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 (MANNSVILLE) IN RURAL SERVICE AREA #4 (TAYLOR COUNTY) OF THE COMMONWEALTH OF KENTUCKY

CASE NO. 2017-00110

APPLICATION FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY (MANNSVILLE)

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 and operate a new 280 foot cell tower facility to provide cellular telephone service to be known as the Mannsville 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. The proposed cell tower facility will be located at 433 Christian Church Road, Campbellsville, Kentucky, 42718.

1. Pursuant to the FCC Order, Docket No. 08-165, dated November 18, 2009, ¶ 32, pp. 11 & 12, the Commission has 150 days to process this application for a certificate of public convenience and necessity to construct a cell tower facility. If the Commission fails to act upon this application within 150 days, then Kentucky RSA #4 may seek redress with the U.S. District Court for the Eastern District of Kentucky.[1]

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[1] In the Matter of: Petition for Declaratory Ruling to Clarify Provisions of Section 332(c)(7)(B) to Ensure Timely Siting Review and to Preempt Under Section 253 State and Local Ordinances that Classify all Wireless Siting Proposals as Requiring a Variance, FCC Order, Docket No. 08-165, November 18, 2009, pp 11 and 12. ("Specifically, we find that a "reasonable period of time" is, presumptively 90 days to process personal wireless service facility siting applications requesting collocations, and, also presumptively, 150 days to process all other applications. (Relevant pages attached as Exhibit "L"). Accordingly, if State or local governments do not act upon applications within those timeframes, then a "failure

2. As required by 807 KAR 5:001 Sections 8(l) 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.

3. Pursuant to 807 KAR 5:063 § 1 (1)(b), a copy of the applicant's applications to the Federal Aviation Administration and Kentucky Airport Zoning Commission are Exhibit "A." Written authorizations from these agencies will be supplied to the Commission upon their approval.

4. 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.

5. 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."

6. 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."

7. Pursuant to 807 KAR 5:063 §1(1)(g), experienced personnel will manage and operate the Mannsville 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 Mannsville 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 twenty years. This extensive management experience with

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to act" has occurred and personal wireless service providers may seek redress in a court of competent jurisdiction within 30 days, as provided in Section 332(c)(7)(B)(v).") See also Order Denying Motion for Reconsideration, issued August 4, 2010.

Bluegrass Cellular demonstrates Bluegrass Cellular Inc.'s management and technical ability to supervise the operations of a wireless carrier.

8. Pursuant to 807 KAR 5:063 §1(1)(g), World Tower Company, Inc. is responsible for the design specifications of the proposed tower (identified in Exhibit "B").

9. Pursuant to 807 KAR 5:063 §1(1)(h), a site development plan and 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."

10. 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."

11. 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."

12. 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."

13. 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.

14. 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.

15. 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."

16. Pursuant to 807 KAR 5:063 § 1 (1)(n), applicant's legal counsel hereby affirms that the Taylor 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.

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

18. 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.

19. 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 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 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."

20. 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."

21. Pursuant to 807 KAR 5:063 § 1(1)(r), the cell site, which has been selected, is in a relatively undeveloped, rural area in Campbellsville, Kentucky. Existing land uses are characterized as agricultural.

22. 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.

23. 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.

24. 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."

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

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

John E. Selent
Felix H. Sharpe, II
DINSMORE & SHOHL LLP
101 South Fifth Street
Suite 2500
Louisville, KY 40202
(502) 540-2300
john.selent@dinsmore.com
felix.sharpe@dinsmore.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 Mannsville cell site; and

2. Granting all other relief as appropriate.

Respectfully submitted,

John E. Selent
Felix H. Sharpe, II
DINSMORE & SHOHL LLP
101 South Fifth Street
Suite 2500
Louisville, KY 40202
(502) 540-2300
john.selent@dinsmore.com
felix.sharpe@dinsmore.com

10996811v1

Federal Aviation Administration

Note: Effective 10/28/2016, the format of the FAA Determination of No Hazard to Air Navigation for Temporary Structure letter has changed. Please be sure to review all pages of the determination issued for your ASN and adhere to all conditions stated in the letter.

« OE/AAA

Notice of Proposed Construction or Alteration - Off Airport

Add a new Case Off Airport - Desk Reference Guide V_2016.3.0

Add a New Case Off Airport for Wind Turbines - Met Towers - Desk Reference Guide V_2016.3.0

Project Name: BLUEG-000391812-16 **Sponsor:** Bluegrass Cellular, Inc.

Details for Case : Mannsville

Show Project Summary

Case Status

ASN: 2016-ASO-28767-OE
Status: Accepted
Public Comments: None

Date Accepted: 11/11/2016
Date Determined:
Letters: None
Documents: 11/11/2016 2C Certification ...

Project Documents:
None

Construction / Alteration Information

Notice Of: Construction
Duration: Permanent
if Temporary : Months: Days:
Work Schedule - Start: 12/20/2016
Work Schedule - End: 12/25/2016

For temporary cranes-Does the permanent structure require separate notice to the FAA? To find out, use the Notice Criteria Tool. If separate notice is required, please ensure it is filed. If it is not filed, please state the reason in the Description of Proposal.

State Filing: Filed with State

Structure Summary

Structure Type: Antenna Tower
Structure Name: Mannsville
FDC NOTAM:
NOTAM Number:
FCC Number:
Prior ASN:

Structure Details

Latitude:	37° 22' 33.50" N
Longitude:	85° 12' 18.74" W
Horizontal Datum:	NAD83
Site Elevation (SE):	795 (nearest foot)
Structure Height (AGL):	290 (nearest foot)
Current Height (AGL): ** For notice of alteration or existing provide the current AGL height of the existing structure. Include details in the Description of Proposal*	(nearest foot)
Minimum Operating Height (AGL): ** For aeronautical study of a crane or construction equipment the maximum height should be listed above as the Structure Height (AGL). Additionally, provide the minimum operating height to avoid delays if impacts are identified that require negotiation to a reduced height. If the Structure Height and minimum operating height are the same enter the same value in both fields.*	(nearest foot)
Nacelle Height (AGL): ** For Wind Turbines 500ft AGL or greater*	(nearest foot)
Requested Marking/Lighting:	Dual-red and medium intensity
Other :	
Recommended Marking/Lighting:	
Current Marking/Lighting:	N/A Proposed Structure
Other :	null
Nearest City:	Campbellsville
Nearest State:	Kentucky
Description of Location: *On the Project Summary page upload any certified survey.*	Site is located at: 430 Christian Road Campbellsville, KY 42718
Description of Proposal:	Proposed self-supporting tower with top-mounted antennas for overall height of 290' AGL.

Common Frequency Bands

Low Freq	High Freq	Freq Unit	ERP	ERP Unit
698	806	MHz	1000	W
806	824	MHz	500	W
824	849	MHz	500	W
851	866	MHz	500	W
869	894	MHz	500	W
896	901	MHz	500	W
901	902	MHz	7	W
930	931	MHz	3500	W
931	932	MHz	3500	W
932	932.5	MHz	17	dBW
935	940	MHz	1000	W
940	941	MHz	3500	W
1850	1910	MHz	1640	W
1930	1990	MHz	1640	W
2305	2310	MHz	2000	W
2345	2360	MHz	2000	W

Specific Frequencies

Previous Back to Search Result Next

KENTUCKY AIRPORT ZONING COMMISSION

MATTHEW BEVIN
Governor

200 Mero Street 4th Floor
Frankfort, KY 40622
www.transportation.ky.gov
502-782-4044

January 12, 2017

APPROVAL OF APPLICATION

APPLICANT:
BLUEGRASS CELLULAR
BLUEGRASS CELLULAR
2902 Ring Road
Elizabethtown, KY 42702

SUBJECT: AS-109-AAS-2016-086

STRUCTURE:	Antenna Tower
LOCATION:	Campbellsville, KY
COORDINATES:	37° 22' 33.50" N / 85° 12' 18.74" W
HEIGHT:	290' AGL/1085'AMSL

The Kentucky Airport Zoning Commission has approved your application for a permit to construct 290'AGL/ 1085'AMSL Antenna Tower near Campbellsville, KY 37° 22' 33.50" N / 85° 12' 18.74" W.

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

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

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

John Houlihan
Administrator

MATTHEW BEVIN
Governor

KENTUCKY AIRPORT ZONING COMMISSION
200 Mero Street 4th Floor
Frankfort, KY 40622
www.transportation.ky.gov
502-782-4044

CONSTRUCTION/ALTERATION STATUS REPORT

January 12, 2017

AERONAUTICIAL STUDY NUMBER: AS-109-AAS-2016-086

BLUEGRASS CELLULAR
BLUEGRASS CELLULAR
2902 Ring Road
Elizabethtown, KY 42702

This concerns the permit which was issued to you by the Kentucky Airport Zoning Commission on January 12, 2017. 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, 200 Mero Street 4th Floor Office of Audits, Frankfort, KY, 40622. 502-782-4044.

STRUCTURE:	Antenna Tower
LOCATION:	Campbellsville, KY
COORDINATES:	37° 22' 33.50" N / 85° 12' 18.74" W
HEIGHT:	290' AGL /1085'AMSL

CONSTRUCTION/ALTERATION STATUS

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

2. Construction status is as follows:
   Structure reached its greatest height of _____ ft. AGL
   _____ ft. AMSL on _____ (date).

   Date construction was completed. _____

   Type of obstruction marking/painting. _____

   Type of obstruction lighting. _____

   As built coordinates. _____

   Miscellaneous Information. _____

   DATE _____

   SIGNATURE/TITLE _____

KENTUCKY TRANSPORTATION CABINET

KENTUCKY AIRPORT ZONING COMMISSION

TC 55-2
Rev. 06/2016

APPLICATION FOR PERMIT TO CONSTRUCT OR ALTER A STRUCTURE

APPLICANT (*name*) Scott McCloud	**PHONE** 270-769-0339	**FAX** 270-737-0580	**KY AERONAUTICAL STUDY #** A5-109-AAS-2016-086	
ADDRESS (*street*) 2902 Ring Road	**CITY** Elizabethtown		**STATE** KY	**ZIP** 42702
APPLICANT'S REPRESENTATIVE (*name*) Leila Rezanavaz	**PHONE** 703-584-8668	**FAX** 703-584-8694		
ADDRESS (*street*) 8300 Greensboro Dr. Suite 1200	**CITY** McLean		**STATE** VA	**ZIP** 22102
APPLICATION FOR ☒ New Construction ☐ Alteration ☐ Existing **DURATION** ☒ Permanent ☐ Temporary (*months* *days*)			**WORK SCHEDULE** Start 12/15/16 End 12/20/16	
TYPE ☐ Crane ☐ Building ☒ Antenna Tower ☐ Power Line ☐ Water Tank ☐ Landfill ☐ Other	**MARKING/PAINTING/LIGHTING PREFERRED** ☐ Red Lights & Paint ☐ White- medium intensity ☐ White- high intensity ☒ Dual- red & medium intensity white ☐ Dual- red & high intensity white ☐ Other			
LATITUDE 37°22'33.50"	**LONGITUDE** 85°12'18.74"		**DATUM** ☒ NAD83 ☐ NAD27 ☐ Other	
NEAREST KENTUCKY City Campbellsville County Taylor	**NEAREST KENTUCKY PUBLIC USE OR MILITARY AIRPORT** Taylor County Airport (AAS)			
SITE ELEVATION (AMSL, *feet*) 795	**TOTAL STRUCTURE HEIGHT** (AGL, *feet*) 290		**CURRENT** (*FAA aeronautical study #*) 2016-ASO-28767-OE	
OVERALL HEIGHT (*site elevation plus total structure height, feet*) 1085			**PREVIOUS** (*FAA aeronautical study #*)	
DISTANCE (*from nearest Kentucky public use or Military airport to structure*) 5.8 Miles			**PREVIOUS** (*KY aeronautical study #*)	
DIRECTION (*from nearest Kentucky public use or Military airport to structure*) ENE				

DESCRIPTION OF LOCATION (*Attach USGS 7.5 minute quadrangle map or an airport layout drawing with the precise site marked and any certified survey.*)
Site is located at: 430 Christian Church Road, Cambellsville, KY 42718

DESCRIPTION OF PROPOSAL
Proposed self-supporting tower with top-mounted antennas for overall height of 290' AGL.

FAA Form 7460-1 (*Has the "Notice of Construction or Alteration" been filed with the Federal Aviation Administration?*)
☐ No ☒ Yes, when? 11/11/2016

CERTIFICATION (*I hereby certify that all the above entries, made by me, are true, complete, and correct to the best of my knowledge and belief.*)
PENALITIES (*Persons failing to comply with KRS 183.861 to 183.990 and 602 KAR 050 are liable for fines and/or imprisonment as set forth in KRS 183.990(3). Noncompliance with FAA regulations may result in further penalties.*)

NAME	**TITLE**	**SIGNATURE**	**DATE**
Leila Rezanavaz	Sr. Consulting Engr	Leila Rezanavaz	11/15/2016

COMMISSION ACTION
☐ Chairperson, KAZC
☒ Administrator, KAZC
☒ Approved
☐ Disapproved
SIGNATURE
DATE 12/12-17

LNGS | LUKAS, NACE, GUTIERREZ & SACHS, LLP

November 15, 2016

Telephone
(703) 584-8668

Via Email

Mr. John Houlihan
Kentucky Airport Zoning Commission
90 Airport Road
Building 400
Frankfort, Kentucky 40601

Dear Mr. Houlihan:

Enclosed please find a completed TC 55-2 form, Application for Permit to Construct or Alter a Structure, for a new monopole (Mannsville) near Campbellsville, Kentucky. The Structure, including top-mounted antennas will have an overall height of 290 feet Above Ground Level.

Enclosed Form TC 55-2 and the attached exhibit include all the pertinent information for this existing tower structure. Also enclosed are copies of the completed FAA Form 7460-1 for the proposed site, a non-reduced 7-1/2' U.S. Geological Survey map indicating the exact location of the site, and a 2-C survey.

Please do not hesitate to contact the undersigned if there are questions regarding this matter.

Sincerely,
Leila Rezanavaz
Leila Rezanavaz
Consulting Engineer

Enclosures

KENTUCKY TRANSPORTATION CABINET

KENTUCKY AIRPORT ZONING COMMISSION

APPLICATION FOR PERMIT TO CONSTRUCT OR ALTER A STRUCTURE

APPLICANT (*name*) Scott McCloud	**PHONE** 270-769-0339	**FAX** 270-737-0580	**KY AERONAUTICAL STUDY #**	
ADDRESS (*street*) 2902 Ring Road	**CITY** Elizabethtown		**STATE** KY	**ZIP** 42702
APPLICANT'S REPRESENTATIVE (*name*) Leila Rezanavaz	**PHONE** 703-584-8668	**FAX** 703-584-8694		
ADDRESS (*street*) 8300 Greensboro Dr. Suite 1200	**CITY** McLean		**STATE** VA	**ZIP** 22102
APPLICATION FOR ☒ New Construction ☐ Alteration ☐ Existing **DURATION** ☒ Permanent ☐ Temporary (*months* *days*)			**WORK SCHEDULE** Start 12/15/16 End 12/20/16	
TYPE ☐ Crane ☐ Building ☒ Antenna Tower ☐ Power Line ☐ Water Tank ☐ Landfill ☐ Other	**MARKING/PAINTING/LIGHTING PREFERRED** ☐ Red Lights & Paint ☐ White- medium intensity ☐ White- high intensity ☒ Dual- red & medium intensity white ☐ Dual- red & high intensity white ☐ Other			
LATITUDE 37°22'33.50"	**LONGITUDE** 85°12'18.74"		**DATUM** ☒ NAD83 ☐ NAD27 ☐ Other	
NEAREST KENTUCKY City Campbellsville County Taylor	**NEAREST KENTUCKY PUBLIC USE OR MILITARY AIRPORT** Taylor County Airport (AAS)			
SITE ELEVATION (AMSL, *feet*) 795	**TOTAL STRUCTURE HEIGHT** (AGL, *feet*) 290		**CURRENT** (*FAA aeronautical study #*) 2016-ASO-28767-OE	
OVERALL HEIGHT (*site elevation plus total structure height, feet*) 1085			**PREVIOUS** (*FAA aeronautical study #*)	
DISTANCE (*from nearest Kentucky public use or Military airport to structure*) 5.8 Miles			**PREVIOUS** (*KY aeronautical study #*)	
DIRECTION (*from nearest Kentucky public use or Military airport to structure*) ENE				

DESCRIPTION OF LOCATION (*Attach USGS 7.5 minute quadrangle map or an airport layout drawing with the precise site marked and any certified survey.*)
Site is located at: 430 Christian Church Road, Cambellsville, KY 42718

DESCRIPTION OF PROPOSAL
Proposed self-supporting tower with top-mounted antennas for overall height of 290' AGL.

FAA Form 7460-1 (*Has the "Notice of Construction or Alteration" been filed with the Federal Aviation Administration?*)
☐ No ☒ Yes, when? 11/11/2016

CERTIFICATION (*I hereby certify that all the above entries, made by me, are true, complete, and correct to the best of my knowledge and belief.*)
PENALITIES (*Persons failing to comply with KRS 183.861 to 183.990 and 602 KAR 050 are liable for fines and/or imprisonment as set forth in KRS 183.990(3). Noncompliance with FAA regulations may result in further penalties.*)

NAME	**TITLE**	**SIGNATURE**	**DATE**
Leila Rezanavaz	Sr. Consulting Engr	Leila Rezanavaz	11/15/2016

COMMISSION ACTION

☐ Chairperson, KAZC
☐ Administrator, KAZC

☐ Approved
☐ Disapproved

SIGNATURE **DATE**

Landmark Surveying Co., Inc.

Darren L. Helms, P.L.S., PRESIDENT
Dennis N. Helms, P.L.S., VICE PRESIDENT

15 N.E. 3rd Street
Washington, Indiana 47501
Phone: 812-257-0950
Fax: 812-257-0953
Email: landmark97@sbcglobal.net

2C Certification

November 4, 2016

Designation: Mannsville
Site ID No.: Not Available
Tower Type: Proposed Self-Support Tower
Location: 430 Christian Church Road, Campbellsville, Kentucky 42718

I certify that the latitude, longitude, ground elevation and height of the proposed self-support tower are as follows:

Latitude:	37 degrees 22 minutes 33.50 seconds North	(NAD 83-2011)
Longitude:	85 degrees 12 minutes 18.74 seconds West	(NAD 83-2011)
Ground Elevation:	794.7 feet or 242.23 meters	(NAVD 88)
Proposed Structure Height:	280 feet or 85.3 meters	(above ground level)
Proposed Overall Structure Height:	not available	(above ground level)

The accuracy of the latitude and longitude of the proposed self-support tower is ± 50 feet or ± 15 meters. The ground elevation and structure height are accurate to within ± 20 feet or ± 6 meters.

The information shown above is based upon field observations made on October 19, 2016 using the Kentucky Transportation Cabinet's KYCORS NAD83 2011 Network and the Kentucky State Plane Coordinate System, South Zone, NAD83 (2011). The field observations were completed by using a Topcon Hiper II GPS receiver and a Topcon QS3 robotic total station. Geodetic computations were completed using AutoCAD Civil 3D 2014 software.

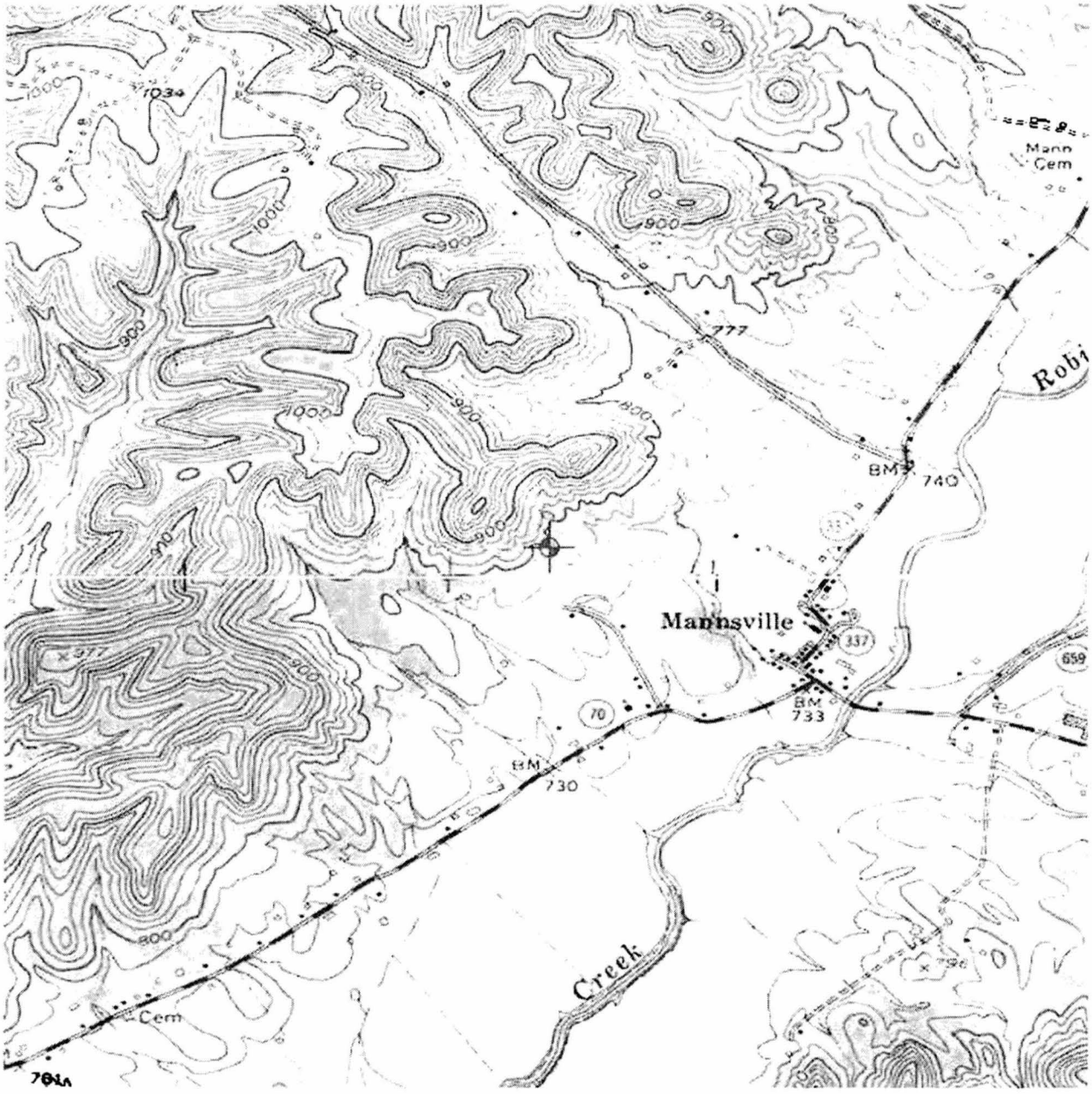
Landmark Surveying Co., Inc.

Darren L. Helms

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

STATE OF KENTUCKY
DARREN L. HELMS
3386
LICENSED
PROFESSIONAL
LAND SURVEYOR

Close Print


Mann Cem
Robi
777
BM 740
Mannsville
337
659
70
BM 733
BM 730
Creek
Cem
1034
1000
900
800

World Tower
COMPANY, INC.

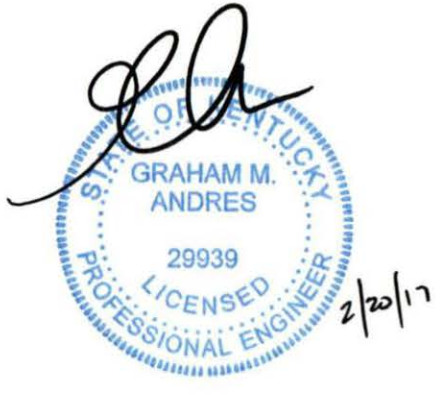
1213 Compressor Drive
P.O. Box 508
Mayfield, KY 42066
270-247-3642
FAX: 270-247-0909
E-mail: worldtower@worldtower.com
Web: www.worldtower.com

280' MODEL WSST TOWER
FOR: BLUEGRASS CELLULAR
SITE: MANNSVILLE
TAYLOR COUNTY, KY
DESIGN PACKAGE

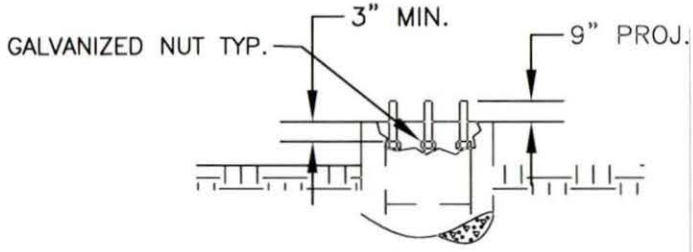
Fabrication, Installation, and Maintenance of TV, AM, FM, & Wireless Communications Towers

GENERAL NOTES

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

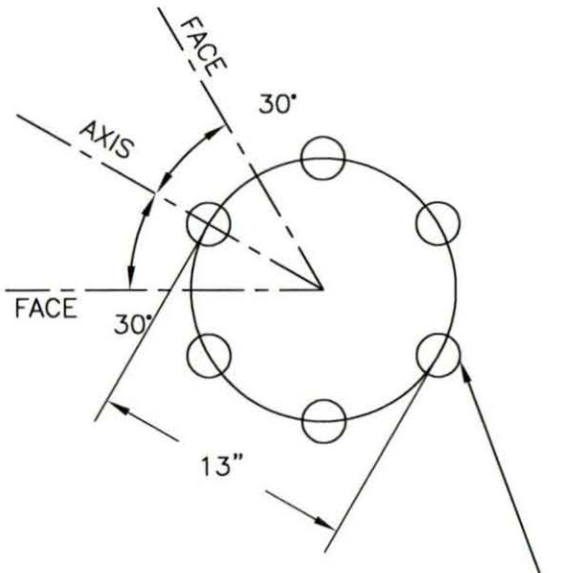


WORLD TOWER			
TITLE: 280' MODEL WSST TOWER FOR: BLUEGRASS CELLULAR SITE: MANNSVILLE TAYLOR COUNTY, KY			
SCALE	DWN. LKG	CKD.	DATE 2-15-17
	DWG. NO.		Q17066N

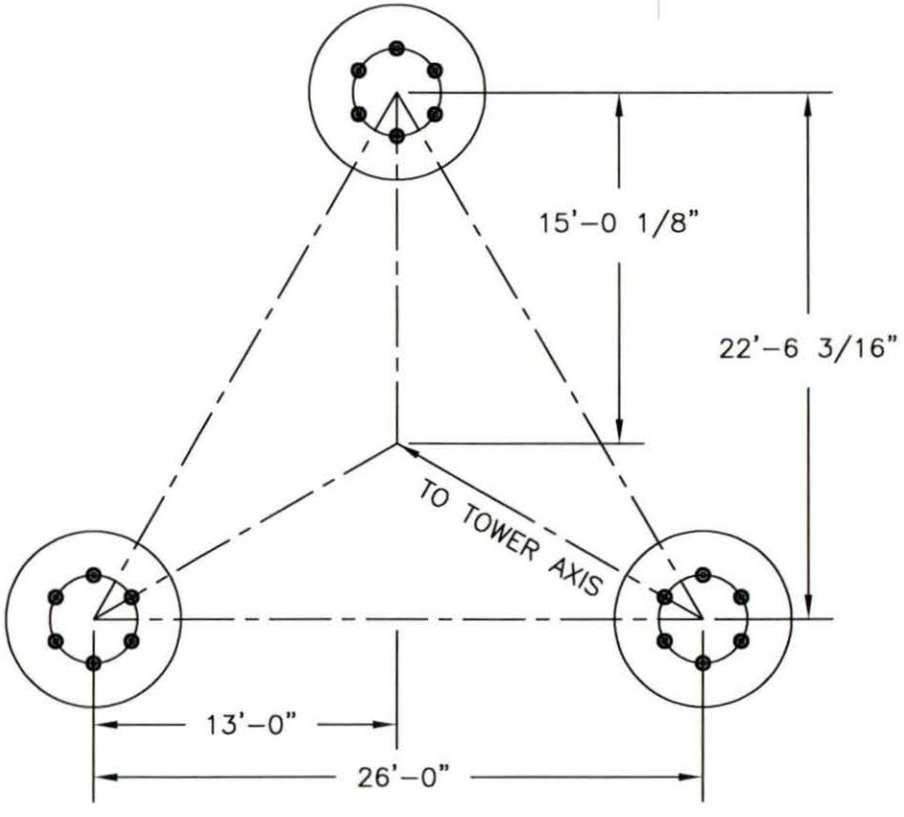


PIER ELEVATION

STATE OF KENTUCKY
GRAHAM M. ANDRES
29939
LICENSED PROFESSIONAL ENGINEER
2/20/17



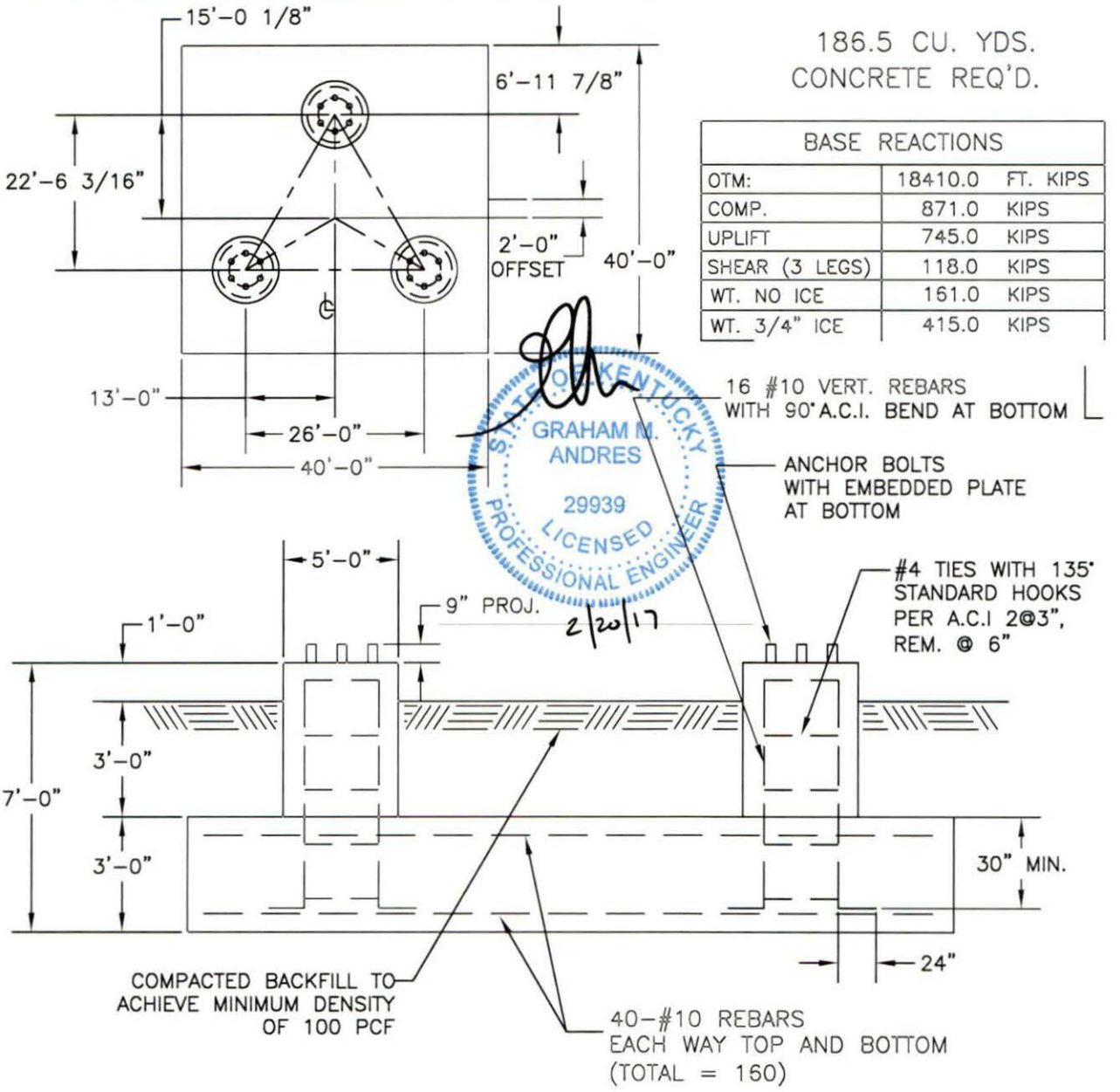
ANCHOR BOLTS 6 (18 TOTAL)
1 3/4"ø X 78" ASTM A354 GR. BC
EQUALLY SPACED WITH TOP TEMPLATE
AND EMBEDDED PLATE



WORLD TOWER

TITLE:
ANCHOR BOLT LAYOUT
280' MODEL WSST TOWER
FOR: BLUEGRASS CELLULAR
SITE : MANNSVILLE
TAYLOR COUNTY, KY

SCALE NONE	DWN. LKG	CKD.	DATE 2–15–17
FILE	DWG. NO. Q17066AB		



186.5 CU. YDS.
CONCRETE REQ'D.

BASE REACTIONS		
OTM:	18410.0	FT. KIPS
COMP.	871.0	KIPS
UPLIFT	745.0	KIPS
SHEAR (3 LEGS)	118.0	KIPS
WT. NO ICE	161.0	KIPS
WT. 3/4" ICE	415.0	KIPS

STATE OF KENTUCKY
GRAHAM M. ANDRES
29939
LICENSED PROFESSIONAL ENGINEER
2/20/17

GENERAL NOTES

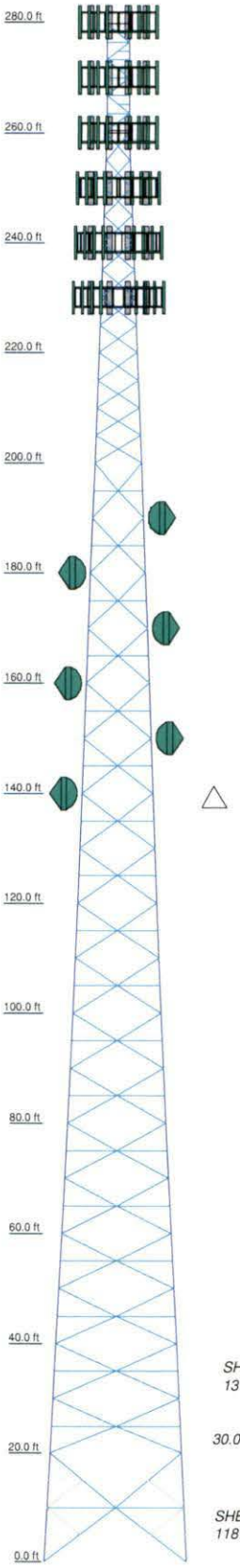
1. CONCRETE TO HAVE 4000 PSI MIN. COMPRESSIVE STRENGTH AFTER 28 DAYS.
2. ALL REINFORCMENT STEEL IS DEFORMED AND MEETS THE STRENGTH REQUIREMENTS OF ASTM A615 GRADE 60.
3. EMBEDDED STEEL TO HAVE 3" MIN. CONCRETE COVER.
4. FOUNDATION DESIGN IS BASED ON CUSTOMER SUPPLIED SOIL DATA FROM TERRACON. PROJECT NUMBER 57165129 DATED DECEMBER 12, 2016.

TITLE: FOUNDATION DETAIL
280' MODEL WSST TOWER
FOR: BLUEGRASS CELLULAR
SITE: MANNSVILLE
TAYLOR COUNTY, KY

WORLD TOWER

SCALE NONE	DWN. LKG	CKD.	DATE 2-15-17
FILE	DWG. NO. Q17066F		

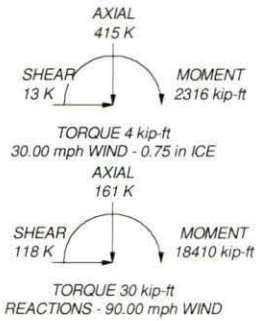
Section	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	SR 5 1/2	SR 5 1/4		SR 5		SR 4 3/4	SR 4 1/2	SR 4 1/4	SR 4	SR 3 3/4	SR 3 1/2	SR 3	SR 2 3/4	SR 1 3/4
Leg Grade	A572-50													
Diagonals	L4x4x3/8			L4x4x5/16		L4x4x1/4	L3 1/2x3 1/2x1/4		L3x3x1/4		L2 1/2x2 1/2x3/16		L2x2x3/16	SR 1 1/8
Diagonal Grade	A36													
Top Girts	N.A.												L2x2x1/8	SR 1
Bottom Girts	N.A.													SR 1
Horizontals	L4x4x3/8	L4x4x5/16	L4x4x1/4	L3 1/2x3 1/2x1/4		L3x3x1/4	L3x3x3/16		L2 1/2x2 1/2x3/16			N.A.		SR 11/16
Sec. Horizontals	N.A.													SR 1
Red. Horizontals	L3x3x3/16							N.A.						
Red. Diagonals	L3x3x3/16							N.A.						
Inner Bracing	L3 1/2x3 1/2x1/4							N.A.						
Face Width (ft)	26	24	22	20	18	16	14.5	13	11.5	10	8.5	7	5.5	4
# Panels @ (ft)	2 @ 10							48 @ 5						6 @ 3.20833
Weight (K)	71.3	9.0	9.2	8.6	7.3	6.7	6.0	5.1	4.5	3.8	3.5	2.8	2.2	1.7	1.0



ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 871 K
SHEAR: 80 K

UPLIFT: -745 K
SHEAR: 69 K



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Air21 Panel w/ mt pipe	280	(3) LNX-8514DS w/ mt pipe	250
Air21 Panel w/ mt pipe	280	(3) LNX-8514DS w/ mt pipe	250
Air21 Panel w/ mt pipe	280	(3) LNX-8514DS w/ mt pipe	250
(3) LNX-8514DS w/ mt pipe	280	WD13X53 Antenna Mounting Frame (w/ .75)*	250
(3) LNX-8514DS w/ mt pipe	280	WD13X53 Antenna Mounting Frame (w/ .75)*	250
(3) LNX-8514DS w/ mt pipe	280	WD13X53 Antenna Mounting Frame (w/ .75)*	250
WD13X53 Antenna Mounting Frame (w/ .75)*	280	Air21 Panel w/ mt pipe	240
WD13X53 Antenna Mounting Frame (w/ .75)*	280	Air21 Panel w/ mt pipe	240
WD13X53 Antenna Mounting Frame (w/ .75)*	280	Air21 Panel w/ mt pipe	240
Air21 Panel w/ mt pipe	270	(3) LNX-8514DS w/ mt pipe	240
Air21 Panel w/ mt pipe	270	(3) LNX-8514DS w/ mt pipe	240
Air21 Panel w/ mt pipe	270	(3) LNX-8514DS w/ mt pipe	240
(3) LNX-8514DS w/ mt pipe	270	WD13X53 Antenna Mounting Frame (w/ .75)*	240
(3) LNX-8514DS w/ mt pipe	270	WD13X53 Antenna Mounting Frame (w/ .75)*	240
(3) LNX-8514DS w/ mt pipe	270	WD13X53 Antenna Mounting Frame (w/ .75)*	240
WD13X53 Antenna Mounting Frame (w/ .75)*	270	Air21 Panel w/ mt pipe	230
WD13X53 Antenna Mounting Frame (w/ .75)*	270	Air21 Panel w/ mt pipe	230
WD13X53 Antenna Mounting Frame (w/ .75)*	270	Air21 Panel w/ mt pipe	230
Air21 Panel w/ mt pipe	260	(3) LNX-8514DS w/ mt pipe	230
Air21 Panel w/ mt pipe	260	(3) LNX-8514DS w/ mt pipe	230
Air21 Panel w/ mt pipe	260	(3) LNX-8514DS w/ mt pipe	230
(3) LNX-8514DS w/ mt pipe	260	WD13X53 Antenna Mounting Frame (w/ .75)*	230
(3) LNX-8514DS w/ mt pipe	260	WD13X53 Antenna Mounting Frame (w/ .75)*	230
(3) LNX-8514DS w/ mt pipe	260	WD13X53 Antenna Mounting Frame (w/ .75)*	230
WD13X53 Antenna Mounting Frame (w/ .75)*	260	6 FT DISH	190
WD13X53 Antenna Mounting Frame (w/ .75)*	260	6 FT DISH	180
WD13X53 Antenna Mounting Frame (w/ .75)*	260	6 FT DISH	170
Air21 Panel w/ mt pipe	250	6 FT DISH	160
Air21 Panel w/ mt pipe	250	6 FT DISH	150
Air21 Panel w/ mt pipe	250	6 FT DISH	140

MATERIAL STRENGTH

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

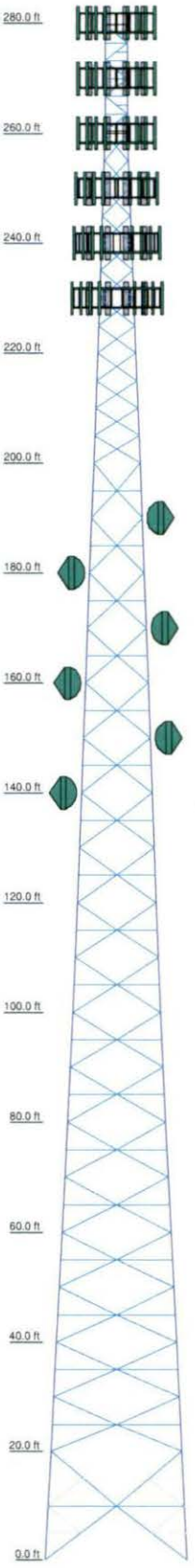
TOWER DESIGN NOTES

1. Tower is located in Taylor County, Kentucky.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 90.00 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 30.00 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60.00 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. fall radius less than half tower height per custome spec
9. TOWER RATING: 98.8%

World Tower Company, Inc.
1213 Compressor Drive
Mayfield, KY 42066
Phone: (270) 247-3642
FAX: (270) 247-0909

Job: ***280' WSST / Run C1612-016***			
Project: ***Mannsville, KY***			
Client: Bluegrass Cellular	Drawn by: JAR		App'd:
Code: TIA-222-G	Date: 01/26/17		Scale: NTS
Path: T:\00_World Tower Bids\015_Mannsville, KY\Check\JAR\C1612-016.R.ae			Dwg No. E-1

Section	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	SR 5 1/2	SR 5 1/4		SR 5		SR 4 3/4	SR 4 1/2	SR 4 1/4	SR 4	SR 3 3/4	SR 3 1/2	SR 3	SR 2 3/4	SR 1 3/4
Leg Grade	A572-50													
Diagonals	L4x4x3/8			L4x4x5/16		L4x4x1/4		L3 1/2x3 1/2x1/4		L3x3x1/4		L2 1/2x2 1/2x3/16		SR 1 1/8
Diagonal Grade	A36													
Top Girts	N.A.												L2x2x1/8	SR 1
Bottom Girts	N.A.													SR 1
Horizontals	L4x4x3/8	L4x4x5/16	L4x4x1/4	L3 1/2x3 1/2x1/4		L3x3x1/4	L3x3x3/16		L2 1/2x2 1/2x3/16			N.A.		SR 11/16
Sec. Horizontals	N.A.													SR 1
Red. Horizontals	L3x3x3/16							N.A.						
Red. Diagonals	L3x3x3/16							N.A.						
Inner Bracing	L3 1/2x3 1/2x1/4							N.A.						
Face Width (ft)	26	24	20	18	16	14.5	13	11.5	10	8.5	7	5.5	4	
# Panels @ (ft)	2 @ 10						48 @ 5							6 @ 3.20833
Weight (K)	71.3	9.0	8.2	8.6	7.2	8.7	6.0	5.1	4.5	3.8	2.9	3.5	2.2	1.7	1.0



ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 871 K
SHEAR: 80 K

UPLIFT: -745 K
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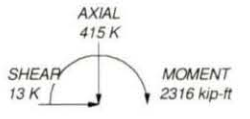
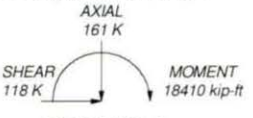


TORQUE 4 kip-ft
30.00 mph WIND - 0.75 in ICE



TORQUE 30 kip-ft
REACTIONS - 90.00 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Air21 Panel w/ mt pipe	280	(3) LNX-8514DS w/ mt pipe	250
Air21 Panel w/ mt pipe	280	(3) LNX-8514DS w/ mt pipe	250
Air21 Panel w/ mt pipe	280	(3) LNX-8514DS w/ mt pipe	250
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Air21 Panel w/ mt pipe	250	6 FT DISH	150
Air21 Panel w/ mt pipe	250	6 FT DISH	140

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 Taylor County, Kentucky.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 90.00 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 30.00 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60.00 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. fall radius less than half tower height per custome spec
9. TOWER RATING: 98.8%

World Tower Company, Inc.
1213 Compressor Drive
Mayfield, KY 42066
Phone: (270) 247-3642
FAX: (270) 247-0909

Job:	***280' WSST / Run C1612-016***		
Project:	***Mannsville, KY***		
Client:	Bluegrass Cellular	Drawn by: JAR	App'd:
Code:	TIA-222-G	Date: 01/26/17	Scale: NTS
Path:	T:\00_World Tower Bids\15_Mannsville, KY\Check\JAR\C1612-016.Rxs		Dwg No. E-1

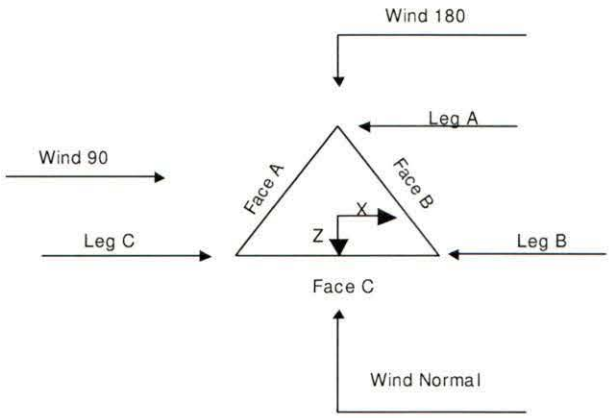
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 280.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 4.00 ft at the top and 26.00 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in Taylor County, Kentucky.
Basic wind speed of 90.00 mph.
Structure Class II.
Exposure Category C.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.75 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 30.00 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60.00 mph.
fall radius less than half tower height per custome spec.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Horizontals		Assume Legs Pinned	√	Calculate Redundant Bracing Forces
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Use Moment Magnification	√	Use Clear Spans For Wind Area	√	SR Leg Bolts Resist Compression
√	Use Code Stress Ratios	√	Use Clear Spans For KL/r		All Leg Panels Have Same Allowable
√	Use Code Safety Factors - Guys		Retension Guys To Initial Tension		Offset Girt At Foundation
	Escalate Ice	√	Bypass Mast Stability Checks	√	Consider Feed Line Torque
	Always Use Max Kz	√	Use Azimuth Dish Coefficients	√	Include Angle Block Shear Check
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Use TIA-222-G Bracing Resist. Exemption
√	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Use TIA-222-G Tension Splice Exemption
	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination		Poles
√	Secondary Horizontal Braces Leg	√	Sort Capacity Reports By Component		Include Shear-Torsion Interaction
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Always Use Sub-Critical Flow
√	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder		Use Top Mounted Sockets
	SR Members Are Concentric				



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	280.00-260.00			4.00	1	20.00
T2	260.00-240.00			4.00	1	20.00
T3	240.00-220.00			5.50	1	20.00
T4	220.00-200.00			7.00	1	20.00
T5	200.00-180.00			8.50	1	20.00
T6	180.00-160.00			10.00	1	20.00
T7	160.00-140.00			11.50	1	20.00
T8	140.00-120.00			13.00	1	20.00
T9	120.00-100.00			14.50	1	20.00
T10	100.00-80.00			16.00	1	20.00
T11	80.00-60.00			18.00	1	20.00
T12	60.00-40.00			20.00	1	20.00
T13	40.00-20.00			22.00	1	20.00
T14	20.00-0.00			24.00	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	280.00-260.00	3.21	K Brace Left	No	Yes+Steps	4.50	4.50

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T2	260.00-240.00	5.00	X Brace	No	No	0.00	0.00
T3	240.00-220.00	5.00	X Brace	No	No	0.00	0.00
T4	220.00-200.00	5.00	X Brace	No	No	0.00	0.00
T5	200.00-180.00	5.00	Double K	No	Yes	0.00	0.00
T6	180.00-160.00	5.00	Double K	No	Yes	0.00	0.00
T7	160.00-140.00	5.00	Double K	No	Yes	0.00	0.00
T8	140.00-120.00	5.00	Double K	No	Yes	0.00	0.00
T9	120.00-100.00	5.00	Double K	No	Yes	0.00	0.00
T10	100.00-80.00	5.00	Double K	No	Yes	0.00	0.00
T11	80.00-60.00	5.00	Double K	No	Yes	0.00	0.00
T12	60.00-40.00	5.00	Double K	No	Yes	0.00	0.00
T13	40.00-20.00	5.00	Double K	No	Yes	0.00	0.00
T14	20.00-0.00	10.00	Double K1	No	Yes	0.00	0.00

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 280.00-260.00	Solid Round	1 3/4	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T2 260.00-240.00	Solid Round	2 3/4	A572-50 (50 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T3 240.00-220.00	Solid Round	3	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T4 220.00-200.00	Solid Round	3 1/2	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T5 200.00-180.00	Solid Round	3 3/4	A572-50 (50 ksi)	Equal Angle	L3x3x1/4	A36 (36 ksi)
T6 180.00-160.00	Solid Round	4	A572-50 (50 ksi)	Equal Angle	L3x3x1/4	A36 (36 ksi)
T7 160.00-140.00	Solid Round	4 1/4	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T8 140.00-120.00	Solid Round	4 1/2	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T9 120.00-100.00	Solid Round	4 3/4	A572-50 (50 ksi)	Equal Angle	L4x4x1/4	A36 (36 ksi)
T10 100.00-80.00	Solid Round	5	A572-50 (50 ksi)	Equal Angle	L4x4x1/4	A36 (36 ksi)
T11 80.00-60.00	Solid Round	5	A572-50 (50 ksi)	Equal Angle	L4x4x5/16	A36 (36 ksi)
T12 60.00-40.00	Solid Round	5 1/4	A572-50 (50 ksi)	Equal Angle	L4x4x3/8	A36 (36 ksi)
T13 40.00-20.00	Solid Round	5 1/4	A572-50 (50 ksi)	Equal Angle	L4x4x3/8	A36 (36 ksi)
T14 20.00-0.00	Solid Round	5 1/2	A572-50 (50 ksi)	Equal Angle	L4x4x3/8	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 280.00-260.00	Solid Round	1	A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T2 260.00-240.00	Equal Angle	L2x2x1/8	A36 (36 ksi)	Equal Angle		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 280.00-260.00	None	Single Angle		A36 (36 ksi)	Solid Round	11/16	A36 (36 ksi)
T5 200.00-180.00	None	Single Angle		A36 (36 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T6 180.00-160.00	None	Single Angle		A36 (36 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T7 160.00-140.00	None	Single Angle		A36 (36 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T8 140.00-120.00	None	Single Angle		A36 (36 ksi)	Equal Angle	L3x3x3/16	A36 (36 ksi)
T9 120.00-100.00	None	Single Angle		A36 (36 ksi)	Equal Angle	L3x3x1/4	A36 (36 ksi)
T10 100.00-80.00	None	Double Angle		A36 (36 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T11 80.00-60.00	None	Double Angle		A36 (36 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T12 60.00-40.00	None	Double Angle		A36 (36 ksi)	Equal Angle	L4x4x1/4	A36 (36 ksi)
T13 40.00-20.00	None	Double Angle		A36 (36 ksi)	Equal Angle	L4x4x5/16	A36 (36 ksi)
T14 20.00-0.00	None	Double Angle		A36 (36 ksi)	Equal Angle	L4x4x3/8	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T1 280.00-260.00	Solid Round	1	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T14 20.00-0.00	Equal Angle		A36 (36 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
T14	A36	Horizontal (1)	Equal Angle	L3x3x3/16	1
20.00-0.00	(36 ksi)	Diagonal (1)	Equal Angle	L3x3x3/16	1

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1	0.00	0.00	A36	1	1	1.05	0.00	0.00	36.00
280.00-260.00			(36 ksi)						
T2	0.00	0.38	A36	1	1	1.06	0.00	0.00	36.00
260.00-240.00			(36 ksi)						
T3	0.00	0.38	A36	1	1	1.06	0.00	0.00	36.00
240.00-220.00			(36 ksi)						
T4	0.00	0.38	A36	1	1	1.06	0.00	0.00	36.00
220.00-200.00			(36 ksi)						
T5	0.00	0.38	A36	1	1	1.07	0.00	0.00	36.00
200.00-180.00			(36 ksi)						
T6	0.00	0.38	A36	1	1	1.07	0.00	0.00	36.00
180.00-160.00			(36 ksi)						
T7	0.00	0.38	A36	1	1	1.07	0.00	0.00	36.00
160.00-140.00			(36 ksi)						
T8	0.00	0.38	A36	1	1	1.07	0.00	0.00	36.00
140.00-120.00			(36 ksi)						
T9	0.00	0.50	A36	1	1	1.08	0.00	0.00	36.00
120.00-100.00			(36 ksi)						
T10	0.00	0.50	A36	1	1	1.08	0.00	0.00	36.00
100.00-80.00			(36 ksi)						
T11	0.00	0.50	A36	1	1	1.08	0.00	0.00	36.00
80.00-60.00			(36 ksi)						
T12	0.00	0.50	A36	1	1	1.08	0.00	0.00	36.00
60.00-40.00			(36 ksi)						
T13	0.00	0.50	A36	1	1	1.08	0.00	0.00	36.00
40.00-20.00			(36 ksi)						
T14 20.00-0.00	0.00	0.50	A36	1	1	1.08	0.00	0.00	36.00
			(36 ksi)						

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1	Yes	Yes	1	1	1	1	1	1	1	1
280.00-260.00				1	1	1	1	1	1	1
T2	Yes	Yes	1	1	1	1	1	1	1	1
260.00-240.00				1	1	1	1	1	1	1
T3	Yes	Yes	1	1	1	1	1	1	1	1
240.00-220.00				1	1	1	1	1	1	1

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T4	Yes	Yes	1	1	1	1	1	1	1	1
220.00-200.00				1	1	1	1	1	1	1
T5	Yes	Yes	1	1	1	1	1	1	1	1
200.00-180.00				1	1	1	1	1	1	1
T6	Yes	Yes	1	1	1	1	1	1	1	1
180.00-160.00				1	1	1	1	1	1	1
T7	Yes	Yes	1	1	1	1	1	1	1	1
160.00-140.00				1	1	1	1	1	1	1
T8	Yes	Yes	1	1	1	1	1	1	1	1
140.00-120.00				1	1	1	1	1	1	1
T9	Yes	Yes	1	1	1	1	1	1	1	1
120.00-100.00				1	1	1	1	1	1	1
T10	Yes	Yes	1	1	1	1	1	1	1	1
100.00-80.00				1	1	1	1	1	1	1
T11	Yes	Yes	1	1	1	1	1	1	1	1
80.00-60.00				1	1	1	1	1	1	1
T12	Yes	Yes	1	1	1	1	1	1	1	1
60.00-40.00				1	1	1	1	1	1	1
T13	Yes	Yes	1	1	1	1	1	1	1	1
40.00-20.00				1	1	1	1	1	1	1
T14	Yes	Yes	1	1	1	1	1	1	1	1
20.00-0.00				1	1	1	1	1	1	1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1	0.00	1	0.00	1	0.00	1	0.00	1	0.00	0.75	0.00	1	0.00	1
280.00-260.00														
T2	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
260.00-240.00														
T3	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
240.00-220.00														
T4	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
220.00-200.00														
T5	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
200.00-180.00														
T6	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
180.00-160.00														
T7	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
160.00-140.00														
T8	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
140.00-120.00														
T9	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
120.00-100.00														
T10	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
100.00-80.00														

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T11 80.00-60.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T12 60.00-40.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T13 40.00-20.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T14 20.00-0.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 280.00-260.00	Flange	0.75 A325N	4	0.00 A325N	0	0.00 A325N	0	0.00 A325N	0	0.63 A325N	0	0.00 A325N	0	0.00 A325N	0
T2 260.00-240.00	Flange	1.00 A325N	4	0.63 A325N	1	0.63 A325N	1	0.00 A325N	0	0.63 A325N	0	0.00 A325N	0	0.00 A325N	0
T3 240.00-220.00	Flange	1.00 A325N	4	0.63 A325N	1	0.00 A325N	0	0.00 A325N	0	0.63 A325N	0	0.00 A325N	0	0.00 A325N	0
T4 220.00-200.00	Flange	1.00 A325N	6	0.63 A325N	1	0.00 A325N	0	0.00 A325N	0	0.63 A325N	0	0.00 A325N	0	0.00 A325N	0
T5 200.00-180.00	Flange	1.25 A325N	6	0.75 A325N	1	0.00 A325N	0	0.00 A325N	0	0.63 A325N	0	0.75 A325N	1	0.00 A325N	0
T6 180.00-160.00	Flange	1.25 A325N	6	0.75 A325N	1	0.00 A325N	0	0.00 A325N	0	0.63 A325N	0	0.75 A325N	1	0.00 A325N	0
T7 160.00-140.00	Flange	1.25 A325N	6	0.75 A325N	1	0.00 A325N	0	0.00 A325N	0	0.63 A325N	0	0.75 A325N	1	0.00 A325N	0
T8 140.00-120.00	Flange	1.50 A325N	6	0.88 A325N	1	0.00 A325N	0	0.00 A325N	0	0.63 A325N	0	0.88 A325N	1	0.00 A325N	0
T9 120.00-100.00	Flange	1.50 A325N	6	0.88 A325N	1	0.00 A325N	0	0.00 A325N	0	0.63 A325N	0	0.88 A325N	1	0.00 A325N	0
T10 100.00-80.00	Flange	1.50 A325N	6	0.88 A325N	1	0.00 A325N	0	0.00 A325N	0	0.63 A325N	0	0.88 A325N	1	0.00 A325N	0
T11 80.00-60.00	Flange	1.50 A325N	6	0.88 A325N	1	0.00 A325N	0	0.00 A325N	0	0.63 A325N	0	0.88 A325N	1	0.00 A325N	0
T12 60.00-40.00	Flange	1.75 A325N	6	0.88 A325N	1	0.00 A325N	0	0.00 A325N	0	0.63 A325N	0	0.88 A325N	1	0.00 A325N	0
T13 40.00-20.00	Flange	1.75 A325N	6	0.88 A325N	1	0.00 A325N	0	0.00 A325N	0	0.63 A325N	0	0.88 A325N	1	0.00 A325N	0
T14 20.00-0.00	Flange	1.75 A354-BC	6	0.88 A325N	1	0.00 A325N	0	0.00 A325N	0	0.63 A325N	0	0.88 A325N	1	0.00 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
Safety Line 3/8	C	No	Ar (CaAa)	280.00 - 5.00	1	1	0.50	0.38		0.22
1 5/8	A	No	Ar (CaAa)	250.00 - 280.00	18	6	0.50	1.98		1.04
1 5/8	B	No	Ar (CaAa)	240.00 - 270.00	18	6	0.50	1.98		1.04
1 5/8	C	No	Ar (CaAa)	230.00 - 260.00	18	6	0.50	1.98		1.04
1 5/8	A	No	Ar (CaAa)	5.00 - 250.00	36	12	0.50	1.98		1.04
1 5/8	B	No	Ar (CaAa)	5.00 - 240.00	36	12	0.50	1.98		1.04
1 5/8	C	No	Ar (CaAa)	5.00 - 230.00	36	12	5.00 0.50	1.98		1.04
W/G LADDER RAIL*	A	No	Af (CaAa)	5.00 - 280.00	2	2	48.00	0.25		3.00
W/G LADDER RAIL*	B	No	Af (CaAa)	5.00 - 270.00	2	2	48.00	0.25		3.00
W/G LADDER RAIL*	C	No	Af (CaAa)	5.00 - 260.00	2	2	48.00	0.25		3.00
Fiber Bundle	A	No	Ar (CaAa)	5.00 - 280.00	1	1	0.00	0.75		1.00
Fiber Bundle	B	No	Ar (CaAa)	5.00 - 270.00	1	1	0.00	0.75		1.00
Fiber Bundle	C	No	Ar (CaAa)	5.00 - 260.00	1	1	0.00	0.75		1.00
Fiber Bundle	A	No	Ar (CaAa)	5.00 - 250.00	1	1	0.00	0.75		1.00
Fiber Bundle	B	No	Ar (CaAa)	5.00 - 240.00	1	1	0.00	0.75		1.00
Fiber Bundle	C	No	Ar (CaAa)	5.00 - 230.00	1	1	0.00	0.75		1.00
EW52	C	No	Ar (CaAa)	5.00 - 190.00	1	1	0.00	1.74		0.59
EW52	C	No	Ar (CaAa)	5.00 - 180.00	1	1	0.00	1.74		0.59
EW52	C	No	Ar (CaAa)	5.00 - 170.00	1	1	0.00	1.74		0.59
EW52	C	No	Ar (CaAa)	5.00 - 160.00	1	1	0.00	1.74		0.59
EW52	C	No	Ar (CaAa)	5.00 - 150.00	1	1	0.00	1.74		0.59
EW52	C	No	Ar (CaAa)	5.00 - 140.00	1	1	0.00	1.74		0.59

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	280.00-260.00	A	0.000	0.000	74.447	0.000	0.51
		B	0.000	0.000	37.223	0.000	0.26
		C	0.000	0.000	0.750	0.000	0.00
T2	260.00-240.00	A	0.000	0.000	110.837	0.000	0.71
		B	0.000	0.000	74.447	0.000	0.51
		C	0.000	0.000	75.197	0.000	0.52
T3	240.00-220.00	A	0.000	0.000	147.227	0.000	0.91
		B	0.000	0.000	147.227	0.000	0.91
		C	0.000	0.000	111.587	0.000	0.72
T4	220.00-200.00	A	0.000	0.000	147.227	0.000	0.91
		B	0.000	0.000	147.227	0.000	0.91
		C	0.000	0.000	147.977	0.000	0.91
T5	200.00-180.00	A	0.000	0.000	147.227	0.000	0.91
		B	0.000	0.000	147.227	0.000	0.91
		C	0.000	0.000	149.719	0.000	0.92
T6	180.00-160.00	A	0.000	0.000	147.227	0.000	0.91
		B	0.000	0.000	147.227	0.000	0.91
		C	0.000	0.000	156.690	0.000	0.94
T7	160.00-140.00	A	0.000	0.000	147.227	0.000	0.91
		B	0.000	0.000	147.227	0.000	0.91
		C	0.000	0.000	163.660	0.000	0.97
T8	140.00-120.00	A	0.000	0.000	147.227	0.000	0.91
		B	0.000	0.000	147.227	0.000	0.91
		C	0.000	0.000	168.887	0.000	0.98
T9	120.00-100.00	A	0.000	0.000	147.227	0.000	0.91
		B	0.000	0.000	147.227	0.000	0.91
		C	0.000	0.000	168.887	0.000	0.98
T10	100.00-80.00	A	0.000	0.000	147.227	0.000	0.91
		B	0.000	0.000	147.227	0.000	0.91

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C	0.000	0.000	168.887	0.000	0.98
T11	80.00-60.00	A	0.000	0.000	147.227	0.000	0.91
		B	0.000	0.000	147.227	0.000	0.91
		C	0.000	0.000	168.887	0.000	0.98
T12	60.00-40.00	A	0.000	0.000	147.227	0.000	0.91
		B	0.000	0.000	147.227	0.000	0.91
		C	0.000	0.000	168.887	0.000	0.98
T13	40.00-20.00	A	0.000	0.000	147.227	0.000	0.91
		B	0.000	0.000	147.227	0.000	0.91
		C	0.000	0.000	168.887	0.000	0.98
T14	20.00-0.00	A	0.000	0.000	110.420	0.000	0.68
		B	0.000	0.000	110.420	0.000	0.68
		C	0.000	0.000	126.666	0.000	0.74

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	280.00-260.00	A	1.851	0.000	0.000	77.829	0.000	2.08
		B		0.000	0.000	38.915	0.000	1.04
		C		0.000	0.000	8.153	0.000	0.11
T2	260.00-240.00	A	1.837	0.000	0.000	99.059	0.000	2.72
		B		0.000	0.000	77.562	0.000	2.06
		C		0.000	0.000	85.659	0.000	2.17
T3	240.00-220.00	A	1.821	0.000	0.000	120.217	0.000	3.35
		B		0.000	0.000	120.217	0.000	3.35
		C		0.000	0.000	266.001	0.000	4.95
T4	220.00-200.00	A	1.805	0.000	0.000	119.849	0.000	3.33
		B		0.000	0.000	119.849	0.000	3.33
		C		0.000	0.000	443.986	0.000	7.66
T5	200.00-180.00	A	1.787	0.000	0.000	119.449	0.000	3.31
		B		0.000	0.000	119.449	0.000	3.31
		C		0.000	0.000	446.355	0.000	7.64
T6	180.00-160.00	A	1.767	0.000	0.000	119.008	0.000	3.29
		B		0.000	0.000	119.008	0.000	3.29
		C		0.000	0.000	464.182	0.000	7.86
T7	160.00-140.00	A	1.745	0.000	0.000	118.518	0.000	3.26
		B		0.000	0.000	118.518	0.000	3.26
		C		0.000	0.000	481.289	0.000	8.05
T8	140.00-120.00	A	1.720	0.000	0.000	117.966	0.000	3.23
		B		0.000	0.000	117.966	0.000	3.23
		C		0.000	0.000	492.326	0.000	8.14
T9	120.00-100.00	A	1.692	0.000	0.000	117.331	0.000	3.20
		B		0.000	0.000	117.331	0.000	3.20
		C		0.000	0.000	486.968	0.000	7.97
T10	100.00-80.00	A	1.658	0.000	0.000	116.582	0.000	3.16
		B		0.000	0.000	116.582	0.000	3.16
		C		0.000	0.000	480.649	0.000	7.76
T11	80.00-60.00	A	1.617	0.000	0.000	115.666	0.000	3.11
		B		0.000	0.000	115.666	0.000	3.11
		C		0.000	0.000	472.911	0.000	7.52
T12	60.00-40.00	A	1.564	0.000	0.000	114.475	0.000	3.05
		B		0.000	0.000	114.475	0.000	3.05
		C		0.000	0.000	462.852	0.000	7.21
T13	40.00-20.00	A	1.486	0.000	0.000	112.742	0.000	2.97
		B		0.000	0.000	112.742	0.000	2.97
		C		0.000	0.000	448.212	0.000	6.76

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T14	20.00-0.00	A	1.331	0.000	0.000	81.978	0.000	2.10
		B		0.000	0.000	81.978	0.000	2.10
		C		0.000	0.000	314.363	0.000	4.44

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	280.00-260.00	-1.01	-1.71	-0.73	-1.10
T2	260.00-240.00	-0.51	-0.28	-0.32	-0.08
T3	240.00-220.00	0.00	0.42	0.00	0.79
T4	220.00-200.00	0.00	1.54	0.00	1.96
T5	200.00-180.00	0.00	1.82	0.00	2.35
T6	180.00-160.00	0.00	2.22	0.00	2.92
T7	160.00-140.00	0.00	2.62	0.00	3.51
T8	140.00-120.00	0.00	3.00	0.00	4.07
T9	120.00-100.00	0.00	3.25	0.00	4.42
T10	100.00-80.00	0.00	3.54	0.00	4.84
T11	80.00-60.00	0.00	3.90	0.00	5.32
T12	60.00-40.00	0.00	4.21	0.00	5.77
T13	40.00-20.00	0.00	4.54	0.00	6.24
T14	20.00-0.00	0.00	4.64	0.00	6.36

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	1	Safety Line 3/8	260.00 - 280.00	0.6000	0.5491
T1	2	1 5/8	260.00 - 280.00	0.6000	0.5491
T1	3	1 5/8	260.00 - 270.00	0.6000	0.5491
T1	8	W/G LADDER RAIL*	260.00 - 280.00	0.6000	0.5491
T1	9	W/G LADDER RAIL*	260.00 - 270.00	0.6000	0.5491
T1	11	Fiber Bundle	260.00 - 280.00	0.6000	0.5491
T1	12	Fiber Bundle	260.00 - 270.00	0.6000	0.5491
T2	1	Safety Line 3/8	240.00 - 260.00	0.6000	0.5444
T2	2	1 5/8	250.00 - 260.00	0.6000	0.5444
T2	3	1 5/8	240.00 - 260.00	0.6000	0.5444
T2	4	1 5/8	240.00 - 260.00	0.6000	0.5444
T2	5	1 5/8	240.00 -	0.6000	0.5444

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T2	8	W/G LADDER RAIL*	240.00 - 250.00	0.6000	0.5444
T2	9	W/G LADDER RAIL*	240.00 - 260.00	0.6000	0.5444
T2	10	W/G LADDER RAIL*	240.00 - 260.00	0.6000	0.5444
T2	11	Fiber Bundle	240.00 - 260.00	0.6000	0.5444
T2	12	Fiber Bundle	240.00 - 260.00	0.6000	0.5444
T2	13	Fiber Bundle	240.00 - 260.00	0.6000	0.5444
T2	14	Fiber Bundle	240.00 - 260.00	0.6000	0.5444
T3	1	Safety Line 3/8	220.00 - 250.00	0.6000	0.6000
T3	4	1 5/8	230.00 - 240.00	0.6000	0.6000
T3	5	1 5/8	220.00 - 240.00	0.6000	0.6000
T3	6	1 5/8	220.00 - 240.00	0.6000	0.6000
T3	7	1 5/8	220.00 - 240.00	0.6000	0.6000
T3	8	W/G LADDER RAIL*	220.00 - 230.00	0.6000	0.6000
T3	9	W/G LADDER RAIL*	220.00 - 240.00	0.6000	0.6000
T3	10	W/G LADDER RAIL*	220.00 - 240.00	0.6000	0.6000
T3	11	Fiber Bundle	220.00 - 240.00	0.6000	0.6000
T3	12	Fiber Bundle	220.00 - 240.00	0.6000	0.6000
T3	13	Fiber Bundle	220.00 - 240.00	0.6000	0.6000
T3	14	Fiber Bundle	220.00 - 240.00	0.6000	0.6000
T3	15	Fiber Bundle	220.00 - 240.00	0.6000	0.6000
T3	16	Fiber Bundle	220.00 - 230.00	0.6000	0.6000
T4	1	Safety Line 3/8	200.00 - 220.00	0.6000	0.6000
T4	5	1 5/8	200.00 - 220.00	0.6000	0.6000
T4	6	1 5/8	200.00 - 220.00	0.6000	0.6000
T4	7	1 5/8	200.00 - 220.00	0.6000	0.6000
T4	8	W/G LADDER RAIL*	200.00 - 220.00	0.6000	0.6000
T4	9	W/G LADDER RAIL*	200.00 - 220.00	0.6000	0.6000
T4	10	W/G LADDER RAIL*	200.00 - 220.00	0.6000	0.6000
T4	11	Fiber Bundle	200.00 - 220.00	0.6000	0.6000
T4	12	Fiber Bundle	200.00 - 220.00	0.6000	0.6000
T4	13	Fiber Bundle	200.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T4	14	Fiber Bundle	220.00 200.00 -	0.6000	0.6000
T4	15	Fiber Bundle	220.00 200.00 -	0.6000	0.6000
T4	16	Fiber Bundle	220.00 200.00 -	0.6000	0.6000
T5	1	Safety Line 3/8	220.00 180.00 -	0.6000	0.6000
T5	5	1 5/8	200.00 180.00 -	0.6000	0.6000
T5	6	1 5/8	200.00 180.00 -	0.6000	0.6000
T5	7	1 5/8	200.00 180.00 -	0.6000	0.6000
T5	8	W/G LADDER RAIL*	200.00 180.00 -	0.6000	0.6000
T5	9	W/G LADDER RAIL*	200.00 180.00 -	0.6000	0.6000
T5	10	W/G LADDER RAIL*	200.00 180.00 -	0.6000	0.6000
T5	11	Fiber Bundle	200.00 180.00 -	0.6000	0.6000
T5	12	Fiber Bundle	200.00 180.00 -	0.6000	0.6000
T5	13	Fiber Bundle	200.00 180.00 -	0.6000	0.6000
T5	14	Fiber Bundle	200.00 180.00 -	0.6000	0.6000
T5	15	Fiber Bundle	200.00 180.00 -	0.6000	0.6000
T5	16	Fiber Bundle	200.00 180.00 -	0.6000	0.6000
T5	17	EW52	200.00 180.00 -	0.6000	0.6000
T6	1	Safety Line 3/8	190.00 160.00 -	0.6000	0.6000
T6	5	1 5/8	180.00 160.00 -	0.6000	0.6000
T6	6	1 5/8	180.00 160.00 -	0.6000	0.6000
T6	7	1 5/8	180.00 160.00 -	0.6000	0.6000
T6	8	W/G LADDER RAIL*	180.00 160.00 -	0.6000	0.6000
T6	9	W/G LADDER RAIL*	180.00 160.00 -	0.6000	0.6000
T6	10	W/G LADDER RAIL*	180.00 160.00 -	0.6000	0.6000
T6	11	Fiber Bundle	180.00 160.00 -	0.6000	0.6000
T6	12	Fiber Bundle	180.00 160.00 -	0.6000	0.6000
T6	13	Fiber Bundle	180.00 160.00 -	0.6000	0.6000
T6	14	Fiber Bundle	180.00 160.00 -	0.6000	0.6000
T6	15	Fiber Bundle	180.00 160.00 -	0.6000	0.6000
T6	16	Fiber Bundle	180.00 160.00 -	0.6000	0.6000
T6	17	EW52	180.00 160.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T6	18	EW52	180.00 160.00 -	0.6000	0.6000
T6	19	EW52	180.00 160.00 -	0.6000	0.6000
T7	1	Safety Line 3/8	170.00 140.00 -	0.6000	0.6000
T7	5	1 5/8	160.00 140.00 -	0.6000	0.6000
T7	6	1 5/8	160.00 140.00 -	0.6000	0.6000
T7	7	1 5/8	160.00 140.00 -	0.6000	0.6000
T7	8	W/G LADDER RAIL*	160.00 140.00 -	0.6000	0.6000
T7	9	W/G LADDER RAIL*	160.00 140.00 -	0.6000	0.6000
T7	10	W/G LADDER RAIL*	160.00 140.00 -	0.6000	0.6000
T7	11	Fiber Bundle	160.00 140.00 -	0.6000	0.6000
T7	12	Fiber Bundle	160.00 140.00 -	0.6000	0.6000
T7	13	Fiber Bundle	160.00 140.00 -	0.6000	0.6000
T7	14	Fiber Bundle	160.00 140.00 -	0.6000	0.6000
T7	15	Fiber Bundle	160.00 140.00 -	0.6000	0.6000
T7	16	Fiber Bundle	160.00 140.00 -	0.6000	0.6000
T7	17	EW52	160.00 140.00 -	0.6000	0.6000
T7	18	EW52	160.00 140.00 -	0.6000	0.6000
T7	19	EW52	160.00 140.00 -	0.6000	0.6000
T7	20	EW52	160.00 140.00 -	0.6000	0.6000
T7	21	EW52	160.00 140.00 -	0.6000	0.6000
T8	1	Safety Line 3/8	150.00 120.00 -	0.6000	0.6000
T8	5	1 5/8	140.00 120.00 -	0.6000	0.6000
T8	6	1 5/8	140.00 120.00 -	0.6000	0.6000
T8	7	1 5/8	140.00 120.00 -	0.6000	0.6000
T8	8	W/G LADDER RAIL*	140.00 120.00 -	0.6000	0.6000
T8	9	W/G LADDER RAIL*	140.00 120.00 -	0.6000	0.6000
T8	10	W/G LADDER RAIL*	140.00 120.00 -	0.6000	0.6000
T8	11	Fiber Bundle	140.00 120.00 -	0.6000	0.6000
T8	12	Fiber Bundle	140.00 120.00 -	0.6000	0.6000
T8	13	Fiber Bundle	140.00 120.00 -	0.6000	0.6000
T8	14	Fiber Bundle	140.00 120.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T8	15	Fiber Bundle	120.00 - 140.00	0.6000	0.6000
T8	16	Fiber Bundle	120.00 - 140.00	0.6000	0.6000
T8	17	EW52	120.00 - 140.00	0.6000	0.6000
T8	18	EW52	120.00 - 140.00	0.6000	0.6000
T8	19	EW52	120.00 - 140.00	0.6000	0.6000
T8	20	EW52	120.00 - 140.00	0.6000	0.6000
T8	21	EW52	120.00 - 140.00	0.6000	0.6000
T8	22	EW52	120.00 - 140.00	0.6000	0.6000
T9	1	Safety Line 3/8	100.00 - 120.00	0.6000	0.6000
T9	5	1 5/8	100.00 - 120.00	0.6000	0.6000
T9	6	1 5/8	100.00 - 120.00	0.6000	0.6000
T9	7	1 5/8	100.00 - 120.00	0.6000	0.6000
T9	8	W/G LADDER RAIL*	100.00 - 120.00	0.6000	0.6000
T9	9	W/G LADDER RAIL*	100.00 - 120.00	0.6000	0.6000
T9	10	W/G LADDER RAIL*	100.00 - 120.00	0.6000	0.6000
T9	11	Fiber Bundle	100.00 - 120.00	0.6000	0.6000
T9	12	Fiber Bundle	100.00 - 120.00	0.6000	0.6000
T9	13	Fiber Bundle	100.00 - 120.00	0.6000	0.6000
T9	14	Fiber Bundle	100.00 - 120.00	0.6000	0.6000
T9	15	Fiber Bundle	100.00 - 120.00	0.6000	0.6000
T9	16	Fiber Bundle	100.00 - 120.00	0.6000	0.6000
T9	17	EW52	100.00 - 120.00	0.6000	0.6000
T9	18	EW52	100.00 - 120.00	0.6000	0.6000
T9	19	EW52	100.00 - 120.00	0.6000	0.6000
T9	20	EW52	100.00 - 120.00	0.6000	0.6000
T9	21	EW52	100.00 - 120.00	0.6000	0.6000
T9	22	EW52	100.00 - 120.00	0.6000	0.6000
T10	1	Safety Line 3/8	80.00 - 100.00	0.6000	0.6000
T10	5	1 5/8	80.00 - 100.00	0.6000	0.6000
T10	6	1 5/8	80.00 - 100.00	0.6000	0.6000
T10	7	1 5/8	80.00 - 100.00	0.6000	0.6000
T10	8	W/G LADDER RAIL*	80.00 - 100.00	0.6000	0.6000
T10	9	W/G LADDER RAIL*	80.00 - 100.00	0.6000	0.6000
T10	10	W/G LADDER RAIL*	80.00 - 100.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T10	11	Fiber Bundle	80.00 - 100.00	0.6000	0.6000
T10	12	Fiber Bundle	80.00 - 100.00	0.6000	0.6000
T10	13	Fiber Bundle	80.00 - 100.00	0.6000	0.6000
T10	14	Fiber Bundle	80.00 - 100.00	0.6000	0.6000
T10	15	Fiber Bundle	80.00 - 100.00	0.6000	0.6000
T10	16	Fiber Bundle	80.00 - 100.00	0.6000	0.6000
T10	17	EW52	80.00 - 100.00	0.6000	0.6000
T10	18	EW52	80.00 - 100.00	0.6000	0.6000
T10	19	EW52	80.00 - 100.00	0.6000	0.6000
T10	20	EW52	80.00 - 100.00	0.6000	0.6000
T10	21	EW52	80.00 - 100.00	0.6000	0.6000
T10	22	EW52	80.00 - 100.00	0.6000	0.6000
T11	1	Safety Line 3/8	60.00 - 80.00	0.6000	0.6000
T11	5	1 5/8	60.00 - 80.00	0.6000	0.6000
T11	6	1 5/8	60.00 - 80.00	0.6000	0.6000
T11	7	1 5/8	60.00 - 80.00	0.6000	0.6000
T11	8	W/G LADDER RAIL*	60.00 - 80.00	0.6000	0.6000
T11	9	W/G LADDER RAIL*	60.00 - 80.00	0.6000	0.6000
T11	10	W/G LADDER RAIL*	60.00 - 80.00	0.6000	0.6000
T11	11	Fiber Bundle	60.00 - 80.00	0.6000	0.6000
T11	12	Fiber Bundle	60.00 - 80.00	0.6000	0.6000
T11	13	Fiber Bundle	60.00 - 80.00	0.6000	0.6000
T11	14	Fiber Bundle	60.00 - 80.00	0.6000	0.6000
T11	15	Fiber Bundle	60.00 - 80.00	0.6000	0.6000
T11	16	Fiber Bundle	60.00 - 80.00	0.6000	0.6000
T11	17	EW52	60.00 - 80.00	0.6000	0.6000
T11	18	EW52	60.00 - 80.00	0.6000	0.6000
T11	19	EW52	60.00 - 80.00	0.6000	0.6000
T11	20	EW52	60.00 - 80.00	0.6000	0.6000
T11	21	EW52	60.00 - 80.00	0.6000	0.6000
T11	22	EW52	60.00 - 80.00	0.6000	0.6000
T12	1	Safety Line 3/8	40.00 - 60.00	0.6000	0.6000
T12	5	1 5/8	40.00 - 60.00	0.6000	0.6000
T12	6	1 5/8	40.00 - 60.00	0.6000	0.6000
T12	7	1 5/8	40.00 - 60.00	0.6000	0.6000
T12	8	W/G LADDER RAIL*	40.00 - 60.00	0.6000	0.6000
T12	9	W/G LADDER RAIL*	40.00 - 60.00	0.6000	0.6000
T12	10	W/G LADDER RAIL*	40.00 - 60.00	0.6000	0.6000
T12	11	Fiber Bundle	40.00 - 60.00	0.6000	0.6000
T12	12	Fiber Bundle	40.00 - 60.00	0.6000	0.6000
T12	13	Fiber Bundle	40.00 - 60.00	0.6000	0.6000
T12	14	Fiber Bundle	40.00 - 60.00	0.6000	0.6000
T12	15	Fiber Bundle	40.00 - 60.00	0.6000	0.6000
T12	16	Fiber Bundle	40.00 - 60.00	0.6000	0.6000
T12	17	EW52	40.00 - 60.00	0.6000	0.6000
T12	18	EW52	40.00 - 60.00	0.6000	0.6000
T12	19	EW52	40.00 - 60.00	0.6000	0.6000
T12	20	EW52	40.00 - 60.00	0.6000	0.6000
T12	21	EW52	40.00 - 60.00	0.6000	0.6000
T12	22	EW52	40.00 - 60.00	0.6000	0.6000
T13	1	Safety Line 3/8	20.00 - 40.00	0.6000	0.6000
T13	5	1 5/8	20.00 - 40.00	0.6000	0.6000
T13	6	1 5/8	20.00 - 40.00	0.6000	0.6000
T13	7	1 5/8	20.00 - 40.00	0.6000	0.6000
T13	8	W/G LADDER RAIL*	20.00 - 40.00	0.6000	0.6000
T13	9	W/G LADDER RAIL*	20.00 - 40.00	0.6000	0.6000
T13	10	W/G LADDER RAIL*	20.00 - 40.00	0.6000	0.6000
T13	11	Fiber Bundle	20.00 - 40.00	0.6000	0.6000
T13	12	Fiber Bundle	20.00 - 40.00	0.6000	0.6000
T13	13	Fiber Bundle	20.00 - 40.00	0.6000	0.6000
T13	14	Fiber Bundle	20.00 - 40.00	0.6000	0.6000
T13	15	Fiber Bundle	20.00 - 40.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T13	16	Fiber Bundle	20.00 - 40.00	0.6000	0.6000
T13	17	EW52	20.00 - 40.00	0.6000	0.6000
T13	18	EW52	20.00 - 40.00	0.6000	0.6000
T13	19	EW52	20.00 - 40.00	0.6000	0.6000
T13	20	EW52	20.00 - 40.00	0.6000	0.6000
T13	21	EW52	20.00 - 40.00	0.6000	0.6000
T13	22	EW52	20.00 - 40.00	0.6000	0.6000
T14	1	Safety Line 3/8	5.00 - 20.00	0.6000	0.6000
T14	5	1 5/8	5.00 - 20.00	0.6000	0.6000
T14	6	1 5/8	5.00 - 20.00	0.6000	0.6000
T14	7	1 5/8	5.00 - 20.00	0.6000	0.6000
T14	8	W/G LADDER RAIL*	5.00 - 20.00	0.6000	0.6000
T14	9	W/G LADDER RAIL*	5.00 - 20.00	0.6000	0.6000
T14	10	W/G LADDER RAIL*	5.00 - 20.00	0.6000	0.6000
T14	11	Fiber Bundle	5.00 - 20.00	0.6000	0.6000
T14	12	Fiber Bundle	5.00 - 20.00	0.6000	0.6000
T14	13	Fiber Bundle	5.00 - 20.00	0.6000	0.6000
T14	14	Fiber Bundle	5.00 - 20.00	0.6000	0.6000
T14	15	Fiber Bundle	5.00 - 20.00	0.6000	0.6000
T14	16	Fiber Bundle	5.00 - 20.00	0.6000	0.6000
T14	17	EW52	5.00 - 20.00	0.6000	0.6000
T14	18	EW52	5.00 - 20.00	0.6000	0.6000
T14	19	EW52	5.00 - 20.00	0.6000	0.6000
T14	20	EW52	5.00 - 20.00	0.6000	0.6000
T14	21	EW52	5.00 - 20.00	0.6000	0.6000
T14	22	EW52	5.00 - 20.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Air21 Panel w/ mt pipe	A	From Leg	3.00	0.000	280.00	No Ice	6.13	5.54	0.10
			0			1/2" Ice	6.52	6.20	0.16
			0			1" Ice	6.92	6.87	0.22
Air21 Panel w/ mt pipe	B	From Leg	3.00	0.000	280.00	No Ice	6.13	5.54	0.10
			0			1/2" Ice	6.52	6.20	0.16
			0			1" Ice	6.92	6.87	0.22
Air21 Panel w/ mt pipe	C	From Leg	3.00	0.000	280.00	No Ice	6.13	5.54	0.10
			0			1/2" Ice	6.52	6.20	0.16
			0			1" Ice	6.92	6.87	0.22
(3) LNX-8514DS w/ mt pipe	A	From Leg	3.00	0.000	280.00	No Ice	11.45	9.36	0.08
			0			1/2" Ice	12.06	10.68	0.16
			0			1" Ice	12.69	11.71	0.25
(3) LNX-8514DS w/ mt pipe	B	From Leg	3.00	0.000	280.00	No Ice	11.45	9.36	0.08
			0			1/2" Ice	12.06	10.68	0.16
			0			1" Ice	12.69	11.71	0.25
(3) LNX-8514DS w/ mt pipe	C	From Leg	3.00	0.000	280.00	No Ice	11.45	9.36	0.08
			0			1/2" Ice	12.06	10.68	0.16
			0			1" Ice	12.69	11.71	0.25
WD13X53 Antenna	C	From Leg	1.50	0.000	280.00	No Ice	7.20	3.88	1.18

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Mounting Frame (w/ .75)*			0			1/2" Ice	10.42	5.70	1.60
			0			1" Ice	13.56	7.51	2.11
WD13X53 Antenna	B	From Leg	1.50	0.000	280.00	No Ice	7.20	3.88	1.18
Mounting Frame (w/ .75)*			0			1/2" Ice	10.42	5.70	1.60
			0			1" Ice	13.56	7.51	2.11
WD13X53 Antenna	A	From Leg	1.50	0.000	280.00	No Ice	7.20	3.88	1.18
Mounting Frame (w/ .75)*			0			1/2" Ice	10.42	5.70	1.60
			0			1" Ice	13.56	7.51	2.11
Air21 Panel w/ mt pipe	A	From Leg	3.00	0.000	270.00	No Ice	6.13	5.54	0.10
			0			1/2" Ice	6.52	6.20	0.16
			0			1" Ice	6.92	6.87	0.22
Air21 Panel w/ mt pipe	B	From Leg	3.00	0.000	270.00	No Ice	6.13	5.54	0.10
			0			1/2" Ice	6.52	6.20	0.16
			0			1" Ice	6.92	6.87	0.22
Air21 Panel w/ mt pipe	C	From Leg	3.00	0.000	270.00	No Ice	6.13	5.54	0.10
			0			1/2" Ice	6.52	6.20	0.16
			0			1" Ice	6.92	6.87	0.22
(3) LNX-8514DS w/ mt pipe	A	From Leg	3.00	0.000	270.00	No Ice	11.45	9.36	0.08
			0			1/2" Ice	12.06	10.68	0.16
			0			1" Ice	12.69	11.71	0.25
(3) LNX-8514DS w/ mt pipe	B	From Leg	3.00	0.000	270.00	No Ice	11.45	9.36	0.08
			0			1/2" Ice	12.06	10.68	0.16
			0			1" Ice	12.69	11.71	0.25
(3) LNX-8514DS w/ mt pipe	C	From Leg	3.00	0.000	270.00	No Ice	11.45	9.36	0.08
			0			1/2" Ice	12.06	10.68	0.16
			0			1" Ice	12.69	11.71	0.25
WD13X53 Antenna	C	From Leg	1.50	0.000	270.00	No Ice	7.20	3.88	1.18
Mounting Frame (w/ .75)*			0			1/2" Ice	10.42	5.70	1.60
			0			1" Ice	13.56	7.51	2.11
WD13X53 Antenna	B	From Leg	1.50	0.000	270.00	No Ice	7.20	3.88	1.18
Mounting Frame (w/ .75)*			0			1/2" Ice	10.42	5.70	1.60
			0			1" Ice	13.56	7.51	2.11
WD13X53 Antenna	A	From Leg	1.50	0.000	270.00	No Ice	7.20	3.88	1.18
Mounting Frame (w/ .75)*			0			1/2" Ice	10.42	5.70	1.60
			0			1" Ice	13.56	7.51	2.11
Air21 Panel w/ mt pipe	A	From Leg	3.00	0.000	260.00	No Ice	6.13	5.54	0.10
			0			1/2" Ice	6.52	6.20	0.16
			0			1" Ice	6.92	6.87	0.22
Air21 Panel w/ mt pipe	B	From Leg	3.00	0.000	260.00	No Ice	6.13	5.54	0.10
			0			1/2" Ice	6.52	6.20	0.16
			0			1" Ice	6.92	6.87	0.22
Air21 Panel w/ mt pipe	C	From Leg	3.00	0.000	260.00	No Ice	6.13	5.54	0.10
			0			1/2" Ice	6.52	6.20	0.16
			0			1" Ice	6.92	6.87	0.22
(3) LNX-8514DS w/ mt pipe	A	From Leg	3.00	0.000	260.00	No Ice	11.45	9.36	0.08
			0			1/2" Ice	12.06	10.68	0.16
			0			1" Ice	12.69	11.71	0.25
(3) LNX-8514DS w/ mt pipe	B	From Leg	3.00	0.000	260.00	No Ice	11.45	9.36	0.08
			0			1/2" Ice	12.06	10.68	0.16
			0			1" Ice	12.69	11.71	0.25
(3) LNX-8514DS w/ mt pipe	C	From Leg	3.00	0.000	260.00	No Ice	11.45	9.36	0.08
			0			1/2" Ice	12.06	10.68	0.16
			0			1" Ice	12.69	11.71	0.25
WD13X53 Antenna	C	From Leg	1.50	0.000	260.00	No Ice	7.20	3.88	1.18
Mounting Frame (w/ .75)*			0			1/2" Ice	10.42	5.70	1.60
			0			1" Ice	13.56	7.51	2.11
WD13X53 Antenna	B	From Leg	1.50	0.000	260.00	No Ice	7.20	3.88	1.18

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Mounting Frame (w/ .75)*			0			1/2" Ice	10.42	5.70	1.60
			0			1" Ice	13.56	7.51	2.11
WD13X53 Antenna	A	From Leg	1.50	0.000	260.00	No Ice	7.20	3.88	1.18
Mounting Frame (w/ .75)*			0			1/2" Ice	10.42	5.70	1.60
			0			1" Ice	13.56	7.51	2.11
Air21 Panel w/ mt pipe	A	From Leg	3.00	0.000	250.00	No Ice	6.13	5.54	0.10
			0			1/2" Ice	6.52	6.20	0.16
			0			1" Ice	6.92	6.87	0.22
Air21 Panel w/ mt pipe	B	From Leg	3.00	0.000	250.00	No Ice	6.13	5.54	0.10
			0			1/2" Ice	6.52	6.20	0.16
			0			1" Ice	6.92	6.87	0.22
Air21 Panel w/ mt pipe	C	From Leg	3.00	0.000	250.00	No Ice	6.13	5.54	0.10
			0			1/2" Ice	6.52	6.20	0.16
			0			1" Ice	6.92	6.87	0.22
(3) LNX-8514DS w/ mt pipe	A	From Leg	3.00	0.000	250.00	No Ice	11.45	9.36	0.08
			0			1/2" Ice	12.06	10.68	0.16
			0			1" Ice	12.69	11.71	0.25
(3) LNX-8514DS w/ mt pipe	B	From Leg	3.00	0.000	250.00	No Ice	11.45	9.36	0.08
			0			1/2" Ice	12.06	10.68	0.16
			0			1" Ice	12.69	11.71	0.25
(3) LNX-8514DS w/ mt pipe	C	From Leg	3.00	0.000	250.00	No Ice	11.45	9.36	0.08
			0			1/2" Ice	12.06	10.68	0.16
			0			1" Ice	12.69	11.71	0.25
WD13X53 Antenna	C	From Leg	1.50	0.000	250.00	No Ice	7.20	3.88	1.18
Mounting Frame (w/ .75)*			0			1/2" Ice	10.42	5.70	1.60
			0			1" Ice	13.56	7.51	2.11
WD13X53 Antenna	B	From Leg	1.50	0.000	250.00	No Ice	7.20	3.88	1.18
Mounting Frame (w/ .75)*			0			1/2" Ice	10.42	5.70	1.60
			0			1" Ice	13.56	7.51	2.11
WD13X53 Antenna	A	From Leg	1.50	0.000	250.00	No Ice	7.20	3.88	1.18
Mounting Frame (w/ .75)*			0			1/2" Ice	10.42	5.70	1.60
			0			1" Ice	13.56	7.51	2.11
Air21 Panel w/ mt pipe	A	From Leg	3.00	0.000	240.00	No Ice	6.13	5.54	0.10
			0			1/2" Ice	6.52	6.20	0.16
			0			1" Ice	6.92	6.87	0.22
Air21 Panel w/ mt pipe	B	From Leg	3.00	0.000	240.00	No Ice	6.13	5.54	0.10
			0			1/2" Ice	6.52	6.20	0.16
			0			1" Ice	6.92	6.87	0.22
Air21 Panel w/ mt pipe	C	From Leg	3.00	0.000	240.00	No Ice	6.13	5.54	0.10
			0			1/2" Ice	6.52	6.20	0.16
			0			1" Ice	6.92	6.87	0.22
(3) LNX-8514DS w/ mt pipe	A	From Leg	3.00	0.000	240.00	No Ice	11.45	9.36	0.08
			0			1/2" Ice	12.06	10.68	0.16
			0			1" Ice	12.69	11.71	0.25
(3) LNX-8514DS w/ mt pipe	B	From Leg	3.00	0.000	240.00	No Ice	11.45	9.36	0.08
			0			1/2" Ice	12.06	10.68	0.16
			0			1" Ice	12.69	11.71	0.25
(3) LNX-8514DS w/ mt pipe	C	From Leg	3.00	0.000	240.00	No Ice	11.45	9.36	0.08
			0			1/2" Ice	12.06	10.68	0.16
			0			1" Ice	12.69	11.71	0.25
WD13X53 Antenna	C	From Leg	1.50	0.000	240.00	No Ice	7.20	3.88	1.18
Mounting Frame (w/ .75)*			0			1/2" Ice	10.42	5.70	1.60
			0			1" Ice	13.56	7.51	2.11
WD13X53 Antenna	B	From Leg	1.50	0.000	240.00	No Ice	7.20	3.88	1.18
Mounting Frame (w/ .75)*			0			1/2" Ice	10.42	5.70	1.60
			0			1" Ice	13.56	7.51	2.11
WD13X53 Antenna	A	From Leg	1.50	0.000	240.00	No Ice	7.20	3.88	1.18

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Mounting Frame (w/ .75)*			0			1/2" Ice	10.42	5.70	1.60
			0			1" Ice	13.56	7.51	2.11
Air21 Panel w/ mt pipe	A	From Leg	3.00	0.000	230.00	No Ice	6.13	5.54	0.10
			0			1/2" Ice	6.52	6.20	0.16
			0			1" Ice	6.92	6.87	0.22
Air21 Panel w/ mt pipe	B	From Leg	3.00	0.000	230.00	No Ice	6.13	5.54	0.10
			0			1/2" Ice	6.52	6.20	0.16
			0			1" Ice	6.92	6.87	0.22
Air21 Panel w/ mt pipe	C	From Leg	3.00	0.000	230.00	No Ice	6.13	5.54	0.10
			0			1/2" Ice	6.52	6.20	0.16
			0			1" Ice	6.92	6.87	0.22
(3) LNX-8514DS w/ mt pipe	A	From Leg	3.00	0.000	230.00	No Ice	11.45	9.36	0.08
			0			1/2" Ice	12.06	10.68	0.16
			0			1" Ice	12.69	11.71	0.25
(3) LNX-8514DS w/ mt pipe	B	From Leg	3.00	0.000	230.00	No Ice	11.45	9.36	0.08
			0			1/2" Ice	12.06	10.68	0.16
			0			1" Ice	12.69	11.71	0.25
(3) LNX-8514DS w/ mt pipe	C	From Leg	3.00	0.000	230.00	No Ice	11.45	9.36	0.08
			0			1/2" Ice	12.06	10.68	0.16
			0			1" Ice	12.69	11.71	0.25
WD13X53 Antenna	C	From Leg	1.50	0.000	230.00	No Ice	7.20	3.88	1.18
Mounting Frame (w/ .75)*			0			1/2" Ice	10.42	5.70	1.60
			0			1" Ice	13.56	7.51	2.11
WD13X53 Antenna	B	From Leg	1.50	0.000	230.00	No Ice	7.20	3.88	1.18
Mounting Frame (w/ .75)*			0			1/2" Ice	10.42	5.70	1.60
			0			1" Ice	13.56	7.51	2.11
WD13X53 Antenna	A	From Leg	1.50	0.000	230.00	No Ice	7.20	3.88	1.18
Mounting Frame (w/ .75)*			0			1/2" Ice	10.42	5.70	1.60
			0			1" Ice	13.56	7.51	2.11

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
6 FT DISH	B	Paraboloid w/Radome	From Leg	1.00	0.000		190.00	6.00	No Ice	28.27	0.14
				0					1/2" Ice	29.05	0.29
				0					1" Ice	29.83	0.44
6 FT DISH	C	Paraboloid w/Radome	From Leg	1.00	0.000		180.00	6.00	No Ice	28.27	0.14
				0					1/2" Ice	29.05	0.29
				0					1" Ice	29.83	0.44
6 FT DISH	B	Paraboloid w/Radome	From Leg	1.00	0.000		170.00	6.00	No Ice	28.27	0.14
				0					1/2" Ice	29.05	0.29
				0					1" Ice	29.83	0.44
6 FT DISH	C	Paraboloid w/Radome	From Leg	1.00	0.000		160.00	6.00	No Ice	28.27	0.14
				0					1/2" Ice	29.05	0.29
				0					1" Ice	29.83	0.44
6 FT DISH	B	Paraboloid w/Radome	From Leg	1.00	0.000		150.00	6.00	No Ice	28.27	0.14
				0					1/2" Ice	29.05	0.29

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral / Vert (ft)	Azimuth Adjustment (°)	3 dB Beam Width (°)	Elevation (ft)	Outside Diameter (ft)		Aperture Area (ft^2)	Weight (K)
				0					1" Ice	29.83	0.44
6 FT DISH	C	Paraboloid w/Radome	From Leg	1.00 0	0.000		140.00	6.00	No Ice 1/2" Ice	28.27 29.05	0.14 0.29
				0					1" Ice	29.83	0.44

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service

Comb. No.	Description
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	280 - 260	15.62	48	0.581	0.019
T2	260 - 240	13.18	48	0.543	0.017
T3	240 - 220	10.96	48	0.495	0.019
T4	220 - 200	8.96	48	0.433	0.019
T5	200 - 180	7.21	48	0.378	0.019
T6	180 - 160	5.69	48	0.324	0.018
T7	160 - 140	4.39	48	0.275	0.016
T8	140 - 120	3.29	47	0.229	0.013
T9	120 - 100	2.37	47	0.187	0.010
T10	100 - 80	1.63	47	0.149	0.007
T11	80 - 60	1.04	47	0.115	0.005
T12	60 - 40	0.59	47	0.082	0.003
T13	40 - 20	0.28	47	0.053	0.002
T14	20 - 0	0.07	43	0.025	0.001

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
280.00	Air21 Panel w/ mt pipe	48	15.62	0.581	0.019	72869
270.00	Air21 Panel w/ mt pipe	48	14.38	0.563	0.018	36434
260.00	Air21 Panel w/ mt pipe	48	13.18	0.543	0.017	19158
250.00	Air21 Panel w/ mt pipe	48	12.04	0.521	0.018	20004
240.00	Air21 Panel w/ mt pipe	48	10.96	0.495	0.019	21845
230.00	Air21 Panel w/ mt pipe	48	9.93	0.464	0.019	20656
190.00	6 FT DISH	48	6.42	0.351	0.019	21179
180.00	6 FT DISH	48	5.69	0.324	0.018	22951
170.00	6 FT DISH	48	5.01	0.299	0.017	23044
160.00	6 FT DISH	48	4.39	0.275	0.016	23111
150.00	6 FT DISH	48	3.82	0.252	0.014	25056
140.00	6 FT DISH	47	3.29	0.229	0.013	27370

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	280 - 260	56.42	20	2.100	0.062
T2	260 - 240	47.62	20	1.964	0.063
T3	240 - 220	39.58	20	1.788	0.068
T4	220 - 200	32.37	20	1.565	0.070

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T5	200 - 180	26.03	20	1.365	0.069
T6	180 - 160	20.55	20	1.172	0.066
T7	160 - 140	15.85	20	0.994	0.057
T8	140 - 120	11.88	20	0.828	0.047
T9	120 - 100	8.56	20	0.677	0.035
T10	100 - 80	5.86	10	0.538	0.026
T11	80 - 60	3.74	10	0.414	0.018
T12	60 - 40	2.13	10	0.295	0.012
T13	40 - 20	1.00	10	0.190	0.008
T14	20 - 0	0.27	11	0.089	0.003

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
280.00	Air21 Panel w/ mt pipe	20	56.42	2.100	0.062	20362
270.00	Air21 Panel w/ mt pipe	20	51.96	2.035	0.062	10181
260.00	Air21 Panel w/ mt pipe	20	47.62	1.964	0.063	5351
250.00	Air21 Panel w/ mt pipe	20	43.49	1.883	0.065	5570
240.00	Air21 Panel w/ mt pipe	20	39.58	1.788	0.068	6051
230.00	Air21 Panel w/ mt pipe	20	35.87	1.677	0.069	5724
190.00	6 FT DISH	20	23.19	1.268	0.068	5859
180.00	6 FT DISH	20	20.55	1.172	0.066	6343
170.00	6 FT DISH	20	18.11	1.081	0.062	6372
160.00	6 FT DISH	20	15.85	0.994	0.057	6393
150.00	6 FT DISH	20	13.78	0.909	0.052	6931
140.00	6 FT DISH	20	11.88	0.828	0.047	7572

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	280	Leg	A325N	0.75	4	10.37	29.82	0.348 ✔	1	Bolt Tension
T2	260	Leg	A325N	1.00	4	23.89	53.01	0.451 ✔	1	Bolt Tension
		Diagonal	A325N	0.63	1	7.30	8.89	0.820 ✔	1	Member Block Shear
		Top Girt	A325N	0.63	1	1.75	5.93	0.295 ✔	1	Member Block Shear
T3	240	Leg	A325N	1.00	4	41.86	53.01	0.790 ✔	1	Bolt Tension
		Diagonal	A325N	0.63	1	9.67	10.93	0.884 ✔	1	Member Block Shear
T4	220	Leg	A325N	1.00	6	39.64	53.01	0.748 ✔	1	Bolt Tension
		Diagonal	A325N	0.63	1	9.80	10.93	0.897 ✔	1	Member Block Shear
T5	200	Leg	A325N	1.25	6	48.90	82.83	0.590 ✔	1	Bolt Tension
		Diagonal	A325N	0.75	1	13.99	17.89	0.782 ✔	1	Bolt Shear

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
		Horizontal	A325N	0.75	1	6.03	10.16	0.593 ✔	1	Member Block Shear
T6	180	Leg	A325N	1.25	6	59.28	82.83	0.716 ✔	1	Bolt Tension
		Diagonal	A325N	0.75	1	15.37	17.89	0.859 ✔	1	Bolt Shear
		Horizontal	A325N	0.75	1	6.97	10.16	0.686 ✔	1	Member Block Shear
T7	160	Leg	A325N	1.25	6	69.51	82.83	0.839 ✔	1	Bolt Tension
		Diagonal	A325N	0.75	1	16.85	17.89	0.942 ✔	1	Bolt Shear
		Horizontal	A325N	0.75	1	8.16	10.16	0.803 ✔	1	Member Block Shear
T8	140	Leg	A325N	1.50	6	79.68	119.28	0.668 ✔	1	Bolt Tension
		Diagonal	A325N	0.88	1	17.25	20.88	0.826 ✔	1	Member Bearing
		Horizontal	A325N	0.88	1	9.36	13.47	0.695 ✔	1	Member Block Shear
T9	120	Leg	A325N	1.50	6	89.54	119.28	0.751 ✔	1	Bolt Tension
		Diagonal	A325N	0.88	1	18.01	20.88	0.863 ✔	1	Member Bearing
		Horizontal	A325N	0.88	1	10.55	17.96	0.587 ✔	1	Member Block Shear
T10	100	Leg	A325N	1.50	6	97.20	119.28	0.815 ✔	1	Bolt Tension
		Diagonal	A325N	0.88	1	14.02	20.88	0.671 ✔	1	Member Bearing
		Horizontal	A325N	0.88	1	11.52	20.88	0.552 ✔	1	Member Bearing
T11	80	Leg	A325N	1.50	6	103.83	119.28	0.870 ✔	1	Bolt Tension
		Diagonal	A325N	0.88	1	15.58	24.35	0.640 ✔	1	Bolt Shear
		Horizontal	A325N	0.88	1	12.38	20.88	0.593 ✔	1	Member Bearing
T12	60	Leg	A325N	1.75	6	110.38	162.36	0.680 ✔	1	Bolt Tension
		Diagonal	A325N	0.88	1	16.53	24.35	0.679 ✔	1	Bolt Shear
		Horizontal	A325N	0.88	1	13.25	20.88	0.635 ✔	1	Member Bearing
T13	40	Leg	A325N	1.75	6	116.85	162.36	0.720 ✔	1	Bolt Tension
		Diagonal	A325N	0.88	1	18.06	24.35	0.741 ✔	1	Bolt Shear
		Horizontal	A325N	0.88	1	14.13	24.35	0.580 ✔	1	Bolt Shear
T14	20	Leg	A354-BC	1.75	6	120.56	169.12	0.713 ✔	1	Bolt Tension
		Diagonal	A325N	0.88	1	23.51	24.35	0.965 ✔	1	Bolt Shear
		Horizontal	A325N	0.88	1	14.65	24.35	0.601 ✔	1	Bolt Shear

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	280 - 260	1 3/4	20.00	3.21	88.0 K=1.00	2.41	-44.13	61.44	0.718 [1] ✔
T2	260 - 240	2 3/4	20.02	5.00	87.4 K=1.00	5.94	-112.64	152.99	0.736 [1] ✔
T3	240 - 220	3	20.02	5.00	80.1 K=1.00	7.07	-195.43	199.04	0.982 [1] ✔
T4	220 - 200	3 1/2	20.02	5.00	68.6 K=1.00	9.62	-271.46	306.80	0.885 [1] ✔
T5	200 - 180	3 3/4	20.02	5.00	64.1 K=1.00	11.04	-332.69	368.18	0.904 [1] ✔
T6	180 - 160	4	20.02	5.00	60.1 K=1.00	12.57	-401.84	434.40	0.925 [1] ✔
T7	160 - 140	4 1/4	20.02	5.00	56.5 K=1.00	14.19	-471.05	505.39	0.932 [1] ✔
T8	140 - 120	4 1/2	20.02	5.00	53.4 K=1.00	15.90	-540.26	581.08	0.930 [1] ✔
T9	120 - 100	4 3/4	20.02	5.00	50.6 K=1.00	17.72	-608.45	661.41	0.920 [1] ✔
T10	100 - 80	5	20.03	5.01	48.1 K=1.00	19.64	-664.39	746.17	0.890 [1] ✔
T11	80 - 60	5	20.03	5.01	48.1 K=1.00	19.64	-714.00	746.17	0.957 [1] ✔
T12	60 - 40	5 1/4	20.03	5.01	45.8 K=1.00	21.65	-764.23	835.68	0.915 [1] ✔
T13	40 - 20	5 1/4	20.03	5.01	45.8 K=1.00	21.65	-814.80	835.68	0.975 [1] ✔
T14	20 - 0	5 1/2	20.03	5.01	43.7 K=1.00	23.76	-844.61	929.74	0.908 [1] ✔

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	280 - 260	1 1/8	5.13	4.94	147.6 K=0.70	0.99	-9.64	10.31	0.935 [1] ✔
T2	260 - 240	L2x2x3/16	7.03	3.34	106.4 K=1.04	0.71	-7.53	12.77	0.590 [1] ✔
T3	240 - 220	L2 1/2x2 1/2x3/16	8.45	4.04	103.5 K=1.06	0.90	-9.82	16.63	0.590 [1] ✔
T4	220 - 200	L2 1/2x2 1/2x3/16	9.70	4.64	114.4 K=1.02	0.90	-9.91	14.67	0.676 [1] ✔
T5	200 - 180	L3x3x1/4	7.07	6.52	132.1 K=1.00	1.44	-13.99	18.61	0.751 [1] ✔
T6	180 - 160	L3x3x1/4	7.62	7.07	143.2 K=1.00	1.44	-15.37	15.86	0.969 [1] ✔
T7	160 - 140	L3 1/2x3 1/2x1/4	8.20	7.64	132.2 K=1.00	1.69	-16.85	21.83	0.772 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T8	140 - 120	L3 1/2x3 1/2x1/4	8.81	8.20	141.9 K=1.00	1.69	-17.98	18.97	0.948 [1]
T9	120 - 100	L4x4x1/4	9.43	8.83	133.2 K=1.00	1.94	-18.93	24.62	0.769 [1]
T10	100 - 80	L4x4x1/4	10.30	9.68	146.2 K=1.00	1.94	-14.59	20.51	0.711 [1]
T11	80 - 60	L4x4x5/16	11.18	10.57	160.4 K=1.00	2.40	-15.58	21.07	0.739 [1]
T12	60 - 40	L4x4x3/8	12.08	11.47	174.6 K=1.00	2.86	-16.47	21.18	0.777 [1]
T13	40 - 20	L4x4x3/8	13.00	12.39	188.7 K=1.00	2.86	-17.44	18.15	0.961 [1]
T14	20 - 0	L4x4x3/8	16.40	15.74	153.6 K=1.00	2.86	-23.51	27.40	0.858 [1]

[1] $P_u / \phi P_n$ controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	280 - 260	11/16	4.00	3.85	188.4 K=0.70	0.37	-1.59	2.36	0.674 [1]
T5	200 - 180	L2 1/2x2 1/2x3/16	9.63	4.49	114.4 K=1.05	0.90	-6.03	14.67	0.411 [1]
T6	180 - 160	L2 1/2x2 1/2x3/16	11.13	5.23	126.8 K=1.00	0.90	-6.97	12.54	0.556 [1]
T7	160 - 140	L2 1/2x2 1/2x3/16	12.63	5.97	144.7 K=1.00	0.90	-8.16	9.73	0.839 [1]
T8	140 - 120	L3x3x3/16	14.13	6.69	134.6 K=1.00	1.09	-9.36	13.57	0.690 [1]
T9	120 - 100	L3x3x1/4	15.63	7.43	150.5 K=1.00	1.44	-10.55	14.35	0.735 [1]
T10	100 - 80	L3 1/2x3 1/2x1/4	17.50	8.35	144.5 K=1.00	1.69	-11.52	18.30	0.630 [1]
T11	80 - 60	L3 1/2x3 1/2x1/4	19.50	9.35	161.7 K=1.00	1.69	-12.38	14.59	0.848 [1]
T12	60 - 40	L4x4x1/4	21.50	10.34	156.1 K=1.00	1.94	-13.25	17.98	0.737 [1]
T13	40 - 20	L4x4x5/16	23.50	11.34	172.1 K=1.00	2.40	-14.13	18.31	0.772 [1]
T14	20 - 0	L4x4x3/8	25.00	12.08	184.0 K=1.00	2.86	-14.65	19.08	0.768 [1]

[1] $P_u / \phi P_n$ controls

Secondary Horizontal Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	280 - 260	1	2.00	1.93	83.8 K=0.91	0.79	-0.00	17.58	0.000 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	280 - 260	1	4.00	3.85	129.5 K=0.70	0.79	-2.27	10.52	0.216 [1] ✔
T2	260 - 240	L2x2x1/8	4.00	3.56	113.8 K=1.06	0.48	-2.00	7.85	0.254 [1] ✔

[1] P_u / ϕP_n controls

Bottom Girt Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	280 - 260	1	4.00	3.85	129.5 K=0.70	0.79	-3.06	10.52	0.291 [1] ✔

[1] P_u / ϕP_n controls

Redundant Horizontal (1) Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T14	20 - 0	L3x3x3/16	6.25	6.02	121.2 K=1.00	1.09	-14.65	16.16	0.906 [1] ✔

[1] P_u / ϕP_n controls

Redundant Diagonal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T14	20 - 0	L3x3x3/16	8.20	7.90	159.1 K=1.00	1.09	-9.61	9.72	0.988 [1] ✔

[1] P_u / ϕP_n controls

Inner Bracing Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T14	20 - 0	L3 1/2x3 1/2x1/4	12.50	12.50	216.1 K=1.00	1.69	-0.03	8.17	0.003 [1] ✔

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	280 - 260	1 3/4	20.00	0.38	10.3	2.41	41.49	108.24	0.383 [1] ✔
T2	260 - 240	2 3/4	20.02	5.00	87.4	5.94	95.57	267.28	0.358 [1] ✔
T3	240 - 220	3	20.02	5.00	80.1	7.07	167.43	318.09	0.526 [1] ✔
T4	220 - 200	3 1/2	20.02	5.00	68.6	9.62	237.85	432.95	0.549 [1] ✔
T5	200 - 180	3 3/4	20.02	5.00	64.1	11.04	293.68	497.01	0.591 [1] ✔
T6	180 - 160	4	20.02	5.00	60.1	12.57	355.97	565.49	0.629 [1] ✔
T7	160 - 140	4 1/4	20.02	5.00	56.5	14.19	417.41	638.38	0.654 [1] ✔
T8	140 - 120	4 1/2	20.02	5.00	53.4	15.90	478.47	715.69	0.669 [1] ✔
T9	120 - 100	4 3/4	20.02	5.00	50.6	17.72	537.65	797.42	0.674 [1] ✔
T10	100 - 80	5	20.03	5.01	48.1	19.64	583.72	883.57	0.661 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T11	80 - 60	5	20.03	5.01	48.1	19.64	623.48	883.57	0.706 [1] ✔
T12	60 - 40	5 1/4	20.03	5.01	45.8	21.65	662.81	974.14	0.680 [1] ✔
T13	40 - 20	5 1/4	20.03	5.01	45.8	21.65	701.75	974.14	0.720 [1] ✔
T14	20 - 0	5 1/2	20.03	5.01	43.7	23.76	723.94	1069.12	0.677 [1] ✔

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	280 - 260	1 1/8	5.13	4.94	210.8	0.99	9.65	32.21	0.300 [1] ✔
T2	260 - 240	L2x2x3/16	7.03	3.34	67.9	0.43	7.30	18.74	0.389 [1] ✔
T3	240 - 220	L2 1/2x2 1/2x3/16	8.15	3.89	62.3	0.57	9.67	24.84	0.389 [1] ✔
T4	220 - 200	L2 1/2x2 1/2x3/16	9.70	4.64	73.9	0.57	9.80	24.84	0.395 [1] ✔
T5	200 - 180	L3x3x1/4	6.81	6.26	85.0	0.92	13.79	39.84	0.346 [1] ✔
T6	180 - 160	L3x3x1/4	7.34	6.79	91.9	0.92	14.87	39.84	0.373 [1] ✔
T7	160 - 140	L3 1/2x3 1/2x1/4	8.20	7.64	87.8	1.10	16.29	48.00	0.339 [1] ✔
T8	140 - 120	L3 1/2x3 1/2x1/4	8.81	8.20	94.5	1.08	17.25	46.98	0.367 [1] ✔
T9	120 - 100	L4x4x1/4	9.43	8.83	88.3	1.27	18.01	55.14	0.327 [1] ✔
T10	100 - 80	L4x4x1/4	10.30	9.68	96.6	1.27	14.02	55.14	0.254 [1] ✔
T11	80 - 60	L4x4x5/16	11.18	10.57	106.0	1.57	14.92	68.10	0.219 [1] ✔
T12	60 - 40	L4x4x3/8	11.63	11.02	111.1	1.86	15.91	81.07	0.196 [1] ✔
T13	40 - 20	L4x4x3/8	13.00	12.39	124.5	1.86	17.52	81.07	0.216 [1] ✔
T14	20 - 0	L4x4x3/8	16.40	15.74	157.2	1.86	20.23	81.07	0.249 [1] ✔

[1] P_u / ϕP_n controls

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	280 - 260	11/16	4.00	3.85	269.1	0.37	1.63	12.03	0.135 [1] ✔
T5	200 - 180	L2 1/2x2 1/2x3/16	9.63	4.49	107.7	0.55	6.03	24.08	0.250 [1] ✔
T6	180 - 160	L2 1/2x2 1/2x3/16	11.13	5.23	124.8	0.55	6.97	24.08	0.289 [1] ✔
T7	160 - 140	L2 1/2x2 1/2x3/16	12.63	5.97	142.0	0.55	8.16	24.08	0.339 [1] ✔
T8	140 - 120	L3x3x3/16	14.13	6.69	131.8	0.68	9.36	29.44	0.318 [1] ✔
T9	120 - 100	L3x3x1/4	15.63	7.43	147.4	0.89	10.55	38.82	0.272 [1] ✔
T10	100 - 80	L3 1/2x3 1/2x1/4	17.50	8.35	141.1	1.08	11.52	46.98	0.245 [1] ✔
T11	80 - 60	L3 1/2x3 1/2x1/4	19.50	9.35	157.6	1.08	12.38	46.98	0.264 [1] ✔
T12	60 - 40	L4x4x1/4	21.50	10.34	151.6	1.27	13.25	55.14	0.240 [1] ✔
T13	40 - 20	L4x4x5/16	23.50	11.34	167.4	1.57	14.13	68.10	0.207 [1] ✔
T14	20 - 0	L4x4x3/8	25.00	12.08	119.7	1.86	14.65	81.07	0.181 [1] ✔

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	280 - 260	1	2.00	1.93	92.5	0.79	0.00	25.45	0.000 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	280 - 260	1	4.00	3.85	185.0	0.79	2.28	25.45	0.089 [1] ✔
T2	260 - 240	L2x2x1/8	4.00	3.56	73.9	0.29	1.75	12.74	0.137 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$

[1] P_u / ϕP_n controls

Bottom Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	280 - 260	1	4.00	3.85	185.0	0.79	3.20	25.45	0.126 [1] ✔

[1] P_u / ϕP_n controls

Redundant Horizontal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T14	20 - 0	L3x3x3/16	6.25	6.02	76.9	1.09	14.65	35.32	0.415 [1] ✔

[1] P_u / ϕP_n controls

Redundant Diagonal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T14	20 - 0	L3x3x3/16	8.20	7.90	101.0	1.09	9.61	35.32	0.272 [1] ✔

[1] P_u / ϕP_n controls

Inner Bracing Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T14	20 - 0	L3 1/2x3 1/2x1/4	12.50	12.50	137.6	1.69	0.00	54.76	0.000 [1] ✔

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	280 - 260	Leg	1 3/4	3	-44.13	61.44	71.8	Pass
T2	260 - 240	Leg	2 3/4	51	-112.64	152.99	73.6	Pass
T3	240 - 220	Leg	3	81	-195.43	199.04	98.2	Pass
T4	220 - 200	Leg	3 1/2	108	-271.46	306.80	88.5	Pass
T5	200 - 180	Leg	3 3/4	135	-332.69	368.18	90.4	Pass
T6	180 - 160	Leg	4	167	-401.84	434.40	92.5	Pass
T7	160 - 140	Leg	4 1/4	200	-471.05	505.39	93.2	Pass
T8	140 - 120	Leg	4 1/2	232	-540.26	581.08	93.0	Pass
T9	120 - 100	Leg	4 3/4	265	-608.45	661.41	92.0	Pass
T10	100 - 80	Leg	5	299	-664.39	746.17	89.0	Pass
T11	80 - 60	Leg	5	332	-714.00	746.17	95.7	Pass
T12	60 - 40	Leg	5 1/4	365	-764.23	835.68	91.5	Pass
T13	40 - 20	Leg	5 1/4	398	-814.80	835.68	97.5	Pass
T14	20 - 0	Leg	5 1/2	431	-844.61	929.74	90.8	Pass
T1	280 - 260	Diagonal	1 1/8	12	-9.64	10.31	93.5	Pass
T2	260 - 240	Diagonal	L2x2x3/16	66	-7.53	12.77	59.0	Pass
							82.0 (b)	
T3	240 - 220	Diagonal	L2 1/2x2 1/2x3/16	86	-9.82	16.63	59.0	Pass
							88.4 (b)	
T4	220 - 200	Diagonal	L2 1/2x2 1/2x3/16	109	-9.91	14.67	67.6	Pass
							89.7 (b)	
T5	200 - 180	Diagonal	L3x3x1/4	137	-13.99	18.61	75.1	Pass
							78.2 (b)	
T6	180 - 160	Diagonal	L3x3x1/4	170	-15.37	15.86	96.9	Pass
T7	160 - 140	Diagonal	L3 1/2x3 1/2x1/4	203	-16.85	21.83	77.2	Pass
							94.2 (b)	
T8	140 - 120	Diagonal	L3 1/2x3 1/2x1/4	237	-17.98	18.97	94.8	Pass
T9	120 - 100	Diagonal	L4x4x1/4	270	-18.93	24.62	76.9	Pass
							86.3 (b)	
T10	100 - 80	Diagonal	L4x4x1/4	303	-14.59	20.51	71.1	Pass
T11	80 - 60	Diagonal	L4x4x5/16	336	-15.58	21.07	73.9	Pass
T12	60 - 40	Diagonal	L4x4x3/8	369	-16.47	21.18	77.7	Pass
T13	40 - 20	Diagonal	L4x4x3/8	402	-17.44	18.15	96.1	Pass
T14	20 - 0	Diagonal	L4x4x3/8	437	-23.51	27.40	85.8	Pass
							96.5 (b)	
T1	280 - 260	Horizontal	11/16	30	-1.59	2.36	67.4	Pass
T5	200 - 180	Horizontal	L2 1/2x2 1/2x3/16	139	-6.03	14.67	41.1	Pass
							59.3 (b)	
T6	180 - 160	Horizontal	L2 1/2x2 1/2x3/16	169	-6.97	12.54	55.6	Pass
							68.6 (b)	
T7	160 - 140	Horizontal	L2 1/2x2 1/2x3/16	202	-8.16	9.73	83.9	Pass
T8	140 - 120	Horizontal	L3x3x3/16	235	-9.36	13.57	69.0	Pass
							69.5 (b)	
T9	120 - 100	Horizontal	L3x3x1/4	268	-10.55	14.35	73.5	Pass
T10	100 - 80	Horizontal	L3 1/2x3 1/2x1/4	301	-11.52	18.30	63.0	Pass
T11	80 - 60	Horizontal	L3 1/2x3 1/2x1/4	334	-12.38	14.59	84.8	Pass
T12	60 - 40	Horizontal	L4x4x1/4	370	-13.25	17.98	73.7	Pass
T13	40 - 20	Horizontal	L4x4x5/16	400	-14.13	18.31	77.2	Pass
T14	20 - 0	Horizontal	L4x4x3/8	433	-14.65	19.08	76.8	Pass
T1	280 - 260	Secondary Horizontal	1	20	-0.00	17.58	0.1	Pass
T1	280 - 260	Top Girt	1	5	-2.27	10.52	21.6	Pass
T2	260 - 240	Top Girt	L2x2x1/8	52	-2.00	7.85	25.4	Pass
							29.5 (b)	

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	280 - 260	Bottom Girt	1	9	-3.06	10.52	29.1	Pass
T14	20 - 0	Redund Horz 1 Bracing	L3x3x3/16	442	-14.65	16.16	90.6	Pass
T14	20 - 0	Redund Diag 1 Bracing	L3x3x3/16	465	-9.61	9.72	98.8	Pass
T14	20 - 0	Inner Bracing	L3 1/2x3 1/2x1/4	456	-0.03	8.17	0.6	Pass
							Summary	
						Leg (T3)	98.2	Pass
						Diagonal (T6)	96.9	Pass
						Horizontal (T11)	84.8	Pass
						Secondary Horizontal (T1)	0.1	Pass
						Top Girt (T2)	29.5	Pass
						Bottom Girt (T1)	29.1	Pass
						Redund Horz 1 Bracing (T14)	90.6	Pass
						Redund Diag 1 Bracing (T14)	98.8	Pass
						Inner Bracing (T14)	0.6	Pass
						Bolt Checks	96.5	Pass
						RATING =	**98.8**	**Pass**

Geotechnical Engineering Report

Proposed 280-foot Self-Support Tower
Site Name: Mannsville Tower
Mannsville, Taylor County, Kentucky
December 12, 2016
Project No. 57165129

Prepared for:
Kentucky RSA #4 Cellular General Partnership,
D/B/A Bluegrass Cellular, Inc.
Elizabethtown, Kentucky

Prepared by:
Terracon Consultants, Inc.
Louisville, Kentucky

December 12, 2016

Terracon

Bluegrass Cellular, Inc.
2902 Ring Road
Elizabethtown, KY 42702

Attn: Mr. Tim Ash
P: [270] 765 6361

Regarding: Geotechnical Engineering Report
Proposed 280-foot Self Support Telecommunications Tower
Site Name: Mannsville Tower
Mannsville, Taylor County, Kentucky
Terracon Project No.: 57165129

Dear Mr. Ash:

Terracon Consultants, Inc. (Terracon) has completed the geotechnical subsurface exploration, field testing, laboratory testing, and engineering evaluation for the Mannsville tower project. It is our understanding that a 280-foot, self-support tower is planned for this site. The purpose of this report is to provide geotechnical parameters for the subsurface materials for foundation design and earthwork considerations. **This study was performed in general accordance with Terracon's Master** Service Agreement dated March 7, 2001 and Kentucky RSA#4 Cellular General Partnership d/b/a Bluegrass Cellular Purchase Order PO-3898 dated September 2, 2016.

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, please contact the writer.

Sincerely,
Terracon Consultants, Inc.

Ryan C. Ortiz, E.I.T.
Staff Geotechnical Engineer

STATE OF KENTUCKY
GEORGE C. WEBB, II
12,332
LICENSED
PROFESSIONAL ENGINEER

George C. Webb, P.E., LEED AP
Senior Principal

TABLE OF CONTENTS

GEOTECHNICAL ENGINEERING REPORT
PROPOSED 280-FOOT SELF-SUPPORT TOWER
SITE NAME: MANNSVILLE TOWER
MANNSVILLE, KENTUCKY

Terracon Project No. 57165129
December 12, 2016

1.0 INTRODUCTION

A geotechnical exploration has been performed for the proposed self-support telecommunications tower located off of the west end of Christian Church Road in Mannsville, Kentucky. One boring was completed for this geotechnical study and was advanced to a depth of approximately 44 feet below the existing grade. The boring was offset about 10 feet southeast of the center of the proposed self-support tower location due to safety concerns regarding overhead tree limbs. The log of the test boring along with a site location plan and exploration plan are included in Appendix A of this report.

The purpose of these services is to provide information and geotechnical engineering recommendations relative to:

- subsurface soil conditions
- short term groundwater conditions
- earthwork operations
- foundation design and construction

2.0 PROJECT INFORMATION

2.1 Project Description

ITEM	DESCRIPTION
Site layout	Please see the Exploration Plan in the Appendix (Exhibit A-2). Boring B-1 was offset approximately 10 feet southeast of the center of the proposed self-support tower location due to safety concerns regarding overhead tree limbs.
Proposed Improvements	A 280-foot tall self-support tower and an equipment shelter are planned within the 50 foot by 50 foot lease area. The equipment shelter location and dimensions are not available at the time of this report.

ITEM	DESCRIPTION
Grading	Based on review of USGS publically available topographic information, the site slopes downward towards the southeast with about 8 feet of local elevation relief over the 50-foot lease area. We anticipate minimal cuts and fills (ie. <5 ft) will be required. Terracon should be retained to review the topographic plan and grading plan upon availability relative to the recommendations contained in this report.
280-foot Self-Support Tower: Maximum loads (to be confirmed)	Vertical: 800 kips Shear: 100 kips Uplift: 650 kips These anticipated loads are based on experience with similar projects. Loads should be confirmed by the project Structural Engineer. If loading conditions vary from those stated above, Terracon should review the recommendations in this report and confirm they are applicable.
280-foot Self-Support tower: Maximum allowable settlement (to be confirmed)	1-inch (to be confirmed)
Equipment building: Maximum loads (to be confirmed)	Column: 34 kips (to be confirmed) Wall: 1.5 kips/ft (to be confirmed) These anticipated loads that are shown are based on experience with similar projects. Loads should be confirmed by Structural Engineer. If loading conditions vary from those stated above, Terracon should review the recommendations in this report and confirm they are applicable.
Equipment building: Maximum allowable settlement (to be confirmed)	Total: 1-inch (to be confirmed) Differential: ¾ inch over 40 feet (to be confirmed)

2.2 Site Location and Description

ITEM	DESCRIPTION
Location	The existing site, referred to as Mannsville Telecommunications Tower, is located at near the west end of Christian Church Road in Mannsville, Kentucky. ■ Approximate lat/long coordinates: 37°22'33.50",-85°12'18.74" ■ The coordinates were obtained from 2C Certification dated November 4, 2016. ■ See the Site Location Plan in the Appendix (Exhibit A-1).
Existing improvements	The proposed lease area does not contain any existing structures.
Current ground cover	Trees, grass, shrubs, and a drainage swale are generally located within footprint of the proposed lease area.
Existing topography	The existing grade tower elevation of 794.7 feet was obtained from the 2D Certification dated November 4, 2016. Based on site observations by Terracon representative Ryan Ortiz, the project site slopes gently, downward towards the southeast. A drainage swale was also observed just southeast of the tower footprint.

3.0 SUBSURFACE CONDITIONS

3.1 Geology

FORMATION[1]	DESCRIPTION
Borden Formation	Siltstone, minor limestone and shale Siltstone, dolomitic, medium light-gray, laminated, contains a few scattered quartz geodes and partially oxidized pyrite nodules, intercalated with a few lenses of limestone and light-to-medium gray silty shale partings. Limestone, calcarenite, dolomitic, cherty, partly silicified, medium-grained, weathers to light-yellowish-orange soil containing silicified crinoid stems, horn corals, brachiopods, quartz geodes, and a few scattered partially oxidized pyrite nodules.

1. Based on the Geologic Map of the Bradfordsville Quadrangle, Kentucky, published by U.S. Geological Survey (GQ-1386).

3.2 Typical Profile

Based on the results of our boring, the subsurface conditions can be generalized as follows:

Description	Approximate Depth to Bottom of Stratum (feet)	Material Encountered	Consistency/Density
Surface Materials [1]	0.4	Topsoil	NA
Stratum 1	23	Lean clay, CL [2]	Very stiff to hard[3]
Stratum 2	Greater than 44 feet [4] (boring terminated in bedrock)	Siltstone	Recovery range: 97 to 98% RQD range: 40 to 85%

1. Topsoil was encountered at Boring B-1.
2. Native, residual lean clay was encountered in Boring B-1. An Atterberg limit test at offset Boring B-1 at about 13.5 to 15 feet below existing grade resulted in a liquid limit (LL) of 36 percent and plastic limit (PL) of 24 percent. Moisture contents on representative samples ranged from 17 to 24 percent.
3. Native lean clay exhibited a very stiff to hard consistency based on SPT N-values ranging from 22 to 38 and on hand penetrometer values of 8000+ psf.
4. Siltstone was encountered at the test boring location at a depth of about 23 feet below existing grade. The test boring terminated in this stratum. Boring B-1 was advanced into siltstone bedrock, starting at about 29 feet below ground surface, by rock coring techniques extending to about 44 feet below existing ground surface. Tested unconfined compressive strength results ranged from approximately 40 to 620 psi at Boring B-1. A seam of completely weathered material was observed in the recovered rock core from 32 to 33.5 feet below existing grades. See the Rock Core Photo in the Appendix (Exhibit A-5).

Auger refusal was encountered at a depth of approximately 29 feet below existing grade at B-1 and the boring was extended using rock coring techniques to a depth of about 44 feet below existing grade. Auger refusal is defined as the depth below the ground surface at which a test boring can no longer be advanced with the soil drilling technique being used.

Specific conditions encountered at Boring B-1 are indicated on the attached boring log. Stratification boundaries on the boring log represent the approximate location of changes in soil types; in-situ, the transition between materials may be gradual. Further details of the boring can be found on the test boring log in the Appendix of this report. Photographs of the recovered rock core samples can be observed in the Rock Core Photography Log (Exhibit A-5).

3.3 Groundwater

The borehole was observed while drilling and after completion of soil drilling activities for the presence and level of groundwater. Groundwater was not observed in the boring while drilling the soil overburden. The introduction of water into the borehole for rock coring purposes precluded obtaining accurate groundwater level readings at the time of coring operations. Due to the low permeability of

the soils encountered in the boring, a relatively long period of time is necessary for a groundwater level to develop and stabilize in a borehole in these materials. Long term observations in piezometers or observation wells sealed from the influence of surface water are often required to define groundwater levels in materials of this type.

Groundwater level fluctuations 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 tower project. In particular, this project has potential for perched water at the natural overburden/bedrock surface.

4.0 RECOMMENDATIONS FOR DESIGN AND CONSTRUCTION

4.1 Geotechnical Considerations

We understand that a shallow foundation or straight shaft drilled pier are being considered for foundation support of the proposed self-support tower. Shallow spread footings are typical for equipment shelters. If other foundation options are selected for the support of the equipment building (ie. mat foundation), we should be contacted to revise our recommendations.

Completely Weathered Siltstone Layer

A completely weathered siltstone layer in bedrock was encountered from 32 to 33.5 feet below existing grade. If a shaft drilled pier is selected for foundation support, we recommend that the drilled pier be tipped at least 3 feet or one pier diameter into competent siltstone bedrock below 33.5 feet below grade. The contractor should advance a test hole with an air track drill through the bedrock bearing surface to a depth of at least two times the pier diameter to check for discontinuities in the bedrock that may require additional rock removal.

Potential Soft Soils Due to Drainage Swale

A drainage swale is located just southeast of the proposed tower footprint. Soft soils associated with the drainage feature should be anticipated and some undercut of soft soils and replacement with low volume change material may be required. These soils should be observed and tested by Terracon representative during construction.

4.2 Earthwork

4.2.1 Site Preparation

Prior to placing fill to raise grades (if needed), the site should be grubbed and all vegetation, topsoil and any otherwise unsuitable material should be removed from the construction area. Wet or dry material should either be removed or moisture conditioned and recompacted to the project specified densities and moisture contents. Any unsuitable materials should be undercut and replaced with low volume change material meeting the requirements of the 4.2.2 Material Requirements section of this report. We recommend the actual stripping depth and undercutting of unsuitable soils be observed and documented by a representative of Terracon during construction. After stripping, excavation, and filling to planned final grades, the subgrade should be proof-rolled with a loaded dump truck where possible to aid in locating loose or soft areas. Unstable materials delineated by proofrolling should be removed and replaced with suitable compacted fill material.

4.2.2 Material Requirements

Engineered fill should meet the following material property requirements:

Fill Type [1]	USCS Classification	Acceptable Location for Placement[1]
Well graded granular material [2]	GW[4], SW, SM, and SC	All locations and elevations
Fat Clay	CH (LL>50 & PI>22)	Not recommended for use as structural fill
Low volume change material [3]	CL or GW[4] (LL<50 & PI<22)	All locations and elevations

1. Controlled, compacted fill should consist of approved materials that are free of organic matter and debris. Frozen material should not be used, and fill should not be placed on a frozen subgrade. A sample of each material type should be submitted to the geotechnical engineer for evaluation prior to trucking to site or use. Any fill to be placed beneath the equipment shelter and lightly loaded foundations should consist of low volume change material.
2. Similar to crushed limestone aggregate or limestone screenings or granular material such as sand, gravel or crushed stone (pug mix).
3. Low plasticity cohesive soil or granular soil having at least 18% low plasticity fines.
4. Similar to KYTC dense grade aggregate (DGA) or crushed stone base limestone, limestone screenings, or granular material such as sand, gravel or crushed stone containing not more than 14% non-plastic fines.

4.2.3 Compaction Requirements

Fill Lift Thickness	8-inches or less in loose thickness
Compaction Requirements [1]	Minimum 98% of the material's Standard Proctor maximum dry density (ASTM D-698)
Moisture Content – Granular Material	Moisture levels should be maintained low enough to allow for satisfactory compaction to be achieved without the cohesionless fill material pumping when proofrolled
Moisture Content – Cohesive Soil	Within the range of 1% below to 3% above the optimum moisture content (OMC) as determined by the Standard Proctor test at the time of placement and compaction

1. We recommend that engineered fill be tested for moisture content and compaction during placement. Should the results of the in-place density tests indicate the specified moisture or compaction limits have not been met, the area represented by the test should be reworked and retested as required until the specified moisture and compaction requirements are achieved.

4.2.4 Construction Considerations

Although the exposed subgrade is anticipated to be relatively stable upon initial exposure, unstable subgrade conditions could develop during general construction operations, particularly if the soils are wetted and/or subjected to repetitive construction traffic. The use of light construction equipment would aid in reducing subgrade disturbance. Should unstable subgrade conditions develop, stabilization measures will need to be used.

Construction traffic over the completed subgrade should be avoided to the extent practical. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. If the subgrade should become frozen, desiccated, saturated, or disturbed, the affected material should be removed or these materials should be scarified, moisture conditioned, and recompacted.

Temporary excavations will likely be required during grading operations. The grading contractor, by his contract, is usually responsible for designing and constructing stable, temporary excavations, and should shore, slope or bench the sides of the excavations as required, to maintain stability of both the excavation sides and bottom. All excavations should comply with applicable local, state and federal safety regulations, including the current OSHA Excavation and Trench Safety Standards.

The geotechnical engineer should be retained during the construction phase of the project to observe earthwork and to perform necessary tests and observations during subgrade preparation; proof-rolling; placement and compaction of controlled compacted fills; backfilling of excavations; and, just prior to construction of foundations and slabs.

4.3 Foundations

4.3.1 Tower Foundation - Mat

A shallow buried foundation can be used to support the proposed tower following the recommendations in this report. The mat foundation can be designed using the following native soil parameters for an undisturbed, very stiff to hard residual lean clay.

DESCRIPTION	VALUE
Foundation Subgrade [1]	Suitable undisturbed natural lean clay or engineered fill extending to suitable natural soil
Modulus of Subgrade Reaction [2]	25 psi/in of deflection
Allowable passive pressure [3]	350 psf (below 3 feet)
Coefficient of sliding friction [3]	0.30
Minimum embedment below finished grade for frost protection	24 inches
Approximate total settlement [4]	1 inch

1. A geotechnical engineer should verify footing subgrade prior to concrete placement.
2. This is based on the expectation that any soft or unsuitable soils, if encountered, will be undercut and replaced with approved structural soil fill or lean concrete. The provided modulus of subgrade reaction will need to be confirmed when details of the mat foundation are known (mat size and thickness and bottom of mat elevation and degree of rigidity of the mat. The provided k value is estimated and must be confirmed when loading, rigidity and size of the mat foundation are known.
3. The sides of the excavation for the foundation must be nearly vertical and the concrete should be placed neat against these vertical faces for the passive earth pressure values to be valid. If the loaded side is sloped or benched, and then backfilled, the allowable passive pressure will be significantly reduced. Passive resistance in the upper 3 feet of the soil profile should be neglected. Lateral resistance due to friction at the base of the footing should be ignored where uplift also occurs.
4. The foundation settlement will depend upon the variations within the subsurface soil profile, the structural loading conditions, the embedment depth of the footing, the thickness of compacted fill, and the quality of the earthwork operations.

Uplift forces can be resisted by the dead weight of the mat foundation and the effective weight of any soil above the mat A unit weight of soil of 115 pcf is appropriate for the on-site soils backfilled above the foundation, based on the soil being compacted to at least 98 percent of Standard Proctor maximum dry density (ASTM D-698). A unit weight of 150 pcf could be used for mat foundation concrete. The ground surface should be sloped away from the foundation to avoid ponding of water and saturation of the backfill materials.

Observation of the mat subgrade soil is important, and minimum disturbance of the bearing area is required to aid in controlling settlement. The excavation for the mat foundation subgrade should be performed with care to protect the bearing material. We recommend that the mat subgrade be

excavated with a smooth (toothless) bucket (or similar) as to minimize disturbance of the subgrade. Construction equipment should not cross the final prepared subgrade areas.

The base of all foundation excavations should be free of water and loose soil prior to placing concrete. Concrete should be placed soon after excavating to reduce bearing soil disturbance. Should the soils at bearing level become excessively dry, disturbed or saturated, or frozen, the affected soil should be removed prior to placing concrete. A lean concrete mud-mat should be placed over the bearing soils if the excavations must remain open over night or for an extended period of time. We recommend that the geotechnical engineer be retained to observe and test the soil foundation bearing materials.

4.3.2 Design/Analysis Parameters for Deep Foundations

Based on the results of the test boring data and laboratory testing, we have developed the following drilled pier design parameters:

Approximate Depth (feet) [1]	Allowable Skin Friction (psf)	Allowable End Bearing Capacity (psf)	Undrained Shear Strength, c (psf)	Unit Weight (pcf)	Strain ε_{50}	Lateral Subgrade Modulus, k (pci)	Model
0 – 3[2]	Ignore	Ignore	Ignore	Ignore	Ignore	Ignore	Ignore
Lean Clay 3 – 23	550	--	6,000	120	0.004	800	Stiff Clay w/o water
Approximate Depth (feet) [1]	**Allowable Skin Friction (psf)**	**Allowable End Bearing Capacity (psf)**	**Unconfined compressive Strength, qu (psf)**	**Unit Weight (pcf)**	**Strain K_{RM}**	**Initial Modulus, e (pci)**	**Model**
Weathered Siltstone 23 – 33.5 RQD = 25	750	--	7,000	140	0.0006	200	Weak Rock
Unweathered Siltstone 33.5-40	2,500 [4]	20,000 [3]	80,000 [4]	150	0.0005	600	Weak Rock-

The above indicated cohesion, friction angle, lateral subgrade modulus and strain values have no factors of safety, and the allowable skin friction bearing capacity and the passive resistances have a factor of safety of at least 2. The cohesion, internal friction angle, lateral subgrade modulus and strain values given in the above table are based on our boring, published values and our past experience with similar soil and 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 competent bedrock. Competent bedrock was encountered at a depth of 33.5 feet below existing grade in the boring drilled. The allowable end bearing pressure provided in the table has an approximate factor of safety of at least 3. If the drilled pier is designed using the above parameters and bear within the siltstone bedrock, settlement is anticipated to be about ½ inch or less.

4.3.3 Deep Foundation Construction Considerations

Difficult drilling conditions may be encountered in the test borings due to layers of limestone and chert typically found in the Borden formation. The contractor should be prepared to penetrate bedrock with chert and limestone layers. The bottom of the excavation should be inspected carefully by a qualified geotechnical engineer or representative.

Drilled piers should be designed with a minimum shaft diameter of 30 inches to facilitate clean out and inspection of the bedrock surface from the ground. The pier should be tipped at least 3 feet below the top of competent bedrock depth estimated to be about 33.5 feet below existing grade or one pier diameter. If groundwater seepage is encountered, water should be removed from each pier hole prior to concrete placement. Care should be taken so that the sides and bottom of the excavations are not disturbed during construction. The contractor should have temporary casing and pumping equipment available onsite during construction of the drilled pier.

Based on compressive strength and rock quality data, we expect that advancement of piers to minimum embedment in rock could be achieved by a rock auger equipped with self-rotating cutter bits or by rock coring. However, advancement method may vary between contractors depending on experience and their evaluation of penetration rates for the site conditions.

The bottom of the shaft should be free of loose soil or debris prior to reinforcing steel and concrete placement. It is recommended that the specifications state that reinforcing steel and pier concrete be placed the same day as the shaft is drilled. No completed shaft excavation should be allowed to remain open overnight. It is suitable, however, for the contractor to excavate a portion of the drilled shaft and then complete the shaft excavation the next day.

If pier concrete cannot be placed in dry conditions, a tremie should be used for concrete placement. Free-fall concrete placement in piers will only be acceptable if provisions are taken to avoid striking the concrete on the sides of the hole or reinforcing steel. The use of a bottom-dump hopper or tremie discharging near the bottom of the hole where concrete segregation will be minimized, is recommended. Due to potential sloughing and raveling, foundation concrete quantities may exceed calculated geometric volumes.

Adequate performance of the drilled shaft foundations will be highly dependent on the contractor's installation techniques used to construct the foundation elements. At a minimum, the following inspection criteria should be incorporated as a requirement for construction of the drilled piers.

Bearing conditions of the drilled pier foundations should be evaluated by a qualified geotechnical engineer at the time of construction to confirm suitable end bearing on competent bedrock and to provide recommendations if unsuitable bearing materials are encountered. Entry of personnel into the drilled pier foundations is not required and is strongly discouraged for this project. The evaluation of the piers should include the following:

- Contractor should advance a test hole with an air track drill through the bedrock bearing surface to a depth of at least two times the pier diameter to check for discontinuities in the bedrock that may require additional rock removal.
- The number of test holes at each pier location would be determined by the geotechnical engineer's representative based on the field test results.
- Significant discontinuous rock layers may require additional rock removal as directed by the engineer's representative.
- Visual evaluation of the exposed bearing surface should be performed by the engineer's representative to confirm that the base is free from loose material, soil, water or other unsuitable materials. Visual inspection to determine the suitability of the shaft bottom using either a flashlight or reflected light with a mirror may be conducted from the ground surface.

4.4 Equipment Building Foundations

4.4.1 Shallow Foundation Design Recommendations

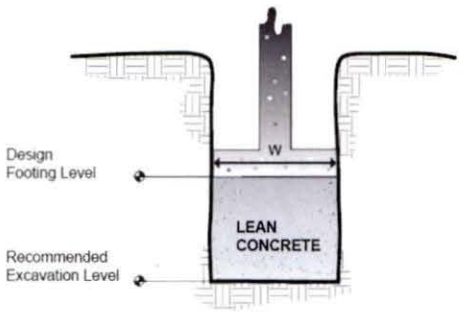
Support of the equipment building/cabinet on shallow spread footings is considered suitable. The footings may be sized/designed based on the parameters in the following table.

DESCRIPTION	Column	Wall
Net allowable bearing pressure [1]	4,500 psf	4,000 psf
Minimum dimensions	24 inches	18 inches
Minimum embedment below finished grade for frost protection [2]	24 inches	24 inches
Estimated total settlement [3]	< 1 inch	< 1 inch
Estimated differential settlement	< ¾ inches between columns	< ¾ inches over 40 feet
Allowable passive pressure [4]	350 psf (below 3 ft.)	
Ultimate coefficient of sliding friction [4]	0.30	

1. The recommended net allowable bearing pressure is the pressure in excess of the minimum surrounding overburden pressure at the footing base elevation. This bearing pressure is based on any soft or unsuitable soils, if encountered, will be undercut and replaced with engineered fill and that all recommendations contained in this report are adhered to.
2. For perimeter footing and footings within the unheated equipment building. Also to reduce the effects of seasonal moisture variations in the subgrade soils.
3. The foundation settlement will depend upon the variations within the subsurface profile, the structural loading conditions, the embedment depth of the footings, the thickness of compacted fill, and the quality of the earthwork operations.
4. The sides of the excavation for the spread footing foundation must be nearly vertical and the concrete should be placed neat against these vertical faces for the passive earth pressure value to be valid. If the loaded side is sloped or benched, and then backfilled, the allowable passive pressure will be significantly reduced. Passive resistance in the upper 3 feet of the subsurface profile should be neglected. If passive resistance is considered in design then the sliding friction should be ignored.

4.4.2 Construction Considerations

If unsuitable bearing soils are encountered in footing excavations, the excavations should be extended deeper to suitable soils and the footings could bear directly on these soils at the lower level or on lean concrete backfill placed in the excavations. The overexcavation and backfill procedure is described in the figure below.



Lean Concrete Backfill

4.5 Floor Slab

4.5.1 Design Recommendations

ITEM	DESCRIPTION
Floor slab support	Onsite suitable natural lean clays or new engineered fill underlain by suitable soils.
Modulus of subgrade reaction [1]	100 pounds per square inch per in (psi/in) for point loading conditions.

ITEM	DESCRIPTION
Aggregate base course/capillary break [2]	4 to 6 inches of free draining granular material
Structural Considerations	Floor slabs should be structurally independent of building [3]

1. This value has been based on our experience on other jobs with similar soil conditions.
2. The floor slab design should include a capillary break, comprised of free-draining, compacted, granular material, at least 4 to 6 inches thick. Free-draining granular material should have less than 5 percent fines (material passing the #200 sieve). Other design considerations such as cold temperatures and condensation development could warrant more extensive design provisions.
3. The floor slab in the equipment building should be structurally independent of any building footings or walls to reduce the possibility of floor slab cracking caused by differential movements between the slab and foundation. Where slabs are tied to perimeter walls to meet structural or other construction objectives, our experience indicates that any differential movement between the walls and slabs will likely be observed in adjacent slab expansion joints or floor slab cracks that occur beyond the length of the structural dowels. The structural engineer should account for this potential differential settlement through use of sufficient control joints, appropriate reinforcing or other means.

Where appropriate, saw-cut control joints should be placed in the slab the same day of concrete placement to help control the location and extent of cracking. For additional recommendations, please refer to the appropriate section in the ACI Design Manual.

4.5.2 Construction Considerations for Floor Slab

On most project sites, the site grading is generally accomplished early in the construction phase. However as construction proceeds, the subgrade may be disturbed due to utility excavations, construction traffic, desiccation, rainfall, etc. As a result, the floor slab subgrade may not be suitable for placement of aggregate base and concrete and corrective action will be required. Additional protection, stabilization measures may be necessary and requires specific field evaluation. We recommend floor subgrades be maintained in a relatively moist condition until floor slabs are constructed. If the subgrade should become desiccated prior to construction of floor slabs, the affected material should be removed or the materials scarified, moistened, and recompacted. Upon completion of grading operations in the building areas, care should be taken to maintain the recommended subgrade moisture content and density prior to construction of the building floor slabs.

We recommend the area underlying the floor slab be rough graded and then have Terracon geotechnical engineer to perform an evaluation prior to final grading and placement of aggregate base. Particular attention should be paid to high traffic areas that were rutted and disturbed earlier and to areas where backfilled trenches are located. Areas where unsuitable conditions are located should be repaired by removing and replacing the affected material with properly compacted fill. All floor slab subgrade areas should be moisture conditioned and properly compacted to the recommendations in this report immediately prior to placement of the aggregate base and concrete.

5.0 GENERAL COMMENTS

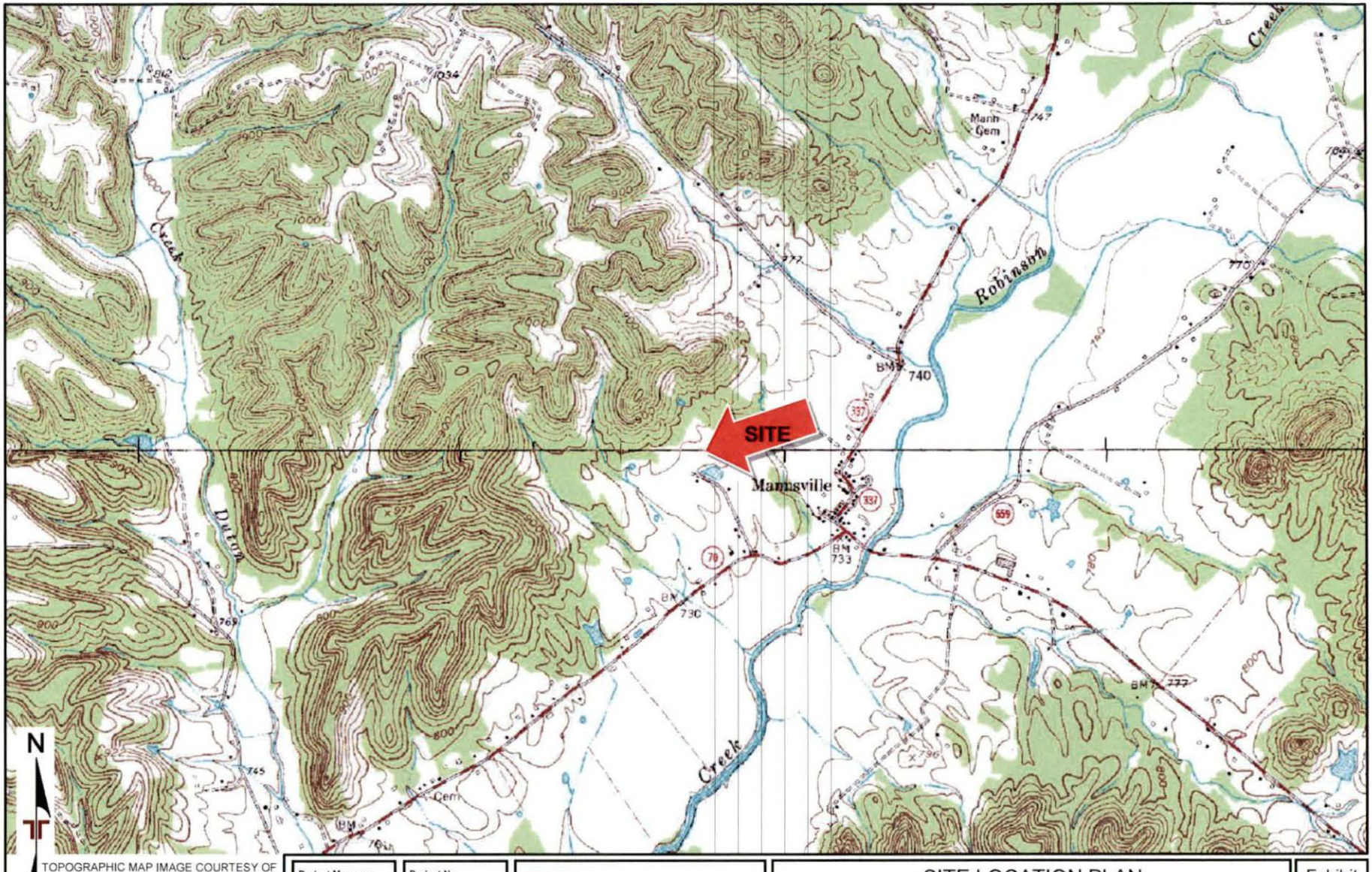
We respectfully request that Terracon be retained to review the final design plans and specifications so comments can be made regarding interpretation and implementation of our geotechnical recommendations in the design and specifications. Terracon also should be retained to provide observation and testing services during grading, excavation, foundation construction and other earth-related 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 geotechnical 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 A



TOPOGRAPHIC MAP IMAGE COURTESY OF THE U.S. GEOLOGICAL SURVEY QUADRANGLES INCLUDE: BRADFORDSVILLE, KY (1/1/1952) and MANNSVILLE, KY (1/1/1970).

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

Project Manager:	RCO
Drawn by:	RCO
Checked by:	GCW
Approved by:	GCW

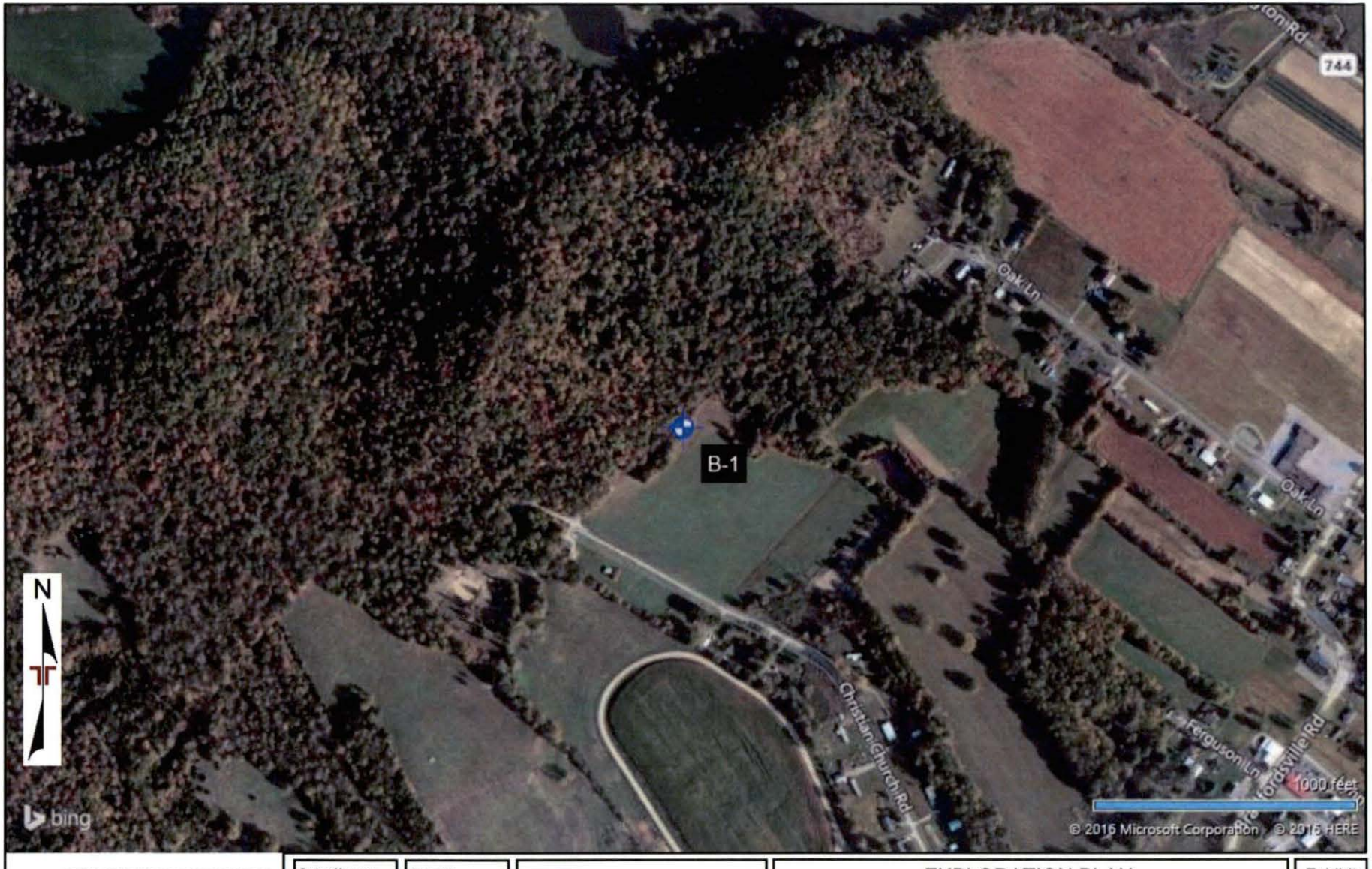
Project No.	57165129
Scale:	1"=2,000'
File Name:	Plans
Date:	12/5/2016

Terracon
13050 Eastgate Park Way Ste 101
Louisville, KY 40223-3915

SITE LOCATION PLAN

Mannsville Telecommunications Tower
Christian Church Rd
Mannsville, KY

Exhibit
A-1



AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

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

Project Manager:	RCO
Drawn by:	RCO
Checked by:	GCW
Approved by:	GCW

Project No.	57165129
Scale:	AS SHOWN
File Name:	Plans
Date:	12/5/2016

Terracon
13050 Eastgate Park Way Ste 101
Louisville, KY 40223-3915

EXPLORATION PLAN

Mannsville Telecommunications Tower
Christian Church Rd
Mannsville, KY

Exhibit
A-2

Field Exploration Description

- The subsurface exploration consisted of drilling and sampling one boring which extended to about 44 feet below existing grade. The field exploration was performed on November 8, 2016. The boring was offset about 10 feet southeast of the proposed self-support tower location due to safety concerns regarding overhead tree limbs. The boring elevation as shown on the boring log was obtained from 2C Certification dated November 4, 2016.

The boring was drilled with an ATV mounted drill rig using hollow stem augers to advance the boreholes. Representative samples were obtained using split-barrel sampling procedures. In the split-barrel sampling procedure, a standard 2-inch (outside diameter) split-barrel sampling spoon is driven into the ground with an automatic 140-pound hammer falling a distance of 30 inches. The number of blows required to advance the sampling spoon the last 12 inches of a normal 18-inch penetration is recorded as the standard penetration resistance value (N). These blow counts and "N" values are indicated on the boring logs at the depths of occurrence. A significantly greater efficiency is achieved with the automatic hammer compared to the conventional safety hammer operated with a cathead and rope. This higher efficiency has an appreciable effect on the SPT-N value. The effect of the automatic hammer's efficiency has been considered in the interpretation and analysis of the subsurface information for this report. The samples were sealed and transported to the laboratory for testing and classification.

A field log of each boring was prepared by the drill crew. 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 logs included with this report represents an interpretation of the field logs and includes modifications based on laboratory observation and tests of the samples.

The descriptions of the soils indicated on the boring logs are in general 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 logs. A brief description of this classification system is attached to this report.

Below auger refusal, the borehole was advanced 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.

BORING LOG NO. B-1

PROJECT: Mannsville Tower

CLIENT: Kentucky RSA #4 Cellular General Partnership, D/B/A Bluegrass Cellular, Inc.
Elizabethtown, Kentucky

SITE: Christian Church Rd
Mannsville, Kentucky

LOCATION See Exhibit A-2

Latitude: 37.375944° Longitude: -85.205111°

DEPTH	ELEVATION (Ft.)	Description	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	ROCK CORE UNIAXIAL STRENGTH (psi)	LABORATORY TORVANE/HP (psf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI
0.4		**TOPSOIL**									
		LEAN CLAY (CL), brown with gray, hard, trace gray and reddish-brown rock fragments				18	7-11-21 N=32		8000+ (HP)	20	
						18	19-20-18 N=38		8000+ (HP)	18	
			5			18	11-14-23 N=37		8000+ (HP)	20	
						7	9-13-13 N=26		8000+ (HP)	17	
12.0			10								
		LEAN CLAY (CL), with silt, tannish-brown with gray, very stiff				18	5-9-13 N=22		8000+ (HP)	24	36-24-12
			15								
						18	7-10-15 N=25		8000+ (HP)	22	
23.0			20								
		SEDIMENTARY BEDROCK - SILTSTONE, gray				8	46-50/2"			9	
		- highly weathered from 23 to 29.5 ft	25								
		- slightly weathered from 29.5 to 32 ft				2	50/4"			7	
			30			58	RQD = 40%	620			
		- completely weathered from 32 to 33.5 ft									
		- unweathered	35			59	RQD = 80%	40			
			40			59	RQD = 85%	560			
44.0											
		Boring Terminated at 44 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4" Flight Auger

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

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Boring Started: 11/8/2016 | Boring Completed: 11/8/2016
Drill Rig: CME-550 | Driller: S. Anderson
Project No.: 57165129 | Exhibit: A-4

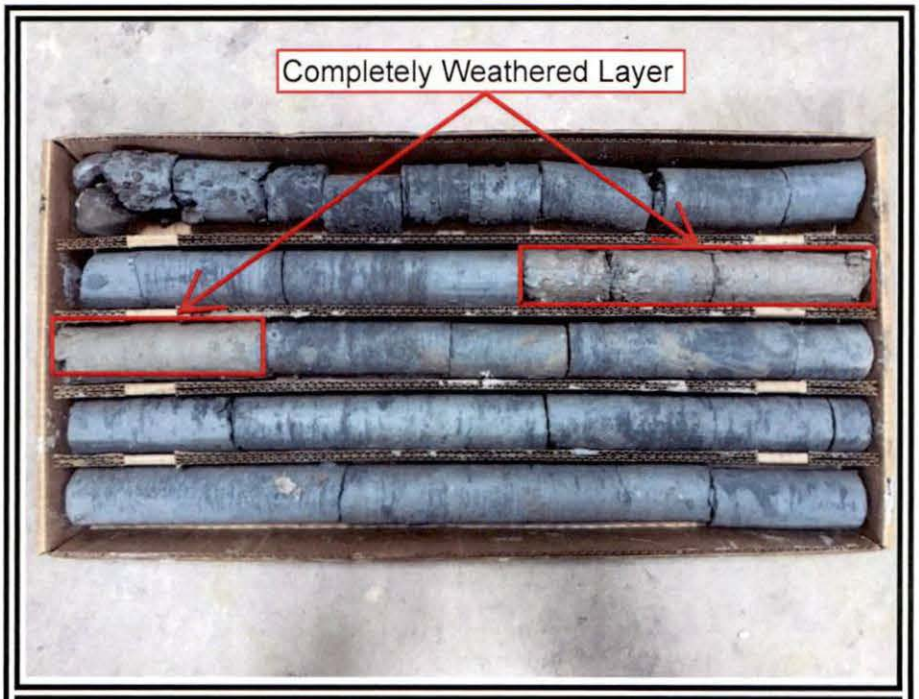


PHOTO #1 – Rock Core sample at B-1 from 29 to 39 feet below existing grade

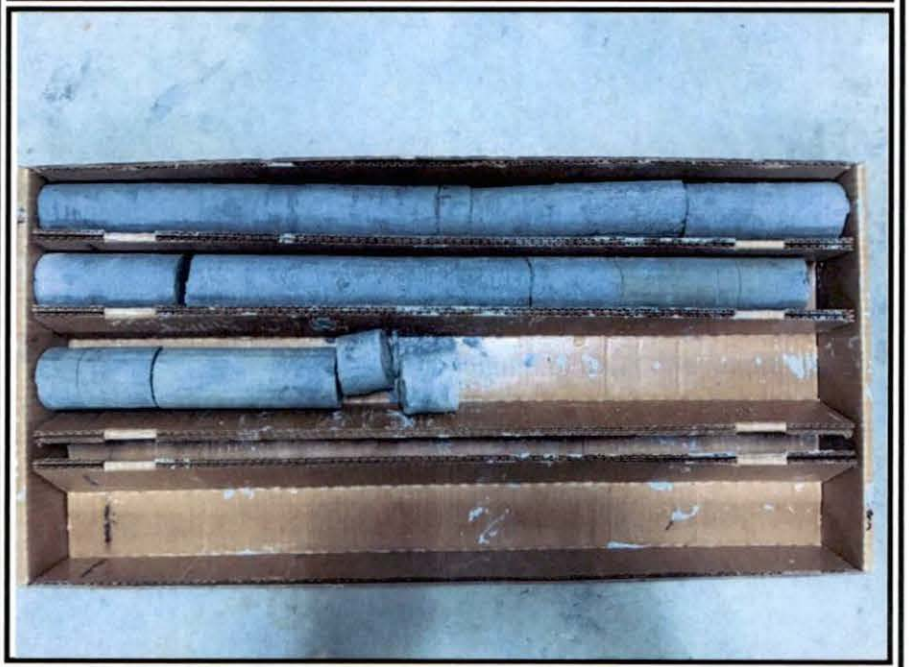


PHOTO #2 – Rock Core sample at B-1 from 39 to 44 feet below existing grade

APPENDIX B

Laboratory Testing

Descriptive classifications of the soils indicated on the boring logs are in accordance with the enclosed General Notes and the Unified Soil Classification System. Also shown are estimated Unified Soil Classification Symbols. A brief description of this classification system is attached to this report. Soils laboratory testing was performed under the direction of a geotechnical engineer and included visual classification, moisture content and Atterberg limits testing as appropriate. The results of the laboratory testing are shown on the borings logs and in Appendix B.

ASTM D2216 Standard Test Method of Determination of Water Content of Soil and Rock by Mass
ASTM D2487 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D2488 Standard Practice of Description and Identification of Soils (Visual Manual Method)
ASTM D4318 Standard Test Method for Liquid Limit, Plastic Limit and Plasticity Index of Soils
Need to add the unconfined compression test ASTM #, etc...
ASTM D7012 Standard Test Methods for Compressive Strength and Elastic Moduli of Intact Rock Core Specimens under Varying States of Stress and Temperatures

Procedural standards noted above are for reference to methodology in general. In some cases variations to methods are applied as a result of local practice or professional judgment.

Summary of Laboratory Results

BORING ID	Depth	USCS Classification and Soil Description	Compressive Strength (psf)	Liquid Limit	Plastic Limit	Plasticity Index	% <#200 Sieve	% Gravel	% Sand	% Silt	% Clay	Water Content (%)	Dry Density (pcf)
B-1	1 - 2.5											20.0	
B-1	3.5 - 5											18.1	
B-1	6 - 7.5											19.7	
B-1	8.5 - 10											17.0	
B-1	13.5 - 15			36	24	12						23.6	
B-1	18.5 - 20											22.5	
B-1	23.5 - 24.2											8.9	
B-1	28.5 - 28.8											7.1	

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. OLD-LAB SUMMARY: USCS 57165129 MANNSVILLETOWER LOGS UPDATE.GPJ TERRACON2015.GDT 12/5/16

PROJECT: Mannsville Tower

SITE: Christian Church Rd
Mannsville, Kentucky

Terracon
13050 Eastgate Park Way Ste 101
Louisville, KY

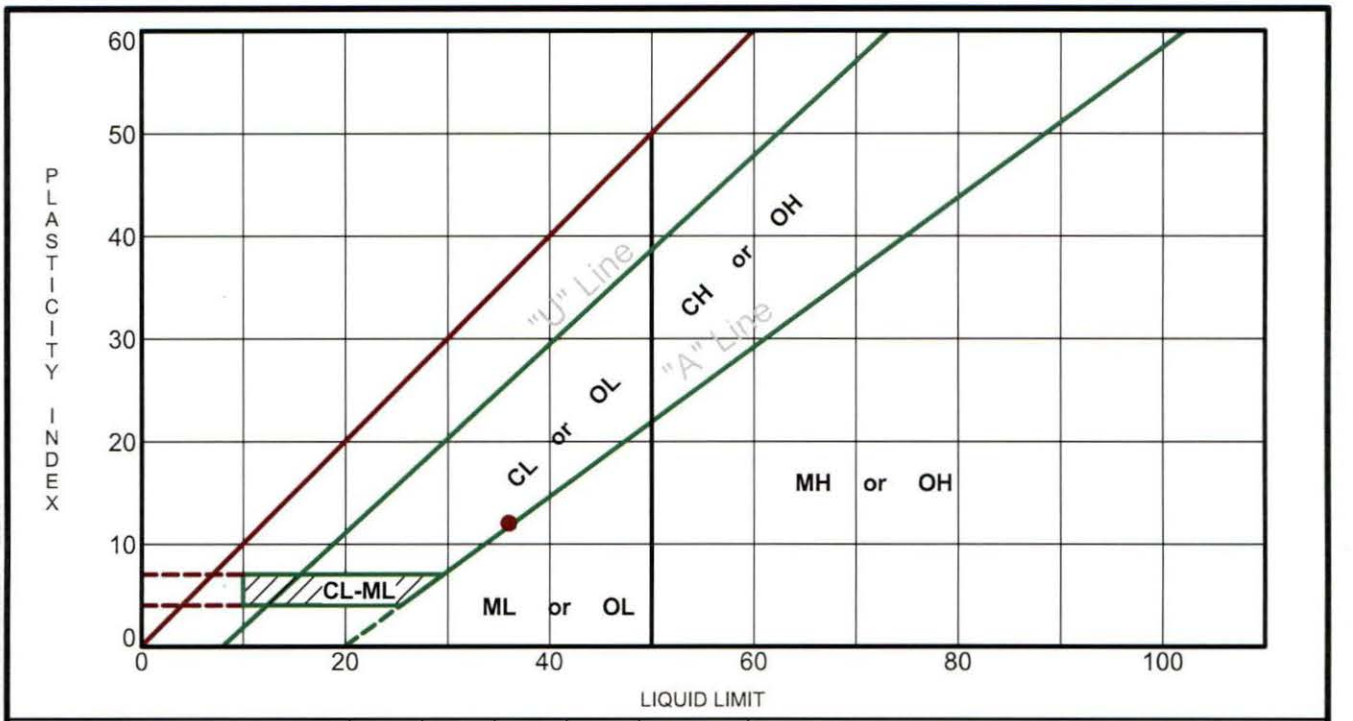
PROJECT NUMBER: 57165129

CLIENT: Kentucky RSA #4 Cellular General Partnership, D/B/A Bluegrass Cellular, Inc.
Elizabethtown, Kentucky

EXHIBIT: B-2

ATTERBERG LIMITS RESULTS

ASTM D4318



Boring ID	Depth	LL	PL	PI	Fines	USCS	Description
B-1	13.5 - 15	36	24	12			

PROJECT: Mannsville Tower

SITE: Christian Church Rd
Mannsville, Kentucky

Terracon
13050 Eastgate Park Way Ste 101
Louisville, KY

PROJECT NUMBER: 57165129

CLIENT: Kentucky RSA #4 Cellular General Partnership, D/B/A Bluegrass Cellular, Inc.
Elizabethtown, Kentucky

EXHIBIT: B-3

APPENDIX C

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., 3" O.D., unless otherwise noted	PA:	Power Auger (Solid Stem)
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	BCR:	Before Casing Removal
WCI:	Wet Cave in	WD:	While Drilling	ACR:	After Casing Removal
DCI:	Dry Cave in	AB:	After Boring	N/E:	Not Encountered

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 Soil 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

Unconfined Compressive Strength, Qu, psf	Standard Penetration or N-value (SS) Blows/Ft.	Consistency
< 500	>2	Very Soft
500 – 1,000	2 - 3	Soft
1,000 – 2,000	4 - 6	Medium Stiff
2,000 – 4,000	7 - 12	Stiff
4,000 – 8,000	13 - 26	Very Stiff
8,000+	> 26	Hard

RELATIVE DENSITY OF COARSE-GRAINED SOILS

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

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 15
With	15 – 29
Modifier	≥ 30

GRAIN SIZE TERMINOLOGY

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

RELATIVE PROPORTIONS OF FINES

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 5
With	5 – 12
Modifier	> 12

PLASTICITY DESCRIPTION

Term	Plasticity Index
Non-plastic	0
Low	1-10
Medium	11-30
High	> 30

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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]
			$Cu < 4$ and/or $1 > Cc > 3$ [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F,G,H]
			Fines classify as CL or CH		GC	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]
			$Cu < 6$ and/or $1 > Cc > 3$ [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G,H,I]
			Fines Classify as CL or CH		SC	Clayey sand [G,H,I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above "A" line [J]		CL	Lean clay [K,L,M]
			PI < 4 or plots below "A" line [J]		ML	Silt [K,L,M]
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay [K,L,M,N]
			Liquid limit - not dried			Organic silt [K,L,M,O]
	Silts 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			Organic silt [K,L,M,Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-in. (75-mm) sieve

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels 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.

[D] Sands 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] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.

[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[N] PI ≥ 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.

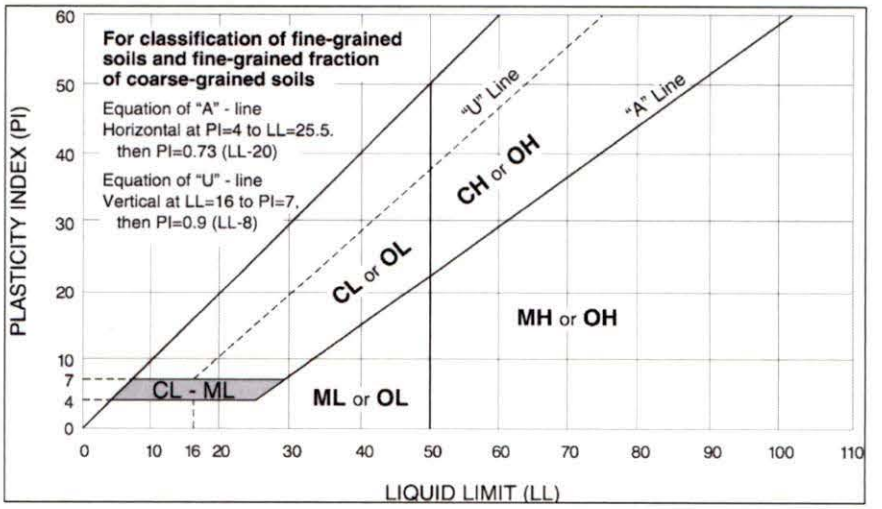

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Exhibit C-2

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.

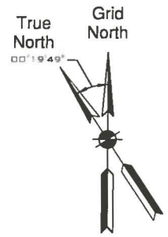
References: American Society of Civil Engineers. Manuals and Reports on Engineering Practice - No. 56. Subsurface Investigation for Design and Construction of Foundations of Buildings. New York: American Society of Civil Engineers, 1976.

U.S. Department of the Interior, Bureau of Reclamation, Engineering Geology Field Manual.

SITE: MANNSVILLE

Lease Boundary and Topographic Survey

Taylor County, Kentucky



Basis of Bearings

THE BEARING SYSTEM OF THIS SURVEY IS BASED UPON THE KENTUCKY STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD 83 (2011), AS DETERMINED BY G.P.S. OBSERVATIONS MADE ON OCTOBER 19, 2016 USING THE KENTUCKY TRANSPORTATION CABINET'S KYCORS NAD83 2011 NETWORK. THIS BEARING SYSTEM IS GRID NORTH.

Tower Location Information

DESIGNATION: MANNSVILLE
SITE ID#: NONE
HORIZONTAL DATUM: NAD 83 (2011)
LATITUDE: 37°22'33.50" NORTH
LONGITUDE: 85°12'18.74" WEST
VERTICAL DATUM: NAVD 88
GROUND ELEVATION: 794.7 FEET (242.23 M)

STATE PLANE COORDINATES
NORTHING: 2,020,845.60 FEET (615,954.971 M)
EASTING: 1,798,718.41 FEET (548,250.468 M)

Landowner Information

LANDOWNERS: JOHNNIE W. & LEONORA A. WISE
ADDRESS: P.O. BOX 145, MANNSVILLE, KY 42758
CONTACT PERSON: JOHNNIE W. WISE
PHONE NUMBER: 270-789-4238
PVA MAP NUMBER: 71-001-01

Project Bench Mark

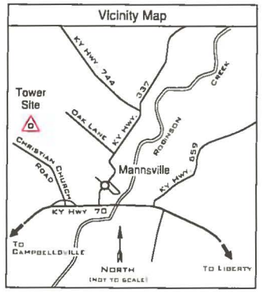
NORTHING: 2,020,337 FEET (615,800 M)
EASTING: 1,798,619 FEET (548,220 M)
ELEVATION: 797.37 FEET (243.039 M)

DESCRIPTION: A 1/2" SQUARE IRON SPIKE SET IN THE WEST SIDE OF A UTILITY POLE, 12" ABOVE GRADE, THAT IS 179 FEET SOUTHWEST OF THE CENTER OF THE TOWER.

Flood Plain Statement

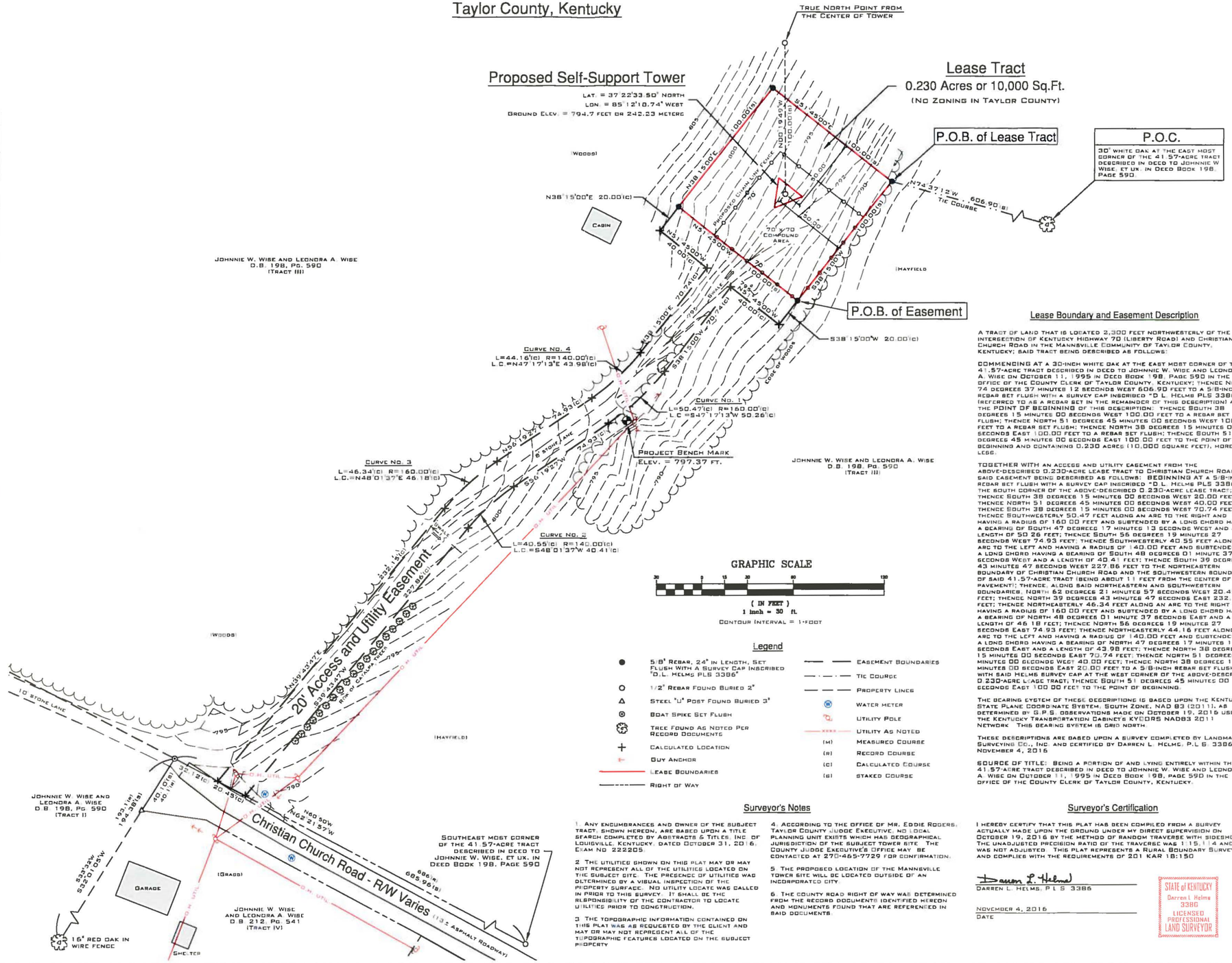
ACCORDING TO THE FLOOD INSURANCE RATE MAP FOR TAYLOR COUNTY, KENTUCKY, MAP NO 21217C0090C, DATED MAY 24, 2011, THE SUBJECT SITE LIES WITHIN "OTHER AREAS - ZONE X", WHICH IS DEFINED AS "AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN".

Vicinity Map



Directions to the Site

FROM ELIZABETHTOWN, KENTUCKY: TRAVEL SOUTHEASTERLY ON KENTUCKY HIGHWAY 61 (LINCOLN PARKWAY) FOR ABOUT 12 MILES TO KENTUCKY HIGHWAY 210 (CAMPBELLSVILLE ROAD) ON THE SOUTHEAST SIDE OF HODGENVILLE; TURN RIGHT ONTO KENTUCKY HIGHWAY 210 AND CONTINUE TO TRAVEL SOUTHEASTERLY FOR 27 MILES TO U.S. HIGHWAY 68 ON THE WEST SIDE OF CAMPBELLSVILLE; TURN LEFT ONTO U.S HIGHWAY 68 (BROADWAY STREET) AND TRAVEL EAST FOR 1.3 MILES TO DOWNTOWN CAMPBELLSVILLE AND KENTUCKY HIGHWAY 70; TURN RIGHT ONTO KENTUCKY HIGHWAY 70 (ALSO KNOWN AS CENTRAL AVENUE AND LIBERTY ROAD) AND TRAVEL EASTERLY FOR 9.8 MILES TO CHRISTIAN CHURCH ROAD ON THE SOUTHWEST SIDE OF MANNSVILLE (0.2 MILES BEFORE REACHING KENTUCKY HIGHWAY 337); TURN LEFT ONTO CHRISTIAN CHURCH ROAD AND TRAVEL NORTHERLY FOR 0.5 MILES TO THE END OF CHRISTIAN CHURCH ROAD AND THE TOWER ACCESS LANE; TURN RIGHT ONTO THE LANE AND TRAVEL NORTHEASTERLY FOR 500 FEET TO THE TOWER SITE, WHICH IS LOCATED IN THE EDGE OF A WOODS.



Legend

- 5/8" REBAR, 24" IN LENGTH, SET FLUSH WITH A SURVEY CAP INSCRIBED "D.L. HELMS PLS 3386"
- 1/2" REBAR FOUND BURIED 2"
- STEEL "U" POST FOUND BURIED 3"
- BOAT SPIKE SET FLUSH
- TREE FOUND AS NOTED PER RECORD DOCUMENTS
- CALCULATED LOCATION
- GUY ANCHOR
- LEASE BOUNDARIES
- RIGHT OF WAY
- EASEMENT BOUNDARIES
- TIE COURSE
- PROPERTY LINES
- WATER METER
- UTILITY POLE
- UTILITY AS NOTED
- (M) MEASURED COURSE
- (R) RECORD COURSE
- (C) CALCULATED COURSE
- (S) STAKED COURSE

Lease Boundary and Easement Description

A TRACT OF LAND THAT IS LOCATED 2,300 FEET NORTHWESTERLY OF THE INTERSECTION OF KENTUCKY HIGHWAY 70 (LIBERTY ROAD) AND CHRISTIAN CHURCH ROAD IN THE MANNSVILLE COMMUNITY OF TAYLOR COUNTY, KENTUCKY; SAID TRACT BEING DESCRIBED AS FOLLOWS:

COMMENCING AT A 30-INCH WHITE OAK AT THE EAST MOST CORNER OF THE 41.57-ACRE TRACT DESCRIBED IN DEED TO JOHNNIE W. WISE AND LEONORA A. WISE ON OCTOBER 11, 1995 IN DEED BOOK 198, PAGE 590 IN THE OFFICE OF THE COUNTY CLERK OF TAYLOR COUNTY, KENTUCKY; THENCE NORTH 74 DEGREES 37 MINUTES 12 SECONDS WEST 606.90 FEET TO A 5/8-INCH REBAR SET FLUSH WITH A SURVEY CAP INSCRIBED "D L. HELMS PLS 3386" (REFERRED TO AS A REBAR SET IN THE REMAINDER OF THIS DESCRIPTION) AT THE POINT OF BEGINNING OF THIS DESCRIPTION; THENCE SOUTH 38 DEGREES 15 MINUTES 00 SECONDS WEST 100.00 FEET TO A REBAR SET FLUSH; THENCE NORTH 51 DEGREES 45 MINUTES 00 SECONDS WEST 100.00 FEET TO A REBAR SET FLUSH; THENCE NORTH 38 DEGREES 15 MINUTES 00 SECONDS EAST 100.00 FEET TO A REBAR SET FLUSH; THENCE SOUTH 51 DEGREES 45 MINUTES 00 SECONDS EAST 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 CHRISTIAN CHURCH ROAD; 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 38 DEGREES 15 MINUTES 00 SECONDS WEST 20.00 FEET; THENCE NORTH 51 DEGREES 45 MINUTES 00 SECONDS WEST 40.00 FEET; THENCE SOUTH 38 DEGREES 15 MINUTES 00 SECONDS WEST 70.74 FEET; THENCE SOUTHWESTERLY 50.47 FEET ALONG AN ARC TO THE RIGHT AND HAVING A RADIUS OF 160.00 FEET AND SUBTENDED BY A LONG CHORD HAVING A BEARING OF SOUTH 47 DEGREES 17 MINUTES 13 SECONDS WEST AND A LENGTH OF 50.26 FEET; THENCE SOUTH 56 DEGREES 19 MINUTES 27 SECONDS WEST 74.93 FEET; THENCE SOUTHWESTERLY 40.55 FEET ALONG AN ARC TO THE LEFT AND HAVING A RADIUS OF 140.00 FEET AND SUBTENDED BY A LONG CHORD HAVING A BEARING OF SOUTH 48 DEGREES 01 MINUTE 37 SECONDS WEST AND A LENGTH OF 40.41 FEET; THENCE SOUTH 39 DEGREES 43 MINUTES 47 SECONDS WEST 227.86 FEET TO THE NORTHEASTERN BOUNDARY OF CHRISTIAN CHURCH ROAD AND THE SOUTHWESTERN BOUNDARY OF SAID 41.57-ACRE TRACT (BEING ABOUT 11 FEET FROM THE CENTER OF THE PAVEMENT); THENCE, ALONG SAID NORTHEASTERN AND SOUTHWESTERN BOUNDARIES, NORTH 62 DEGREES 21 MINUTES 57 SECONDS WEST 20.45 FEET; THENCE NORTH 39 DEGREES 43 MINUTES 47 SECONDS EAST 232.15 FEET; THENCE NORTHEASTERLY 46.34 FEET ALONG AN ARC TO THE RIGHT AND HAVING A RADIUS OF 160.00 FEET AND SUBTENDED BY A LONG CHORD HAVING A BEARING OF NORTH 48 DEGREES 01 MINUTE 37 SECONDS EAST AND A LENGTH OF 46.18 FEET; THENCE NORTH 56 DEGREES 19 MINUTES 27 SECONDS EAST 74.93 FEET; THENCE NORTHEASTERLY 44.16 FEET ALONG AN ARC TO THE LEFT AND HAVING A RADIUS OF 140.00 FEET AND SUBTENDED BY A LONG CHORD HAVING A BEARING OF NORTH 47 DEGREES 17 MINUTES 13 SECONDS EAST AND A LENGTH OF 43.98 FEET; THENCE NORTH 38 DEGREES 15 MINUTES 00 SECONDS EAST 70.74 FEET; THENCE NORTH 51 DEGREES 45 MINUTES 00 SECONDS WEST 40.00 FEET; THENCE NORTH 38 DEGREES 15 MINUTES 00 SECONDS EAST 20.00 FEET TO A 5/8-INCH REBAR SET FLUSH WITH SAID HELMS SURVEY CAP AT THE WEST CORNER OF THE ABOVE-DESCRIBED 0.230-ACRE LEASE TRACT; THENCE SOUTH 51 DEGREES 45 MINUTES 00 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 83 (2011), AS DETERMINED BY G.P.S. OBSERVATIONS MADE ON OCTOBER 19, 2016 USING THE KENTUCKY TRANSPORTATION CABINET'S KYCORS NAD83 2011 NETWORK. THIS BEARING SYSTEM IS GRID NORTH.

THESE DESCRIPTIONS ARE BASED UPON A SURVEY COMPLETED BY LANDMARK SURVEYING CO., INC. AND CERTIFIED BY DARREN L. HELMS, P.L.S. 3386, ON NOVEMBER 4, 2016.

SOURCE OF TITLE: BEING A PORTION OF AND LYING ENTIRELY WITHIN THE 41.57-ACRE TRACT DESCRIBED IN DEED TO JOHNNIE W. WISE AND LEONORA A. WISE ON OCTOBER 11, 1995 IN DEED BOOK 198, PAGE 590 IN THE OFFICE OF THE COUNTY CLERK OF TAYLOR COUNTY, KENTUCKY.

Surveyor's Notes

1. ANY ENCUMBRANCES AND OWNER OF THE SUBJECT TRACT, SHOWN HEREON, ARE BASED UPON A TITLE SEARCH COMPLETED BY ABSTRACTS & TITLES, INC. OF LOUISVILLE, KENTUCKY, DATED OCTOBER 31, 2016, EXAM NO. 222205.

2. THE UTILITIES SHOWN ON THIS PLAT MAY OR MAY NOT REPRESENT ALL OF THE UTILITIES LOCATED ON THE SUBJECT SITE. THE PRESENCE OF UTILITIES 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 UTILITIES PRIOR TO CONSTRUCTION.

3. THE TOPOGRAPHIC INFORMATION CONTAINED ON THIS PLAT WAS AS REQUESTED BY THE CLIENT AND MAY OR MAY NOT REPRESENT ALL OF THE TOPOGRAPHIC FEATURES LOCATED ON THE SUBJECT PROPERTY.

4. ACCORDING TO THE OFFICE OF MR. EDDIE ROGERS, TAYLOR COUNTY JUDGE EXECUTIVE, NO LOCAL PLANNING UNIT EXISTS WHICH HAS GEOGRAPHICAL JURISDICTION OF THE SUBJECT TOWER SITE. THE COUNTY JUDGE EXECUTIVE'S OFFICE MAY BE CONTACTED AT 270-465-7729 FOR CONFIRMATION.

5. THE PROPOSED LOCATION OF THE MANNSVILLE TOWER SITE WILL BE LOCATED OUTSIDE OF AN INCORPORATED CITY.

6. THE COUNTY ROAD RIGHT OF WAY WAS DETERMINED FROM THE RECORD DOCUMENTS IDENTIFIED HEREON AND MONUMENTS FOUND THAT ARE REFERENCED IN SAID DOCUMENTS.

Surveyor's Certification

I HEREBY CERTIFY THAT THIS PLAT HAS BEEN COMPILED FROM A SURVEY ACTUALLY MADE UPON THE GROUND UNDER MY DIRECT SUPERVISION ON OCTOBER 19, 2016 BY THE METHOD OF RANDOM TRAVERSE WITH SHOTS. THE UNADJUSTED PRECISION RATIO OF THE TRAVERSE WAS 1:15,114 AND IT WAS NOT ADJUSTED. THIS PLAT REPRESENTS A RURAL BOUNDARY SURVEY AND COMPLIES WITH THE REQUIREMENTS OF 201 KAR 18:150

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

NOVEMBER 4, 2016
DATE

STATE of KENTUCKY
Darren L Helms
3386
LICENSED PROFESSIONAL LAND SURVEYOR

LANDMARK SURVEYING CO., INC.
15 N.E. 3RD STREET
WASHINGTON, INDIANA 47501
(812) 257-0950
Email: landmark97@sbcglobal.net

Project No. 16-07 0161

Lease Boundary Survey
430 Christian Church Road
Campbellsville, Kentucky 42718

Bluegrass Cellular
2902 Ring Road
Elizabethtown, KY 42701

REVISIONS	DATE
CHANGED LONG ON TOWER LABEL	11-14-16

DATE 11-04-2016
DRAWN BY J. Hamilton
CHECKED BY D. L. Helms

SHEET No. 1 of 1 SHEETS

FILE NAME
marnis.dwg

BLUEGRASS CELLULAR

APPROVAL SIGNATURES

BLUEGRASS CELLULAR PROJECT SUPERVISOR: _____

DATE: _____

CITY REPRESENTATIVE: _____

TITLE: _____

DATE: _____

PROPERTY OWNER/OWNERS: _____

_____

DATE: _____

TOWER OWNER/OWNERS: _____

_____

DATE: _____

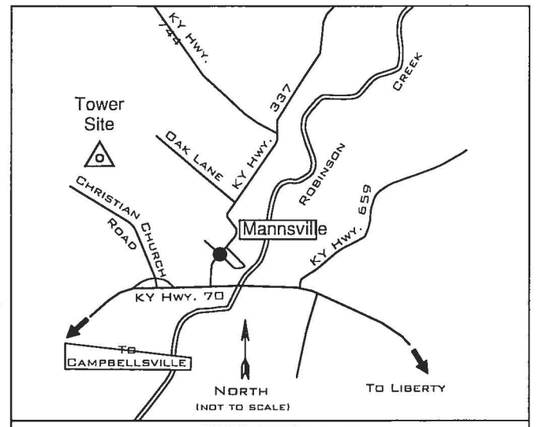
SITE NAME: MANNSVILLE

911 ADDRESS: 430 CHRISTIAN CHURCH RD.
CAMPBELLSVILLE, KY.
42718

COUNTY: TAYLOR

TOWER LATITUDE & LONGITUDE

N37* 22' 33.50" W85* 12' 18.74"



VICINITY MAP
NOT TO SCALE

DIRECTIONS TO SITE

FROM ELIZABETHTOWN, KENTUCKY: TRAVEL SOUTHEASTERLY ON KENTUCKY HIGHWAY 61 (LINCOLN PARKWAY) FOR ABOUT 12 MILES TO KENTUCKY HIGHWAY 210 (CAMPBELLSVILLE ROAD) ON THE SOUTHEAST SIDE OF HODGENVILLE; TURN RIGHT ONTO KENTUCKY HIGHWAY 210 AND CONTINUE TO TRAVEL SOUTHEASTERLY FOR 27 MILES TO U.S. HIGHWAY 68 ON THE WEST SIDE OF CAMPBELLSVILLE; TURN LEFT ONTO U.S. HIGHWAY 68 (BROADWAY STREET) AND TRAVEL EAST FOR 1.0 MILES TO DOWNTOWN CAMPBELLSVILLE AND KENTUCKY HIGHWAY 70; TURN RIGHT ONTO KENTUCKY HIGHWAY 70 (ALSO KNOWN AS CENTRAL AVENUE AND LIBERTY ROAD) AND TRAVEL EASTERLY FOR 9.8 MILES TO CHRISTIAN CHURCH ROAD ON THE SOUTHWEST SIDE OF MANNSVILLE (0.2 MILES BEFORE REACHING KENTUCKY HIGHWAY 337); TURN LEFT ONTO CHRISTIAN CHURCH ROAD AND TRAVEL NORTHERLY FOR 0.5 MILES TO THE END OF CHRISTIAN CHURCH ROAD AND THE TOWER ACCESS LANE; TURN RIGHT ONTO THE LANE AND TRAVEL NORTHEASTERLY FOR 500 FEET TO THE TOWER SITE, WHICH IS LOCATED IN THE EDGE OF A WOODS.

SHEET INDEX

SITE DATA

PROPERTY OWNER:	JOHNNIE & LEONORA WISE P.O. BOX 146 MANNSVILLE, KY (270)789-4238 (270)403-3121
TOWER OWNER:	BLUEGRASS CELLULAR
POWER COMPANY:	TAYLOR CO. RECC 1-270-465-4101
TELEPHONE COMPANY:	WINDSTREAM (855) 575-7625
BLUEGRASS PROJECT MANAGER:	BILL BURKS (270)734-1028
BLUEGRASS PROJECT SUPERVISOR:	MASON McDOWELL (270)734-1002

RSB DESIGN

ROBIN BECKER
(502)599-9427
OFFICE

SITE: MANNSVILLE

Lease Boundary and Topographic Survey

Taylor County, Kentucky

True North
00°19'49"

Grid North

Basis of Bearings

The bearing system of this survey is based upon the Kentucky State Plane Coordinate System, South Zone, NAD 83 (2011), as determined by G.P.S. observations made on October 19, 2016 using the Kentucky Transportation Cabinet's KYCORS NAD83 2011 Network. This bearing system is grid north.

Tower Location Information

Designation: Mannsville
Site ID#: None.
Horizontal Datum: NAD 83 (2011)
Latitude: 37°22'33.50" North
Longitude: 85°12'18.74" West
Vertical Datum: NAVD 88
Ground Elevation: 794.7 feet (242.23 m)

State Plane Coordinates
Northing: 2,020,845.60 feet (615,954.971 m)
Easting: 1,798,718.41 feet (548,250.468 m)

Landowner Information

Landowners: Johnnie W. & Leondra A. Wise

Address: P.O. Box 146
Mannsville, KY 42758

Contact Person: Johnnie W. Wise

Phone Number: 270-789-4238

PVA Map Number: 71-001-01

Project Bench Mark

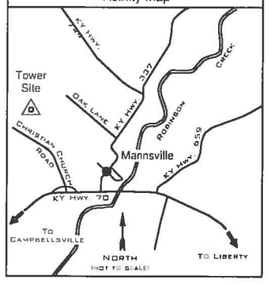
Northing: 2,020.337 feet (615.800 m)
Easting: 1,798,619 feet (548.220 m)
Elevation: 797.37 feet (243.039 m)

Description: A 1/2" square iron spike set in the west side of a utility pole. 12" above grade, that is 179 feet southwest of the center of the tower.

Flood Plain Statement

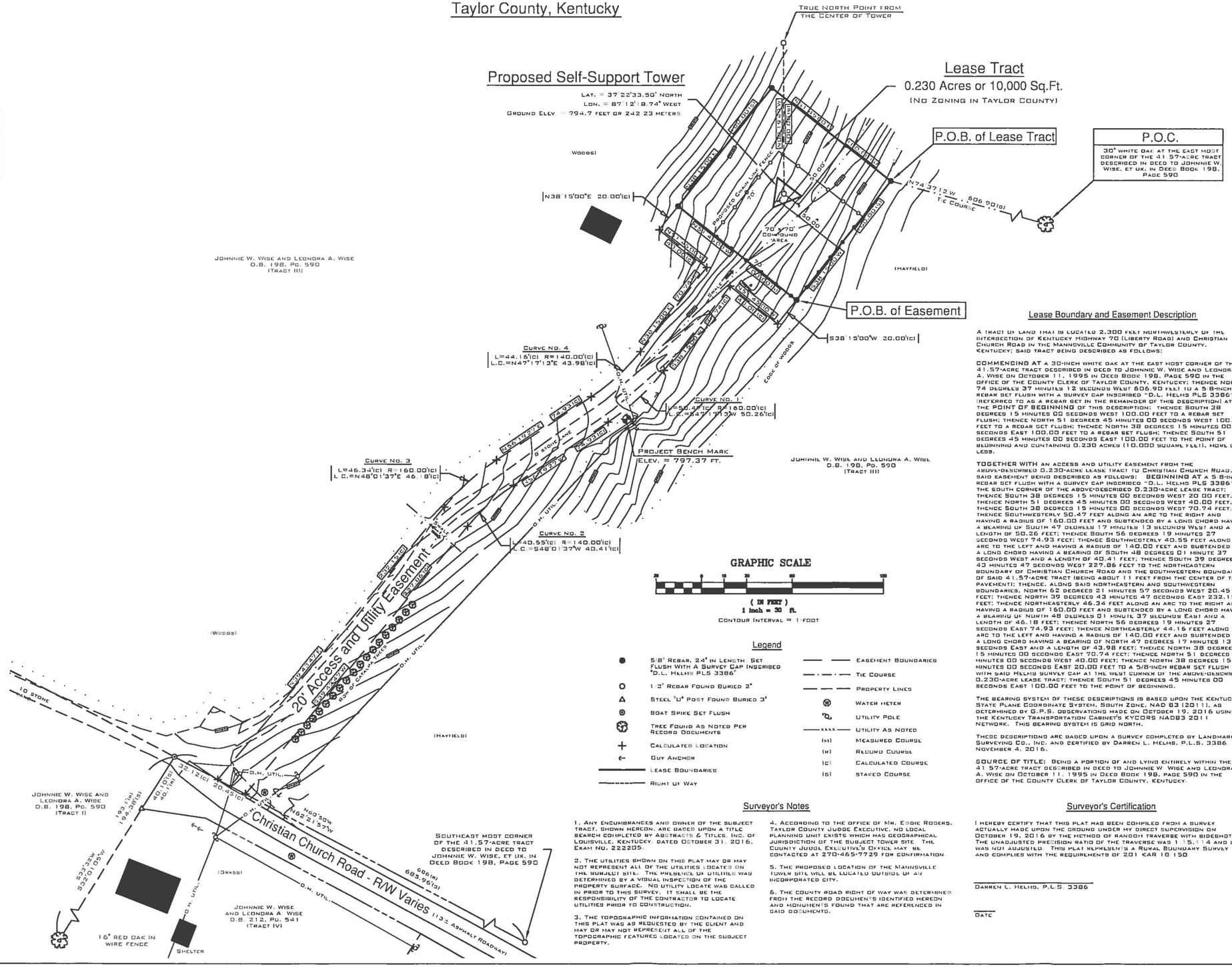
According to the Flood Insurance Rate Map for Taylor County, Kentucky, Map No. 21217C0090C, dated May 24, 2011, the subject site lies within "Other Areas - Zone X", which is defined as "Areas determined to be outside the 0.2% annual chance floodplain".

Vicinity Map



Directions to the Site

From Elizabethtown, Kentucky: Travel southeasterly on Kentucky Highway 61 (Lincoln Parkway) for about 12 miles to Kentucky Highway 210 (Campbellsville Road) on the southeast side of Hodgenville; turn right onto Kentucky Highway 210 and continue to travel southeasterly for 27 miles to U.S. Highway 68 on the west side of Campbellsville; turn left onto U.S. Highway 68 (Broadway Street) and travel east for 1.0 miles to downtown Campbellsville and Kentucky Highway 70; turn right onto Kentucky Highway 70 (also known as Central Avenue and Liberty Road) and travel easterly for 9.8 miles to Christian Church Road on the southwest side of Mannsville (0.2 miles before reaching Kentucky Highway 337); turn left onto Christian Church Road and travel northerly for 0.5 miles to the end of Christian Church Road and the tower access lane; turn right onto the lane and travel northeasterly for 500 feet to the tower site, which is located in the edge of a woods.



Lease Boundary and Easement Description

A tract of land that is located 2,300 feet northwesterly of the intersection of Kentucky Highway 70 (Liberty Road) and Christian Church Road in the Mannsville Community of Taylor County, Kentucky; said tract being described as follows:

Commencing at a 30-inch white oak at the east most corner of the 41.57-acre tract described in deed to Johnnie W. Wise and Leondra A. Wise on October 11, 1995 in Deed Book 198, Page 590 in the office of the County Clerk of Taylor County, Kentucky; thence North 74 degrees 37 minutes 13 seconds West 606.90 feet to a 5/8-inch rebar set flush with a survey cap inscribed "D.L. Helms PLS 3386" (referred to as a rebar set in the remainder of this description) at the POINT OF BEGINNING of this description; thence South 38 degrees 15 minutes 00 seconds West 100.00 feet to a rebar set flush; thence North 51 degrees 45 minutes 00 seconds West 100.00 feet to a rebar set flush; thence North 38 degrees 15 minutes 00 seconds East 100.00 feet to a rebar set flush; thence South 51 degrees 45 minutes 00 seconds East 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 Christian Church Road, 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 38 degrees 15 minutes 00 seconds West 20.00 feet; thence North 51 degrees 45 minutes 00 seconds West 40.00 feet; thence South 38 degrees 15 minutes 00 seconds West 70.74 feet; thence Southwesterly 50.47 feet along an arc to the right and having a radius of 160.00 feet and subtended by a long chord having a bearing of South 47 degrees 17 minutes 13 seconds West and a length of 50.26 feet; thence South 56 degrees 19 minutes 27 seconds West 74.93 feet; thence Southwesterly 40.55 feet along an arc to the left and having a radius of 140.00 feet and subtended by a long chord having a bearing of South 48 degrees 01 minute 37 seconds West and a length of 40.41 feet; thence South 39 degrees 43 minutes 47 seconds West 327.86 feet to the northeastern boundary of Christian Church Road and the southwestern boundary of said 41.57-acre tract (being about 11 feet from the center of the pavement); thence along said northeastern and southwestern boundaries, North 62 degrees 21 minutes 37 seconds West 20.45 feet; thence North 39 degrees 43 minutes 47 seconds East 232.15 feet; thence Northeasterly 46.34 feet along an arc to the right and having a radius of 160.00 feet and subtended by a long chord having a bearing of North 48 degrees 01 minute 37 seconds East and a length of 46.18 feet; thence North 56 degrees 19 minutes 27 seconds East 74.93 feet; thence Northeasterly 44.16 feet along an arc to the left and having a radius of 140.00 feet and subtended by a long chord having a bearing of North 47 degrees 17 minutes 13 seconds East and a length of 43.98 feet; thence North 38 degrees 15 minutes 00 seconds East 70.74 feet; thence North 51 degrees 45 minutes 00 seconds West 40.00 feet; thence North 38 degrees 15 minutes 00 seconds East 20.00 feet to a 5/8-inch rebar set flush with said Helms survey cap at the west corner of the above-described 0.230-acre lease tract; thence South 51 degrees 45 minutes 00 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 83 (2011), as determined by G.P.S. observations made on October 19, 2016 using the Kentucky Transportation Cabinet's KYCORS NAD83 2011 Network. This bearing system is grid north.

These descriptions are based upon a survey completed by Landmark Surveying Co., Inc. and certified by Darren L. Helms, P.L.S. 3386 on November 4, 2016.

Source of Title: Being a portion of and lying entirely within the 41.57-acre tract described in deed to Johnnie W. Wise and Leondra A. Wise on October 11, 1995 in Deed Book 198, Page 590 in the office of the County Clerk of Taylor County, Kentucky.

Surveyor's Notes

1. Any encumbrances and owner of the subject tract, shown hereon, are based upon a title search completed by Abstracts & Titles, Inc. of Louisville, Kentucky, dated October 31, 2016, Exam No. 222205.

2. The utilities shown on this plat may or may not represent all of the utilities located on the subject site. The presence of utilities 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 utilities prior to construction.

3. The topographic information contained on this plat was as requested by the client and may or may not represent all of the topographic features located on the subject property.

4. According to the office of Mr. Eddie Rogers, Taylor County Judge Executive, no local planning unit exists which has geographical jurisdiction of the subject tower site. The County Judge Executive's office may be contacted at 270-465-7729 for confirmation.

5. The proposed location of the Mannsville tower site will be located outside of an incorporated city.

6. The county road right of way was determined from the record documents identified hereon and monuments found that are referenced in said documents.

Surveyor's Certification

I hereby certify that this plat was compiled from a survey actually made upon the ground under my direct supervision on October 19, 2016 by the method of random traverse with sideshots. The unadjusted precision ratio of the traverse was 1:15,114 and it was not adjusted. This plat represents a Rural Boundary Survey and complies with the requirements of 201 KAR 18:150.

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

Date

Landmark Surveying Co., Inc.
115 N.E. 3rd Street
Washington, Indiana 47501
(812) 257-0950
Email: landmark7@sbcglobal.net

Project No. 16-07-0161

Lease Boundary Survey
430 Christian Church Road
Campbellsville, Kentucky 42718

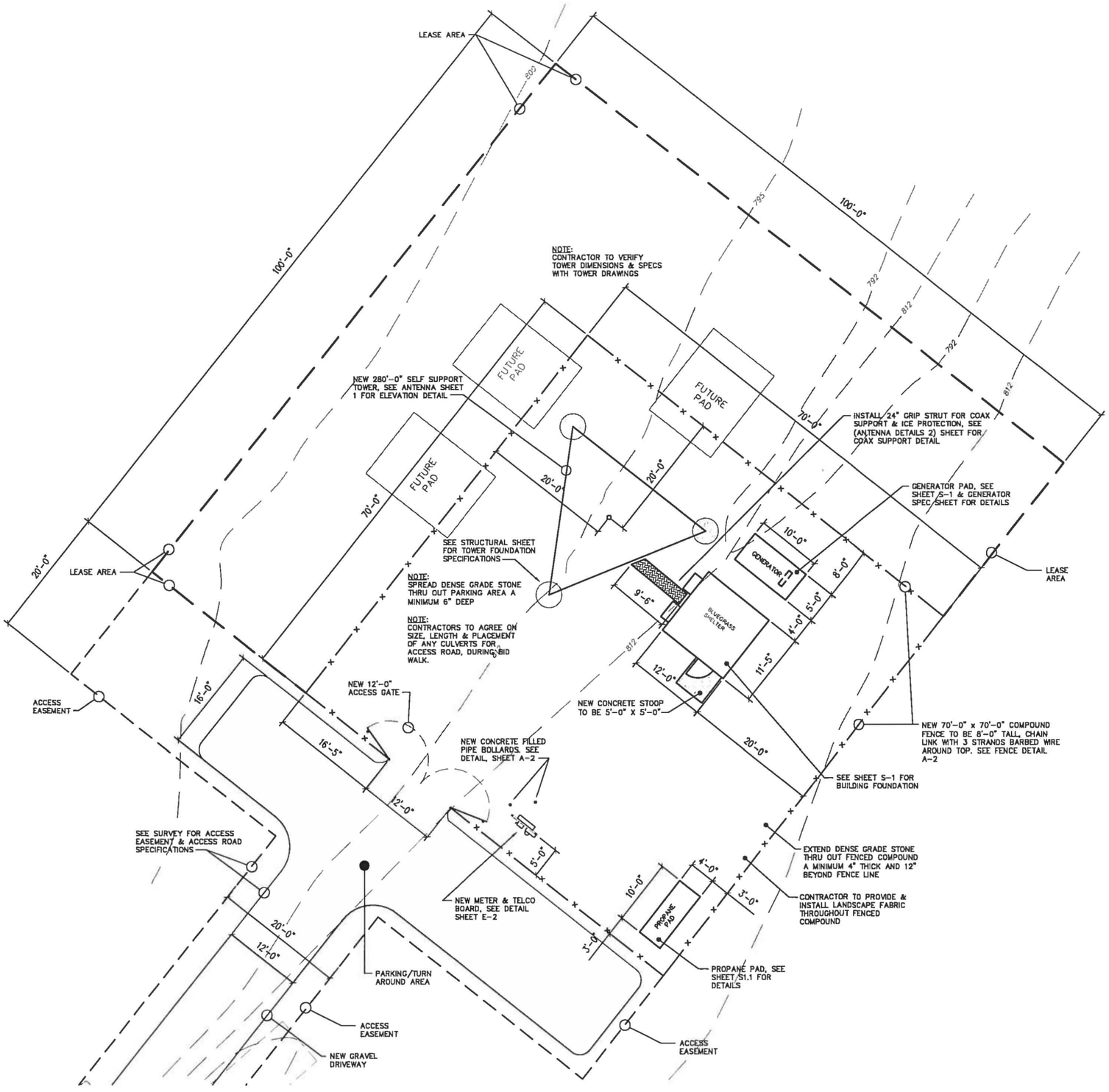
Bluegrass Cellular
2902 Ring Road
Elizabethtown, KY 42701

REVISIONS	DATE

DATE	DRAWN BY	CHECKED BY
11-04-2016	J. Hamilton	D. L. Helms

SHEET No.
1
of 1 SHEETS

FILE NAME
manns.dwg



GENERAL NOTES:

1) EQUIPMENT PICK–UP AND DELIVERY TO SITE FROM BLUEGRASS CELLULAR STAGING FACILITY TO BE THE CONTRACTORS RESPONSIBILITY, INCLUDING CRANE SET, AND ALL COST INCURRED.

2) FOR, BUILDING AND ALL CONCRETE PAD DETAILS REFER TO STRUCTURALS AND SHEET S1.1

3) ANY DAMAGE DUE TO CONSTRUCTION, TO BE REPAIRED OR REPLACED TO ORIGINAL CONDITION. (SUBJECT TO BLUEGRASS CELLULAR'S APPROVAL).

4) ANY DAMAGE OF NATURAL SURROUNDINGS , INCLUDING BUT NOT LIMITED TO, GRASS, TREES, LANDSCAPING, ETC.. TO BE REPAIRED OR REPLACED TO ORIGINAL CONDITION AT BLUEGRASS CELLULAR'S APPROVAL.

5) ROADWAYS TO BE GRADED SMOOTH AND EVEN, REMOVING ALL POTHOLES. ROADS TO HAVE PROPER DRAINAGE AND RUNOFF PER BLUEGRASS CELLULAR'S APPROVAL.

6) ANY RELOCATION OF EXISTING UTILITIES TO BE DONE IN ACCORDANCE WITH LOCAL CODES AND RECOMMENDATIONS, CONSULTING ALL UTILITY COMPANIES INVOLVED FOR APPROVAL AND SPECIFICATIONS REQUIRED.

7) FOR GRADING DETAILS, SEE GENERAL NOTESHEET

8) CONTRACTOR TO FIELD VERIFY ALL TOWER DIMENSIONS WITH TOWER MANUFACTURER PRIOR TO JOB BIDDING OR START OF ANY CONSTRUCTION

9) CONTRACTOR RESPONSIBLE FOR APPLYING FOR SERVICE TO SITE AND PAYING ANY FEES REQUIRED FOR PERMITS, HOOKUP, ETC..

SITE PLAN

SCALE: 1/16"= 1'–0"

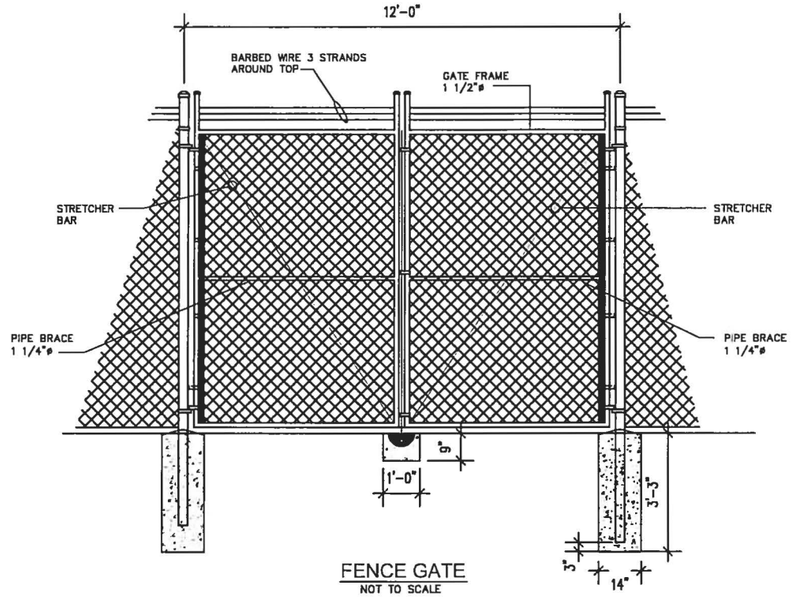
R.B. DESIGN
rbdesign1@bellsouth.net (502)599-9427

NO.	DATE	REVISION

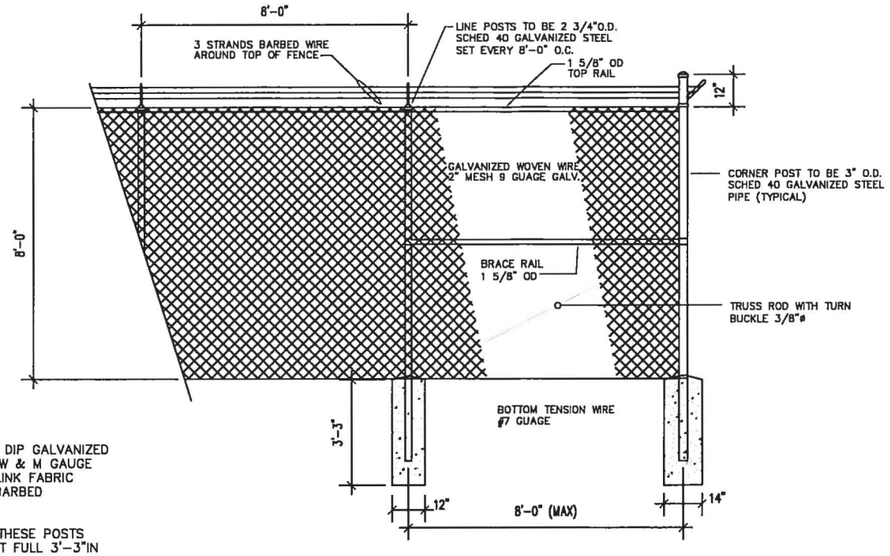
BLUEGRASS CELLULAR, INC.
STANDARD CELLULAR SITE
MANNSVILLE
430 Christian Church Rd., CAMPBELLSVILLE, KY 42718

DRAWN BY: R. BECKER
ISSUE DATE: 11–10–16
SCALE: LISTED

SHEET NUMBER
A–1



FENCE GATE
NOT TO SCALE



FENCE DETAIL END POLES
NOT TO SCALE

CHAIN LINK FENCING NOTES:

1 FABRIC: THE FABRIC SHALL BE COMPOSED OF INDIVIDUAL HOT DIP GALVANIZED WIRE PICKETS HELICALLY WOUND AND INTERWOVEN FROM NO.9 W & M GAUGE COPPER BEARING STEEL WIRE TO FORM A CONTINUOUS CHAIN LINK FABRIC HAVING A 2" MESH. TOP EDGES SHALL HAVE A TWISTED AND BARBED

2 POSTS: SHALL BE 2 3/4" O.D. SS 40 PIPE HOT GALVINIZED. THESE POSTS SHALL BE SPACED APPROXIMATELY 8'-0" ON CENTERS AND SET FULL 3'-3"IN BELL – SHAPED CONCRETE FOOTING, CROWNED AT TOP TO SHED WATER.

3 TOP RAIL: SHALL BE 1 5/8" O.C. STANDARD PIPE HOT GALVANIZED AND SHALL BE FURNISHED IN RANDOM LENGTHS AVRERAGING NOT LESS THAN 20".

4 FABRIC TIES: FOR ATTACHING FABRIC TO LINE POST, TOP RAIL OR TOP WIRE, SHALL BE ALUMINUM STRIP OF WIRE OF APPROVED GUAGE AND DESIGN. USED ON TOP OF RAIL EVERY 24" AND ONE POST EVERY 12".

5 EXTENSION ARMS: CAST STEEL GALVANIZED TO ACCOMODATE 3 STRANDS OF BARB WIRE, SINGLE ARM SLOPED TO 45°, AND VERTICAL ON TOP OF SWING GATES.

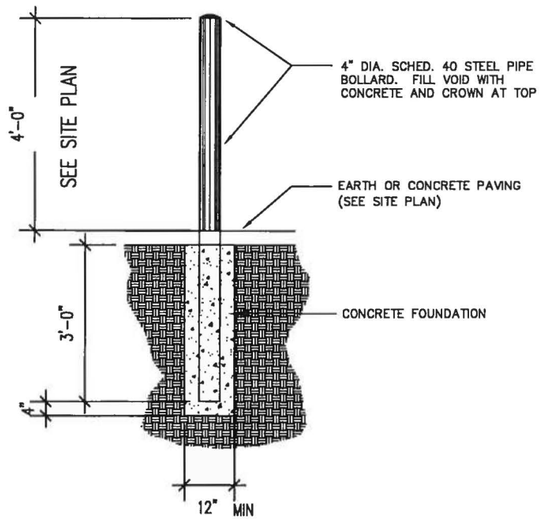
6 BARBED WIRE (STEEL): ASTM A121 GALVINIZED STEEL, 12 GUAGE THICK WIRE, 3 STRANDS 4 POINTS AT 3" O.C.

7 SWING GATE POSTS: SHALL BE 3" O.C. STANDARD HOT GALVINIZED, WEIGHING 5.79 LBS. PER FOOT.

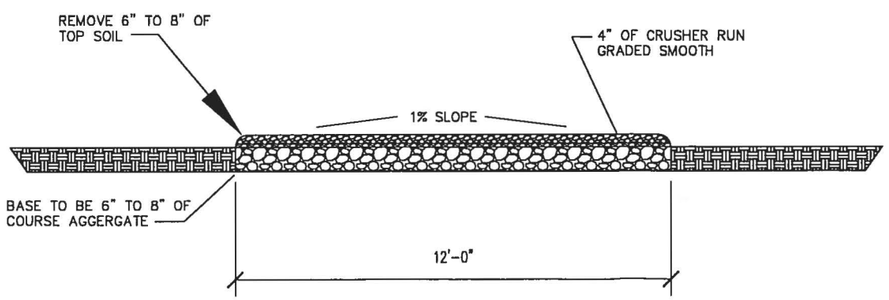
8 GATES: (a) SWING GATES: 2" O.C. STANDARD PIPE WITH INTERNAL BRACING OF 1 5/8" O.D. STANDARD PIPE; WELDED AT ALL JOINTS TO PROVIDE RIGID WATERTIGHT CONSTRUCTION. FABRIC SAME AS FENCE.

9 FENCE TO BE 100% ERECTED WITHIN TEN(10) DAYS OF COMPLETION OF CONSTRUCTION, IF TIME FRAME CANNOT BE MET, PLEASE NOTIFY PROJECT SUPERVISOR.

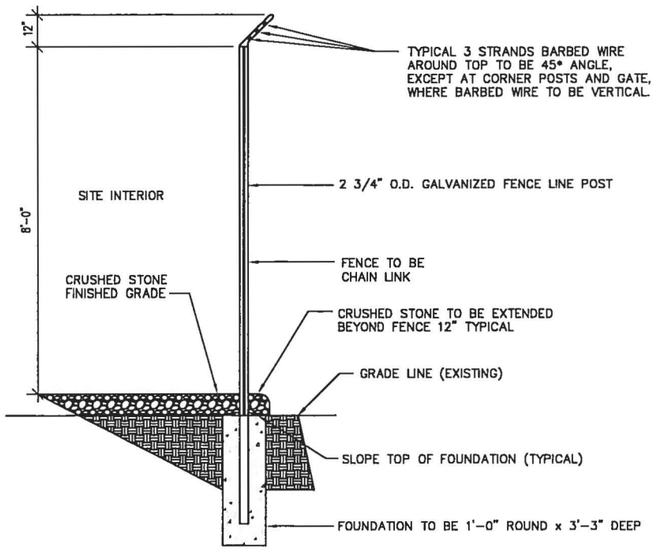
10 FENCE STOPS TO BE PLACED ON INSIDE OF COMPOUND PER ACCESS GATE SPECIFICATIONS.



BOLLARD DETAIL
NOT TO SCALE



ROAD DETAIL
NOT TO SCALE



FENCE DETAIL LINE POLES
NOT TO SCALE

RB DESIGN
rabdesign1@bellsouth.net (502)599-9427

NO.	DATE	REVISION

BLUEGRASS CELLULAR, INC.
STANDARD CELLULAR SITE
MANNSVILLE
430 Christian Church Rd., CAMPBELLSVILLE, KY 42718

DRAWN BY: R. BECKER
ISSUE DATE: 11-10-16
SCALE: LISTED

SHEET NUMBER
A-2

BLUEGRASS CELLULAR GENERAL NOTES & ANTENNA SPECS

ALL LINES AND ANTENNAS TO BE PROPERLY MOUNTED TO TOWER OR STRUCTURE PER BLUEGRASS CELLULAR SPECIFICATIONS.

ALL GROUND BARS TO BE INSTALLED AND CAD WELDED TO GROUND FIELD (WHERE REQUIRED)

ALL LINES TO BE GROUNDED AT THE TOP AND BASE OF STRUCTURE OR TOWER.

ALL LINES TO BE GROUNDED AT ENTRANCE OF SHELTER BEFORE WAVE GUIDE PORTS. (EXTERIOR OF BUILDING)

LINES ARE TO BE SECURED TO ICE BRIDGE

WAVE-GUIDE BOOTS ARE TO BE INSTALLED ON ALL LINES (BOTH INSIDE AND OUTSIDE)

ALL COAX CONNECTIONS ARE TO BE WEATHER PROOFED.

INVENTORY OF ALL MATERIAL IS TO BE DONE PRIOR TO INSTALLATION BY CONTRACTOR. (LIST WILL BE PROVIDED)

ALL TRASH AND REFUGE IS TO BE PROPERLY DISPOSED OF.

CONTRACTOR TO EXTEND HARDLINES INTO BUILDING 12" & INSTALL POLYPHASERS AND GROUNDING, PER INSTRUCTION OF PROJECT SUPERVISOR.

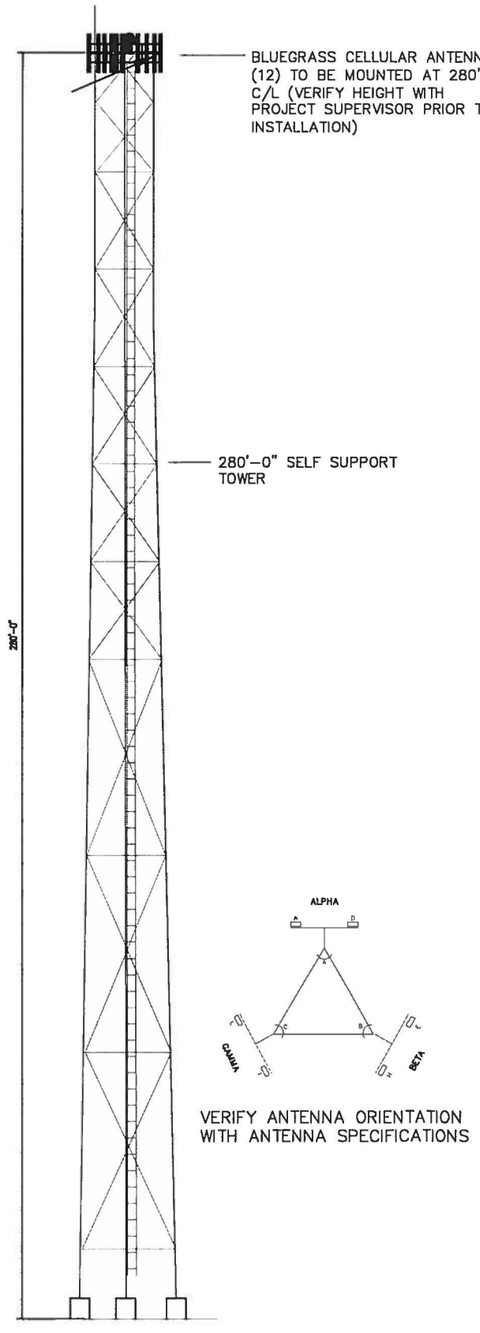
GENERAL CONTRACTOR TO MOUNT ANTENNA MOUNTS AT TOP OF STRUCTURE OR TOWER BY BLUEGRASS CELLULAR SPECIFICATIONS.

ICE BRIDGE TO BE SUPPLIED AND INSTALLED BY GENERAL CONTRACTOR. (Additional Ice Bridge if needed)

TRAPEZE KIT TO BE SUPPLIED AND INSTALLED BY GENERAL CONTRACTOR.

CONTRACTOR TO INSTALL GPS BRACKET & ANTENNAS COMPLETE.

CONTRACTOR TO INSTALL LIGHTING SYSTEM PER FAA ADVISORY 70/7460-1K CHANGE 2, OBSTRUCTION MARKING AND LIGHTING, A MED-DUAL SYSTEM - CHAPTERS 4,8(M-DUAL), & 12



VERIFY ANTENNA ORIENTATION WITH ANTENNA SPECIFICATIONS

SELF SUPPORT TOWER ELEVATION (TYPICAL)

TOWER HEIGHT & TYPE

280'-0" SELF SUPPORT TOWER

ANTENNA SPECS

	TYPE	SIZE L x W x D	NUMBER	AZIMUTH	MOUNTING HEIGHT
ANTENNA (CDMA)	COMMSCOPE LNX-8514DS-VTM		9	0*, 120*, 240*	280'-0" C/L VERIFY WITH CONSTRUCTION SUPERVISOR
ANTENNA (LTE)	Air21 PANELS		3	0*, 120*, 240*	280'-0" C/L
	RRUS 11 B13		3 EA.	1 EA. PER SECTOR	

ANTENNA MOUNTING HARDWARE SPECS

	TYPE	SIZE	NUMBER
MOUNT (PRIMARY)	WD 13X53 MOUNTING FRAME		3
MOUNT (SECONDARY)			

ANTENNA TRANSMISSION LINES SPECS

	TYPE	SIZE	NUMBER
TRANSMISSION LINE (PRIMARY)	(7) #8AWG	(1) 5/8"	1
TRANSMISSION LINE (SECONDARY)	(24) Fiber	(1) 3/8"	1

DISH SPECS

	MICROWAVE/DONOR	SIZE	NUMBER	AZIMUTH	MOUNTING HEIGHT
DISH #1					

DISH MOUNT SPECS

	TYPE	SIZE	NUMBER
MOUNT #1			
MOUNT #2			

DISH TRANSMISSION LINES

	TYPE	SIZE	NUMBER
TRANSMISSION LINE #1			
TRANSMISSION LINE #2			

ANTENNA SYNOPSIS

* ANTENNAS TO HAVE A 2*E
* ANTENNAS TO HAVE A 0* Mech.

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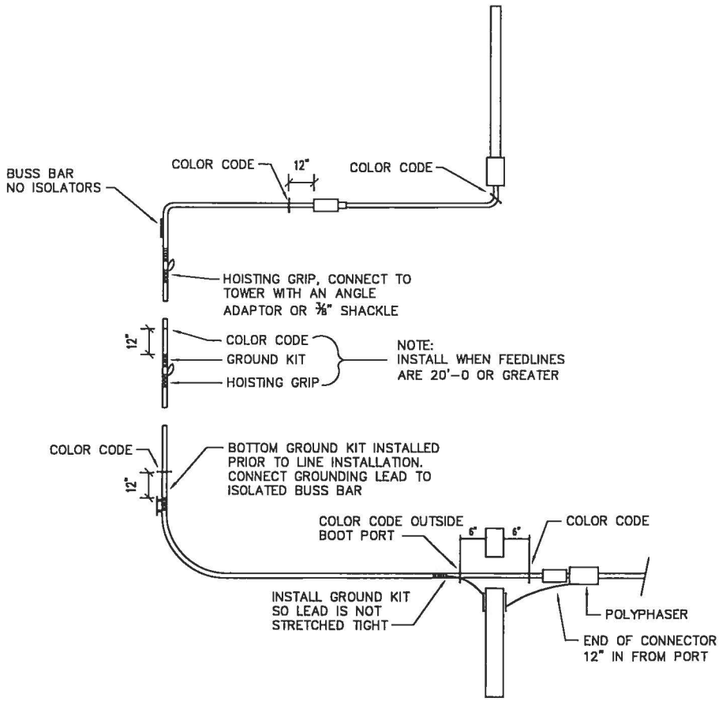
ANTENNA DETAILS 1



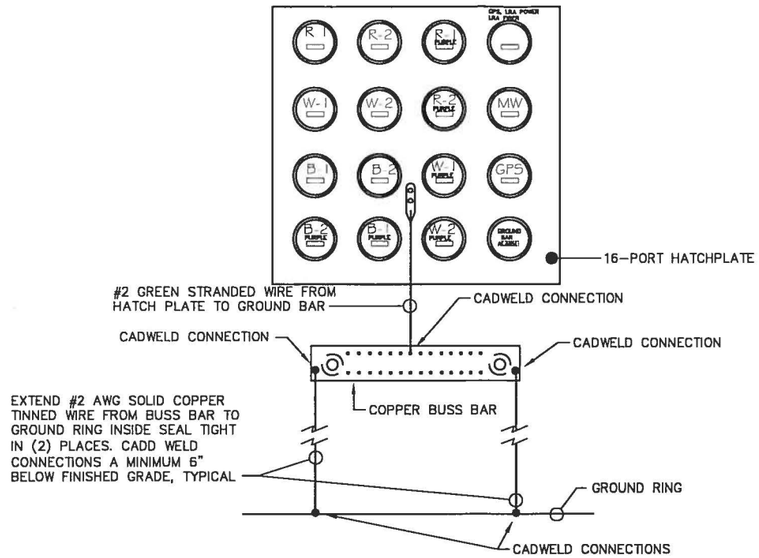
COLOR CODING DETAIL

NO SCALE

COLOR CODE DETAILS:

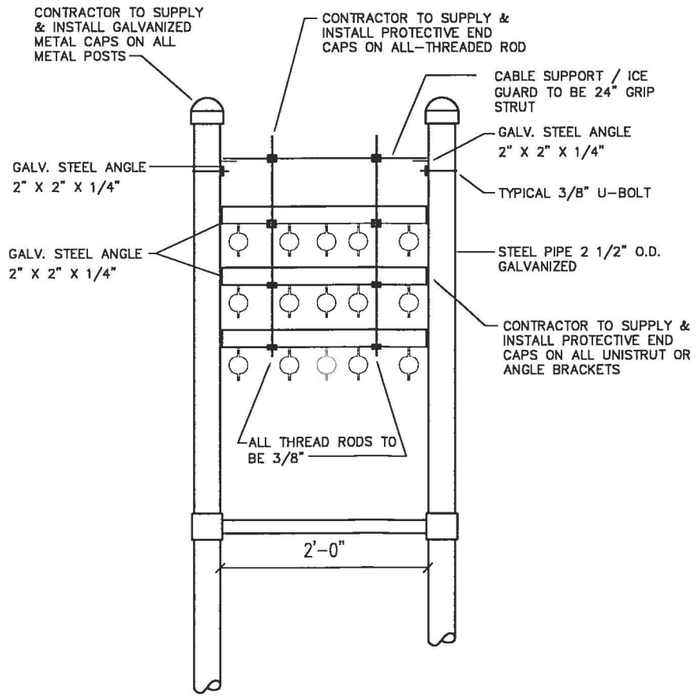
CDMA–NO COLOR OTHER THAN THE SECTOR DESIGNATORS
BCI LTE–ALWAYS 1 PURPLE BAND AFTER RED, WHITE OR BLUE SECTOR DESIGNATOR COLORS.
LRA LTE–ALWAYS HAS 1 ORANGE BAND AFTER RED, WHITE OR BLUE SECTOR DESIGNATOR COLORS.
AWS–ALWAYS HAS 2 ORANGE BANDS AFTER RED, WHITE OR BLUE SECTOR DESIGNATOR COLORS. AWS POWER AND FIBER TRUNK CABLES JUST HAVE 2 ORANGE BANDS WITH NO SECTOR DESIGNATOR COLORS SINCE ALL 3 SECTORS ARE IN TRUNK.

THE SECTOR DESIGNATOR COLORS ARE:
ALPHA 1–1 RED BAND
ALPHA 2–2 RED BANDS
DELTA 1–3 RED BANDS
DELTA 2–4 RED BANDS
BETA 1–1 WHITE BAND
BETA 2 –2 WHITE BANDS
EPSILON1 –3 WHITE BANDS
EPSILON 2–4 WHITE BANDS
GAMMA 1– 1 BLUE BAND
GAMMA 2– 2 BLUE BANDS
ZETA 1 – 3 BLUE BANDS
ZETA 2 – 4 BLUE BANDS
BCI LTE (PURPLE BAND)
1 RED 1 PURPLE (ALPHA 1 BCI LTE)
2 RED 1 PURPLE (ALPHA 2 BCI LTE)
1 WHITE 1 PURPLE (BETA 1 BCI LTE)
2 WHITE 1 PURPLE (BETA 2 BCI LTE)
1 BLUE 1 PURPLE (GAMMA 1 BCI LTE)
2 BLUE 1 PURPLE (GAMMA 2 BCI LTE)



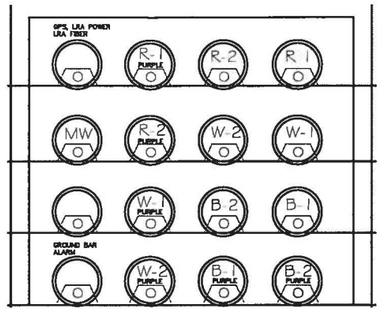
BOOT PORT GROUNDING DETAIL

NO SCALE



ICE BRIDGE / COAX SUPPORT DETAIL

NO SCALE



COAX ENTRY DETAIL POWER SIDE (VIEW FROM INSIDE SHELTER)

NO SCALE

RB DESIGN
rbdesign16@bellsouth.net (502)599-9427

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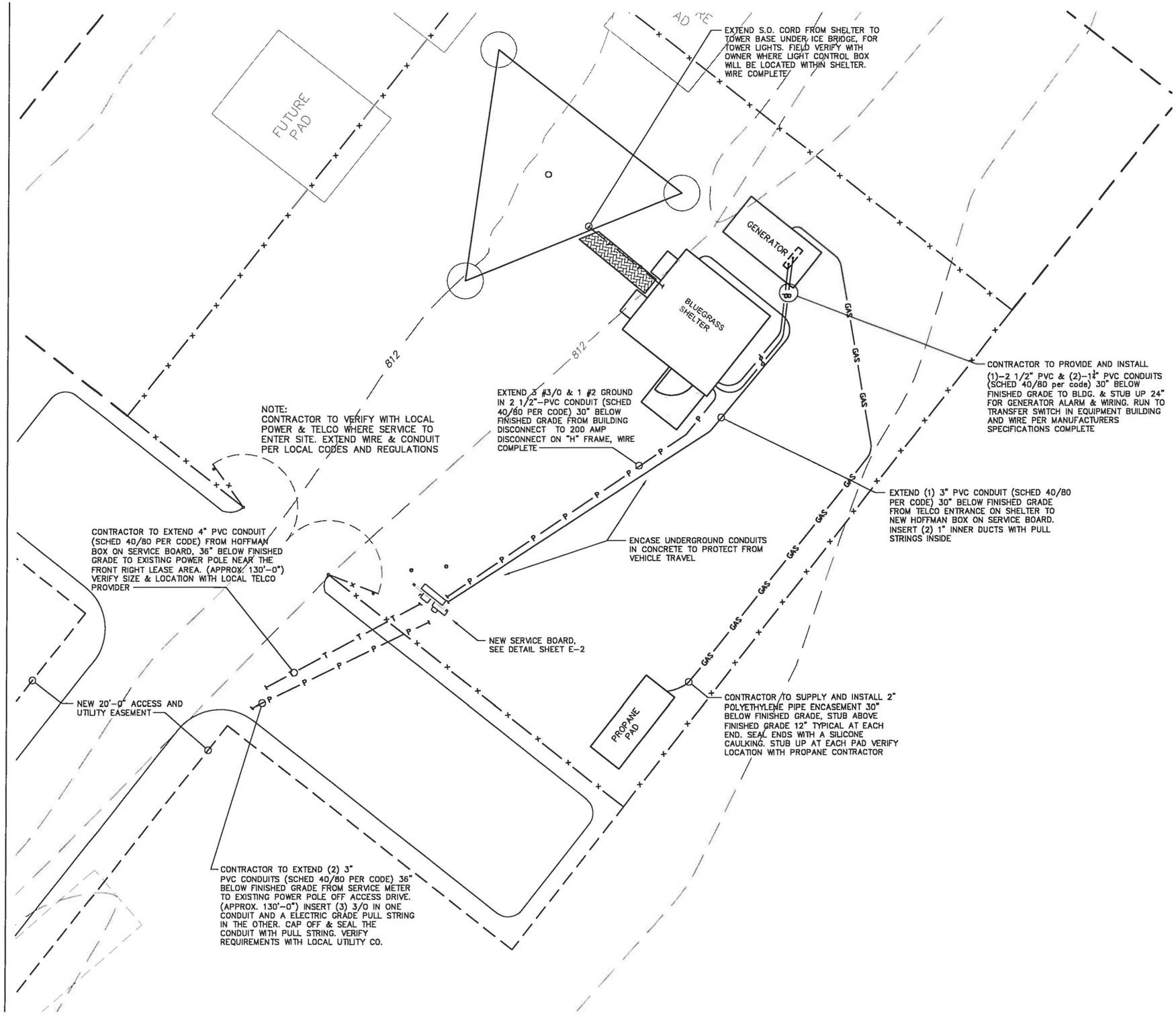
SHEET NUMBER
ANTENNA DETAILS 2



GENERAL ELECTRICAL NOTES:

1) CONTRACTOR RESPONSIBLE FOR MAKING ALL ARRANGEMENTS WITH THE LOCAL UTILITIES FOR SERVICE AND FEE PAYMENTS REQUIRED TO OBTAIN SERVICE.

2) CONTRACTOR RESPONSIBLE FOR MAKING ALL ARRANGEMENTS WITH THE LOCAL TELEPHONE COMPANY FOR SERVICE AND FEE PAYMENTS REQUIRED TO OBTAIN SERVICE.

3) GROUND RING TO BE CONTAINED WITH IN THE COMPOUNDS FENCED AREA.

4) FENCE TO BE GROUNDED FROM GROUND RING TO ALL CORNER POST & GATES. SPACE FENCE GROUNDING APPROXIMATELY 20'-0" O/C. (CAD WELD ALL CONNECTIONS)

5) ALL GROUND RING CONNECTIONS TO BE AS CLOSE AS POSSIBLE, SHARP BENDS WILL NOT BE PERMITTED AS WELL AS "T" CONNECTIONS. ALL CONNECTIONS TO HAVE A SWEEPING RADIUS OF 8" MINIMUM. GROUNDING CONFIGURATION TO BE IN PARALLEL.

6) CONTACT POINTS FOR GROUNDING TO BE CLEANED OF ANY RUST, PAINT, DIRT, ETC. TO CREATE A GOOD BOND FOR CONDUCTOR. AREA THAT HAS BEEN CLEANED TO BE RESEALED TO PREVENT RUSTING.

7) PROPERLY GROUND ANY EXPOSED METAL THAT MAY EXIST ON EXTERIOR OF EQUIPMENT SHELTER OR CABINET.

8) WHERE GROUND CONDUCTORS REQUIRE MECHANICAL BONDING, STAINLESS STEEL CONNECTORS ARE REQUIRED AT EACH CONNECTING POINT USING LOCK WASHERS.

9) CONTRACTOR RESPONSIBLE FOR SEEING THAT UTILITY PERSONNEL MAKE FINAL CONNECTIONS, MAKING SURE THE TOWER ALARM IS CONNECTED AND WORKING. A TELEPHONE NUMBER FOR THE ALARM MUST BE SUPPLIED.

10) CONTRACTOR RESPONSIBLE FOR MEG TESTING THE SITE AND SUPPLYING OWNER WITH FINAL READINGS IN OWNERS SPECIFICATIONS.

11) IF CONDUIT RUNS BURIED LESS THAN REQUIRED DEPTHS, CONTACT BLUEGRASS CELLULAR FOR FURTHER INSTRUCTIONS

NOTE:
CONTRACTOR TO PROVIDE WARNING TAPE IN TRENCHES FOR ALL POWER AND TELCO RUNS UNDER GROUND. TAPE TO BE INSTALLED 1'-0" ABOVE CONDUIT RUNS. (TAKE PICTURES)

SYMBOLS LEGEND

- P — POWER
- G — GAS
- T — TELEPHONE
- X — FENCE
- SWITCH (DISCONNECT)
- METER PACK

SITE PLAN- ELECTRICAL

SCALE: 3/32" = 1'-0"

RAB DESIGN
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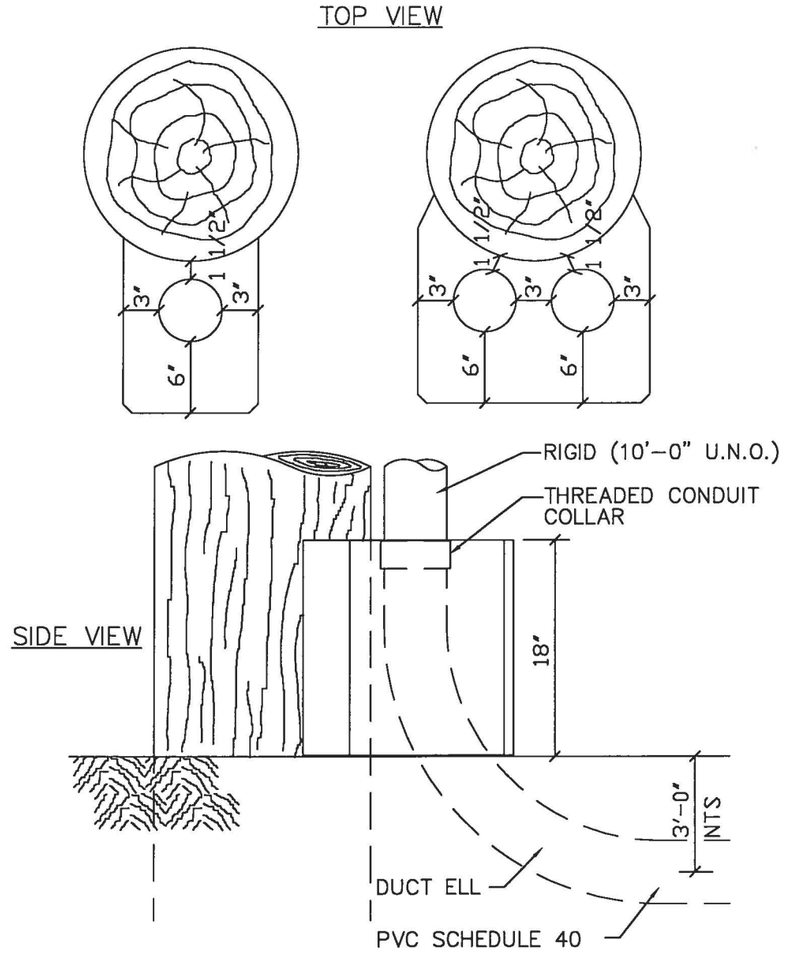
E-1



HUB-BAND DETAIL

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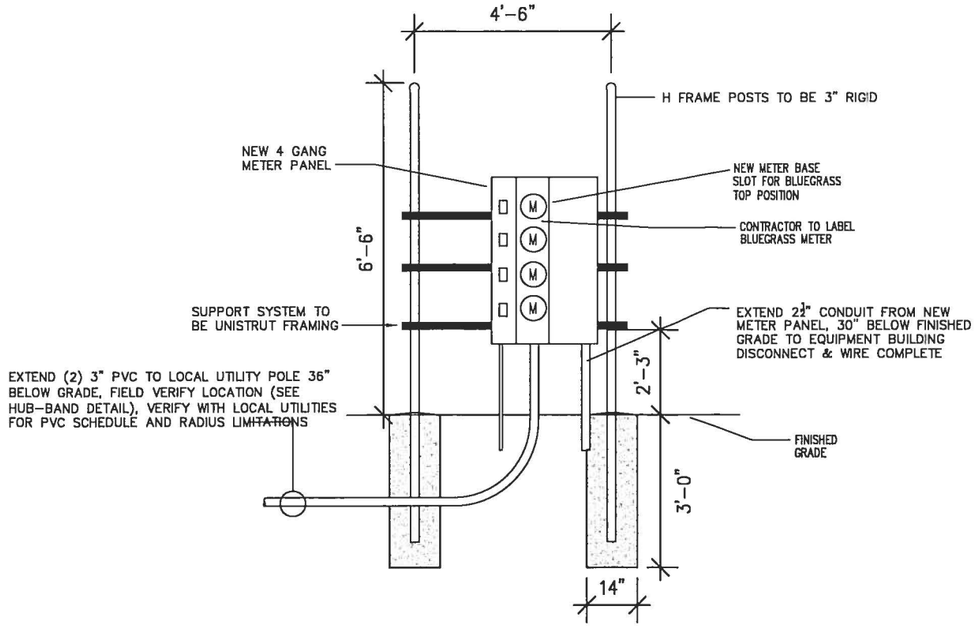

SERVICE BOARD DETAIL

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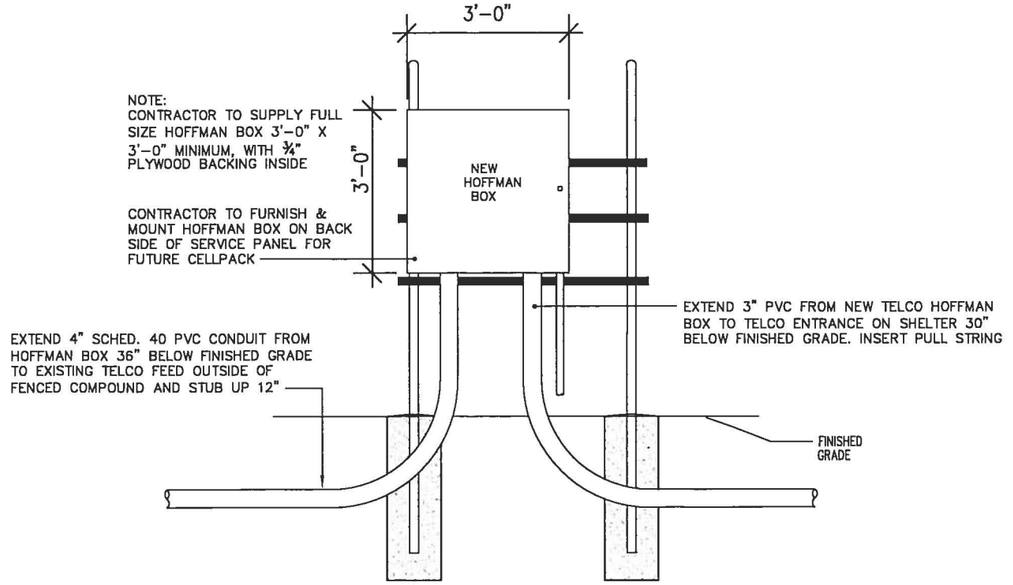

BACKBOARD DETAIL

NO SCALE

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BLUEGRASS CELLULAR, INC.
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MANNSVILLE
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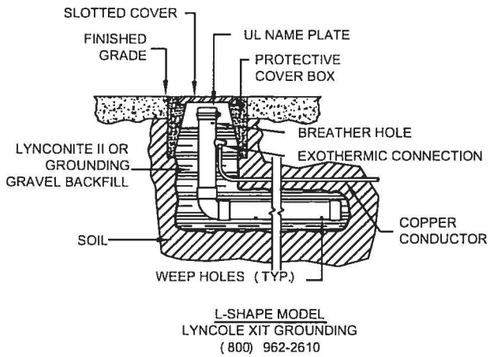
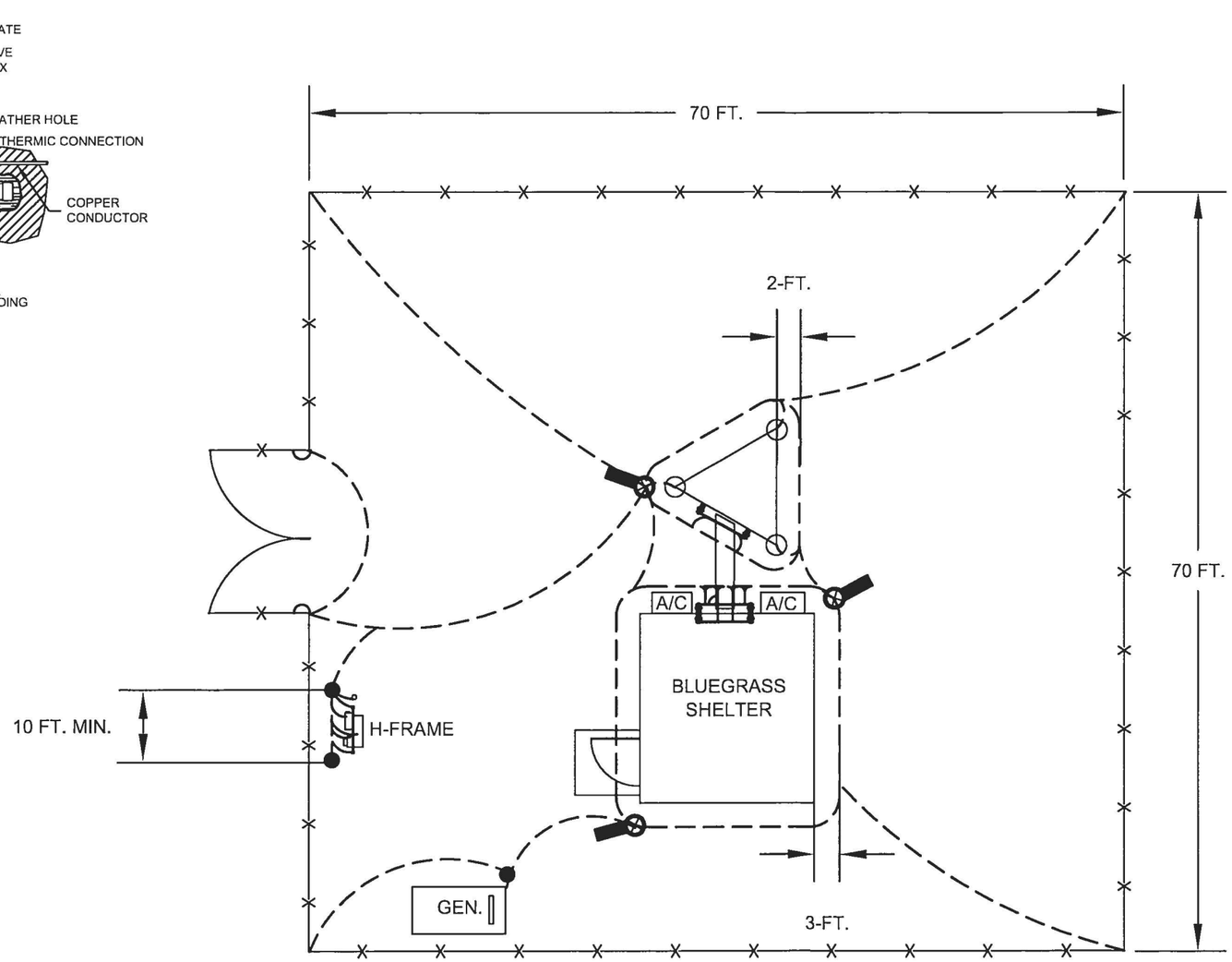
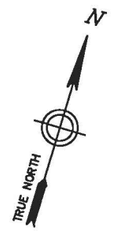
SHEET NUMBER
E-2



L-SHAPE MODEL
LYNCOLE XIT GROUNDING
(800) 962-2610

DETAIL



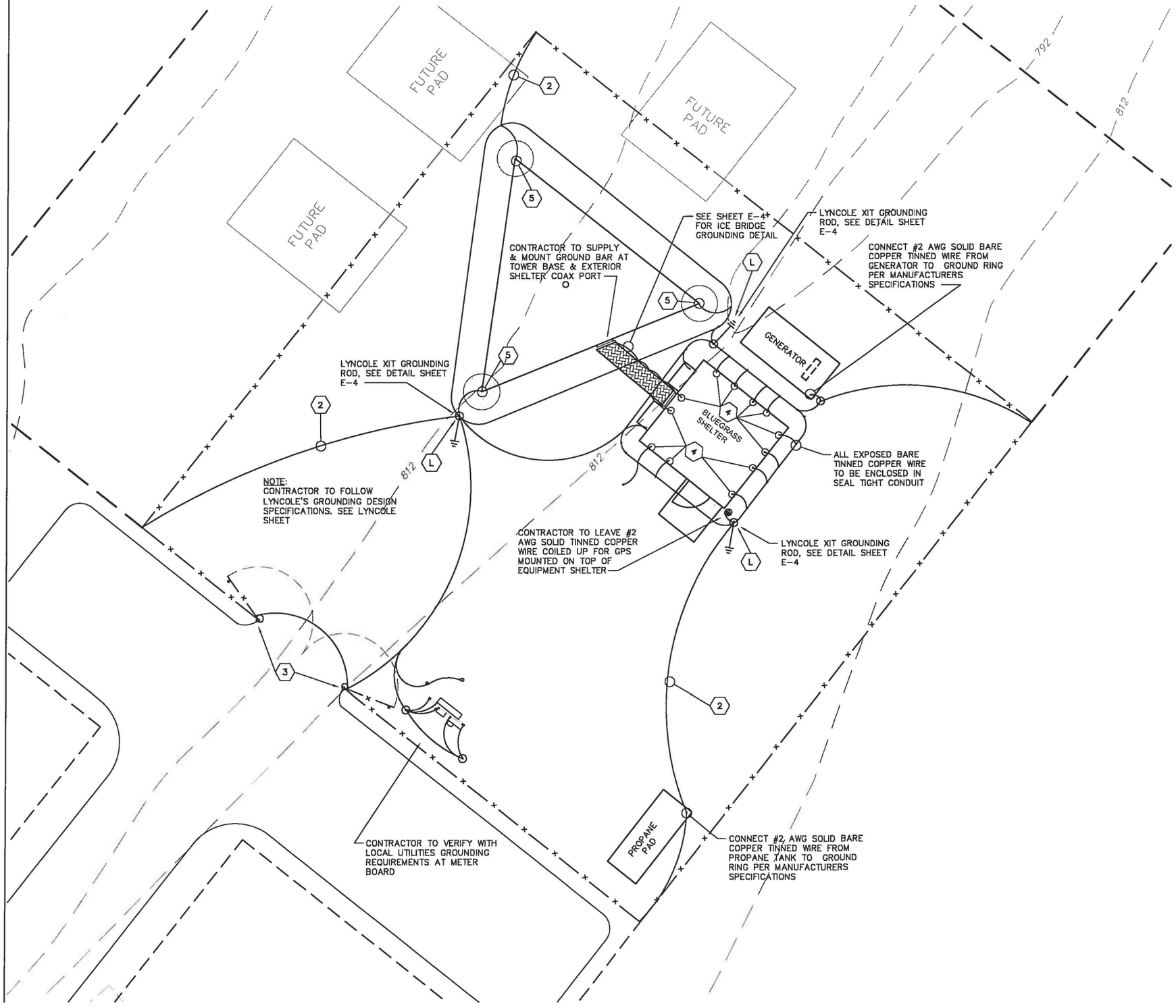


NOTES:

- FENCE LINE
- BARE #2 AWG TINNED SOLID COPPER CONDUCTOR BURIED 30 IN. BELOW GRADE OR 6 IN. BELOW FROST LINE
- BARE #2 AWG TINNED SOLID COPPER CONDUCTOR IN NON-METALLIC FLEXIBLE CONDUIT ALL BENDS IN GROUND CONDUCTORS TO BE MADE WITH 12 IN. RADIUS OR LARGER
- K2L-10CS-24 (SEE DETAIL)
- 3/4 IN. X 10 FT. COPPER CLAD GROUND ROD
- GROUND BAR

LYNCOLE
TECHNICAL SERVICES
3547 VOYAGER STREET, SUITE 204
TORRANCE, CA. 90503
(800)962-2610 FAX (310)214-1114
ENGINEERING@LYNCOLE.COM

CLIENT / END USER: RSB DESIGN / BLUEGRASS CELLULAR			
DRAWING: 1	PROJECT NAME: MANNSVILLE		
TITLE: GROUNDING OPTION			
LOCATION: CITY, STATE: KENTUCKY			CALCULATED RESISTANCE: < 5 OHMS
DRAWN BY: RFW	APPROVED BY:	DATE: 01/09/2017	
SOIL DATA PROVIDED BY: TERRACON	REFERENCE NUMBER: N/A	SCALE: NONE	LTS NUMBER: 171012



GENERAL ELECTRICAL NOTES:

1) CONTRACTOR RESPONSIBLE FOR MAKING ALL ARRANGEMENTS WITH THE LOCAL UTILITIES FOR SERVICE AND FEE PAYMENTS REQUIRED TO OBTAIN SERVICE.

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10) CONTRACTOR RESPONSIBLE FOR MEG TESTING THE SITE AND SUPPLYING OWNER WITH FINAL READINGS IN OWNERS SPECIFICATIONS.

NOTE:
CONTRACTOR TO PROVIDE WARNING TAPE IN ALL POWER & TELCO TRENCHES, 12" ABOVE CONDUIT RUNS, BUT BELOW FINISHED GRADE.

NOTE:
CONTRACTOR TO FOLLOW LYNCOLES GROUNDING SPECIFICATIONS WHEN USING THEIR XIT GROUNDING RODS. SEE DETAIL SHEET E-4.

KEYNOTES:

(L) LYNCOLE XIT GROUNDING ROD TO BE INSTALLED WHERE SHOWN AND TO MANUFACTURERS SPECIFICATIONS. (SEE LYNCOLE SPECIFICATIONS)

(1) GROUNDING RODS 10'-0" LONG x 3/4" COPPER BONDED GROUND RODS

(2) INSTALL AND PROVIDE SOLID BARE TINNED COPPER WIRE #2 AWG, GROUND RING BELOW GRADE 30". USE #2 AWG SOLID BARE TINNED COPPER GROUND "TAP" CONNECTING CONDUCTORS. (CONNECTIONS FOR ALL TAP CONDUCTORS TO BE PARALLEL AND "CAD WELD" CONNECTIONS)

(3) FLEXIBLE GROUNDING STRAP TO BE USED TO PROVIDE A COMMON BOND BETWEEN GATE AND CHAIN LINK FENCE, #2 AWG SOLID COPPER BARE TINNED CONDUCTOR FROM GROUND RING TO FENCE USING CAD WELD CONNECTIONS. GROUND TAP TO BE PROVIDED ON EACH 4 SIDES TO GROUND RING AS DESCRIBED ABOVE.

(4) BONDED GROUND TO BE PROVIDED TO GROUND RING FOR EACH OF THE FOLLOWING: BUILDING STEEL, HATCH PLATE, EMERGENCY RECEPTACLE, WAVE GUIDE STRUCTURE, FRAME WORK, BUILDING DISCONNECT.

(5) FOR TOWER FRAME GROUNDING, REMOVE GALVANIZED COATING COMPLETELY AT SPOT TO "CAD WELD" TO AND CLEAN. #2 AWG SOLID BARE TINNED COPPER CONDUCTOR TO BE CAD WELDED APPROXIMATELY 1'-0" ABOVE FOUNDATION OR AT FLANGE IF PROVIDED BY TOWER MANUFACTURER.

EXTEND CONDUCTOR TO GROUND RING. RIGHT ANGLES NOT ACCEPTED ALL BENDS TO BE SWEEPING.

SITE PLAN-GROUNDING

SCALE: 3/32" = 1'-0"

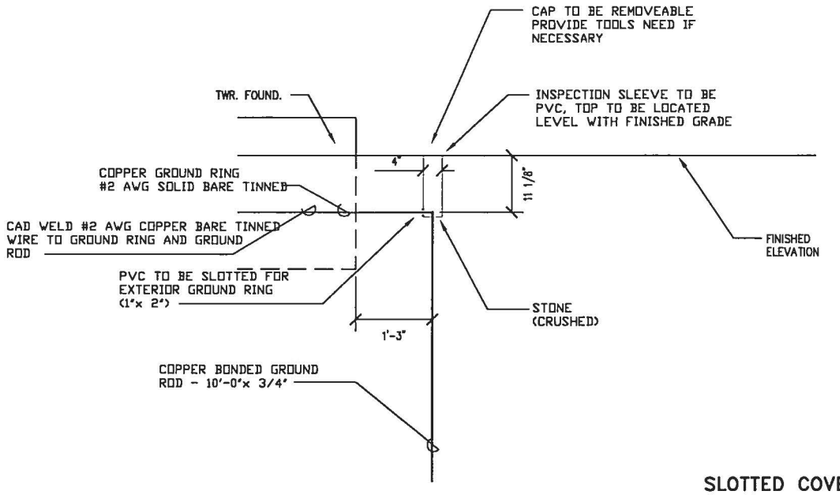
RB DESIGN
rbdesign1@bellsouth.net (502)599-9427

NO.	DATE	REVISION

BLUEGRASS CELLULAR, INC.
STANDARD CELLULAR SITE
MANNSVILLE
430 Christian Church Rd. CAMPBELLSVILLE, KY 42718

DRAWN BY: R. BECKER
ISSUE DATE: 11-10-16
SCALE: LISTED

SHEET NUMBER
E-3



GROUND ROD DETAIL

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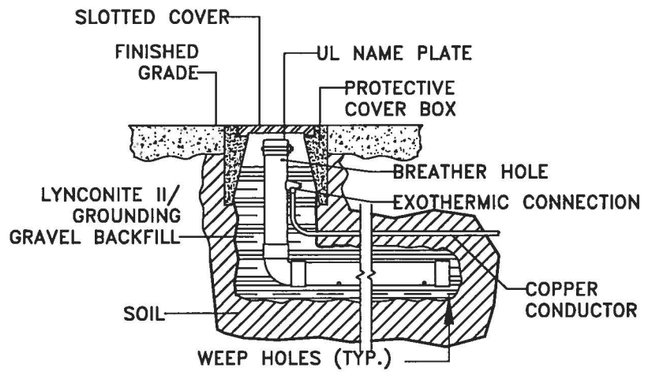
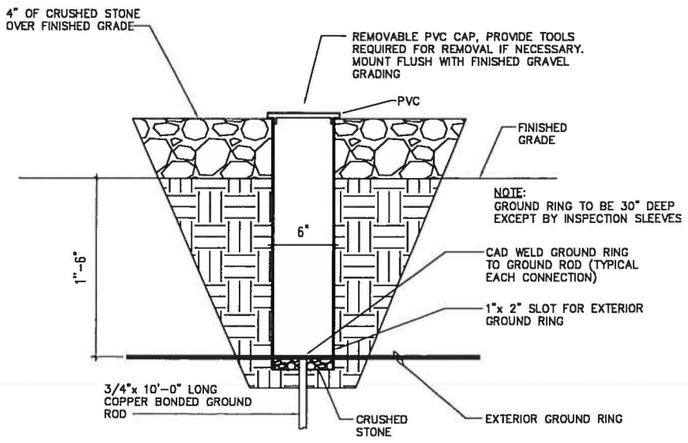


L-SHAPE MODEL
LYNCOLE XIT GROUNDING
(800) 962-2610

LYNCOLE XIT ROD DETAIL

NO SCALE



GROUND SLEEVE DETAIL

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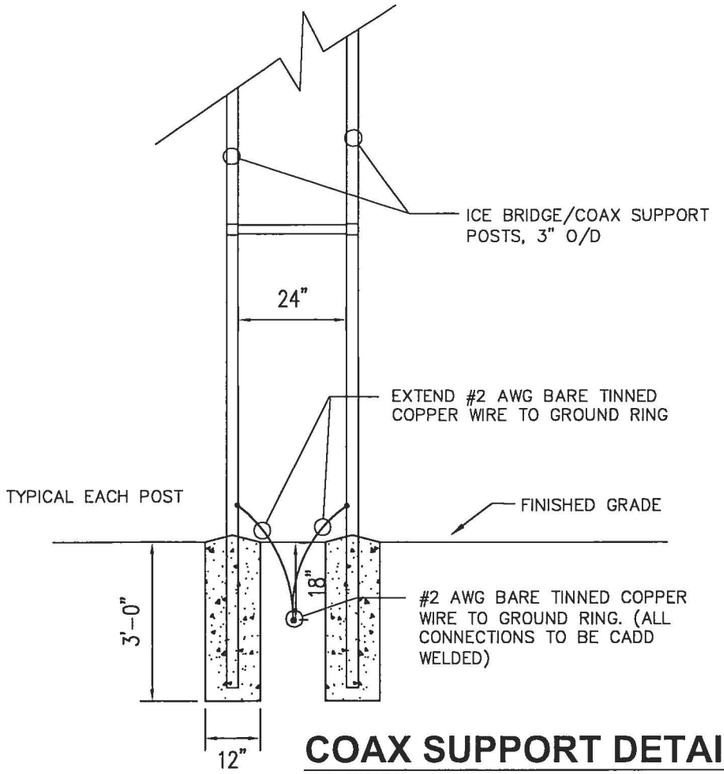
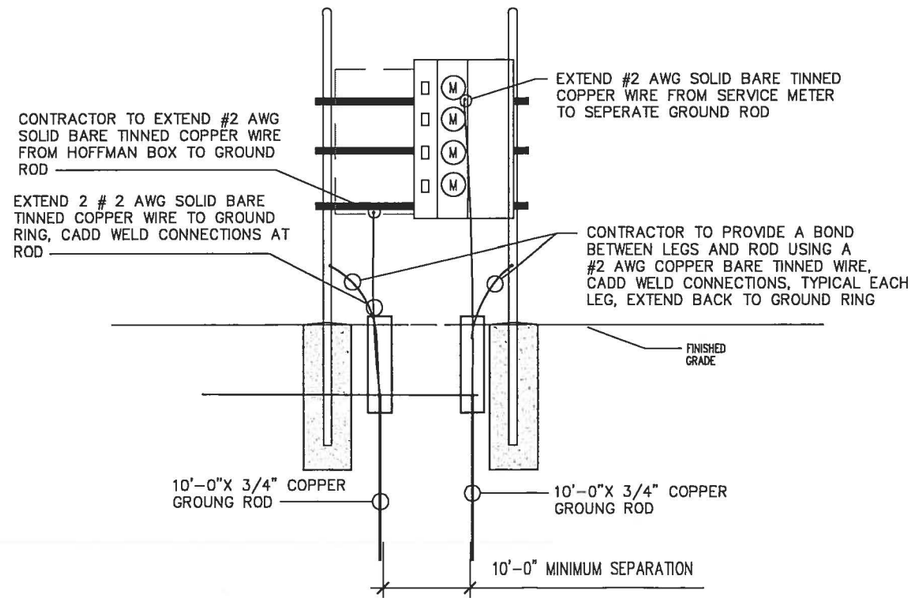


COAX SUPPORT DETAIL

NO SCALE



SERVICE BOARD DETAIL

NO SCALE

RAB DESIGN
rabdesign1@bellsouth.net (502)599-9427

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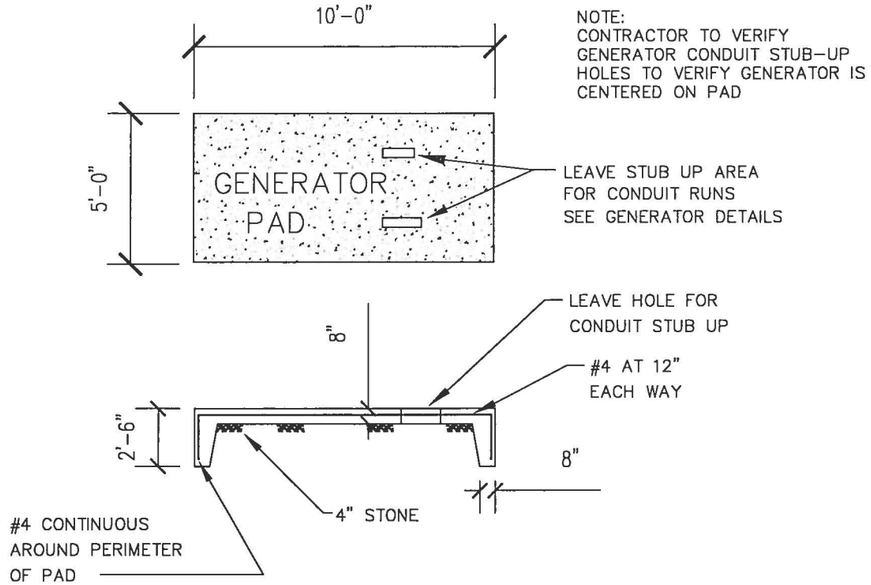
BLUEGRASS CELLULAR, INC.
STANDARD CELLULAR SITE
MANNSVILLE
430 Christian Church Rd., CAMPBELLSVILLE, KY 42718

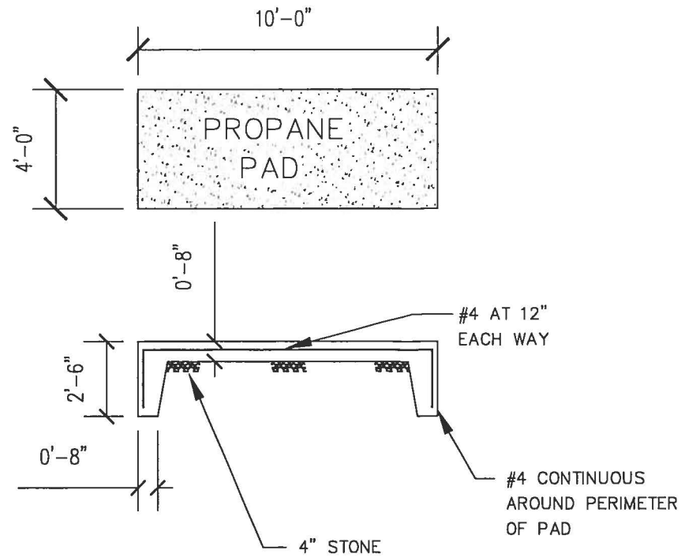
DRAWN BY: R. BECKER
ISSUE DATE: 11-10-16
SCALE: LISTED

SHEET NUMBER
E-4



FOUNDATION DETAIL

NO SCALE



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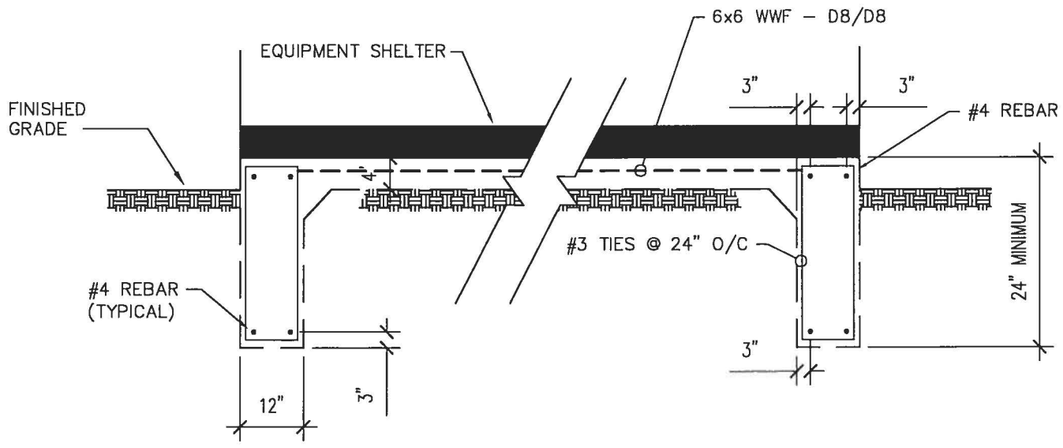
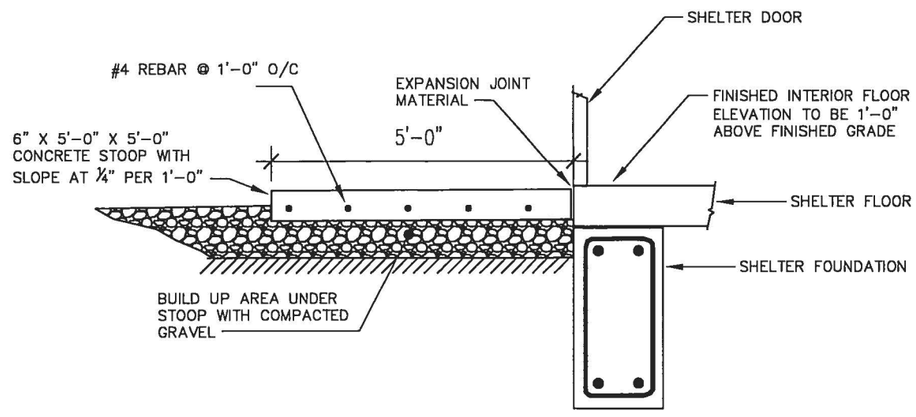


SHELTER FOUNDATION PLAN

NO SCALE



CONCRETE STOOP DETAIL

NO SCALE

RAB DESIGN
rabdesign1@bellsouth.net (502)599-9427

REVISION

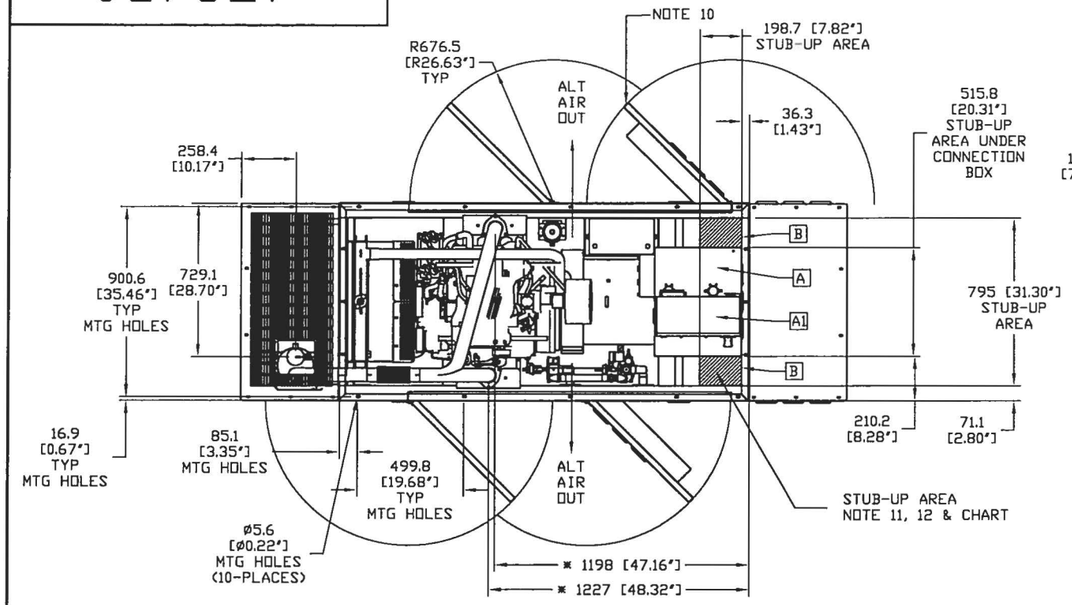
NO. | DATE

BLUEGRASS CELLULAR, INC.
STANDARD CELLULAR SITE
MANNSVILLE
430 Christian Church Rd., CAMPBELLSVILLE, KY 42718

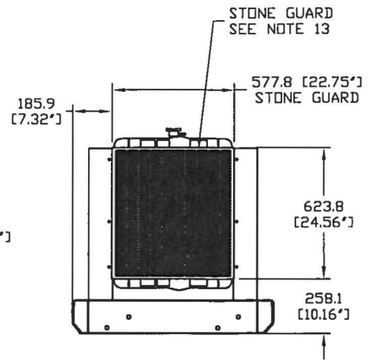
DRAWN BY: R. BECKER
ISSUE DATE: 11-10-16
SCALE: LISTED

SHEET NUMBER
S-1

0G7627



TOP OR PLAN VIEW



RADIATOR END VIEW WITH STONE GUARD OPTION

RECOMMENDED FUEL/ELECTRICAL STUB-UPS (SEE TOP VIEW)	
DESCRIPTION	INSIDE BASE
AC LOAD LEAD CONDUIT (RIGHT)	A
(LEFT)	A¹
ADDITIONAL STUB UP AREA FOR 120VAC GFCI OUTLET, (STANDARD BLOCK HEATER, BATTERY CHARGER, AND OTHER 120 VAC OPTIONS).	B

NOTE:
FUEL SYSTEM SET UP WITH OUTSIDE STUB-UPS (SEE RIGHT SIDE VIEW).

WEIGHT DATA
UNIT: ??? kg [??? lbs.]
STEEL ENCLOSURE: ??? kg [??? lbs]

UNITS: mm [INCHES]

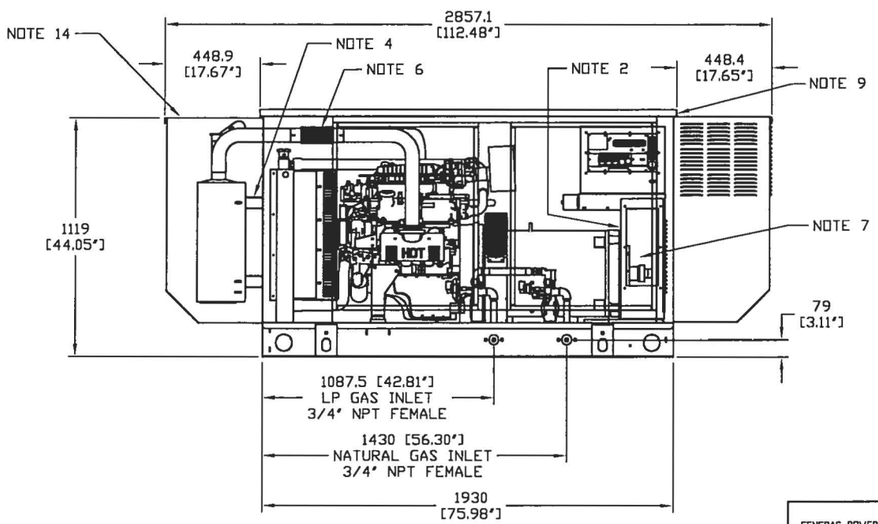
ENGINE SERVICE CONNECTIONS

INLET L/P GAS = 3/4" NPT COUPLING
INLET NATURAL GAS = 3/4" NPT COUPLING
OIL DRAIN = 1/2" NPT COUPLING
EXHAUST OUTLET - EXHAUST MANIFOLDS AS SHOWN ON OPEN SET, 3" OD MUFFLER OUTLET WITH ENCLOSURE

NOTES:

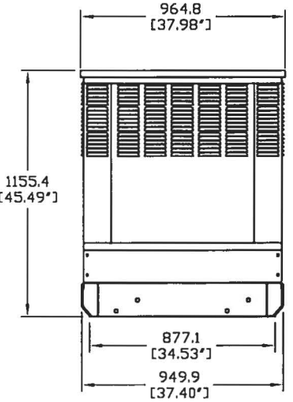
1. CONTROL PANEL MAY BE ROTATED 180° IN EITHER DIRECTION.
2. STANDARD 20A GFCI DUPLEX OUTLET - 120VAC REQUIRED.
3. CONNECTION POINTS FOR CONTROL WIRES PROVIDED IN AC CONNECTION PANEL.
4. EXHAUST MUFFLER SUPPORT BRACKETS SUPPLIED WITH OPTIONAL ENCLOSURE.
5. 12 VOLT NEGATIVE GROUND SYSTEM.
6. 2.5" I.D. FLEX EXHAUST, STANDARD WITH ENCLOSURE UNITS, OPTIONAL WITHOUT.
7. MAIN LINE CIRCUIT BREAKER (MLCB) AND AC LOAD LEAD CONNECTION.
8. REMOVABLE BLANK PANEL FOR OPTIONAL 2nd MAIN LINE CIRCUIT BREAKER.
9. OPTIONAL ENCLOSURE.
10. DOORS MUST BE ABLE TO OPEN 90 DEG. TO BE REMOVED.
11. STUB-UPS:
    STANDARD BASE TANK REQUIRES ALL STUB-UPS TO BE OUTSIDE OR IN THE REAR TANK STUB-UP AREA.
12. A OR A¹ IS THE STUB UP AREA UNDER THE MLCB, DEPENDING ON CIRCUIT BREAKER LOCATION. AREA B IS STUB UP AVAILABLE FOR UNITS WITH A BASE TANK.
13. STONE GUARD AND AIR DUCT ADAPTER STANDARD WITH OPEN SET ONLY.
14. SEE DRAWING 0C3850 FOR DUCT REMOVAL. REMOVAL OF FRONT DUCT WILL PROVIDE ACCESS TO MUFFLER FOR SERVICING.

*NOTE: DIMENSIONS TO THE CENTER OF EXHAUST FLANGE SHOULD BE USED AS A REFERENCE WHEN EXHAUST SYSTEM IS NOT ORDERED. APPLIES TO OPEN SET ONLY.

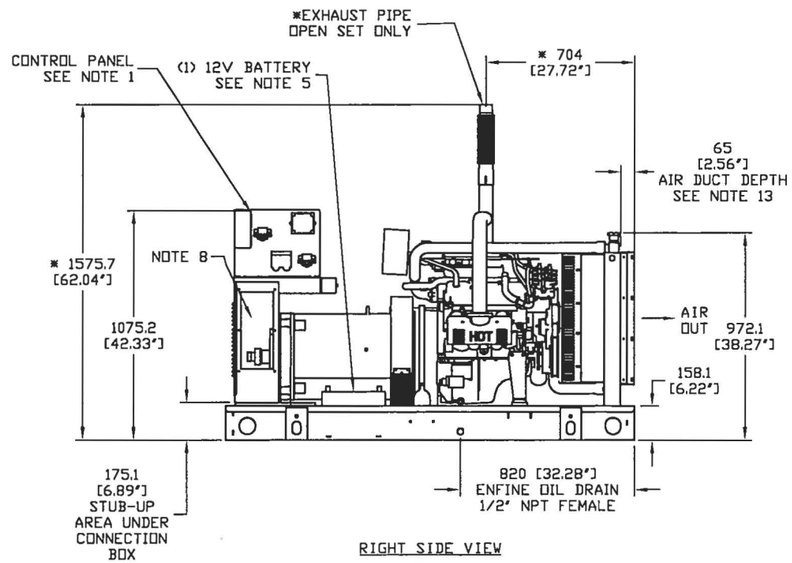


LEFT SIDE VIEW

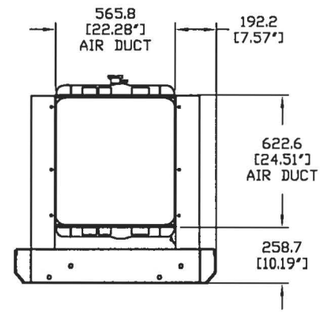
APPLICABLE TO 4.5L G3 35, 40 & 45KW



REAR VIEW



RIGHT SIDE VIEW



RADIATOR END VIEW WITH AIR DUCT ADAPTER OPTION

INSTALLATION DRAWING

SG 35, 40, 45 KW (UPSIZED 100 KW)

4.2L DIRECT DRIVE

ACOUSTIC ENCLOSURE

ISSUE DATE: 11/13/07

GENERAC POWER SYSTEMS
Waukesha
P.O. BOX 8
WAUKESHA, WIS. 53187

FILE NAME	0G7627-A.DWG	SIZE	B
SCALE	NTS	FIRST USE	4.2L G3
DWG NO.	0G7627	REV	A

GENERAL NOTES:

1) THE CONTRACTOR IS RESPONSIBLE FOR EQUIPMENT PICK UP DELIVERY TO SITE, ERECTION OF TOWER, AND CRANE SET, ALL COSTS INCURRED.

2) THE CONTRACTOR IS RESPONSIBLE FOR VISITING THE SITE PRIOR TO BIDDING AND REVIEWING EXISTING STRUCTURES OR UTILITIES THAT MIGHT BE LOCATED ON OR AROUND THE COMPOUND THAT COULD INTERFERE.

3) THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING LOCAL AUTHORITIES NECESSARY FOR INSPECTIONS IF REQUIRED, PLEASE PROVIDE AMPLE NOTICE.

4) THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING PERSONS RESPONSIBLE FOR ANY MATERIALS TESTING, PLEASE PROVIDE AMPLE NOTICE.

5) THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE OWNER WITH FINAL TEST RESULTS ON ALL MATERIALS TESTING. IF ANY PROBLEMS ARE FOUND PRIOR TO FINAL RESULTS PLEASE NOTIFY A&E OR OWNER IMMEDIATELY.

6) THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO ADJOINING PROPERTY, AND REPAIRING OR REPLACING WHAT IS NECESSARY TO OWNERS APPROVAL.

7) THE CONTRACTOR IS TO VERIFY DIMENSIONS ON SITE PRIOR TO CONSTRUCTION STARTING, ANY PROBLEMS OR CHANGE FOUND CONTACT A&E OR OWNER TO VERIFY.

8) THE CONTRACTOR IS RESPONSIBLE FOR ANY TEMPORARY LIGHTING ON THE TOWER AND CONTACTING PROPER AUTHORITIES IF ANY LIGHTING PROBLEMS OCCUR, ALL FINAL LIGHTING TO BE MOUNTED ON TOWER DURING CONSTRUCTION, NOTIFY OWNER WHEN TOWER HAS REACHED FINAL HEIGHT.

9) THE CONTRACTOR IS RESPONSIBLE FOR ALL ON SITE WORK MEANS AND METHODS.

10) CONTRACTOR, ANY CONTRACTOR EMPLOYEES OR REPRESENTATIVES, OR SUB-CONTRACTOR, ANY SUB-CONTRACTOR EMPLOYEES OR REPRESENTATIVES, WILL CONFORM TO ALL LAWS AND REGULATIONS APPLICABLE TO THE WORK BEING PERFORMED, INCLUDING BUT NOT LIMITED TO, ALL OCCUPATIONAL SAFETY AND HEALTH ACT ("OSHA") STATUTES AND REGULATIONS AS WELL AS ALL OTHER FEDERAL, STATE AND/OR LOCAL LAWS OR REGULATIONS APPLICABLE TO THE WORK BEING PERFORMED BY CONTRACTOR.

11) THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL SITE DRAINAGE, AND PROVIDING SILT AND EROSION CONTROL NECESSARY TO MAINTAIN ANY RUN OFF.

12) THE CONTRACTOR IS RESPONSIBLE FOR ALL SEED AND STRAW WORK NECESSARY TO REPAIR DAMAGED AREAS.

13) CONTRACTOR TO GRADE SMOOTH OR REPAIR ANY POT HOLES OR DITCHING ON PROPERTY OR ROAD THAT HAS OCCURRED DURING CONSTRUCTION AT CONTRACTORS EXPENSE.

14) CONTRACTOR'S RESPONSIBILITIES REGARDING BUILD OUT ON FIBREBOND EQUIPMENT SHELTERS TO INCLUDE:

* INSTALLING THE DOOR CANOPY
* INSTALLING EXTERIOR LIGHT ON WALL DETERMINED BY PROJECT SUPERVISOR AND PHOTOCELL REQUIREMENTS
* INSTALLING INTRUDER ALARMS
* CHECK OPERATIONS OF DOOR AND DOOR HARDWARE
* ADJUST WEATHERSTRIPPING ON DOORS AS NEEDED
* INSPECT ROOF FOR DAMAGE AND POSSIBLE LEAKS
* INSPECT INTERIOR FINISH FOR IMPERFECTIONS AND REPAIR AS NEEDED
* CHECK OPERATION OF LIGHTS AND ELECTRICAL OUTLETS
* CHECK OPERATION OF INTAKE AND EXHAUST LOUVERS AND ADJUST AS NEEDED
* CHECK OPERATION OF ENVIRONMENTAL CONTROLS AND HVAC UNITS
* INSTALL AND PAINT SHELTER TIE-DOWNS TO MATCH

15) INSTALL CONCRETE PADS FOR BUILDING, PROPANE TANK, GENERATOR PAD.

16) INSTALL ELECTRIC AND GROUND FIELD FOR COMPOUND.

17) GC WILL BE RESPONSIBLE FOR ALL CRANE OPERATIONS IN ORDER TO SET FIBREBOND BUILDING. COORDINATE BUILDING DELIVERY DATE THROUGH BLUEGRASS CELLULAR.

18) GC WILL BE RESPONSIBLE FOR OFF LOADING AND STACKING OF TOWER WHEN APPLICABLE.

19) GC WILL BE RESPONSIBLE FOR MOUNTING ALL LINES AND ANTENNAS.

20) GC WILL BE RESPONSIBLE FOR SUPPLYING AND INSTALLING ICE BRIDGE.

21) GC WILL BE RESPONSIBLE FOR SCHEDULING PROPANE TANK DELIVERY AND HOOK-UP. PREFERRED SUPPLIERS ARE EMPIRE & AMERIGAS

22) GC WILL BE RESPONSIBLE FOR COORDINATING THE CLEANING OF THE INSIDE OF THE BUILDING WITH THE PROJECT SUPERVISOR AFTER THE SITE HAS BEEN TURNED OVER TO THE OPERATIONS DEPARTMENT AND ALL TURN-UP PROCEDURES HAVE BEEN COMPLETED. THIS WILL INCLUDE SUPPLYING A 30 GALLON TRASHCAN, 30 GALLON TRASH BAGS, BROOM, DUST PAN AND DOORMAT FOR BUILDING.

23) GC TO VERIFY ALL BLUEGRASS CELLULAR EQUIPMENT DIMENSIONS & SPECIFICATIONS WITH MANUFACTURER'S DRAWINGS, (FIBREBOND, GENERAC, EASTPOINTE ETC.) PRIOR TO CONSTRUCTION. ADDRESS ANY ISSUES WITH PROJECT SUPERVISOR BEFORE WORK BEGINS.

24) ALL WAREHOUSE MATERIAL (LINES, ANTENNAS, MOUNTING HARDWARE, GENERATOR, TOWER FOUNDATION KIT, ETC.) WILL NEED TO BE PICKED UP BY GC.

25) GC WILL BE RESPONSIBLE FOR SCHEDULING GENERATOR START-UP WITH CONTACT SCOTT ANDERSON (EVAPAR) 502-267-6315

26) T1 CONDUIT WILL NEED TO BE PLACED FROM POLE TO BUILDING. (IF A MICROWAVE DISH IS USED, THE T1 CONDUIT WILL STILL BE INSTALLED FOR FUTURE USE.)

27) GC WILL BE RESPONSIBLE FOR INSTALLATION OF ALL FENCING.

28) ALL TRASH AND DEBRIS TO BE REMOVED BY GC

29) GC WILL BE RESPONSIBLE FOR APPLYING FOR ELECTRICAL SERVICE AND PAYING NECESSARY FEES REQUIRED.

30) GC WILL BE RESPONSIBLE FOR SUPPLYING & INSTALLING PROTECTIVE END CAPS ON ANY EXPOSED THREADED ROD OR UNISTRUT USED ON SITE. VERIFY TYPE WITH PROJECT SUPERVISOR PRIOR TO INSTALLATION.

31) GC WILL BE RESPONSIBLE FOR HAVING A CERTIFIED ELECTRICIAN HOOK UP THE BATTERIES (IMMEDIATELY) AFTER POWER HAS BEEN TURNED UP AT THE SITE, PREVENTING THE DELAY OF ANY WORK FOR OPERATIONS. THE GENERAL CONTRACTOR MUST NOTIFY THE PROJECT SUPERVISOR IMMEDIATELY AT THIS TIME SO HE CAN COORDINATE A CELL TECH TO BE ONSITE WHEN THIS OCCURS.

32) GC WILL BE RESPONSIBLE FOR RUNNING (CAT5) FROM THE GENERATOR ALARM PANEL MOUNTED ON THE SIDE OF THE TRANSFER SWITCH (BY THE CONTRACTOR), THROUGH THE TRANSFER SWITCH AND UP TO THE EXISTING CONDUIT BESIDE THE A/C POWER FAIL RELAY. THE (CAT5) WILL BE PULLED THROUGH EXISTING CONDUIT AROUND THE SHELTER AND EXTENDED TO THE ALARM BLOCK. THERE SHOULD BE A MINIMUM 3'-0" OF (CAT5) LEFT HANGING ON EACH END FOR THE CELL TECH TO HOOK UP THE GENERATOR ALARMS.

33) GC MUST SUBMIT A COPY OF THE BUILDING PERMIT AND CONSTRUCTION SCHEDULE TO THE PROJECT SUPERVISOR PRIOR TO RECEIVING (NTP) TO BEGIN CONSTRUCTION (NO EXCEPTIONS).

34) GC MUST DISPLAY FCC TOWER REGISTRATION NUMBER AND EMERGENCY PHONE NUMBERS ON 3'-0 X 4'-0" MINIMUM WOODEN BACKBOARD SOMEWHERE ON SITE LOCATION PRIOR TO BREAKING GROUND.

GRADING & EXCAVATING NOTES:

1) ANY DAMAGE TO EXISTING UTILITIES, STRUCTURES, ROADS AND PARKING AREAS TO BE REPAIRED OR REPLACED TO OWNERS SATISFACTION.

2) PREPARATION FOR FILL:
REMOVAL OF ALL DEBRIS, WET AND UNSATISFACTORY SOIL MATERIALS, TOPSOIL, VEGETATION, AND HARMFUL MATERIALS FROM SURFACE OF GROUND PRIOR TO PLOWING, STRIPPING, PLACING FILLS OR BREAKING UP OF SLOPED SURFACES GREATER THAN 1 VERTICAL TO 4 HORIZONTAL SO MATERIAL FOR FILL WILL BOND TO EXISTING SURFACE. WHEN AREA TO RECEIVE FILL HAS A DENSITY LESS THAN REQUIRED, BREAK UP GROUND SURFACE TO DEPTH REQUIRED, AERATE, MOISTURE - CONDITION, OR PULVERIZE SOIL AND RECOMPACT TO REQUIRED DENSITY.

3) BACK FILLING:
- EXCAVATED AREA SHALL BE CLEARED FROM STONES OR CLODS OVER 2 1/2" MAXIMUM DIAMETER
- SHALL BE PLACED IN LAYERS OF 6" AND COMPACTED TO A 95% STANDARD PROCTOR, USE A 90% PROCTOR IN GRASSED / LANDSCAPED AREAS WHERE REQUIRED.
- SHALL BE APPROVED MATERIALS CONSISTING OF SANDY CLAY, GRAVEL AND SAND, SOFT SHALE, EARTH OR LOAM. CONSULT WITH OWNER PRIOR TO FILL BEING ADDED.

4) ALL MATERIAL FOR FILL TO BE APPROVED BY OWNER AND ALL COMPACTING TEST TO BE COMPLETED TO SPEC'S ALL COMPACTING RESULTS TO BE TURNED OVER TO OWNER.

5) AFTER COMPLETION OF BELOW GRADE EXCAVATING, AREA TO BE CLEANED AND CLEARED OF ANY UNSUITABLE MATERIALS, SUCH AS TRASH, DEBRIS, VEGETATION AND SO FORTH.

6) ANY EXCAVATING IN WHICH CONCRETE IS TO BE PLACED SHALL BE SUBSTANTIALLY HORIZONTAL ON UNDISTURBED AND UNFROZEN SOIL AND BE FREE OF ANY LOOSE MATERIAL AND EXCESS GROUND WATER.

7) IF SOUND SOIL IS NOT REACHED AT DESIGNATED EXCAVATION DEPTH, THE POOR SOIL IS TO BE EXCAVATED TO ITS FULL DEPTH AND EITHER REPLACED WITH MECHANICALLY COMPACTED GRANULAR MATERIAL OR THE EXCAVATION TO BE FILLED WITH THE SAME QUALITY CONCRETE SPECIFIED FOR THE FOUNDATION. PLEASE NOTIFY THE PROJECT SUPERVISOR AND THEY WILL HAVE A 3RD PARTY ENGINEERING FIRM CONTACT YOU WITH RECOMMENDATIONS.

8) MECHANICALLY COMPACTED GRANULAR MATERIAL OR CONCRETE OF THE SAME QUALITY SPECIFIED FOR THE FOUNDATIONS TO BE USED IF EXCAVATION EXCEEDED THE OVERALL REQUIRED DEPTH. FOR STABILIZATION OF THE BOTTOM OF THE EXCAVATION, CRUSHED STONE MAY BE USED. STONE, IF USED, SHALL NOT BE USED AS COMPILING CONCRETE THICKNESS. PLEASE NOTIFY THE PROJECT SUPERVISOR AND THEY WILL HAVE A 3RD PARTY ENGINEERING FIRM CONTACT YOU WITH RECOMMENDATIONS.

9) EXCAVATION TO COMPOUND TO INCLUDE WEED CONTROL MAT.

10) SITE TO HAVE PROPER DRAINAGE & EROSION CONTROL (CROWNED FORMATION)

11) GC WILL BE RESPONSIBLE FOR REPAIR OF ALL AREAS DISTURBED DURING CONSTRUCTION. (EXCAVATING ISSUES)

"CALL BEFORE YOU DIG"

THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE UTILITY PROTECTION CENTER, PHONE 811 IN KENTUCKY , WHICH WAS ESTABLISHED TO PROVIDE ACCURATE LOCATIONS OF UNDERGROUND UTILITIES. THE CONTRACTOR SHALL NOTIFY THE UTILITY PROTECTION CENTER 48 HOURS IN ADVANCE OF ANY CONSTRUCTION ON THIS PROJECT. ALL NEW SERVICE AND GROUNDING TRENCHES PROVIDE A WARNING TAPE @ 12 INCHES BELOW GRADE.

SYMBOLS LEGEND

- KEYNOTE
- INSPEC. SLEEVE / GRND ROD
- INSPECTION SLEEVE
- CAD WELD CONNECTION
- T — TRANSFORMER
- LA — LIGHTNING SUPPRESSOR
- SWITCH (DISCONNECT)
- M — METER PACK
- P — POWER
- G — GAS LINE
- W — WATER LINE
- SS — SANITARY SEWER
- T — TELEPHONE
- SSD — STORM SEWER DRAIN
- X — FENCE

RB DESIGN
rbdesign1@bellsouth.net (502)599-9427

NO.	DATE	REVISION

BLUEGRASS CELLULAR, INC.
STANDARD CELLULAR SITE
MANNSVILLE
430 Christian Church Rd., CAMPBELLSVILLE, KY 42718

DRAWN BY: R. BECKER
ISSUE DATE: 11-10-16
SCALE: LISTED

SHEET NUMBER
General Notes

Landmark Surveying Co., Inc.

Darren L. Helms, P.L.S., PRESIDENT
Dennis N. Helms, P.L.S., VICE PRESIDENT

15 N.E. 3rd Street
Washington, Indiana 47501
Phone: 812-257-0950
Fax: 812-257-0953
Email: landmark97@sbcglobal.net

Directions to the Site

From the County Seat of Taylor County, Kentucky

Mannsville Site

From the intersection of U.S. Highway 68 (Broadway Street) and Kentucky Highway 70 (Central Avenue) in downtown Campbellsville, Kentucky: travel easterly on Kentucky Highway 70 (Liberty Road) for 9.8 miles to Christian Church Road on the southwest side of Mannsville (0.2 miles before reaching Kentucky Highway 337); turn left onto Christian Church Road and travel northerly for 0.5 miles to the end of Christian Church Road and the tower access lane; turn right onto the lane and travel northeasterly for 500 feet to the tower site, which is located in the edge of a woods. The address of the site is 430 Christian Church Road, Campbellsville, Kentucky 42718.

Darren L. Helms

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

Nov. 4, 2014

Date

STATE OF KENTUCKY
DARREN L. HELMS
3386
LICENSED
PROFESSIONAL
LAND SURVEYOR

Site Name: Mannsville

OPTION TO LEASE AND LEASE AGREEMENT

I.

OPTION TO LEASE REAL PROPERTY

THIS OPTION TO LEASE REAL PROPERTY (the "Option Agreement") is made and entered into this 3 day of October, 2016, by and between Johnnie W. Wise and Leonora A. Wise, husband and wife, whose address is 433 Christian Church Road, Mannsville, KY 42758 (the "Optionor (s)" and Kentucky RSA 4 Cellular General Partnership (a Kentucky general Partnership) with principal office and place of business at 2902 Ring Road, Elizabethtown, KY 42701 (the "Optionee").

W I T N E S S E T H:

WHEREAS, the Optionor(s) is the owner of certain real property located in Taylor County, **Kentucky** as more particularly described on Exhibit A attached hereto and incorporated herein by reference (the "Property"); and

WHEREAS, the Optionor(s) wishes to grant to the Optionee, and the Optionee wishes to obtain from the Optionor(s), an option to lease a portion of the Property upon the terms and conditions set forth herein;

NOW, THEREFORE, in consideration of the foregoing premises and for other good and valuable consideration, the mutuality, receipt and sufficiency of which are hereby acknowledged, the parties hereto do agree as follows.

1. In consideration of **One Thousand Eight Hundred Dollars and Zero Cents ($1,800.00)** paid by the Optionee to the Optionor(s) (the "Option Consideration"), the receipt of which is hereby acknowledged by the Optionor(s), the Optionor(s) hereby grants to the Optionee an exclusive and irrevocable option to lease a portion of the Property (the "Option"), upon the terms and conditions hereinafter set forth, upon the exercise of the Option at any time before 4:00 p.m. prevailing time on April 2, 2018, (the "Option Period") as set forth in Paragraph 5 thereof.

2. The parties hereto anticipate that the portion of the Property which is the subject of this Option will comprise approximately a **One Hundred Foot by One Hundred Foot** area, together with a right of way across the Property for the purposes of ingress and egress throughout the term of the lease. The Optionee shall obtain an accurate survey of the portion of the Property to be leased by it by a registered land surveyor licensed in the Commonwealth of Kentucky at the sole expense of the Optionee. A copy of the survey shall be provided to the Optionor(s). The description of the portion of the Property to be leased by the Optionee, including the right of way, shall be determined by the surveyor and shall hereafter be referred to as the "Leased Premises." The Optionee shall obtain said survey within a reasonable time following the date of the Option Agreement.

3. During the term of the Option, the Optionee may enter onto the Property at its own risk to obtain soil samples and to bore soil for the purposes of determining the suitability of the Leased Premises for a communications tower.

4. Upon the Optionee's proper exercise of the Option in accordance with Paragraph 5 hereof, the Optionor(s) shall be deemed to have immediately executed, acknowledged and delivered to the Optionee the Lease Agreement contained in Section II hereof. The description of the Leased Premises shall be that determined by the registered land surveyor in accordance with Paragraph 2 hereof.

5. If the Optionee elects to exercise the Option in accordance with the terms hereof, notice of such election shall be deemed sufficient if personally delivered or sent by registered or certified mail, return receipt requested, to the address of the Optionor(s) set forth in Paragraph 14 hereof.

6. The Optionor(s) agrees not to sell, lease or offer for sale or lease the Property, or any portion thereof, during the term of this Option or any renewal or extension of the Option.

7. In the event the Optionee fails to exercise the Option as set forth herein (unless such failure is due to the discovery of a defect in the Leased Premises or other matter unsatisfactory to the Optionee), the Optionor(s) shall have the right to retain the Option Consideration.

8. The Optionee may assign this Option with written consent of the Optionor(s), which consent shall not be unreasonably withheld, and upon any assignment such assignee shall have all the rights, remedies and obligations as if it were the original Optionee hereunder. From and after any such assignment, the term "Optionee" shall refer to such assignee.

9. Each party hereto shall bear any and all of its own expenses in connection with the negotiation, execution or settlement of this Option.

10. Risk of loss with respect to the Property during the term of this Option and during the term of the lease shall be upon the Optionor(s). If, during the term of the Option, any portion of the Leased Premises shall be acquired by public authority under the right or threat of eminent domain, the Optionee may, at its sole option, either (i) exercise the Option, and in such event, all sums received from the public authority

by the Optionor(s) by reason of the taking of a portion of the Leased Premises shall reduce the rent due under the lease, or (ii) terminate this Option and thereupon the Optionor(s) shall be obligated to return to the Optionee the full amount of the Option Consideration previously paid to the Optionor(s) in "good and collected funds."

11. The parties hereto represent to each other that neither has engaged any broker to represent their interests in connection with the transactions contemplated hereby, and each agrees to indemnify the other against any and all claims made by any brokers engaged or purported to be engaged by the other for brokerage commissions or fees in connection with the transactions contemplated hereby.

12. The Optionor(s) represents, warrants and covenants to the Optionee that the Optionor(s) has not caused or permitted, and shall not cause or permit, and to the best of Optionor(s)' knowledge no other person has caused or permitted any hazardous material (as defined by any applicable federal, state or local law, rule or regulation) to be brought upon, placed, held, located or disposed of at the Leased Premises. In the event any such contamination occurs for which the Optionee becomes legally liable, the Optionor(s) shall indemnify the Optionee against all claims, damages, judgments, penalties and costs and expenses, including reasonable attorneys' fees, which Optionee may incur.

13. This Option Agreement and the rights and obligations of the parties hereto shall be construed in accordance with the laws of the Commonwealth of Kentucky.

14. For the purposes of giving notice as permitted or required herein, the address of the Optionor(s)shall be: P.O. Box 146, Mannsville, KY 42758; the Optionee's address shall be: P.O Box 5012, Elizabethtown, KY 42702-5012. Any inquiry by the

Optionor to the Optionee regarding the terms and conditions of the Option Agreement or Lease Agreement, or otherwise related to the Option Agreement or Lease Agreement, shall be made in writing and submitted to the attention of the Optionee's Lease Administrator at the above address.

15. The Optionee shall have the right, in its sole discretion, to record this Option in the Office of the Clerk of the County Court of Taylor County, Kentucky.

II.

LEASE AGREEMENT

16. In the event the Optionee elects to exercise the Option to lease the Leased Premises, the terms of the Lease Agreement ("Lease Agreement" or "Lease") shall become immediately effective upon such exercise and shall be as follows.

a. The term of the Lease shall commence on the date that the Optionor(s) receives proper notice that the Optionee has exercised the Option, pursuant to Paragraph 5 therein. The initial term shall expire **five (5) year(s)** from the commencement date of the Lease Agreement and shall include **six (6) additional five (5)-year terms** per the Lease Agreement. Optionee may, by providing written notice at least sixty (60) days prior to the expiration of the original or any renewal Lease term, elect to unilaterally terminate this Lease at the end of any original or renewal Lease term. Such notice must be personally delivered or sent via registered or certified mail, return receipt requested, to the address of the Optioner(s) set forth in Paragraph 14 hereof. The Lease amount shall be adjusted at the end of each term by an increase of **12%**.

b. The Optionee shall pay to the Optionor(s) rent for the Leased Premises in the sum of Four Thousand Eight Hundred Dollars and Zero Cents ($4,800.00) yearly, to be paid in advance. All rent payments shall be personally delivered or mailed to the Optionor(s) at the address set forth in Paragraph 14 hereof. Any check payment of the rent due under the Lease shall be payable to the order of Optionor(s).

c. The Optionee shall be entitled to use and occupy the Leased Premises for the purpose of erecting, maintaining and operating a communications tower ("Tower") and communications facilities ("Facilities") thereon and for all such other uses as Optionee may, in its sole discretion, deem necessary in connection therewith.

d. The Optionor(s) shall be responsible for the payment of all real estate taxes which shall be assessed against the Property during the term of the lease. The Optionee shall pay all charges for heat, water, gas, electricity, sewer use charges and any other utility used or consumed on the Leased Premises. The Optionee shall, at its own cost and expense, maintain and keep in full force and effect during the term of the lease public liability insurance with coverage in the amount of at least one million dollars ($1,000,000.00) per person for bodily injury, disease, or death and shall maintain property insurance on any property of the Optionee located on the Leased Premises.

e. The Optionee may assign the lease. The Optionee may sublet all or part of the space on the tower or ground space.

f. The Optionor(s) covenants that upon the Optionee's payment of the rent agreed upon herein, as well as Optionee's observing and performing all of

the covenants and conditions contained in the Lease, the Optionee may peacefully and quietly enjoy the Leased Premises subject to the terms and conditions set forth in the Lease.

g. The Optionee agrees to maintain an access road in a passable manner for the term of the lease.

h. Optionee's Payment of Taxes, Fees and Assessments. Optionee shall pay directly to the applicable federal, state or local governmental unit or agency ("Governmental Entity") or to Optionor if Optionor is invoiced by such Governmental Entity, all taxes, fees, assessments or other charges assessed by any Governmental Entity directly against Optionee's Equipment and/or Optionee's use of the Facilities. Optionee shall also pay to Optionor Optionee's Pro Rata Share of all taxes, fees, assessments or charges including, but not limited to, personal property taxes attributable to Optionee's equipment and antenna(s), municipal franchise fees, use fees, municipal application fees, installation fees and increases thereof. "Pro Rata Share" shall mean the fraction of decimal equivalent of dividing one (1) by the total number of then existing users occupying a tower on the last day of the applicable calendar year.

17. This Option and Lease Agreement contains the entire agreement between the parties hereto and no modification or amendment shall be binding upon any party unless made in writing and signed by each of the parties hereto.

18. Upon the termination or other end of this Lease Agreement, Optionee shall have the right to remove any and all of its property (real or personal) from the Leased

Premises regardless of whether or not such property may be considered a fixture thereto.

19. Upon abandonment of the property, Optionee shall have thirty (30) days to dismantle and remove the Tower and any/all equipment located on Optionor's property.

20. Before any interest in Optionor(s)' interest in the Lease, is sold, assigned or transferred in any manner whatsoever (with or without consideration), the Optionee shall have a right of first refusal to acquire whatever interest in the Lease that the Optionor(s) proposes to transfer (the "Proposed Transfer"), on the terms and conditions set forth in this Section 20 (the "Right of First Refusal").

(a) Optionor(s) shall deliver to the Optionee a written notice (the "Notice") stating the name of the proposed purchaser or transferee and the material terms and conditions of the Proposed Transfer,.

(b) At any time within thirty (30) days after receipt of the Notice, the Optionee may, by giving written notice to the Optionor(s) ("Optionee's Notice"), elect to exercise its Right of First Refusal and acquire the interest in the Lease proposed to be transferred pursuant to the Proposed Transfer at the purchase price and on the same terms and conditions as are contained in the offer(s) made to the Optionor(s) to acquire any interest in the Lease ("Offer"). If the Offer includes consideration other than cash, the cash equivalent value of the non-cash consideration shall be determined by the Optionee in good faith. In the event, Optionee exercises its right to acquire the interest in the Lease, the Optioner(s) shall

convey, assign and/or transfer said interest to Optionee free and clear of all liens and encumbrances whatsoever (other than this Lease, which Lease shall remain in effect). All taxes, rents and other assessments applicable to the transferred interest, if any, shall be prorated to the date of closing. The Closing shall occur within thirty (30) days from the date of Optionee's Notice.

(c) If the Optionee declines to exercise its Right of First Refusal to acquire the interest in the Lease proposed to be transferred, the Optioner(s) may sell or transfer same in accordance with the terms of the Offer subject, however, to this Lease and the Optionee's rights thereunder.

[Remainder of Page Intentionally Left Blank]

EXECUTION OF AGREEMENT(S)

IN WITNESS WHEREOF, the parties hereto have set their hands and affixed their respective seals.

Print Name: Johnnie W. Wise
Sign: Johnnie W. Wise
Date: 9-23-2016

Print Name: Leonora A. Wise
Sign: Leonora A Wise
Date: 9-23. 2016

("Optionor(s)")
Property Owner(s)

Kentucky RSA 4 Cellular General Partnership

Sign: _____
Date: 10-3-16

("Optionee")
By: Scott W. McCloud
Authorized Representative

COMMONWEALTH OF KENTUCKY

COUNTY OF Taylor

The foregoing instrument was acknowledged before me this 23rd day of September, 20 16, by **Johnnie W. Wise** to be his/her free act and deed.

Patricia Sparkes

NOTARY PUBLIC STATE AT LARGE

My commission expires: 6-17-19 ID#536123

COMMONWEALTH OF KENTUCKY

COUNTY OF Taylor

The foregoing instrument was acknowledged before me this 23rd day of September, 20 16, by **Leonora A. Wise** to be his/her free act and deed.

Patricia Sparkes

NOTARY PUBLIC STATE AT LARGE

My commission expires: 6-17-19 ID #536123

COMMONWEALTH OF KENTUCKY

COUNTY OF HARDIN

The foregoing instrument was acknowledged before me this 3 day of October, 20 16, by , **Scott W. McCloud**, as Authorized Representative on behalf of **Kentucky RSA 4 Cellular General Partnership**, to be his free act and deed.

NOTARY PUBLIC STATE AT LARGE

My commission expires: 1-21-17

This instrument prepared by:

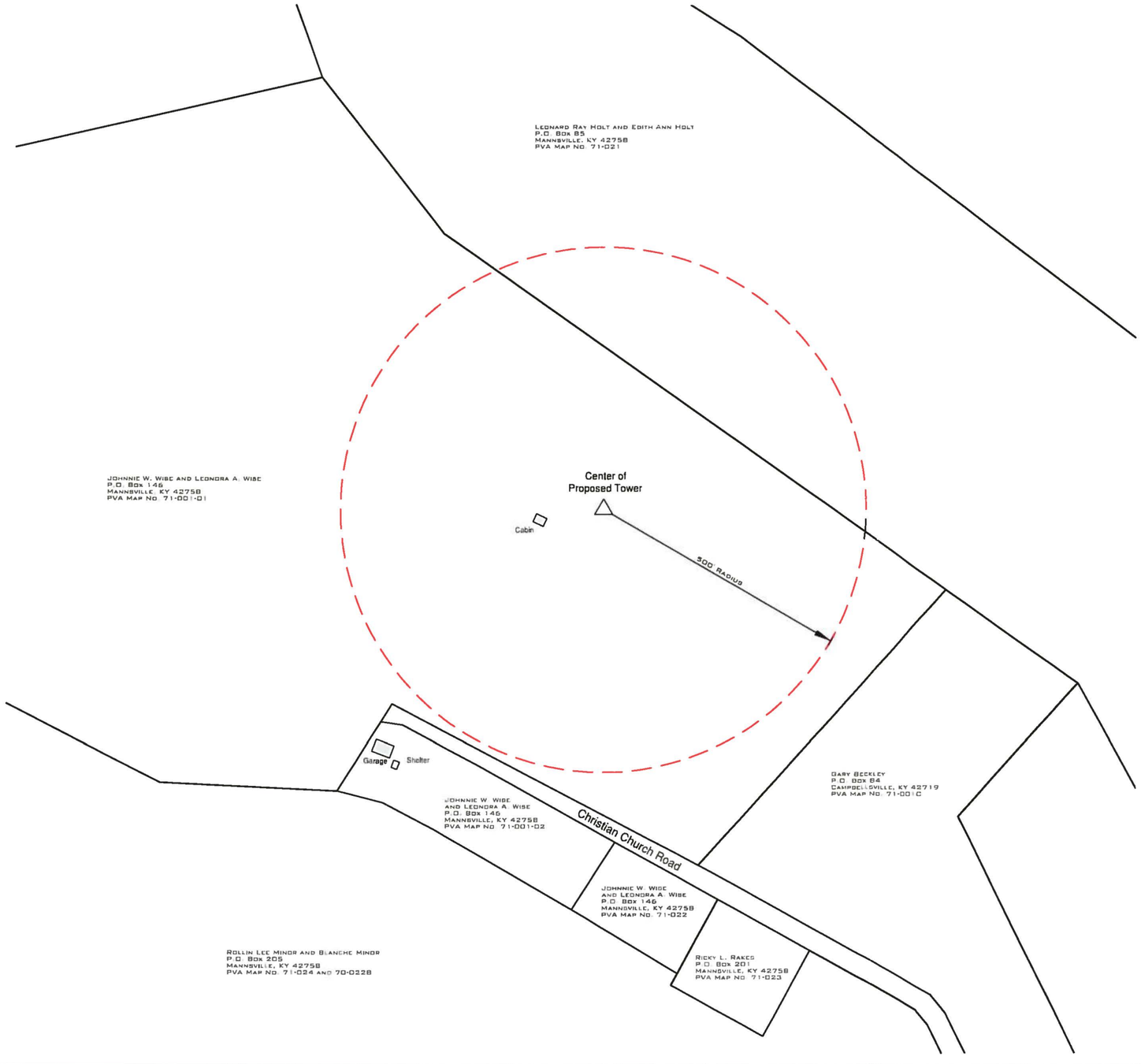
John R. Ruofei, Jr.
DINSMORE & SHOHL LLP
250 West Main Street, Suite 1400
Lexington, KY 40507
(859) 425-1000

EXHIBIT 'A'

SITE: MANNSVILLE

500-Foot Radius Map for Structures and Landowners

Taylor County, Kentucky



GRAPHIC SCALE

(IN FEET)
1 inch = 100 ft.

Note

THE LOCATION OF THE BOUNDARIES SHOWN ARE APPROXIMATE, AND THEY ARE BASED UPON INFORMATION ON FILE IN THE OFFICE OF THE PROPERTY VALUATION ADMINISTRATOR OF TAYLOR COUNTY, KENTUCKY.

Surveyor's Certification

I HEREBY CERTIFY THAT THE INFORMATION SHOWN IS CORRECT TO THE BEST OF MY KNOWLEDGE; AND IT IS IN ACCORDANCE WITH THE RECORDS FOUND IN THE OFFICE OF THE PROPERTY VALUATION ADMINISTRATOR OF TAYLOR COUNTY, KENTUCKY ON OCTOBER 19, 2016.

Darren L. Helms

DARREN L. HELMS, P.L.S. 3386

NOVEMBER 4, 2016
DATE

STATE of KENTUCKY
Darren L. Helms
3386
LICENSED PROFESSIONAL LAND SURVEYOR

LANDMARK SURVEYING CO., INC.
15 N.E. 3RD STREET
WASHINGTON, INDIANA 47501
(812) 257-0950
Email: landmark97@sbcglobal.net

Project No. 16-07-0161

500-Foot Radius Map

430 Christian Church Road

Campbellsville, Kentucky 42718

Bluegrass Cellular
2902 Ring Road
Elizabethtown, KY 42701

REVISIONS	DATE

DATE	DRAWN BY	CHECKED BY
11-04-16	J. Hamilton	D. L. Helms

SHEET No.
1
of 1 SHEETS

FILE NAME
manns-radius.dwg

Landmark Surveying Co., Inc.

Darren L. Helms, P.L.S., PRESIDENT
Dennis N. Helms, P.L.S., VICE PRESIDENT

15 N.E. 3rd Street
Washington, Indiana 47501
Phone: 812-257-0950
Fax: 812-257-0953
Email: landmark97@sbcglobal.net

Landowner and Adjacent Landowner List

Mannsville Site

Rollin Lee Minor and Blanche Minor
P.O. Box 205
Mannsville, KY 42758

Johnnie W. Wise and Leonara A. Wise
P.O. Box 146
Mannsville, KY 42758

Ricky L. Rakes
P.O. Box 201
Mannsville, KY 42758

Gary Beckley
P.O. Box 84
Campbellsville, KY 42719

Leonard Ray Holt and Edith Ann Holt
P.O. Box 85
Mannsville, KY 42758

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

Nov. 4, 2016
Date

STATE OF KENTUCKY
DARREN L. HELMS
3386
LICENSED
PROFESSIONAL
LAND SURVEYOR

December 12, 2016

Rollin Lee Minor and Blanche Minor
P.O. Box 205
Mannsville, Kentucky 42758

Public Notice

Kentucky RSA #4 Cellular General Partnership is a Kentucky general partnership that markets its services as Bluegrass Cellular. Bluegrass Cellular has been serving Central Kentucky with wireless communications services for over 20 years.

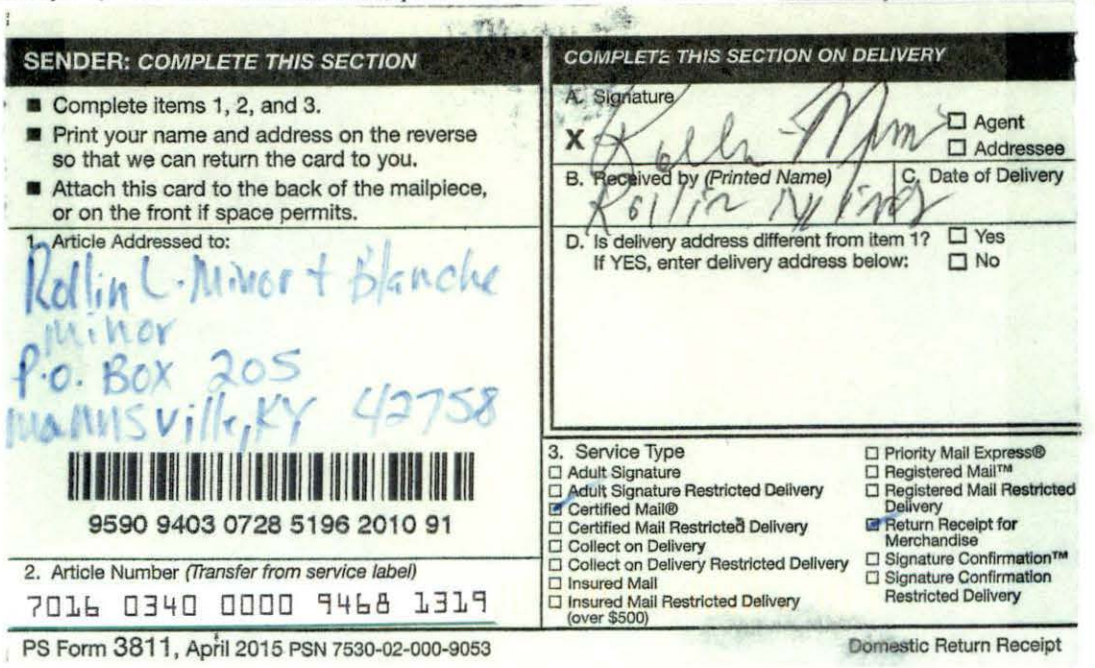
Kentucky RSA #4 Cellular General Partnership is applying to the Public Service Commission of the Commonwealth of Kentucky (the "Commission") for a Certificate of Public Convenience and Necessity to construct and operate a new cellular facility to provide cellular telephone service. This facility will include a 280 foot tower and an equipment shelter to be located at 430 Christian Church Road, Campbellsville, Taylor County, Kentucky, 42718. A map showing the location is attached.

The Commission invites your comments regarding this proposed construction. Also, the Commission wants you to be aware of your right to intervene in this matter. Your comments and request for intervention should be addressed to:

Executive Director's Office
Public Service Commission of Kentucky
P.O. Box 615
Frankfort, Kentucky, 40602.

Please refer to Case Number 2016-00425 in your correspondence.

Bluegrass Cellular welcomes the opportunity to serve and provide wireless service in your community! (For more information, please check us out online at www.mybluewks.com)



SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:
Rollin L. Minor & Blanche Minor
P.O. Box 205
Mannsville, KY 42758

9590 9403 0728 5196 2010 91

2. Article Number (Transfer from service label)
7016 0340 0000 9468 1319

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Rollin Minor ☐ Agent ☐ Addressee

B. Received by (Printed Name) Rollin Minor C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☐ Adult Signature
☐ Adult Signature Restricted Delivery
☑ Certified Mail®
☐ Certified Mail Restricted Delivery
☐ Collect on Delivery
☐ Collect on Delivery Restricted Delivery
☐ Insured Mail
☐ Insured Mail Restricted Delivery (over $500)
☐ Priority Mail Express®
☐ Registered Mail™
☐ Registered Mail Restricted Delivery
☑ Return Receipt for Merchandise
☐ Signature Confirmation™
☐ Signature Confirmation Restricted Delivery

PS Form 3811, April 2015 PSN 7530-02-000-9053 Domestic Return Receipt

December 12, 2016

Johnnie W. Wise and Leonara A. Wise
P.O. Box 146
Mannsville 42758

Public Notice

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Kentucky RSA #4 Cellular General Partnership is applying to the Public Service Commission of the Commonwealth of Kentucky (the "Commission") for a Certificate of Public Convenience and Necessity to construct and operate a new cellular facility to provide cellular telephone service. This facility will include a 280 foot tower and an equipment shelter to be located at 430 Christian Church Road, Campbellsville, Taylor County, Kentucky, 42718. A map showing the location is attached.

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SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Johnnie W Wise &
Leonara Wise
P.O. Box 146
Mannsville, KY 42758

9590 9403 0728 5196 2011 07

2. Article Number (Transfer from service label)

7016 0340 0000 9468 1326

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X

☐ Agent
☐ Addressee

B. Received by (Printed Name) Ba Wise

C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type

☐ Adult Signature
☐ Adult Signature Restricted Delivery
☑ Certified Mail®
☐ Certified Mail Restricted Delivery
☐ Collect on Delivery
☐ Collect on Delivery Restricted Delivery
☐ Insured Mail
☐ Insured Mail Restricted Delivery (over $500)
☐ Priority Mail Express®
☐ Registered Mail™
☐ Registered Mail Restricted Delivery
☑ Return Receipt for Merchandise
☐ Signature Confirmation™
☐ Signature Confirmation Restricted Delivery

PS Form 3811, April 2015 PSN 7530-02-000-9053 Domestic Return Receipt

December 12, 2016

Ricky L. Rakes
P.O. Box 201
Mannsville, Kentucky 42758

Public Notice

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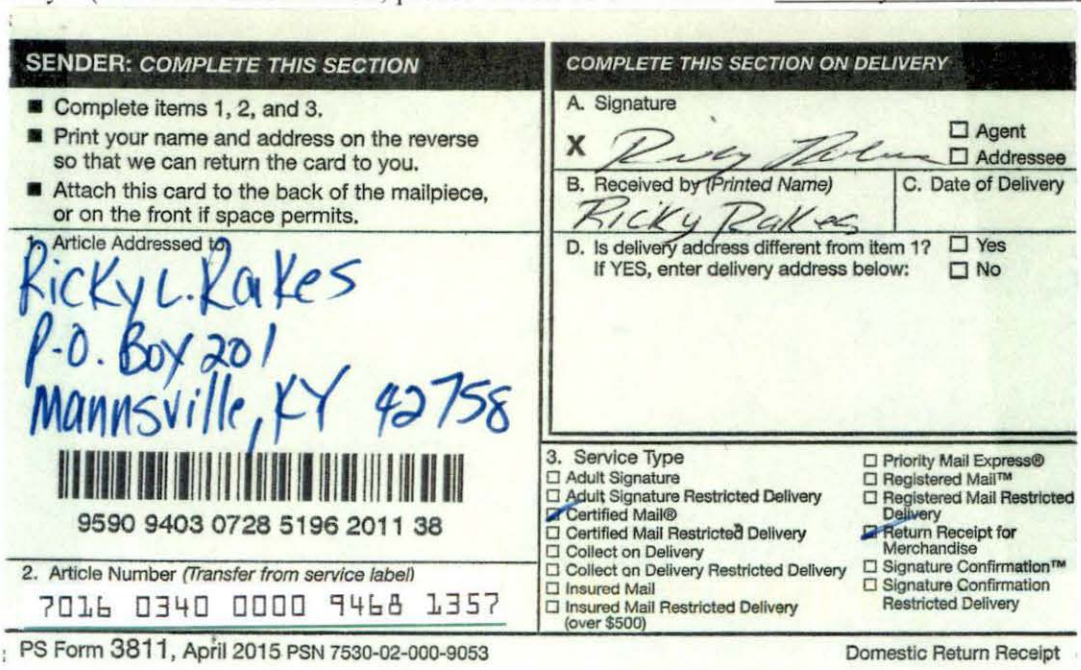
Executive Director's Office
Public Service Commission of Kentucky
P.O. Box 615
Frankfort, Kentucky, 40602.

Please refer to Case Number 2016-00425 in your correspondence.

Bluegrass Cellular welcomes the opportunity to serve and provide wireless service in your community! (For more information, please check us out online at www.mybluegrass.com)



SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:
Ricky L. Rakes
P.O. Box 201
Mannsville, KY 42758

9590 9403 0728 5196 2011 38

2. Article Number (Transfer from service label)
7016 0340 0000 9468 1357

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name) Ricky Rakes
C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☐ Adult Signature
☐ Adult Signature Restricted Delivery
☑ Certified Mail®
☐ Certified Mail Restricted Delivery
☐ Collect on Delivery
☐ Collect on Delivery Restricted Delivery
☐ Insured Mail
☐ Insured Mail Restricted Delivery (over $500)
☐ Priority Mail Express®
☐ Registered Mail™
☐ Registered Mail Restricted Delivery
☑ Return Receipt for Merchandise
☐ Signature Confirmation™
☐ Signature Confirmation Restricted Delivery

PS Form 3811, April 2015 PSN 7530-02-000-9053 Domestic Return Receipt

December 12, 2016

Leonard Ray Holt and Edith Ann Holt
P.O. Box 85
Mannsville, Kentucky 42758

Public Notice

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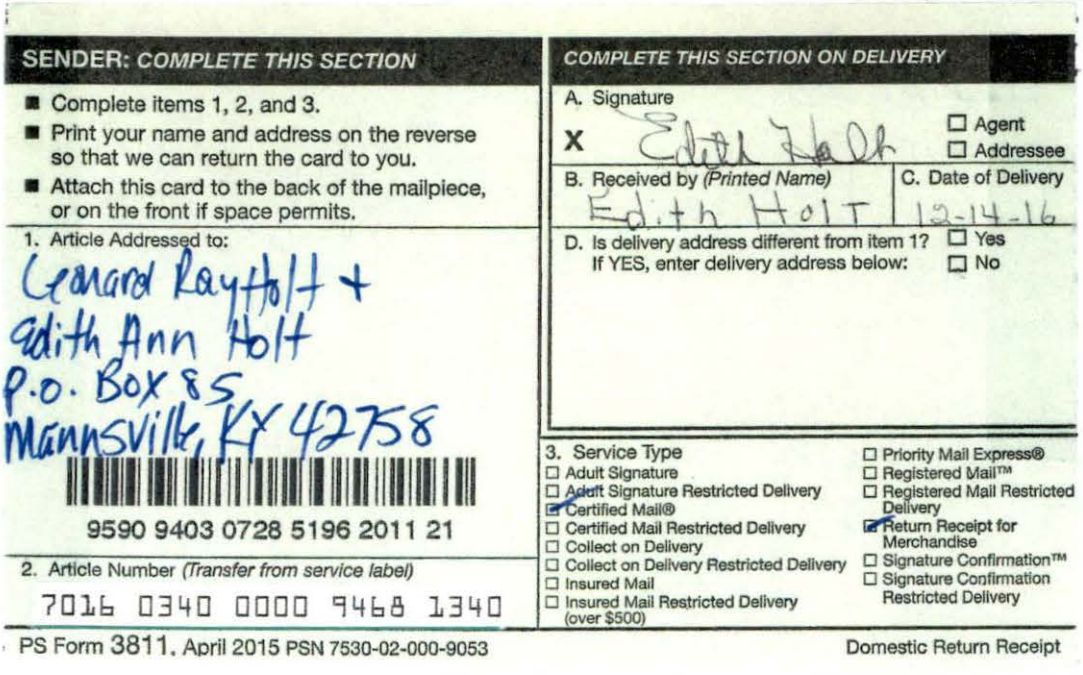
The Commission invites your comments regarding this proposed construction. Also, the Commission wants you to be aware of your right to intervene in this matter. Your comments and request for intervention should be addressed to:

Executive Director's Office
Public Service Commission of Kentucky
P.O. Box 615
Frankfort, Kentucky, 40602.

Please refer to Case Number 2016-00425 in your correspondence.

Bluegrass Cellular welcomes the opportunity to serve and provide wireless service in your community! (For more information, please check us out online at www.mybluegrass.com)



SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:
Leonard Ray Holt +
Edith Ann Holt
P.O. Box 85
Mannsville, KY 42758

9590 9403 0728 5196 2011 21

2. Article Number (Transfer from service label)
7016 0340 0000 9468 1340

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Edith Holt ☐ Agent ☐ Addressee

B. Received by (Printed Name) Edith Holt
C. Date of Delivery 12-14-16

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☐ Adult Signature
☐ Adult Signature Restricted Delivery
☑ Certified Mail®
☐ Certified Mail Restricted Delivery
☐ Collect on Delivery
☐ Collect on Delivery Restricted Delivery
☐ Insured Mail
☐ Insured Mail Restricted Delivery (over $500)
☐ Priority Mail Express®
☐ Registered Mail™
☐ Registered Mail Restricted Delivery
☑ Return Receipt for Merchandise
☐ Signature Confirmation™
☐ Signature Confirmation Restricted Delivery

PS Form 3811, April 2015 PSN 7530-02-000-9053 Domestic Return Receipt

February 7, 2017

Gary Beckley
P.O. Box 84
Campbellsville, Kentucky 42719

Public Notice

Kentucky RSA #4 Cellular General Partnership is a Kentucky general partnership that markets its services as Bluegrass Cellular. Bluegrass Cellular has been serving Central Kentucky with wireless communications services for over 20 years.

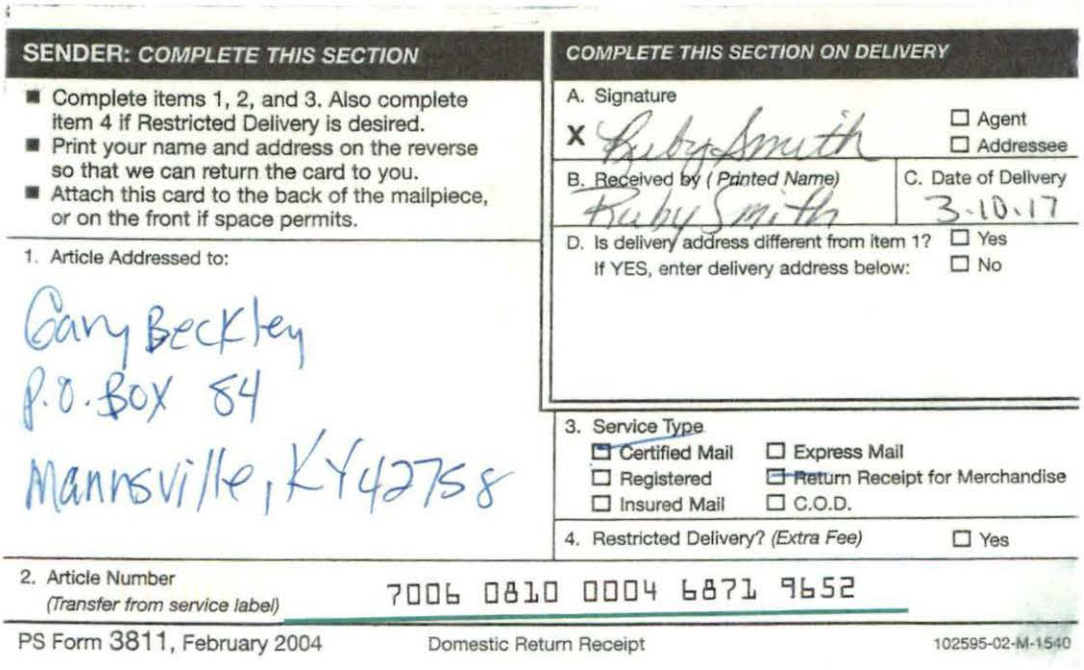
Kentucky RSA #4 Cellular General Partnership is applying to the Public Service Commission of the Commonwealth of Kentucky (the "Commission") for a Certificate of Public Convenience and Necessity to construct and operate a new cellular facility to provide cellular telephone service. This facility will include a 280 foot tower and an equipment shelter to be located at 430 Christian Church Road, Campbellsville, Taylor County, Kentucky, 42718. A map showing the location is attached.

The Commission invites your comments regarding this proposed construction. Also, the Commission wants you to be aware of your right to intervene in this matter. Your comments and request for intervention should be addressed to:

Executive Director's Office
Public Service Commission of Kentucky
P.O. Box 615
Frankfort, Kentucky, 40602.

Please refer to Case Number 2016-00425 in your correspondence.

Bluegrass Cellular welcomes the opportunity to serve and provide wireless service in your community! (For more information, please check us out online at www.myblueworks.com)



SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Gary Beckley
P.O. Box 84
Manrsville, KY 42758

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Ruby Smith ☐ Agent ☐ Addressee

B. Received by (Printed Name) Ruby Smith
C. Date of Delivery 3-10-17

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☑ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7006 0810 0004 6871 9652

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

Dinsmore

Legal Counsel.

DINSMORE & SHOHL LLP
101 South Fifth Street ^ Suite 2500 ^ Louisville, KY 40202
www.dinsmore.com

Kerry W. Ingle
502-540-2354 (Direct Dial)
kerry.ingle@dinsmore.com

December 12, 2016

Via Certified Mail
Honorable Eddie Rogers
Taylor County Judge Executive
203 North Court Street, Suite # 4
Campbellsville, Kentucky 42718

Re: Application of Kentucky RSA #4 Cellular General Partnership d/b/a Bluegrass Cellular for a Certificate of Public Convenience and Necessity to construct a new cellular facility to be located at 430 Christian Church Road, Campbellsville, Taylor County, Kentucky, 42718, before the Public Service Commission of the Commonwealth of Kentucky, Case No. 2016-00425

Judge Rogers:

Kentucky RSA #4 Cellular General Partnership is applying to the Public Service Commission of Kentucky (the "Commission") for a Certificate of Public Convenience and Necessity to construct and operate a new cellular facility to provide cellular telephone service. This facility will include a 280 foot tower and an equipment shelter to be located at 430 Christian Church Road, Campbellsville, Taylor County, Kentucky, 42718. A map showing the location of the proposed new facility is enclosed.

The Commission invites your comments regarding the proposed construction. You also have the right to intervene in this matter.

Your comments and request for intervention should be addressed to: Executive Director's Office, Public Service Commission, P.O. Box 615, Frankfort, Kentucky 40602. Please refer to Case No. 2016-00425 in your correspondence.

Very Truly Yours,

DINSMORE & SHOHL LLP

Kerry W. Ingle
Paralegal

Enclosure

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Hon. Eddie Rogers
Judge Exec.
Taylor County
203 N. Court St., Suite #4
Campbellsville, KY 42718

9590 9403 0728 5196 2011 45

2. Article Number *(Transfer from service label)*

7007 1490 0004 1869 3168

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X Tony Smith ☐ Agent ☑ Addressee

B. Received by *(Printed Name)* Tony Smith

C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type

- ☐ Adult Signature
- ☐ Adult Signature Restricted Delivery
- ☑ Certified Mail®
- ☐ Certified Mail Restricted Delivery
- ☐ Collect on Delivery
- ☐ Collect on Delivery Restricted Delivery
- ☐ Insured Mail
- ☐ Insured Mail Restricted Delivery (over $500)
- ☐ Priority Mail Express®
- ☐ Registered Mail™
- ☐ Registered Mail Restricted Delivery
- ☑ Return Receipt for Merchandise
- ☐ Signature Confirmation™
- ☐ Signature Confirmation Restricted Delivery

PS Form 3811, April 2015 PSN 7530-02-000-9053 Domestic Return Receipt


PUBLIC NOTICE
Kentucky RSA #4 Cellular General Partnership proposes to construct a cellular communications
TOWER
near this site. If you have any questions please contact:
Kentucky RSA #3 Cellular General Partnership
P. O. Box 5012
2902 Ring Road
Elizabethtown, KY 42701
270-769-0339
or
Taylor County Judge Executive
203 North Court Street, Suite #4
Campbellsville, KY 42718
(270) 465-7729
Please refer to P.S.C.
Case #2016-00425
in your correspondence.


PUBLIC NOTICE
Kentucky RSA #4 Cellular General Partnership proposes to construct a cellular communications
TOWER
on this site. If you have any questions please contact:
Kentucky RSA #3 Cellular General Partnership
P. O. Box 5012
2902 Ring Road
Elizabethtown, KY 42701
270-769-0339
or
Taylor County Judge Executive
203 North Court Street, Suite #4
Campbellsville, KY 42718
(270) 465-7729
Please refer to P.S.C.
Case #2016-00425
in your correspondence.


PUBLIC NOTICE
TOWER
Please refer to PS.C
Case #2016-00425


PUBLIC NOTICE
TOWER

CENTRAL KENTUCKY NEWS-JOURNAL

P.O. Box 1138 ◆ Campbellsville, Kentucky 42719 ◆ (270) 465-8111 ◆ www.cknj.com ◆ publisher@cknj.com ◆ Published Mondays, Thursdays

Affidavit of Insertion

Before me, a notary public, personally appeared Jeff Moreland, publisher, who certifies that any and all advertising material for Dinsmore & Shohl LLP – Application for Certificate of Public Convenience and Necessity (Mannsville Cell Site) – appeared in the Central Kentucky News-Journal on Monday, December 19, 2016 and Thursday, December 22, 2016.

Signature

Publisher

Title

State of Kentucky
County of Taylor
Sworn to and subscribed before me on this day December 22, 2016.

Suzanne Houk, Notary Public

My commission expires January 14, 2017.

Notary ID 481496

300 Legals

NOTICE

Kentucky RSA #4 Cellular General Partnership is applying 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 radio telecommunications service in rural service area #4 of the Commonwealth of Kentucky (Mannsville Cell Site). The facility is a 280 tower and an equipment shelter to be located at 430 Christian Church Road, Campbellsville, Taylor County, Kentucky, 42718. Your comments and requests for intervention should be addressed to: Executive Director's Office, Public Service Commission, Post Office Box 615, 211 Sower Boulevard, Frankfort, Kentucky 40602. Please refer to Case No. 2016-00425 in your correspondence.

Ol' Red Ace, Inc., 247 Burdick School Rd., Campbellsville, KY 42718, hereby declares its intention(s) to apply for a Quota Retail Package and Non-Quota Retail Malt Beverage Package License(s) no later than December 30, 2016. The business to be licensed will be located at 419 South Central Ave., Campbellsville, KY 42718, doing business as Ol' Red Ace. The Directors are as follows: Director, Joseph A. Huddleston of 247 Burdick School Rd., Campbellsville, KY 42718; Director, Carl Bush of 2808 Smith Ridge Rd., Campbellsville, KY 42718. Any person, association, corporation, or body politic may protest the granting of the license by writing the Department of Alcoholic Beverage Control, 1003 Twilight Trail, A-2, Frankfort, KY 40601, within 30 days of the date of this legal publication.

JLB Holdings LLC dba Broadway Liquors, 1200 E. Broadway, Campbellsville, Kentucky, 42718, Hereby declares intention to apply for a Quota Retail Package License & NQ Retail Malt Beverage Package license(s) no later than December 19, 2016. The business to be licensed will be located at 1650 E. Broadway, Campbellsville, Kentucky, 42718, doing business as Broadway Liquors. The owner(s); Principal Officers and Directors; Limited Partners; or Members are as follows: Member, Leslie Deskins, 239 Warren Place of Campbellsville, KY 42718; Member, James Rattliff of 122 Cambridge

Kroger Limited Partnership I, Kroger Business License, P.O. Box 305103, Nashville, TN 37230, hereby declares its intention(s) to apply for a NQ Retail Malt Beverage Package, NQ-4 Retail Malt Beverage Drink, Quota Retail Package License(s) no later than December 23, 2016. The business to be licensed will be located at 399 Campbellsville Bypass, Ste 98, Campbellsville, KY 42718, doing business as Kroger #369 Liquor Store. The Principal Officers are as follows: President/SEC, Christine Wheatley of 225 Lafayette Circle, Cincinnati, OH 45220; Vice-President/Treasurer, Todd Foley of 5458 Little Turtle Drive, South Lebanon, OH 45065. Any person, association, corporation, or body politic may protest the granting of the license by writing the Department of Alcoholic Beverage Control, 1003 Twilight Trail, A-2, Frankfort, KY 40601, within 30 days of the date of this legal publication.

INVITATION TO BID
GREEN RIVER LAKE WILDLIFE MANAGEMENT AREA (WMA)
TAYLOR AND ADAIR COUNTIES

Lease for 2017- 2021 Crop Years

The Commonwealth of Kentucky will accept sealed bid proposals for the purpose of leasing 989.9 acres of agricultural land located at Green River Lake WMA for crop production.

Sealed bids will be opened at 3 p.m. EST, Thursday, Jan. 5, 2017, at the Division of Real Properties, Department of Facilities and Support Services, Bush Building, 403 Wapping Street, Frankfort, Kentucky 40601. Proposals will be accepted for the lease of the above property in compliance with the "Sealed Bid Form of Proposal." To obtain a bid form or for information, contact Wendell Harris, Division of Real Properties, at (502) 564-9831 or email at Wendell.harris@ky.gov or contact Brian Gray, Area Manager at (270) 465-5039 or email at Brian.gray@ky.gov, Monday-Friday, 8 a.m. to 4:30 p.m. EST.

The Commonwealth of Kentucky reserves the right to reject any and all bids.

...087
...005
...082
...047
...195
...300
...007
...008
...020
...012
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...084
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...045
...200
...003

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for Thursday Issue
10 a.m. Friday
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10 a.m. Friday
for CKNJ Shopper

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For Thursday Issue
10 a.m. Friday
for Monday Issue
10 a.m. Friday
for CKNJ Shopper

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We Accept
For Display Ads
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Network

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CDL CLASS A DRIVERS, OTR, LOCAL DRIVERS needed. Starting pay 41 cents per mile. Home every weekend and during the week. Experience needed. We have detention and drop pay vacation, 401k, health insurance. Top pay for owner operators.
Established in 1960
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USED MOBILE HOMES without land. All sizes, $20K Cash or Less Call 859-977-3970.

120 Apartments For Rent

BRICK DUPLEX FOR RENT, 10 Townhouse Dr, 4 bedroom, 2 full baths, 2 car garage, all appliances, washer & dryer included. $800 month, $800 deposit. Lawn care provided by landlord. Call 502-432-1807. Available Jan 1st 2017.

NEW 2 BR, 2 BA, w/Garage. All Kitchen Appliances, W&D Hookup. Off Old Lebanon Rd. $650 Rent & Deposit. 270-849-5222

NOW ACCEPTING APPLICATIONS FOR:
- **Jackson Towers**
- **Campbellsville Public Housing**

Federally subsidized,

125 Real Estate Rentals

110 WEST WALNUT St. Campbellsville 2 bedroom. 1 bath. $400 deposit, $400 rent. All due up front. Pet restrictions. 1 year lease and application required. Call 270-849-8175

EQUAL HOUSING OPPORTUNITY

All real estate advertising in this newspaper is subject to the Fair Housing Act which makes it illegal to advertise "any preference, limitation or discrimination based on race, color, religion, sex, handicap, familial status or national origin, or an intention to make any such preference, limitation or discrimination." Familial status includes children under the age of 18 living with parents or legal custodians, pregnant women and people securing custody of children under 18.

This newspaper will not knowingly accept any advertising for real estate which is in violation of the law. Our readers are hereby informed that all dwellings advertised in this newspaper are available on an equal opportunity basis. To complain of discrimination call HUD toll-free at 1-800-669-9777. The toll-free telephone number for the hearing impaired is 1-800-927-9275.

300 Legals

300 Legals

PUBLIC NOTICE

Due to estate mergers, portions of roadway across the estate of Clifford Hedgespeth will be closed to all unauthorized traffic. Any prior agreements/farm roads/easements are extinguished. Recent surveys and PVA records indicate no land locked parcels remain. Farm entrance onto KY 1252 near Jones Creek will be closed to all unauthorized traffic.

Thanks to everyone who brought their sewing and seamstress work to my mother, Bessie Hedgespeth, while she was fighting cancer. Your encouragement and friendship meant a great deal to my parents.

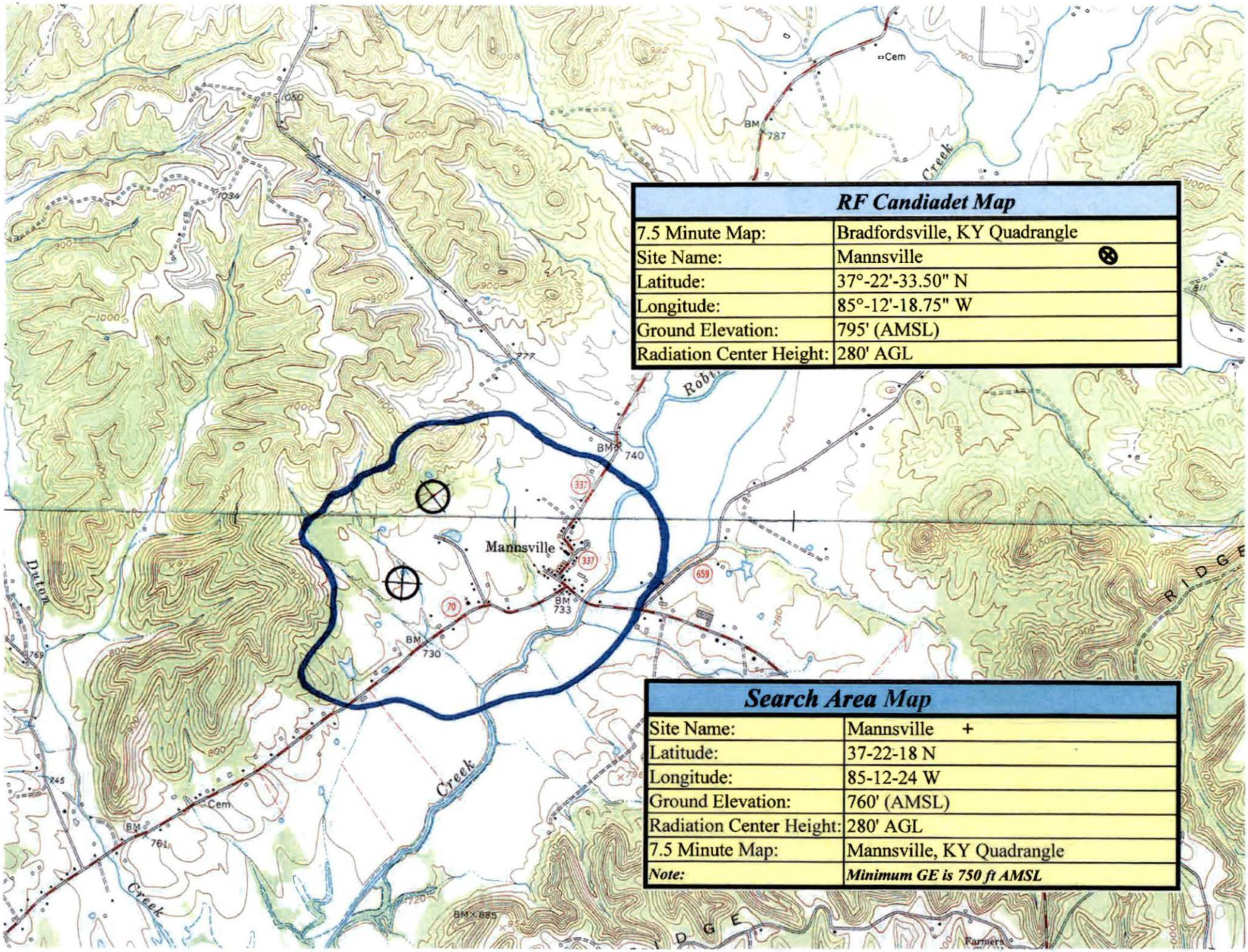
Scotty Hedgespeth

NOTICE

Kentucky RSA #4 Cellular General Partnership is applying 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 radio telecommunications service in rural service area #4 of the Commonwealth of Kentucky (Mannsville Cell Site). The facility is a 280 tower and an equipment shelter to be located at 430 Christian Church Road, Campbellsville, Taylor County, Kentucky, 42718. Your comments and requests for intervention should be addressed to: Executive Director's Office, Public Service Commission, Post Office Box 615, 211 Sower Boulevard, Frankfort, Kentucky 40602. Please refer to Case No. 2016-00425 in your correspondence.

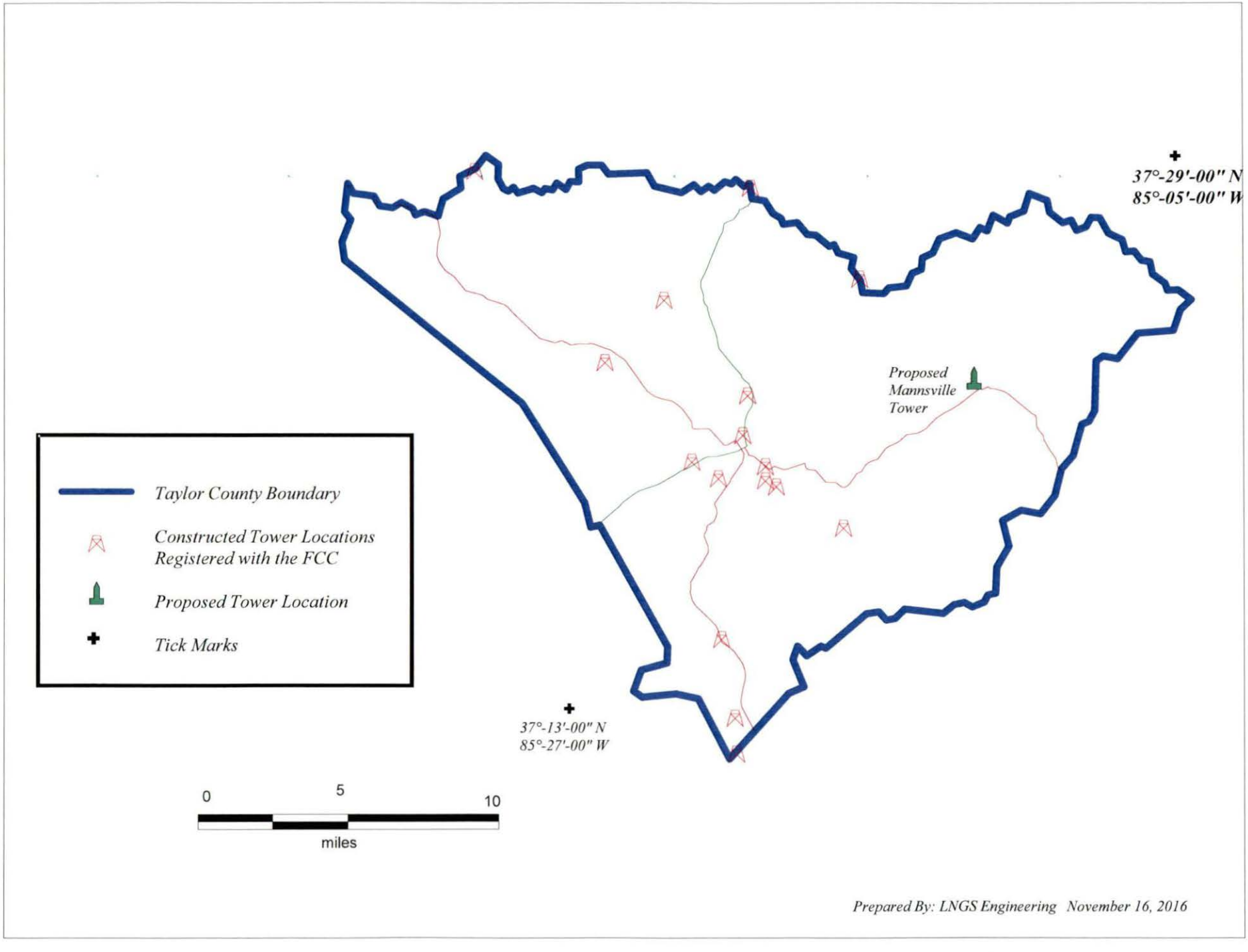
Mike Phillips, 600 Wedgewood Dr., Campbellsville, Kentucky, 42718, Hereby declares intention(s) to apply for a Quota Retail Drink and NQ4 Retail Malt Beverage Drink license(s) no later than December 31, 2016. The business to be licensed will be located at 164 Bambi Dr., Campbellsville, Kentucky, 42718, doing business as Phillips Lanes & Restaurant. The owner(s) are as follows: Owner, Mike Phillips of 600 Wedgewood Dr., Campbellsville, KY 42718. Any person, association, corporation or body politic may protest the granting of the license by writing the Dept. of Alcoholic Beverage Control, 1003 Twilight Trail, Frankfort, KY 40601-8400, within 30 days (KRS 243.430) of the date of this legal publication.

Vaibhav Laxmi Inc., 219 South Central Avenue, Campbellsville, Kentucky, 42718, Hereby declares intention(s) to apply for a Quota Retail Package License and NQ Retail Malt Beverage Package license(s) no later than January 9, 2017. The business to be licensed will be located at 209 South Central Avenue, Campbellsville, Kentucky, 42718, doing



RF Candiadet Map	
7.5 Minute Map:	Bradfordsville, KY Quadrangle
Site Name:	Mannsville ⊗
Latitude:	37°-22'-33.50" N
Longitude:	85°-12'-18.75" W
Ground Elevation:	795' (AMSL)
Radiation Center Height:	280' AGL

Search Area Map	
Site Name:	Mannsville +
Latitude:	37-22-18 N
Longitude:	85-12-24 W
Ground Elevation:	760' (AMSL)
Radiation Center Height:	280' AGL
7.5 Minute Map:	Mannsville, KY Quadrangle
Note:	***Minimum GE is 750 ft AMSL***


37°-29'-00" N
85°-05'-00" W
Proposed
Mannsville
Tower
Taylor County Boundary
Constructed Tower Locations
Registered with the FCC
Proposed Tower Location
Tick Marks
37°-13'-00" N
85°-27'-00" W
0
5
10
miles
Prepared By: LNGS Engineering November 16, 2016

Information on Constructed Towers Registered with the FCC
in Taylor County and 1/2 Mile Area Outside of the County Boundary

FCC ASR Nunber	*North Latitude*				*West Longitude*				*Nearest City*	*State*	*Tower Owner*
1042222	37	19	24	N	85	19	29	W	Campbellsville	KY	Global Tower, LLC. through American Towers, LLC
1043056	37	23	0.2	N	85	25	41.9	W	Campbellsville	KY	Kentucky RSA 4 Cellular General Partnership DBA BLUEGRASS CELLULAR
1043442	37	19	38	N	85	21	35	W	Campbellsville	KY	City of Campbellsville
1044280	37	24	48	N	85	23	33	W	Campbellsville	KY	Kinder Morgan - TGP
1044516	37	28	32.2	N	85	30	23.9	W	Hodgenviile	KY	EAST KENTUCKY POWER COOPERATIVE, INC
1044801	37	25	25	N	85	16	27	W	Spurlington	KY	Kntucky, Commonwealth of DBA = KY EMERGENCY WARNING SYSTEM KEWS
1046182	37	20	7	N	85	22	33	W	Campbellsville	KY	First Corbin Realty, LLC
1052450	37	28	3	N	85	20	25	W	Finley	KY	P & B TOWERS, LLC
1214265	37	19	34.2	N	85	19	52.8	W	Campbellsville	KY	Kentucky RSA 4 Cellular General Partnership d/b/a Bluegrass Cellular
1218250	37	19	59.2	N	85	19	52.8	W	Campbellsville	KY	AMERICAN FAMILY ASSOCIATION
1241661	37	14	59	N	85	21	27.8	W	Campbellsville	KY	Kentucky RSA 4 Cellular General Partnership
1242907	37	20	53	N	85	20	42	W	Campbellsville	KY	SBA Infrastructures, LLC
1243210	37	12	42.6	N	85	20	58.8	W	Columbia	KY	SBA Infrastructures, LLC
1265531	37	18	12.2	N	85	17	2.9	W	Campbellsville	KY	SBA Monarch Towers II, LLC
1268209	37	11	40.7	N	85	20	55.2	W	Columbia	KY	Cumberland Cellular Partnership
1294366	37	22	2.2	N	85	20	31.3	W	Campbellsville	KY	Kentucky Utilities Company

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
Petition for Declaratory Ruling to Clarify Provisions of Section 332(c)(7)(B) to Ensure Timely Siting Review and to Preempt Under Section 253 State and Local Ordinances that Classify All Wireless Siting Proposals as Requiring a Variance	)	WT Docket No. 08-165

DECLARATORY RULING

Adopted: November 18, 2009 **Released:** November 18, 2009

By the Commission: Chairman Genachowski and Commissioners Copps, McDowell, Clyburn, and Baker issuing separate statements.

TABLE OF CONTENTS

I. INTRODUCTION

1. This Declaratory Ruling by the Commission promotes the deployment of broadband and other wireless services by reducing delays in the construction and improvement of wireless networks. Wireless operators must generally obtain State and local zoning approvals before building wireless towers or attaching equipment to pre-existing structures. To encourage the expansion of wireless networks, Congress has required these entities to act "within a reasonable period of time" on such requests.[1] In many cases, delays in the zoning process have hindered the deployment of new wireless infrastructure.[2]

[1] 47 U.S.C. § 332(c)(7)(B)(ii).

[2] *See* para. 33, *infra*.

Commission, should determine whether such processing is reasonable based on the individual facts in each case.[87] They argue that some applications require greater time to consider than others, and that sufficient time is needed to compile a written record as required by Section 332(c)(7)(B)(iii)[88] and to seek collaborative solutions with wireless providers and the surrounding communities impacted by the proposed wireless service facilities.[89] Finally, they assert that rigid timeframes do not account for time to amend applications that are often incomplete when submitted by wireless providers, and may provide incentive for wireless providers to submit incomplete applications and to delay correcting them until the application is "deemed granted" (as proposed by the Petitioner).[90]

29. Wireless providers argue that the Commission has the authority to define "reasonable period of time" and "failure to act," and that such definition is necessary because some State and local governments are unreasonably delaying action on their applications.[91] They further contend that without defined timeframes, it is unclear when governments have failed to act and when they may go to court for redress.[92] They claim that the Petitioner's proposed timetables are reasonable.[93]

30. State and local government commenters also urge the Commission to reject both the "deemed granted" proposal and the alternative presumption in favor of injunctive relief proposed in the Petition.[94] They argue that Congress directed applicants aggrieved by a failure to act to seek a remedy in court, and assigned to the courts the task of deciding the appropriate remedy.[95] Moreover, they assert, under the Petitioner's proposed regime, local governments would have no say over siting of facilities once an application is deemed granted, even where safety factors justify modification or rejection of the facility.[96]

31. Sprint Nextel proposes that the Commission adopt the alternative remedy in the Petition. It argues that a presumptive grant is consistent with the Commission's approach in the *Local Franchising Order*, in which the Commission did not deem a franchise application granted, but provided for an interim authorization, upon the local government's failure to act upon an application in a timely fashion.[97] The Petitioner argues in its Reply that because a State or local authority's failure to act within a reasonable time is specifically declared unlawful under the statute, an automatic grant is appropriate.[98]

32. *Discussion*. The evidence in the record demonstrates that personal wireless service providers have often faced lengthy and unreasonable delays in the consideration of their facility siting applications, and that the persistence of such delays is impeding the deployment of advanced and

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[87] *See, e.g.*, NATOA et al. Comments at 12-14; City of Philadelphia Comments at 3-4; Florida Cities Comments at 2-4; City of Dublin, OH Comments at 2-3.

[88] 47 U.S.C. § 332(c)(7)(B)(iii) (denial of a personal wireless service facility siting application must be rendered "in writing and supported by substantial evidence contained in a written record").

[89] *See, e.g.*, California Cities Comments at 13-16; Florida Cities Comments at 15-20.

[90] *See, e.g.*, Fairfax County, VA Comments at 13; City of Bellingham, WA Comments at 1-2; Michigan Municipalities Comments at 19-20.

[91] *See, e.g.*, Sprint Nextel Comments at 4-5; CalWA Comments at 2-3; T-Mobile Comments at 6-9.

[92] *See, e.g.*, CalWA Comments at 4; Rural Cellular Association Comments at 4-5; T-Mobile Comments at 9-10.

[93] *See, e.g.*, Rural Cellular Association Comments at 6; T-Mobile Comments at 11-12; MetroPCS Comments at 7-8.

[94] *See, e.g.*, California Cities Comments at 17-21; SCAN NATOA Comments at 10-12.

[95] *See, e.g.*, Florida Cities Comments at 6; University of Michigan Comments at 3-4.

[96] *See, e.g.*, Stokes County, N.C. Comments at 2.

[97] Sprint Nextel Comments at 9-11 (*citing Local Franchising Order*, 22 FCC Rcd 5101, 5139 (2007)).

[98] CTIA Reply Comments at 26.

emergency services. To provide guidance, remove uncertainty and encourage the expeditious deployment of wireless broadband services, we therefore determine that it is in the public interest to define the time period after which an aggrieved party can seek judicial redress for a State or local government's inaction on a personal wireless service facility siting application. Specifically, we find that a "reasonable period of time" is, presumptively, 90 days to process personal wireless service facility siting applications requesting collocations, and, also presumptively, 150 days to process all other applications. Accordingly, if State or local governments do not act upon applications within those timeframes, then a "failure to act" has occurred and personal wireless service providers may seek redress in a court of competent jurisdiction within 30 days, as provided in Section 332(c)(7)(B)(v). The State or local government, however, will have the opportunity to rebut the presumption of reasonableness.[99]

33. Need for Action. Initially, we find that the record shows that unreasonable delays are occurring in a significant number of cases. The Petition states that based on data the Petitioner compiled from its members, there were then more than 3,300 pending personal wireless service facility siting applications before local jurisdictions.[100] "Of those, approximately 760 [were] pending final action for more than one year. More than 180 such applications [were] awaiting final action for *more than 3 years*."[101] Moreover, almost 350 of the 760 applications that were pending for more than one year were requests to collocate on existing towers, and 135 of those collocation applications were pending for more than three years.[102] In addition, several wireless providers supplemented the record with their individual experiences in the personal wireless service facility siting application process. For example, Sprint Nextel asserts that the typical processing times for personal wireless service facility siting applications range from 28 to 36 months in several California communities.[103] Verizon Wireless asserts that "in Northern California, 27 of 30 applications took more than 6 months, with 12 applications taking more than a year, and 6 taking more than two years to be approved"; and that "in Southern California, 25 applications took more than two years to be approved, with 52 taking more than a year, and 93 taking more than 6 months."[104] NextG Networks describes delays of 10 to 25 months for its proposals to place facilities in public rights-of-way, and states that such delay occurred even when NextG Networks merely sought to replace old equipment.[105] Moreover, two wireless providers offer evidence that the personal wireless service facility siting applications process is getting longer in several jurisdictions. For example, T-Mobile contends that in Maryland, the typical zoning process went from two months to nine months in four years and in Florida, from two months to nine months in two years.[106] Verizon Wireless notes that in

[99] We note that the operation of this presumption differs significantly from the Petitioner's alternative proposal that the Commission establish a presumption in favor of a court-ordered injunction granting the application. Under the approach we are adopting today, if a court finds that the State or local authority has failed to rebut the presumption that it failed to act within a reasonable time, the court would then review the record to determine the appropriate remedy. The State or local authority's exceeding a reasonable time for action would not, in and of itself, entitle the siting applicant to an injunction granting the application. *See* para. 39, *infra*.

[100] Petition at 15.

[101] *Id.* (emphasis in original).

[102] *Id.* The Petition claims that in "many jurisdictions" it was taking longer to obtain personal wireless service facility approvals than in prior years. *Id.*

[103] Sprint Nextel Comments at 5. Sprint Nextel also notes problems with processing in a New Jersey community. *Id.* The California Wireless Association also describes several instances of delays that ranged from 16 months to two years in California. CalWA Comments at 2-3.

[104] Verizon Wireless Comments at 6-7. T-Mobile also cites specific problems it encountered in four States. T-Mobile Comments at 7-9. Likewise, MetroPCS describes its experience with application processing delays in four jurisdictions. MetroPCS Comments at 8-12.

[105] NextG Networks Comments at 5-8.

[106] T-Mobile Comments at 6. In its comments, T-Mobile also references a collocation application submitted in LaGrange, New York, that was denied following a lengthy review process, despite the fact that the existing tower

(continued....)