

# **The Interior Angle**

**July 2022**



**Kentucky  
Association of  
Professional  
Surveyors**



# **Interior Angle**

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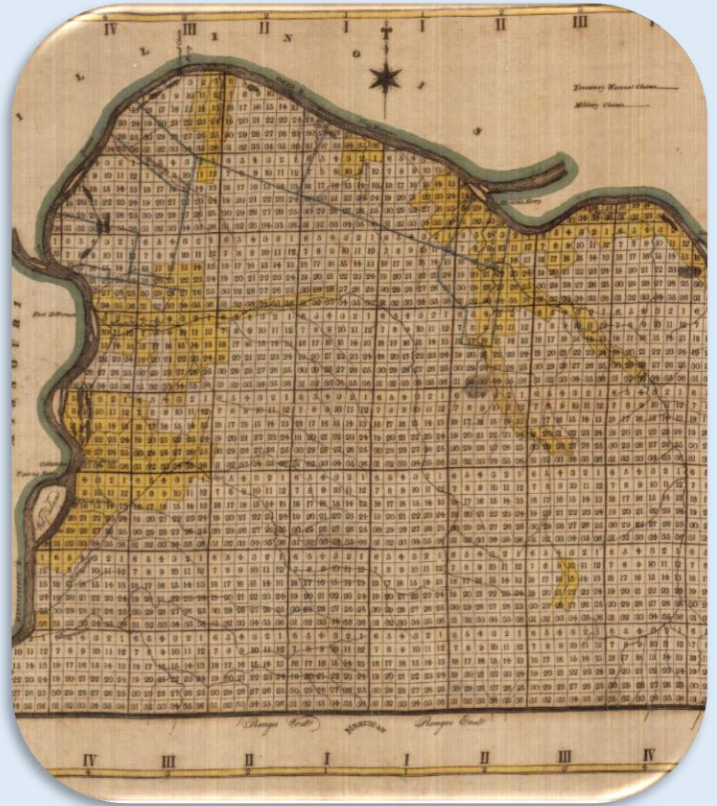
Highlands...Johnny Justice

Northeast...Inactive

Northern Kentucky...James Elliott

Purchase...James Knoth

Southeast...Curtis Felts



“A Map of that part of the State of Kentucky lying west of the Tennessee River surveyed agreeably to an act of the Legislature passed on the 14<sup>th</sup> of February 1820”

William T. Henderson

The original of this map is at the Library of Congress and is stated to be on silk cloth. It was scanned into the Division of Maps in 1947.



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Bob Smith, PLS  
bls3913@yahoo.com

## **From the President's Desk**

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Greetings to all KAPS members and all that read the Interior Angle. I hope everyone is staying cool and dry during these hot summer months. Thankfully, fall is just around the corner. For myself, I'm really looking forward to cooler days.

Speaking of fall, we have our Annual Conference in Bowling Green, Kentucky starting September 29th and ending October 1st. The conference committee has worked extremely hard to put together a great lineup of classes. We have also changed the price structure for the conference. The sooner one registers for the event, the lower the price. So, be sure to visit the website at [www.kaps1.com](http://www.kaps1.com) and register now to take advantage of the lower price package. I am looking forward to an exciting conference and hope to see every member there.

Earlier this summer, on June 10<sup>th</sup>, we held our annual golf scramble and family picnic at My Old Kentucky Home State Park in Bardstown. We had a great turnout for the golf with 14 teams signed up to play. The weather was perfect and everyone had a great time. We did not do as well as I would have liked with hole sponsorship. I challenge each member of KAPS to consider, at the very least, to sponsor a hole next year. Remember, all proceeds from this great event go directly to our scholarship fund. Without great support from our membership, we would not be able to help young students looking at the survey profession - and we all know there is a great need for our young people to start filling in for those of us "older" surveyors.



Bob Smith, PLS  
bls3913@yahoo.com

## **From the President's Desk**

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On that note, we did have a team from the Young Surveyors Network come out to play golf and help with registration on site. They also had the opportunity to meet and network with those of us that have been in the profession for quite some time. The picnic was held right across the street from the golf course and was very well attended. Food was great, conversation was even better. These events are a great way to network with surveyors from around the Commonwealth and to discuss projects, problems, and difficult situations that we all may face. A different perspective of a situation you may be facing may very well benefit from a fresh pair of eyes. I would like to personally thank everyone that came out to enjoy the day. I'm looking forward to next years event with even more folks attending.

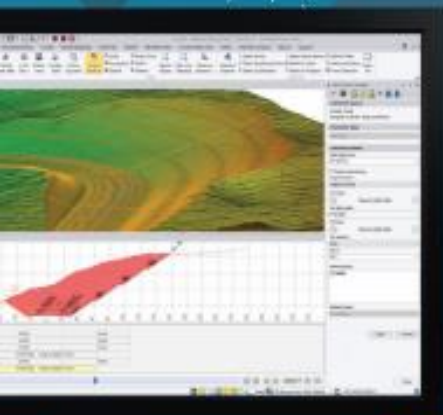
In closing, I hope to see more surveyors step up and become involved at the chapter level and maybe more importantly at the state level and I look forward to seeing everyone at the Annual Conference.





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## **Editor's Commentary**

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Well, this is the third edition I am putting together of the Interior Angle. I can see that that it will quickly become more difficult to get new content into the magazine as time rolls on. So, if anyone has pictures, stories, or opinions they want to submit, please let me know. I would be very glad to have some additional material as we continue to move forward. This could be in the form of individual, company, or chapter happenings.

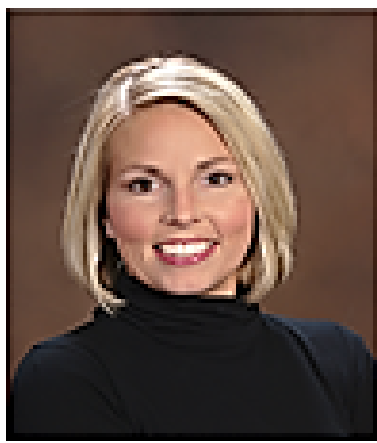
I appreciate those folks who have contributed so far. While it may seem that surveying is surveying, and we take for granted that most other surveyors are doing the same thing we are, there is enough difference in each project that everyone has a good story in them. You all are certainly not shy when it comes to telling tales when we have a chapter meeting or seminar. So please think of those stories you would tell in person and jot them down. They would make interesting reading – pictures are a bonus, but not required.

Huge THANK YOU to the Falls of the Ohio chapter for their contributions this month!

Regards,  
Jon Payne

Survey Marker to be Discussed in an  
Upcoming Issue of the Interior Angle





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Ben Shinabery, PLS

## **Surveying 1000 Bridges in Kentucky**

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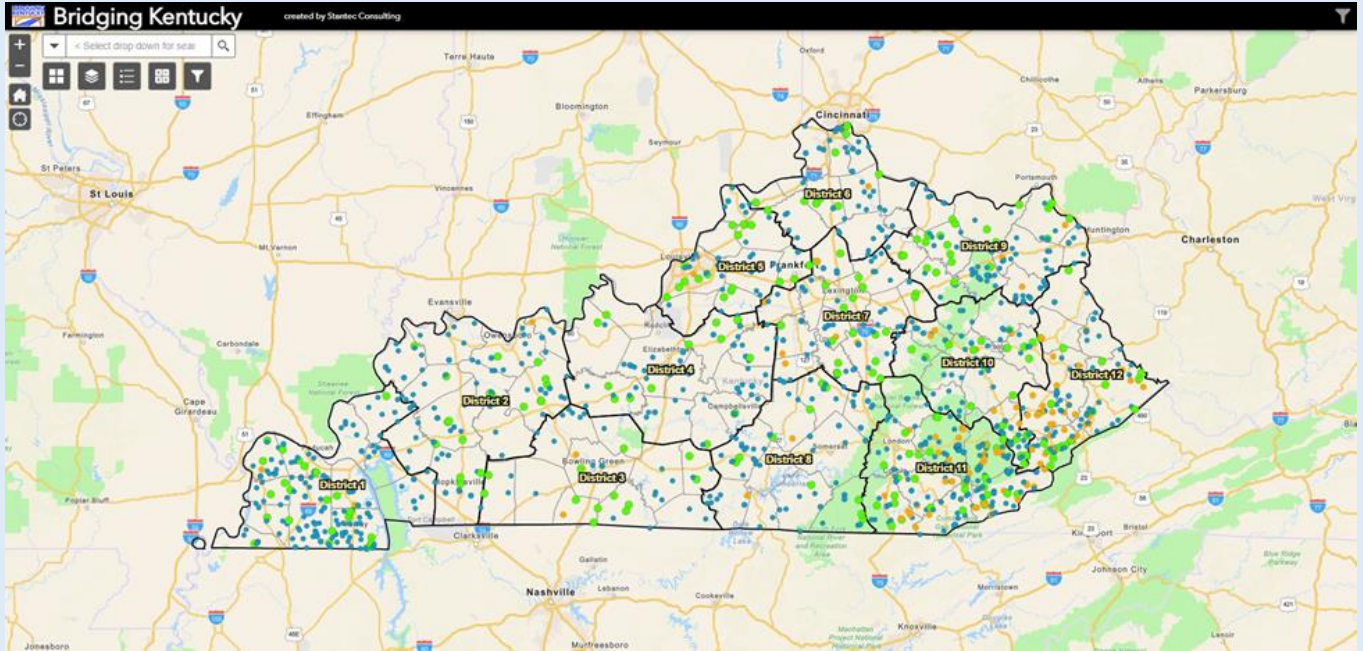
Think back on where you have driven this week anywhere within the Commonwealth of Kentucky. You may even check your google maps on your phone to see where you spent your time. Surveyors always travel to places and traverse through remote areas that the rest of the general population never gets to see. We cover Interstates, US Highways, County Roads, Urban Connectors, and rural one-lane dead-ends. All these road systems have one thing in common, BRIDGES. It would be an interesting study to see how many bridges you cross each week. Bridges that cross creeks, bridges that cross other roads, bridges which span railroads and rivers, we all cross bridges whether we notice them or not. What would happen if those bridges were not safe to cross? How would people get to work, how would kids get to school, how would EMS provide life saving care, how would police and fire services protect our homes, businesses, churches, and schools?

Beginning in May 2018, the Bridging Kentucky project consulting team was awarded the largest compiled bridge contract in the history of the nation. The Kentucky Transportation Cabinet was faced with a growing backlog of bridges that needed replacement, repair, or rehabilitation, over one thousand, in fact. KYTC had been addressing the need one bridge at a time either through its own bridge engineers in the twelve DOT district offices, or through contracting engineering firms to design plans for repair or replacement, but one at a time was not keeping up. The number of bridges to be addressed kept growing and the few that were being fixed just weren't enough.



Ben Shinabery, PLS

# Surveying 1000 Bridges in Kentucky

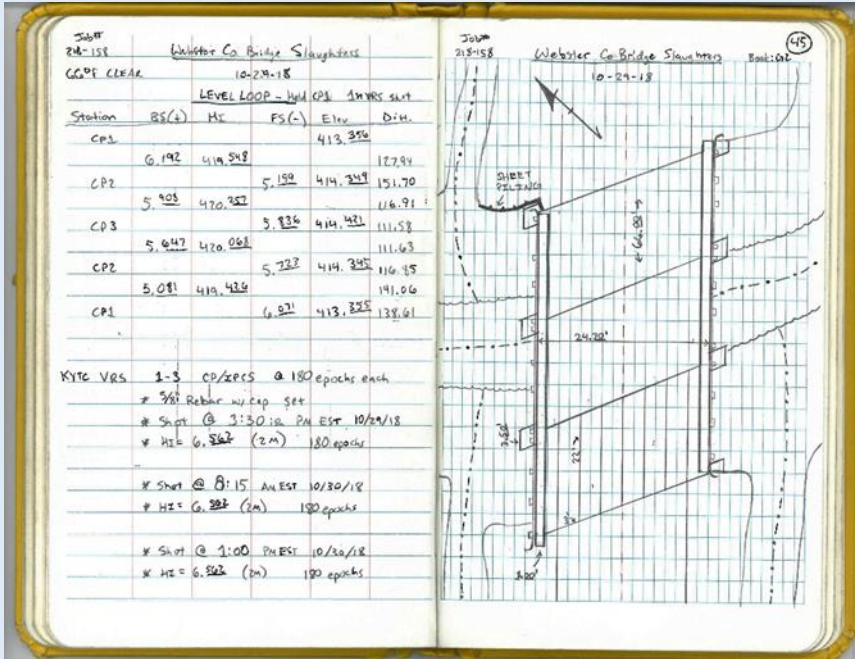


If engineers planned to design new bridges across the Commonwealth, they would need to be surveyed first. The daunting task of repairing or replacing over a thousand bridges in the Bridging Kentucky program starts at the point of data collection. How fast and accurate can you survey the terrain, substructure, piers, substructure, and hydraulic opening of a bridge for design engineering construction plans? Will you form a land survey team to field collect and model close to a forty bridges per month? Surveyors have LiDAR and drones; why don't you just scan all the bridges at a high resolution and just throw the point clouds into a drawing? Let's use every land survey tool in the toolbox to survey these bridges: GPS, Total Station, 3D Laser Scanning, UAS, connected Data Collectors and 360 Photo & Video Capture.

Ben Shinabery, PLS

# Surveying 1000 Bridges in Kentucky

We on the Bridging Kentucky team drafted a process to set at least three land survey control points on state plane coordinates, run a level loop to adjust vertical elevations, take topographic shots of all the terrain features of the site, locate utilities, find any available property evidence, and document the bridge structure from the foundation to the deck, all in a time limit of two days for most of the bridge sites. We trained our survey field crews to identify the features needed in all our bridge sites. CAD technicians learned to run the KYTC field-to-finish codes and then model the topographic survey in 3D including the full ground surface, support structure and the surface of the bridge separate from the ground. Survey managers from four different surveying firms stamped and signed survey reports collected by twenty different survey field crews including KYTC district survey crews. The process became an efficient bridge surveying machine.







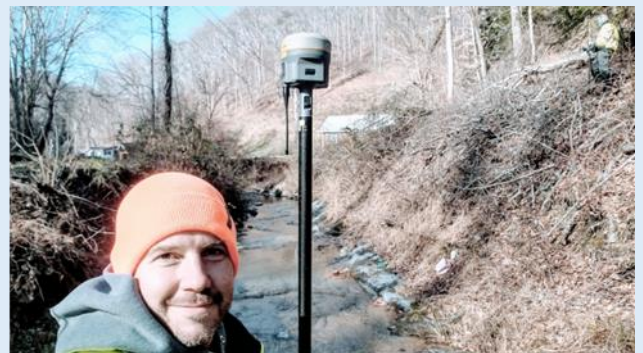
Ben Shinabery, PLS

## Surveying 1000 Bridges in Kentucky

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control points in the ground for permanent horizontal and vertical control. He ran initial GPS sessions on the control points while I set up the level and level rod. We ran the level loop between the first and second sessions of GPS collection to have one clean adjusted vertical set of elevations. Before the day is over, we will run at least a third set of GPS shots on the control for least squares adjustment. This site survey included the single span bridge which measured around 35 feet in length over a creek that cuts through the mountains of Eastern Kentucky. We would need to locate around 600 feet of roadway, 300 feet of creek, utilities, significant trees, nearby houses and their associated septic systems, driveways, and the full bridge detail. Richard sets up the total station while I grabbed the GPS rover to survey the creek.

You never know what to expect deep in the country, we watch for protective dogs, we knock on doors around the site to introduce ourselves to the local neighbors and explain what we are surveying, we make sure each shot is precise to the level of detail



needed for design, and we capture the existing conditions of the site documented with 360 camera images and video to see the whole site from every angle. This particular bridge presented an interesting way to control erosion on the bank of the creek. Someone had buried an old ford truck next to the abutment wall to stabilize the embankment. I guess when you have an old truck and you need to keep the bridge from washing out, just flip that thing over and plant it deep in the side slope. I'm sure no engineer would design with an old truck frame, but on this bridge, they used what they had.

Ben Shinabery, PLS

## **Surveying 1000 Bridges in Kentucky**

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Because I brought the laser scanner with me that day, I set out reference targets and collected several full dome scans of the bridge site. Though Richard had surveyed all the critical elevations of the bridge with the total station, the laser scanner collected the full context of the site and the fine details of the bridge such as the individual beams, the abutment ledge, the condition of the concrete and any significant cracking or spauling. And, for this bridge, the scan also picked up the ford truck. By the end of the day, Richard and I had much of the site survey complete. I planned to travel back to the office that evening with the laser scanning sessions and the 360 photos and videos of the site. Richard had planned to stay in town at a hotel and finish the survey the next day. He had to locate site utilities if they were marked, look for property boundary evidence, finish locating trees, and finalize his field notes for this bridge.

Once the field work was completed, the survey data was downloaded to our CAD technician for 3D modeling during the next two days before delivery. I then reviewed the final digital files stamped the survey report and uploaded all the files to the client.

For two days in Breathitt County, Richard and I established survey control, collected more than 350 survey shots, talked to property owners, took 12 laser scans, and documented the existing condition of a bridge in need of repair. For over two years, the Bridging Kentucky survey field crews collected more than 600 bridge surveys to provide safe bridges to cross for all Kentuckians. Next time you drive over a bridge on your way to a land survey, think of Richard and consider what it takes to survey all elements of a bridge.

Ben Shinabery, PLS

# Surveying 1000 Bridges in Kentucky

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Author: Ben Shinabery, PLS is a land survey project manager at Qk4, Inc. where he specializes in high-definition digital terrain modeling through traditional survey, 3D Laser Scanning and Aerial Drone Mapping.



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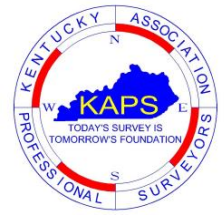
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- Built-in Bluetooth, Wi-Fi, GNSS, worldwide WWAN, and a rear facing camera, make it easy to capture videos and images, send and receive data and access the Internet





# Getting to Know ...

## David Fries, LSIT

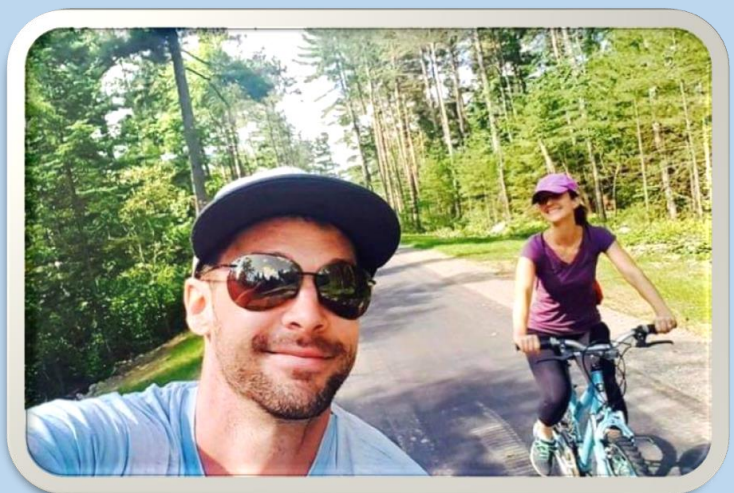
**What started you in the surveying profession and what about surveying has held your interest such that you stayed with it?**

My journey into surveying has been quite a traverse. I originally went to Murray State to get into Construction Eng. Management which required surveying courses instructed by A.C. Kellie. I really enjoyed the course work and studying under Andy, but I still proceeded with the Construction Mgmt. degree. I quickly learned after a year as a Construction PM you spend more time in the trailer pulling submittals than you spend time in the field. So, I reached back out to the Professor to get back on track to obtain the survey credits.

Flash forward a semester or two later, LSIT exam, and I hit the "great" job market right at the 2008/2009 crash. I couldn't find steady employment with any companies full time and I wound up getting pulled into the Telecom business as PM building cell sites for Verizon over the next ten years. It was a great industry to work in for my time, but surveying was in the back of my mind every time I worked with Engineers on my projects.

Slowly the industry and philosophy of the work environment started to change, and I had to make a move. Luckily, I married the niece of the surveyor/owner of Cardinal Surveying with a great opportunity and here I am back in the trade working on my PLS. There's many things

about the profession I enjoy but what keeps me around is the identity it gives me, the art and process of performing a unique trade.





# Getting to Know ...

## David Fries, LSIT

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### **Tell us about one of your more memorable surveying projects.**

Its hard to recall a story that most haven't experienced in this profession in some manner. Most of the really great ones just aren't for public record or its a "you had to be there moment." Honestly, my most memorable experiences in this profession are the characters you get to meet, some of the most beautiful pieces of land most folks will never get to see, and every once in a while, a perfect survey that comes together in every facet.

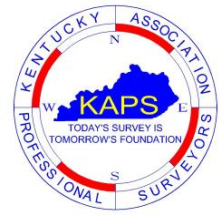
### **In your opinion, what are the benefits of being a member of KAPS and what would you suggest KAPS could do to be of more benefit for its members?**

I value the connections and relationships you build with your peers throughout the time you spend as KAPS members. Its valuable to myself as a young surveyor to be able to pull experience from the surveyors you're going to be working behind in the field.

I think KAPS needs to bring more focus into the growth of our profession specifically in drawing a younger generation into the field. We don't do a great job exposing or marketing the profession to student entering higher education and the possibilities this field can provide.







# **Getting to Know ...**

## **David Fries, LSIT**

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**What do you do to unwind and step away from the work aspect of surveying?**

Playing or listening to music is definitely what helps me to step away from the job. I keep busy with projects and hobbies that help distract with some of the stresses from life as a surveyor. It can be a physically and mentally challenging job sometimes and most of us work well beyond a 40-hr. week. I've learned you have to take time off for yourself and for your family when you need it.

**Tell the readers something your colleagues may not be aware of about yourself.**

I'm a big guitar enthusiast. I love to build, collect, design. I play guitar in a local cover band - 1Louder. I have a beautiful wife, 2 yr. old daughter, and a son just born in April.

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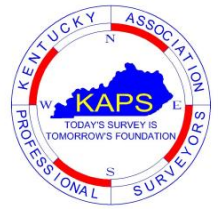
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# CONFERENCE 2022

## UPDATES

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Conference registration is now open on the KAPS website. Make sure you are logged in when you register so that you receive the member discounted rate.

When we have late registrations and late cancellations, they can impact everything from classroom seating to meal prep by the venue. As a result, KAPS has implemented some new policies this year.

First, there are early registration discounts that can save you some money and late registration fees that can cost you. Please be aware of these and see the conference registration webpage for details.

Next, because KAPS is locking in meal decisions with the venue, we are required to schedule numbers in advance. So, we have a new cancellation policy. Cancellations will be provided with either 8 hours or 16 hours of online course access for either a one-day or full registration, respectively.

### KAPS Conference 2020 Details

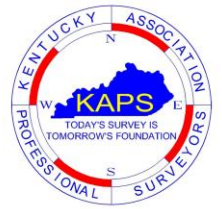
<https://www.kaps1.com/Conference/>



"Bowling Green Fountain Square" (CC BY-NC-SA 2.0) by [www78](#)

# KAPS ONLINE CPD CONTENT

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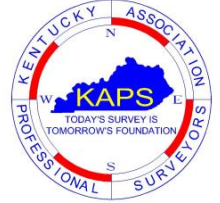
Currently, all fees from the online courses go to the KAPS scholarship fund. If you would like to produce a course to support the scholarship fund, there are KAPS members who will be glad to aid if they can.

<https://www.kaps1.com/online-courses/>



# Become a KAPS Member

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We would love to have you be a member of KAPS if you are not already one. If you would like to join for a first time or would like to renew your membership for the coming year, you can do so easily online using the following QR code from your smartphone or by visiting the website at:

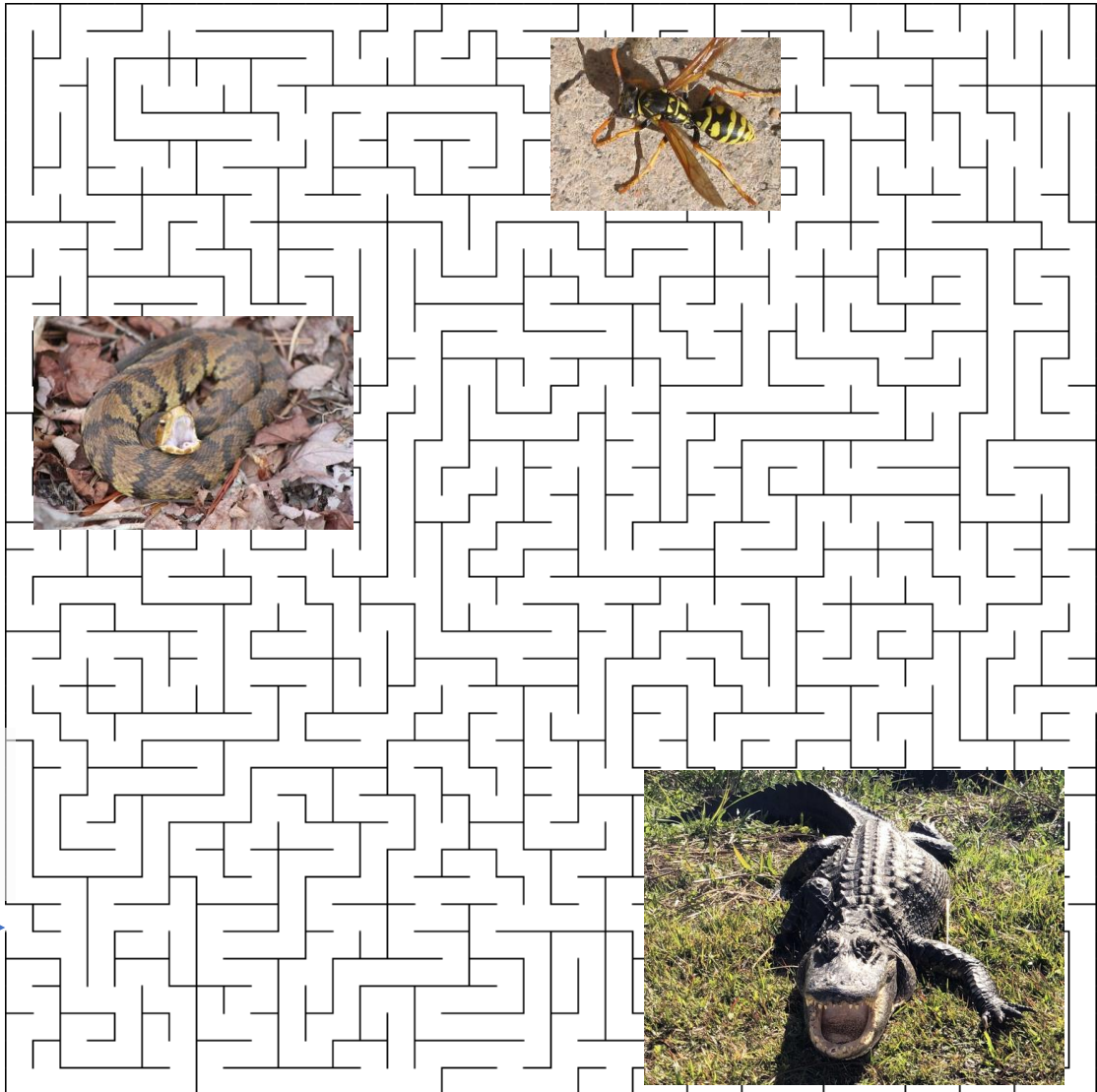
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# Help the Survey Technician find the safe path to the property corner.



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