brown mottled, stiff to very stiff		CH	2	SS	12	24	26	LL=78 PL=28 PI=50
			CH	3	SS	12	17	33	
			CH	4	SS	14	23	31	
			CH	5	SS	18	11	26	
	16.5' Auger Refusal at 16.5 feet, Began Coring	703.5							
	LIMESTONE , very slightly weathered, very close to closely jointed, dark gray, hard			6	DB	95%	RQD 55%		
	26.5' Boring Terminated at 26.5 feet	693.5							

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft				BORING STARTED 9-5-07	
WL	▽ N/E	WD	▽ 6	AB	BORING COMPLETED 9-5-07
WL	▽		▽		RIG Mobile B-61 FOREMAN JS
WL					APPROVED EJH JOB # 57077357



BOREHOLE 99 57077357 LOGS.GPJ TERRACON.GDT 9/14/07



Project: Webbs Tower
Project No.: 57077357
Performed By: JAC
Checked By: TMH

Soil Resistivity

At-Grade Measurements (equal rod spacing)

Location	Depth of Interest (feet)	Electrode Spacing from Center (feet)		Resistance (ohms)	Resistivity (ohm-cm)
		Inner	Outer		
R-1 (North-South)	5	2.5	7.5	22.5	21544
	10	5	15	9.4	18078
	15	7.5	22.5	6.1	17608
	20	10	30	5.2	19725
	30	15	45	4.6	26255
	40	20	60	4.2	32249
R-1 (East-West)	5	2.5	7.5	23.7	22693
	10	5	15	9.7	18480
	15	7.5	22.5	6.3	17953
	20	10	30	5.3	20222
	30	15	45	4.7	26714
	40	20	60	4.4	33781

Resistivity (ohm-cm) = $2 \cdot \pi \cdot a \cdot R \cdot 30.48$

R = resistivity

a = electrode spacing

Equipment Usage: Amec Model 4500 Digital Ground Resistance Tester

Additional Notes: _____

GENERAL NOTES

DRILLING & SAMPLING SYMBOLS:

SS:	Split Spoon - 1-3/8" I.D., 2" O.D., unless otherwise noted	HS:	Hollow Stem Auger
ST:	Thin-Walled Tube - 2" O.D., unless otherwise noted	PA:	Power Auger
RS:	Ring Sampler - 2.42" I.D., 3" O.D., unless otherwise noted	HA:	Hand Auger
DB:	Diamond Bit Coring - 4", N, B	RB:	Rock Bit
BS:	Bulk Sample or Auger Sample	WB:	Wash Boring or Mud Rotary

The number of blows required to advance a standard 2-inch O.D. split-spoon sampler (SS) the last 12 inches of the total 18-inch penetration with a 140-pound hammer falling 30 inches is considered the "Standard Penetration" or "N-value".

WATER LEVEL MEASUREMENT SYMBOLS:

WL:	Water Level	WS:	While Sampling	N/E:	Not Encountered
WCI:	Wet Cave in	WD:	While Drilling		
DCI:	Dry Cave in	BCR:	Before Casing Removal		
AB:	After Boring	ACR:	After Casing Removal		

Water levels indicated on the boring logs are the levels measured in the borings at the times indicated. Groundwater levels at other times and other locations across the site could vary. In pervious soils, the indicated levels may reflect the location of groundwater. In low permeability soils, the accurate determination of groundwater levels may not be possible with only short-term observations.

DESCRIPTIVE SOIL CLASSIFICATION: Soil classification is based on the Unified Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

CONSISTENCY OF FINE-GRAINED SOILS

<u>Unconfined Compressive Strength, Qu, psf</u>	<u>Standard Penetration or N-value (SS) Blows/Ft.</u>	<u>Consistency</u>
< 500	<2	Very Soft
500 - 1,000	2-4	Soft
1,001 - 2,000	5-7	Medium Stiff
2,001 - 4,000	8-15	Stiff
4,001 - 8,000	16-30	Very Stiff
8,000+	30+	Hard

RELATIVE DENSITY OF COARSE-GRAINED SOILS

<u>Standard Penetration or N-value (SS) Blows/Ft.</u>	<u>Relative Density</u>
0 - 3	Very Loose
4 - 9	Loose
10 - 29	Medium Dense
30 - 49	Dense
50+	Very Dense

RELATIVE PROPORTIONS OF SAND AND GRAVEL

<u>Descriptive Term(s) of other constituents</u>	<u>Percent of Dry Weight</u>
Trace	< 15
With	15 - 29
Modifier	> 30

RELATIVE PROPORTIONS OF FINES

<u>Descriptive Term(s) of other constituents</u>	<u>Percent of Dry Weight</u>
Trace	< 5
With	5 - 12
Modifiers	> 12

GRAIN SIZE TERMINOLOGY

<u>Major Component of Sample</u>	<u>Particle Size</u>
Boulders	Over 12 in. (300mm)
Cobbles	12 in. to 3 in. (300mm to 75 mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm)
Silt or Clay	Passing #200 Sieve (0.075mm)

PLASTICITY DESCRIPTION

<u>Term</u>	<u>Plasticity Index</u>
Non-plastic	0
Low	1-10
Medium	11-30
High	30+

GENERAL NOTES
Description of Rock Properties

WEATHERING

Fresh	Rock fresh, crystals bright, few joints may show slight staining. Rock rings under hammer if crystalline.
Very slight	Rock generally fresh, joints stained, some joints may show thin clay coatings, crystals in broken face show bright. Rock rings under hammer if crystalline.
Slight	Rock generally fresh, joints stained, and discoloration extends into rock up to 1 in. Joints may contain clay. In granitoid rocks some occasional feldspar crystals are dull and discolored. Crystalline rocks ring under hammer.
Moderate	Significant portions of rock show discoloration and weathering effects. In granitoid rocks, most feldspars are dull and discolored; some show clayey. Rock has dull sound under hammer and shows significant loss of strength as compared with fresh rock.
Moderately severe	All rock except quartz discolored or stained. In granitoid rocks, all feldspars dull and discolored and majority show kaolinization. Rock shows severe loss of strength and can be excavated with geologist's pick.
Severe	All rock except quartz discolored or stained. Rock "fabric" clear and evident, but reduced in strength to strong soil. In granitoid rocks, all feldspars kaolinized to some extent. Some fragments of strong rock usually left.
Very severe	All rock except quartz discolored or stained. Rock "fabric" discernible, but mass effectively reduced to "soil" with only fragments of strong rock remaining.
Complete	Rock reduced to "soil". Rock "fabric" not discernible or discernible only in small, scattered locations. Quartz may be present as dikes or stringers.

HARDNESS (for engineering description of rock – not to be confused with Moh's scale for minerals)

Very hard	Cannot be scratched with knife or sharp pick. Breaking of hand specimens requires several hard blows of geologist's pick.
Hard	Can be scratched with knife or pick only with difficulty. Hard blow of hammer required to detach hand specimen.
Moderately hard	Can be scratched with knife or pick. Gouges or grooves to ¼ in. deep can be excavated by hard blow of point of a geologist's pick. Hand specimens can be detached by moderate blow.
Medium	Can be grooved or gouged 1/16 in. deep by firm pressure on knife or pick point. Can be excavated in small chips to pieces about 1-in. maximum size by hard blows of the point of a geologist's pick.
Soft	Can be gouged or grooved readily with knife or pick point. Can be excavated in chips to pieces several inches in size by moderate blows of a pick point. Small thin pieces can be broken by finger pressure.
Very soft	Can be carved with knife. Can be excavated readily with point of pick. Pieces 1-in. or more in thickness can be broken with finger pressure. Can be scratched readily by fingernail.

Joint, Bedding and Foliation Spacing in Rock^a

Spacing		Joints		Bedding/Foliation	
Less than 2 in.		Very close		Very thin	
2 in. – 1 ft.		Close		Thin	
1 ft. – 3 ft.		Moderately close		Medium	
3 ft. – 10 ft.		Wide		Thick	
More than 10 ft.		Very wide		Very thick	

Rock Quality Designator (RQD) ^b		Joint Openness Descriptors	
RQD, as a percentage	Diagnostic description	Openness	Descriptor
Exceeding 90	Excellent	No Visible Separation	Tight
90 – 75	Good	Less than 1/32 in.	Slightly Open
75 – 50	Fair	1/32 to 1/8 in.	Moderately Open
50 – 25	Poor	1/8 to 3/8 in.	Open
Less than 25	Very poor	3/8 in. to 0.1 ft.	Moderately Wide
		Greater than 0.1 ft.	Wide

a. Spacing refers to the distance normal to the planes, of the described feature, which are parallel to each other or nearly so.
b. RQD (given as a percentage) = length of core in pieces 4 in. and longer/length of run.

References: American Society of Civil Engineers. Manuals and Reports on Engineering Practice - No. 56. Subsurface Investigation for Design and Construction of Foundations of Buildings. New York: American Society of Civil Engineers, 1976.
U.S. Department of the Interior, Bureau of Reclamation, Engineering Geology Field Manual.

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests^A

			Soil Classification			
			Group Symbol	Group Name ^B		
Coarse Grained Soils More than 50% retained on No. 200 sieve	Gravels More than 50% of coarse fraction retained on No. 4 sieve	Clean Gravels Less than 5% fines ^C	$Cu \geq 4$ and $1 \leq Cc \leq 3^E$	GW	Well-graded gravel ^F	
		Gravels with Fines More than 12% fines ^D	$Cu < 4$ and/or $1 > Cc > 3^E$ Fines classify as ML or MH Fines classify as CL or CH	GP GM GC	Poorly graded gravel ^F Silty gravel ^{F,G,H} Clayey gravel ^{F,G,H}	
	Sands 50% or more of coarse fraction passes No. 4 sieve	Clean Sands Less than 5% fines ^D	$Cu \geq 6$ and $1 \leq Cc \leq 3^E$	SW	Well-graded sand ^I	
		Sands with Fines More than 12% fines ^D	$Cu < 6$ and/or $1 > Cc > 3^E$ Fines classify as ML or MH Fines Classify as CL or CH	SP SM SC	Poorly graded sand ^I Silty sand ^{G,H,I} Clayey sand ^{G,H,I}	
		Silt and Clays Liquid limit less than 50	inorganic	$PI > 7$ and plots on or above "A" line ^J $PI < 4$ or plots below "A" line ^J	CL ML	Lean clay ^{K,L,M} Silt ^{K,L,M}
			organic	Liquid limit - oven dried < 0.75 Liquid limit - not dried	OL	Organic clay ^{K,L,M,N} Organic silt ^{K,L,M,O}
Silt and Clays Liquid limit 50 or more	inorganic	PI plots on or above "A" line	CH	Fat clay ^{K,L,M}		
		PI plots below "A" line	MH	Elastic Silt ^{K,L,M}		
	organic	Liquid limit - oven dried < 0.75	OH	Organic clay ^{K,L,M,P}		
		Liquid limit - not dried	OH	Organic silt ^{K,L,M,Q}		
Highly organic soils	Primarily organic matter, dark in color, and organic odor		PT	Peat		

^ABased on the material passing the 3-in. (75-mm) sieve

^BIf field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

^CGravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

^DSands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

$$^E Cu = D_{60}/D_{10} \quad Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$$

^FIf soil contains $\geq 15\%$ sand, add "with sand" to group name.

^GIf fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

^HIf fines are organic, add "with organic fines" to group name.

^IIf soil contains $\geq 15\%$ gravel, add "with gravel" to group name.

^JIf Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

^KIf soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

^LIf soil contains $\geq 30\%$ plus No. 200 predominantly sand, add "sandy" to group name.

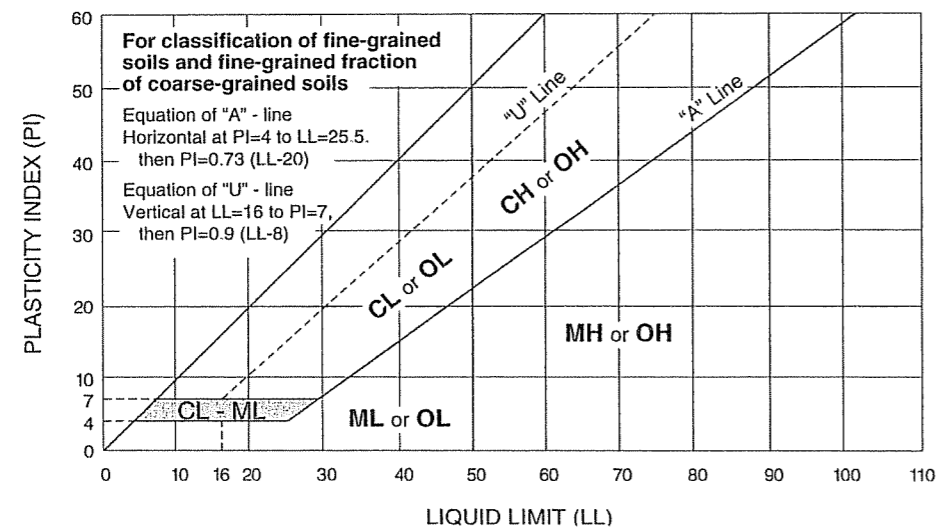
^MIf soil contains $\geq 30\%$ plus No. 200, predominantly gravel, add "gravelly" to group name.

^N $PI \geq 4$ and plots on or above "A" line.

^O $PI < 4$ or plots below "A" line.

^P PI plots on or above "A" line.

^Q PI plots below "A" line.



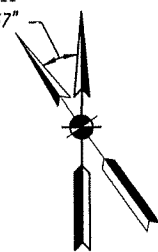
Terracon

Site: Webbs

Lease Boundary and Topographic Survey

Green County, Kentucky

True North
Grid North
00°05'57"



Basis of Bearings

The bearing system of this survey is based upon G.P.S. observations made on October 9, 2007 using the National Geodetic Survey monument "R 257" and the Kentucky State Plane Coordinate System, South Zone, NAD 1983 (1993). This system is grid north.

Power Location Information

Designation: Webbs
Site ID#: None
Horizontal Datum: NAD 1983 (1993)
Latitude: 37°15'19.80" North
Longitude: 85°35'11.90" West
Vertical Datum: NAVD 1988
Ground Elevation: 709.3 feet (216.20 meters)
State Plane Coordinates
Northing: 1,976,206.32 feet (602,348.891 meters)
Easting: 1,687,960.88 feet (514,491.505 meters)

Owner Information

Owners: Judy Jones and Roscoe Jones
Address: 6450 Highway 1464
Greensburg, Kentucky 42743
Contact Person: Roscoe Jones
Phone: (270) 932-4680
PVA Map No. 41-21

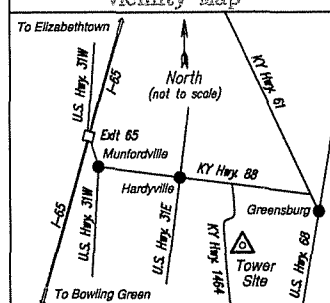
Project Bench Mark

Northing: 1,976,137 feet (602,328 meters)
Easting: 1,687,981 feet (514,498 meters)
Elevation: 713.58 feet (217.500 meters)
Description: A railroad spike set in the north side of a 40' oak, 6' above grade. The tree is approximately 72 feet south of the center of the proposed tower in a wire fence.

Flood Plain Statement

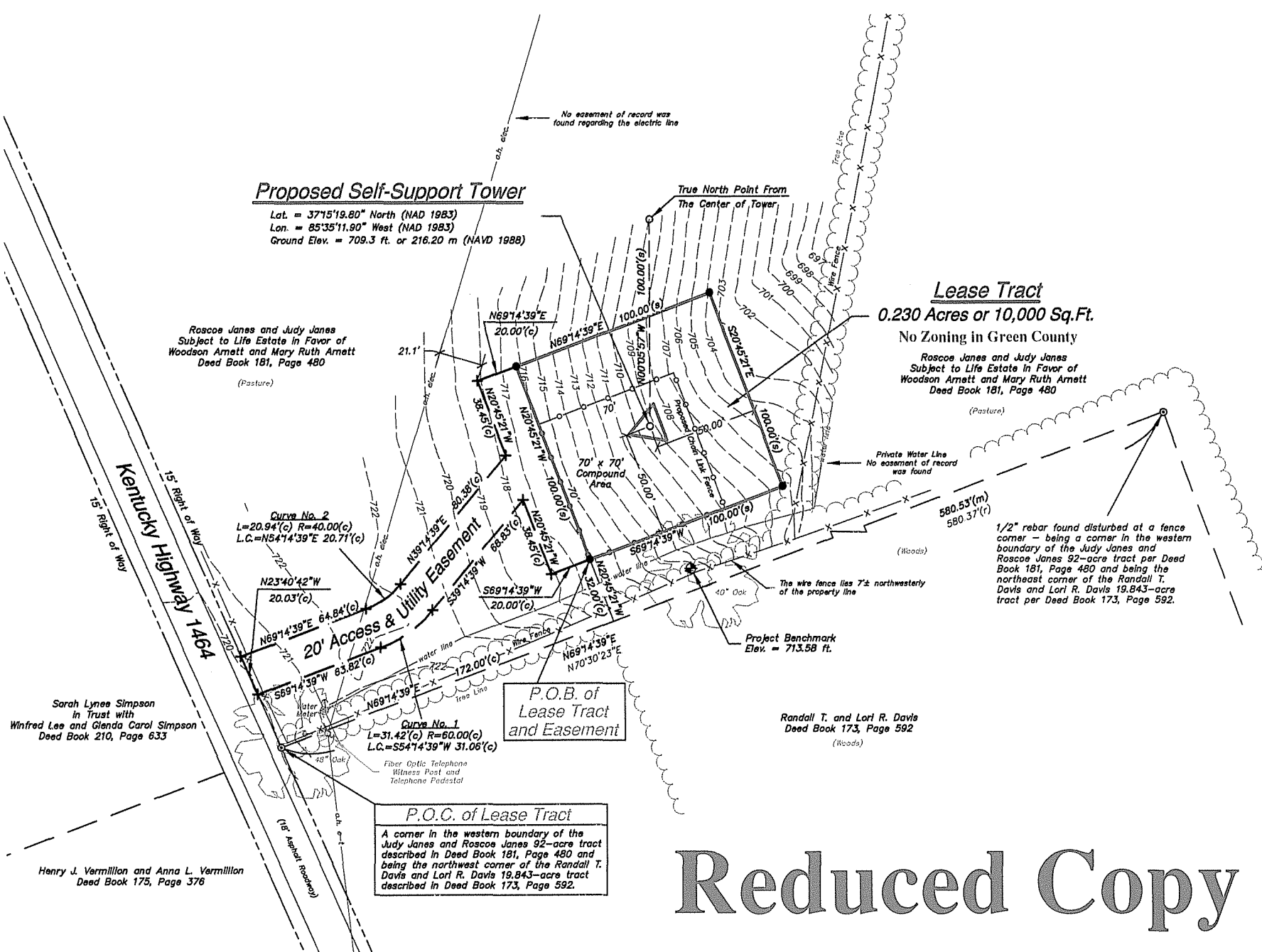
According to the FEMA web site, this is an unmapped area. No flood information is available for the unincorporated areas of Green County, Kentucky. However, a visual inspection of the site would indicate that the subject site does not lie within a flood prone area.

Vicinity Map



Directions to Site

From Elizabethtown, Kentucky: travel south on I-65 about 28 miles to Exit 65 and U.S. Highway 31W near Mundayville; travel south on U.S. Highway 31W for 2.8 miles, passing through Mundayville and crossing the Green River, to Kentucky Highway 88 at the Hart County High School; turn left onto Kentucky Highway 88 and travel east for 19.8 miles, crossing U.S. Highway 31E and passing through Hardyville, to Kentucky Highway 1464 on the right just before reaching the Green River; turn right onto Kentucky Highway 1464 and travel south for 0.7 miles to the tower access lane on the left; turn left onto the access lane and travel northeasterly for about 200 feet to the tower site in a pasture.



Lease Boundary and Easement Description

A tract of land that is located about 200 feet northeasterly of Kentucky Highway 1464 and about 0.7 miles southerly of the intersection of said highway with Kentucky Highway 88 in the Webbs community of Green County, Kentucky; said tract being described as follows:

COMMENCING AT a 1/2-inch rebar found flush with a survey cap inscribed "I.D. Nance KLS 3014 on the northeastern boundary of Kentucky Highway 1464 (15 feet from the centerline); said tract being a corner in the western boundary of the Judy Jones and Roscoe Jones 92-acre tract as described in Deed Book 181, page 480 in the office of the County Clerk of Green County, Kentucky and being the northwest corner of the Randall T. Davis and Lori R. Davis 19.843-acre tract as described in Deed Book 173, page 592 in said Clerk's office; thence, along the western boundary of said Jones tract and the northern boundary of said Davis tract, North 69 degrees 14 minutes 39 seconds East 172.00 feet; thence North 20 degrees 45 minutes 21 seconds 39 seconds East 100.00 feet to a rebar set flush with a survey cap inscribed "D.L. Helms PLS 3386" (referred to as a rebar in the remainder of this description) at the POINT OF BEGINNING of this description; thence continue North 20 degrees 45 minutes 21 seconds East 100.00 feet to a rebar set flush; thence North 69 degrees 14 minutes 39 seconds East 100.00 feet to a rebar set flush; thence South 20 degrees 45 minutes 21 seconds East 100.00 feet to a rebar set flush; thence South 69 degrees 14 minutes 39 seconds West 100.00 feet to the point of beginning and containing 0.230 acres (10,000 square feet), more or less.

TOGETHER WITH an access and utility easement from the above-described 0.230-acre lease tract to Kentucky Highway 1464; said easement being described as follows: BEGINNING AT a 5/8-inch rebar set flush with a survey cap inscribed "D.L. Helms PLS 3386" at the south corner of the above-described 0.230-acre lease tract; thence South 69 degrees 14 minutes 39 seconds West 20.00 feet; thence North 20 degrees 45 minutes 21 seconds West 38.45 feet; thence South 39 degrees 14 minutes 39 seconds West 68.83 feet; thence Southwesterly 31.42 feet along an arc to the right and having a radius of 60.00 feet and subtended by a long chord having a bearing of South 54 degrees 14 minutes 39 seconds West and a length of 31.06 feet; thence South 69 degrees 14 minutes 39 seconds West 63.82 feet to the northeastern boundary of Kentucky Highway 1464 (15 feet from the centerline); thence, along said northeastern boundary, North 23 degrees 40 minutes 42 seconds West 20.03 feet; thence, thence North 69 degrees 14 minutes 39 seconds East 64.84 feet; thence Northeasterly 20.94 feet along an arc to the left and having a radius of 40.00 feet and subtended by a long chord having a bearing of North 54 degrees 14 minutes 39 seconds East and a length of 20.71 feet; thence North 39 degrees 14 minutes 39 seconds East 80.38 feet; thence North 20 degrees 45 minutes 21 seconds West 38.45 feet; thence North 69 degrees 14 minutes 39 seconds East 20.00 feet to a rebar set flush with said Helms survey cap at the west corner of the above-described 0.230-acre lease tract; thence South 20 degrees 45 minutes 21 seconds East 100.00 feet to the point of beginning.

The bearing system of these descriptions is based upon the Kentucky State Plane Coordinate System, South Zone, NAD 1983 (1993), as determined by G.P.S. observations made on October 9, 2007 using the National Geodetic Survey monument "R 257". These descriptions are based upon a survey completed by Landmark Surveying Co., Inc. and certified by Darren L. Helms, P.L.S. 3386, on October 24, 2007. This survey is hereby referenced and made a part of these descriptions.

SOURCE OF TITLE: Being a portion of and lying entirely within the land described in deed to Judy Jones and Roscoe Jones on February 21, 1997 in Deed Book 181, page 480 in the office of the County Clerk of Green County, Kentucky.

Reduced Copy

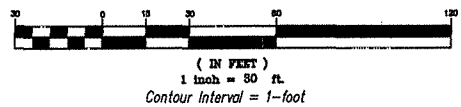
Surveyor's Notes

- This survey is subject to a statement of facts which may be disclosed by an Abstract of Title or a Title Commitment Policy. This documentation was not provided by the client.
- No search of public records has been performed by this firm to determine any defects and/or ambiguities in the title of the parent tract.
- The utilities shown on this plot may or may not represent all of the utilities located on the subject site. The presence of the existing utilities shown was determined by a visual inspection of the property surface. No utility locate was called in prior to this survey. It shall be the responsibility of the contractor to locate any utilities present prior to construction.
- The topographic information contained on this plot was as requested by the client and may or may not represent all of the topographic features located on the subject property.
- According to Mary Ann Blydes Baron, County Judge Executive of Green County, no local planning unit exists which has geographical jurisdiction of the subject tower site. The County Judge Executive's Office may be contacted at 270-932-4024 for confirmation.

Legend

- 5/8" Rebar Set Flush With A Survey Cap Inscribed "D.L. Helms PLS 3386"
- 5/8" Rebar Set Flush - No Cap
- ⊙ 1/2" Rebar Found Flush With A Survey Cap Inscribed "I.D. Nance KLS 3014"
- ⊕ Calculated Position
- Subject Boundaries
- - - Easement Boundaries
- - - Other Boundaries
- Right of Way
- ⊕ Water Meter
- ⊕ Utility Pole
- ⊕ Guy Anchor
- ⊕ Telephone Pedestal
- ⊕ Telephone Witness Post
- (m) Measured
- (r) Recorded
- (c) Calculated
- (s) Set

GRAPHIC SCALE

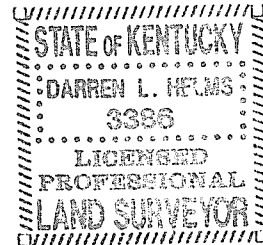


Surveyor's Certification

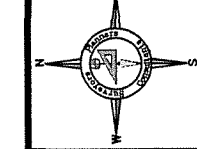
I hereby certify that this plot has been compiled from a survey actually made upon the ground under my direct supervision on October 10, 2007 by the method of random traverse with sideshots. The unadjusted precision ratio of the traverse was 1:37,900 and it was not adjusted. This survey is a Class B survey and the accuracy and precision of this survey meets all the specifications of this class.

Darren L. Helms
Darren L. Helms, P.L.S. 3386

Oct. 24, 2007
Date



Landmark Surveying Co., Inc.
19 N.E. 3rd Street
Washington, Indiana 47501
(812) 257-0950
Email: landmark@landmark.net
Project No. 07-10-0770



Lease Boundary Survey
5986 Highway 1464
Greensburg, Kentucky 42743

Bluegrass Cellular
2902 Ring Road
Elizabethtown, Kentucky 42701

REVISIONS	DATE

DATE: 10-24-07
DRAWN BY: A. Hinder
CHECKED BY: D.L. Helms

SHEET NO. 1 OF 1 SHEETS
FILE NO. webbs.dwg