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HOOSIER SURVEYOR

Quarterly publication of the Indiana Society of Professional Land Surveyors, Inc.



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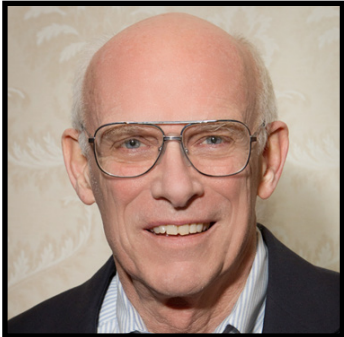
FROM THE EDITOR

Deadlines for copy for various planned issues of the Hoosier Surveyor are as follows:

- Winter - February 1
- Spring - May 1
- Summer - September 1
- Fall - November 1

The Hoosier Surveyor is published quarterly by the Indiana Society of Professional Land Surveyors to inform land surveyors and related professions, government officials, educational institutions, libraries, contractors, suppliers and associated businesses and industries about land surveying affairs.

Articles and columns appearing in this publication do not necessarily reflect the viewpoints of ISPLS or the Hoosier Surveyor staff, but are published as a service to its members, the general public and for the betterment of the surveying profession. No responsibility is assumed for errors, misquotes or deletions as to its contents.



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PRESIDENT'S MESSAGE – IT'S A GREAT TIME TO BE A SURVEYOR!

By Todd R. Bauer, PS, ISPLS President

I would first like to thank the Hoosier Hills Chapter for sponsoring a wonderful Annual Convention at the French Lick Convention Center in French Lick, Indiana. This was our first convention outside of Indianapolis in eighteen years, and we were all pleased to see that our attendance was relatively steady with participation from all over the state. As a resident of Northeast Indiana, the trip was a bit longer than it has been in the past, but it was well worth it and the facility was magnificent!



It was also refreshing to see a variety in the speakers at our Annual Conference. Not that the traditional speakers aren't excellent, and provide insight and knowledge, but variety is the spice of life. I particularly enjoyed the presentation by John Stahl, offering a different perspective as the Role of the First Surveyor. His presentation material quoted a few new sources of text books and materials that I did not have in my library, and I have since acquired new references that I am in the process of reading about our great profession!

As we move forward, I have established the following goals for our Society and the Board of Directors for 2019:

1. Promote the Awareness and Understanding of our Profession.
2. Establish a Path to Licensure Exhibit/Matrix listing the educational course work and resources available to individuals interested in surveying, in an effort to facilitate professional development and licensure.
3. Foster relationships with associated professions.
4. Develop a Virtual Reference Library.

I will briefly expand upon these goals:

Promote the Awareness and Understanding of our Profession

One thing that seems constant as I work and travel throughout the State of Indiana is that no one truly understands what we do. I realize that there is no one magical measure that will inform the general public of our value to society or the contribution that we add, but we must make an effort to educate those in and around us as to what we do. To that end, I have asked each member of the Board of Directors to prepare a brief outline of what they do, how they became involved in surveying and highlight an interesting project that they have been involved with. The variety within the profession of surveying is staggering, and it is far more than the guy on the side of the road taking a picture!

I recently read an introductory article within American Surveyor that stated that we each have an obligation to the profession to inform the public and promote the profession of surveying. The timing was uncanny as I had just prepared an article in a northeast Indiana marketing magazine that was simply about the efforts required to perform a survey and the numerous behind the scenes activities that go unnoticed by the end user of our services. Although it was an unfamiliar marketing effort to our profession, I have had several people contact me with kind words and excellent reviews.

Establish a Path to Licensure Exhibit/Matrix

Another common theme everywhere I travel is that we (surveyors) can't find enough help or develop people fast enough to fill the need. The average age of a Surveyor in Indiana is 58 and a review of the age demographics shows that there are far more surveyors over 65 than there are under 40. These trends are concerning! Especially when you couple that with the fact that our educational providers have eliminated surveying course work and programs over the past decade(s).

In response to this concern, and as an extension of an ad-hoc committee from last year's President, I have asked Mr. Gary Kent and Ms. Carol Moreman to co-chair a committee to accumulate the available educational resources and coursework. The intent is that the committee can generate a matrix of both on-line and classroom coursework across the country that can serve as a means by which we can develop surveyors and provide a Path to Licensure. At our March Board Meeting we saw the matrix in a development stage, and I am extremely encouraged about the end result. We hope to have the matrix complete and posted to the ISPLS website in May of this year.

Foster Relationships with Associated Professions

In the spirit of promoting our profession, I have requested that our Society work with related societies in an effort to create a working relationship of mutual benefit. We all work with other professions on a daily basis (architects, engineers, attorneys, Realtors, governing agencies, etc.) and many of these groups have state societies or representation. If we can develop a relationship with these groups at state and regional levels, and serve as a resource to these groups, perhaps over time we can change the perspective of the general public on the value and contribution the surveying profession provides to the greater community.

Develop a Virtual Reference Library

As we continue to move towards a more digital age and society, the development of a virtual reference library for ISPLS would only seem to be a logical progression. The

intent is to have individual members submit information that has been beneficial or meaningful to them in the development of their career, and to have this information scanned and available on the ISPLS website.

As an example, I recently was informed of an article from a 1975 ACSM magazine about Johnny's Little Acre during a discussion with a colleague. I had never read the article, but my colleague forwarded a copy via email for my review. After reading the article I found it to be so appropriate for today, especially in light of some of the interesting survey results we see in the field. I have copied the article and provided a copy to everyone in my office. It may not mean much to them today, but perhaps some day they will find value in the article. That is exactly the point of the Virtual Reference Library ... it doesn't have to be much ... it just has to make an impact on you.

It is indeed a great time to be a surveyor. Work is plenty and opportunities abound! It is also an important time to prepare for the future and implement efforts that ensure the long-term success of the profession we all love! It is my hope that we can accomplish many great things this year, and I plan to attend as many local chapter meetings as possible. I welcome your feedback and thoughts.

Todd R. Bauer, PS
President ISPLS

IN CASE YOU MISSED IT:

Top Articles Featured in the ISPLS Newsletter | [February 2019 – March 2019](#)

Earth's Magnetic Pole is on the Move, Fast. And We Don't Know Why
[February 4 Newsletter](#) | [News.com.au](#)

What is LiDAR Technology and How Does it Work?
[February 4 Newsletter](#) | [Geospatial World](#)

Marion County IN – GLO Pilot Project Released
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Copyright, Public Domain, and Maps – It's Complicated
[February 18 Newsletter](#) | [Directions Magazine](#)

GPS Numbers to Rollover
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A Millennial's View of Land Surveying
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Have an article you want to see in the ISPLS Newsletter? Email [Kayla Jenkins](#).

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ISPLS 67TH ANNUAL CONVENTION HIGHLIGHTS

French Lick Springs Hotel | French Lick, IN | January 16-19, 2019

ISPLS 2019 Awards Presentation



2018 ISPLS President Ryan Swingley, right, awarding a 2018 President's Award to Eric Banschbach, INDOT.



2018 ISPLS President Ryan Swingley, right, awarding a 2018 President's Award to Randall Nick, Butler, Fairman & Seufert, Inc.



2018 ISPLS President Ryan Swingley, right, awarding the 2018 Atlas Award to Ed Sweetland, Beam, Longest & Neff, LLC.



Incoming ISPLS President Todd Bauer, left, presenting the 2018 ISPLS President Ryan Swingley with a plaque in recognition of his service to the Society.



The ISPLS Board of Directors receiving stakes in recognition of their service.

ISPLS 67TH ANNUAL CONVENTION HIGHLIGHTS

French Lick Springs Hotel | French Lick, IN | January 16-19, 2019

ISPLS 2019 Awards Presentation



Brad Eckerle, right, recognizing William L. Clark, Vincennes University, for his dedication and 31 years of service to the surveying profession.



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LEGAL SURVEYS

By Bryan F. Catlin, PS, ISPLS Past President

The goal of this column is to provide brief summaries of recent Indiana Court of Appeals and Supreme Court cases involving topics related to surveying practice, certainly not to provide legal advice. Information is gathered from the courts website at www.in.gov/judiciary. Comments or suggestions for future columns are welcome by email to: Bryan.Catlin@indy.gov.



Interestingly, there are two cases from Ellettsville this quarter.

Brenda Sue Gittings and Marc Richmond Gittings v. William H. Deal, Indiana Supreme Court Case No. 18S-TR-231, November 2, 2018

This case originating in the Spencer Circuit Court concerns two stepsiblings, Brenda Sue Gittings and William Deal. After the death of Georgia Richmond (William's mother) in 1997, some assets of a trust were distributed to Brenda, William, and the grandchildren. However, William received deeds to land and minerals in Indiana and West Virginia. In 2010, the property in West Virginia began producing hundreds of thousands of dollars annually from oil and gas leases. After Brenda complained, William belatedly sought court approval for the property transfers and this eventually ended up in the Indiana Supreme Court. This was sent back to the trial court because the land transfers were improperly conducted.

This case doesn't really concern surveying, but it is a strong reminder that property transfers must meet procedural steps to be valid. In this case steps dealing with trust properties, even though many years had passed with the transfers not being challenged.

Town of Ellettsville, Indiana Plan Commission and Richland Convenience Store Partners, LLC v. Joseph V. DeSpirito, Indiana Supreme Court Case No. 53S01-1709-PL-612, November 29, 2018

Here is a case that already made it to the Indiana Supreme Court in 2017. As a reminder, the prior case summaries follow in italics.

Town of Ellettsville, Indiana Plan Commission and Richland Convenience Store Partners, LLC v. Joseph V. DeSpirito, Indiana Supreme Court Case No. 53S01-1709-PL-612, December 12, 2017

Here, a case from last year was granted transfer to the Indiana Supreme Court. As a reminder, the original case summary follows in italics.

Town of Ellettsville, Indiana Plan Commission and Richland Convenience Store Partners, LLC v. Joseph V. DeSpirito, Indiana Court of Appeals Case No. 53A01-1611-PL-2559, May 25, 2017

Richland Convenience Store Partners (RCSP) and DeSpirito own adjoining commercial subdivision lots. The RCSP lot has a platted 15' utility easement running through the middle of it containing a sewer line that serves Dr. DeSpirito's optometry practice. RCSP petitioned the Ellettsville Plan Commission for permission to move the sewer line and amend the plat at their expense in order to have a larger portion of their lot be buildable area. Dr. DeSpirito and two others opposed the plat amendment. The Plan Commission approved RCSP's plan and Dr. DeSpirito filed a petition for judicial review with the Monroe Circuit Court. The trial court overturned the Plan Commission decision and repeatedly mentioned "Dr. DeSpirito's easement" and his property interest in it, and claimed that the plat could not be amended without all persons who had a financial interest in the platted property, including Dr. DeSpirito as a lot owner, agreeing. The trial court noted it is illegal for a government agency to assist one private land owner to condemn and take the property of another owner. This appeal followed.

The Appeals Court found that the financial interest provision was based on a part of the Ellettsville Subdivision Regulations that apply to submission of a preliminary plat, not the amendment of an existing plat, as well as noting that the trial courts interpretation would require every owner in a 150 lot residential subdivision to agree to a relocation of an easement on one lot, an absurd result. The Court of Appeals also found that the constitutional and statutory concerns are misplaced. There were also prior court cases cited by the trial court that do not apply because neither of the two owners selected the original easement location. The court also noted that an easement is a limited nonpossessory interest by definition and that preventing reasonable changes would amount to a possessory interest. The trial court's grant of summary judgment was reversed and remanded with instructions to enter summary judgment for the Plan Commission and RCSP, reinstate the Plan Commission's decision, and conduct further proceedings.

Now the Indiana Supreme Court weighs in after a Petition to Transfer was granted. Here they rule that, as the Court of Appeals noted, there was not a final judgment in place to appeal. However, the Court of Appeals proceeded noting the supreme court has relaxed procedure in this regard. The Supreme Court now finds that the circumstances cited

do not apply to this case and remand the case to the trial court for a decision within the next 90 days.

This case returned to the trial court where there was determined there was no just reason for delay and expressly directed entry of judgment for DeSpirito.

By taking up the appeal, the Indiana Supreme Court sets aside any Appeals Court decision. Now the Indiana Supreme Court finds that the easement is in a fixed position. This is because, even though there are not distances to the plat boundary shown, only the width of the easement, it can be scaled from the one inch equals sixty feet plat and so the easement is in a fixed location. Indiana has historically followed a common-law precedent that a fixed easement cannot be relocated unilaterally. Finally, the Indiana Supreme Court discussed why they believe the restatement approach to relocation agreements used by the Appeals Court is unclear and internally inconsistent and why they firmly support the current common-law prohibiting unilaterally relocating fixed easements. The trial court judgment for DeSpirito was affirmed.

Centennial Park, LLC v. Highland Park Estates, LLC, Indiana Court of Appeals Case No. 18A-PL-764, December 5, 2018 - MEMORANDUM DECISION - not regarded as precedent

This case centers on Phase 1 of Highland Park in Monroe County. The plat includes two relevant restrictions. First, Note 1 states that “[n]o parcels shall be dedicated as parks, schools, playgrounds, or other community purposes within section 1.” Second, Paragraph G states that nothing shall be done on any lot “which may be or become an annoyance or nuisance to the neighborhood.” The final plat was recorded by Robert Crider in 1977 and showed that the subdivision runs roughly north and south along Centennial Drive, which connects to State Road 46 on the south and ends in a cul-de-sac on Lot 15 and next to Lot 16 on the north.

On December 21, 2016, Centennial Park acquired thirty acres directly north of Highland Park from Gil Mordoh. Centennial Park has only one point of ingress and egress, which is a roadway through the Woodgate subdivision, located directly to the west. Mordoh had attempted to prove that there was an easement from the cul-de-sac to the planned Centennial Park subdivision so that an access road could be built there, but a trial court found that no such easement existed. Mordoh then attempted to purchase an easement from Crider, but Crider declined. When Centennial Park acquired the real estate, it was aware of this history.

The original developer of Highland Park planned to develop real estate located directly east of Phase I. Highland Park is now in the process of developing Phase II. When Phase II is complete, it will have multiple roadways connecting to Centennial Park. Highland Park offered an easement to Centennial Park so that Centennial Park could build an access road in one of these locations sooner than Highland Park was prepared to do so.

Rather than waiting for Highland Park to build the Phase II access roadways or accepting the easement to build a roadway itself, Centennial Park purchased Lot 15 in Highland Park. Centennial Park then asked the Town of Ellettsville to annex Lot 15 and the town did so. Centennial Park then granted Ellettsville a fifty-foot-wide easement and right-of-way over the western side of Lot 15, creating a connection between the cul-de-sac at the north end of Centennial Drive and the Centennial Park subdivision.

Centennial Park installed a construction road across Lot 15, using it to access Centennial Park from the cul-de-sac. It ultimately intends to build a permanent roadway connecting Centennial Park and Centennial Drive. This process has caused damage and nuisance to the owner of Lot 16. Her mailbox has been knocked down three times, the construction traffic has blocked access to her driveway, and the construction traffic has torn up the cul-de-sac and spread mud over the roadway. The owner of Lot 16 testified that one of the reasons she purchased Lot 16 was precisely because it was located on a cul-de-sac, which is a safe area for her children to play and ride their bikes.

On August 3, 2017, Highland Park filed a complaint against Centennial Park in the Monroe Circuit Court, seeking an injunction to prevent Centennial Park from using Lot 15 as a public right-of-way or construction road. The trial court held an evidentiary hearing and ruled in favor of Highland Park, concluding that Centennial Park’s actions have negatively impacted the area around the cul-de-sac and that if Centennial Park is allowed to install a permanent roadway from its development to the cul-de-sac, the traffic from Centennial Park’s development as well as other subdivisions connected to Centennial Park, consisting of approximately two hundred residential lots, will be funneled through the cul-de-sac to connect with Centennial Drive and eventually State Road 46. Centennial Park’s actions will transform the original cul-de-sac into a major direct thoroughfare, thus dramatically altering the nature of the roadway and the neighborhood.

Centennial Park’s construction of an access road across Lot 15 to Centennial Park, its grant of an ingress-egress easement to the Town of Ellettsville, and its intention to construct a reverse “S” curve in the roadway were found to violate the restrictions contained in the plat because these

acts dedicate a portion of Lot 15 to a community purpose. These same acts also violate Covenant G insofar as they constitute an annoyance or nuisance to the neighborhood.

The trial court enjoined Centennial Park from dedicating Lot 15 or any part thereof for a community purpose, including as a public right-of-way or thoroughfare connecting Highland Park and Centennial Park. It also ordered Centennial Park to cease using the construction road and restore Lot 15 to a use that conforms with the restrictive covenants in the Highland Park plat. Centennial Park appealed.

On Appeal the judgment of the trial court was affirmed.

Daniel Enterprises, L.P., et al. v. City of Portage, Indiana, Indiana Court of Appeals Case No. 18A-PL-1594, December 12, 2018 - MEMORANDUM DECISION - not regarded as precedent

This case from the Porter Superior Court concerns property that the City of Portage condemned in 2017. The owner appealed after the court entered an Order of Condemnation.

On appeal, the owners' basic argument was that a parallel offer must have been made to the current leaseholder. The owner had leased the property which was then apparently sublet to a different entity. However, the Appeals Court noted that the effort to purchase property must be made with the owner or their designated representative, and Indiana Code defines an owner as the persons listed on the tax rolls as responsible for the payment of real estate taxes and the persons in whose name title to real estate is shown in the records of the recorder of the county in which the real estate is located. The judgment of the trial court was affirmed.

Wayne Zollman and Teresa Zollman v. James Albert Costello and Lisa Renee Costello, Indiana Court of Appeals Case No. 18A-PL-1537, December 21, 2018 - MEMORANDUM DECISION - not regarded as precedent

This case has already been before the Court of Appeals. My prior summary follows in italics:

James Albert Costello and Lisa Renee Costello v. Wayne Zollman and Teresa Zollman, Indiana Court of Appeals Case No. 10A05-1503-PL-97, May 31, 2016 - MEMORANDUM DECISION - not regarded as precedent

The Costellos and Zollmans live on neighboring lands in Clark County. Prior to 1957, a fence was constructed between the two properties. In the 1960s, Zollman began leasing the parcel he would eventually purchase in 1978 for hunting and farming. Wayne Zollman believed the fence

was the boundary between the northeastern portion of the Costello property and the southwestern portion of the Zollman property. Zollman built additional fences over time and attached them to the fence in order to contain livestock and repaired the fence from time to time. In 1993, Lisa's parents purchased the Costello real estate and the Costellos often resided on the property. Lisa said she did not know if the fence was the legal boundary line but observed the Zollmans house animals up to it. In 1997, Lisa's parents deeded the property to her. Lisa observed the Zollmans store piles of lime dust near the barn 100 feet east of the fence. The Zollmans again attached additional fencing to enclose animals. The Costellos claimed the Zollmans' animals damaged the fence and entered the Costellos' property and caused the Costellos to repair and replace portions of the fence. Around this time a cluster of thirty-one trees just west of the fence began to die and rot. Lisa had soil samples taken which were tested indicating an increased pH level.

In 2003, Lisa had a boundary survey prepared which revealed that the entire length of the fence was on the Costello property and a strip east of their property which was unowned. At some point, the Township Trustee removed and replaced a portion of the fence which was then assessed against the Costellos' property taxes. In October 2005, the Costellos filed a complaint against Wayne Zollman and several township officials. Wayne Zollman asserted a counterclaim alleging the lawsuit was frivolous and requesting attorney's fees. After mediation, the claims against the township officials were dismissed in consideration of a payment, but the claim against Wayne Zollman was not settled.

In 2009, Lisa had additional soil testing done which indicated the soil pH had returned to normal and on September 10, 2010, hired the prior surveyor to perform a legal survey. On October 13, 2010, the surveyor again adopted his 2003 findings and recorded the survey at the Clark County Surveyor's Office. The survey indicated the Costello boundary was 1.33 feet east of the fence and that an additional 5.88-foot-wide strip east of that (together, the disputed property) was unowned. In May 2011, the Costellos filed a complaint amending the 2005 complaint, and in August 2011, the Costellos filed a third amended complaint for damages and request for declaratory judgment and added Teresa Zollman as a defendant. The complaint requested the Clark Circuit Court adopt the findings of the 2010 survey and declare the Costellos the owners of the disputed property, award damages to the Costellos for common law trespass, and award treble damages and attorney's fees.

After discovery, a bench trial was held in August 2014. Prior to trial, the Zollmans made a motion for specific findings of fact and conclusions, which were granted. Also prior to trial, Lisa Costello removed the fence. On October 28, 2014, the court held that the Zollmans held title to the disputed property, the Costellos were not entitled to damages, and the Zollmans were entitled to a personal judgment against the Costellos in the amount of \$1,950.00 for damages suffered by the removal of the fence. The trial court adopted the Zollmans' proposed findings verbatim. This appeal followed.

The Costellos contended the trial court erred in concluding the Zollmans had proved adverse possession in 1988. The Court of Appeals notes why the requirements of *Fraley v. Minger* were satisfied in this case for the disputed property although title to the actual fence was not determined. The Court of Appeals affirmed that the Zollmans acquired title of the disputed property by adverse possession, but since they did not gain title to the fence, their claim of trespass due to removal of the fence and damages for removal of the fence related to trespass fail. The Costellos also claimed that the trial court erred in finding that the Zollmans did not commit common law or criminal trespass by allowing lime to flow onto their property where the trees died. The denial of the Costellos' claim of trespass by lime flow-

ing onto their property was reversed and remanded back to the trial court with instructions for further proceedings.

The trial court now found that the Zollmans caused the loss of the Costellos' trees appropriately valued at \$41,543 and awarded that amount to the Costellos. The Zollmans appealed.

The Appeals Court now finds that trespass had occurred as there was a direct causal link between the Zollmans' conduct in storing lime uphill from the trees and the intrusion of that lime into the Costellos' land. The Zollmans also disputed expert testimony from the Costellos' expert, a certified arborist, about the cause of the trees' death as well as complained that individual values were not calculated even though there were individual values in the arborist's report submitted into evidence at trial. The judgment of the trial court was affirmed.

Bryan F. Catlin, PS has been registered as a Land Surveyor in Indiana since 1991. He holds B.S. Land Surveying Engineering and M.S. Engineering (Geodesy) degrees from Purdue University.



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IT'S NOT THAT SIMPLE

Todd Bauer of ForeSight Consulting, LLC explains the multi-faceted profession of surveying

By Tammy Davis • Photography by Steve Vordeman

Almost everyone has seen a person in high-visibility clothing setting up a tripod at the edge of a property, or noticed the boundary-marking wooden stakes that identify its edges. Although that's all many people know about surveying, the profession encompasses much more than just, as some people say, 'finding the corners.'

Todd Bauer, President of ForeSight Consulting, LLC, explains it this way: "It's a valuable service, and it's a pretty diverse field. From the traditional boundary survey to contours and elevations for site development to underwater or underground surveying, there are many different areas of specialty. And there's so much that goes on behind the scenes that most people don't even realize."

That behind-the-scenes work includes activities such as research into existing records, analysis of data, making professional, site-relevant judgments, and knowledge of legal precedent. Even if a survey has been previously performed on a site, many elements can change. Over time, landmarks may move or disappear, weather or development may alter the contours of the earth, coordinate systems may differ, and measuring technology may improve. In the current GPS-based system, factors such as satellite position, tree cover, or even power line interference can affect a measurement on any given day.

"Any survey can be complicated," says Bauer. "It's a matter of what you're dealing with."

A common confounding factor, even on what may seem like a straightforward survey, is the historical data associated with the property. Plat documents used for prior surveys may be extremely old and inaccurate or boundary landmarks may no longer exist. The boundaries previously recorded for one property may differ from the boundaries recorded on an adjacent property. The possibilities for conflict are vast. It therefore falls on the shoulders of the surveyor to document the irregularities and render a professional opinion on the property in question.

"When you're surveying something and come up against an irregularity, you have to go layers and layers back,"

explains Bauer. "The challenge sometimes is the tenacity to keep digging. It's easy to give up. It's kind of like being a history detective at times."

But does such precise measurement really matter in the grand scheme of things? Of course it does, says Bauer – and not just because ForeSight Consulting offers surveying services. Contours and elevations, a prevalent factor in construction surveys, can affect building placement, utilities, grading, and drainage, for example. Boundary lines affect land development and placement, and an inaccurate measurement can kill a project.



Aaron Bender, surveying technician, sets up the and land development instrument to begin a new survey project.

Bauer cites a specific example where construction had begun on a motel along I-69 in Grant County. After the building was partially erected, work ceased when it was discovered that boundary lines had been improperly designated. Unable to effectively resolve the conflict, the structure was eventually demolished

before it was ever completed.

Cases like this underscore the importance of finding the right firm, whose quality of work stands for itself.

"Surveying is a profession, and it's not easy" says Bauer. "It requires a certain level of education, experience, and examination. You want to make sure you hire a qualified person."

Bauer brings a host of qualifications to the table. In addition to being a registered professional engineer in twelve states and a registered professional land surveyor in Indiana and Kentucky, Bauer serves as president of the Indiana Society of Professional Land Surveyors. His company, ForeSight Consulting, is also a member of the American Land Title Association, the Indiana Land Title Association, the Indiana Society of Professional Land Surveyors, the Indiana Society of Professional Engineers, and the American Society of Civil Engineers. Bauer also brings more than twenty-five years of professional experience.

ForeSight Consulting offers civil engineering and construction services, specializing in the development of land projects from inspiration to completion. From civil engineering to land planning, the success of all of ForeSight's projects

rests on the survey.

“The survey is often the beginning and ending of every project,” says Bauer.

An initial survey, he explains, is critical to the development of the land, as it may indicate boundaries, right-of-way, subsurfaces, and mapping. The information it offers affects how and where the property is developed. The final survey, performed once a project is complete, is filed with the county recorder and serves as official legal documentation of a property’s characteristics.

Although many people have only a superficial understanding of surveying and all it entails, its effects touch every property owner.

“Everything we do, and every project we are involved with, directly impacts our community and the communities in which we work,” says Bauer.

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HARD-LEARNED LESSONS IN DRONE PHOTOGRAMMETRY

By Logan Campbell and Daniel Katz, Aerotas

As more land surveyors use drones as part of their daily work, they are finding themselves having to learn the ropes of photogrammetry. Having done data processing for thousands of drone survey projects for our customers, we have learned the hard way why photogrammetry is a PhD level science. We have banged our heads against every wall that there is and learned some essential lessons that we now apply to every project we do for our customers. We have explored which parts of the photogrammetry process can be automated and tested the fully-automated tools on the market. Ultimately we determined that having a qualified human involved in absolutely every project is essential to ensure we produce consistent high-quality deliverables.

In order to make sure our team has the chops they need, we rely on the American Society of Photogrammetry and Remote Sensing (ASPRS) as the only nationwide organization that provides certification for photogrammetry.

Issues are common in drone photogrammetry projects — nearly half of the projects we process for customers have some sort of issue. Ultimately we have found that having a qualified photogrammetrist involved in every drone survey is necessary to answer three critical, and common, questions:

1. Did a problem happen?
2. What caused the problem?
3. How can the problem be fixed, or avoided next time?

Did a problem happen?

The most critical and most often overlooked question that needs to be asked of every drone project is, “did something go wrong?” The challenge is that unless the photogrammetrist knows what to look for, it can be easy to miss that something went wrong.

The first job of the drone photogrammetrist is to know how to check whether something went wrong. This is also the biggest limitation of purely automated data processing services -- many issues that can seriously compromise the accuracy of a project would not be caught by automated QA methods. This can lead to the worst-case scenario of passing on a final survey to a client without even realizing that there is a problem in the project.

We regularly see issues that automated services would not catch. One example is insufficient distribution of aerial ground control targets. If one area of a project does not have enough control, it can wind up with much higher error than other areas. If this inconsistent error is not managed properly in the processing, it can lead to that nightmare scenario of delivering an inaccurate final survey.

Another example can come from the types of cameras used for drone surveying. Because they are not highly-calibrated (and expensive) metric cameras, there is a higher frequency of issues like inexplicably blurry or unfocused individual photos or slight changes in camera calibrations between drone models or jobs. These sorts of error sources are invisible to the naked eye and to automated “error reports,” but can contribute to inconsistent accuracy levels on a project.

What caused the problem?

Knowing is only half the battle. Even if a problem is detected, the reason is often not obvious. But before a problem can be fixed, or a lesson learned, it must be diagnosed. Speaking from our experience, it takes a lot of headaches before a photogrammetrist is experienced enough to know how to diagnose even the most common problems.

One example of a hard-learned lesson is how certain features on a project site — such as a stream bisecting a property — can cause a project to process into separate “blocks,” with the software essentially treating it as separate, disconnected sites. This means the entire site cannot tie together with consistent accuracy at all points.

Another notorious source of headache-inducing error is an aerial ground control target moving partway through a flight. We have even had a target removed by an over-eager public servant who assumed it was a piece of trash. More often, however, a passerby slightly shifts a target’s location, introducing an immediate tenth or two of error into the model. Also common are errors in the locating of the target due to GPS errors or malfunctioning equipment — our team even recently identified that a client’s brand new rover was malfunctioning.

How can the problem be fixed, or avoided next time?

Identifying and diagnosing problems is critical, but ultimately they need to be fixed when they happen and avoided whenever possible. On many of the projects our team processes, they need to take manual steps to resolve or mitigate issues. In the example of a project processing into multiple separate “blocks” due to a stream bisecting the property, an experienced photogrammetrist can often manually tie the blocks together using photos and data that the automated software had overlooked or discarded.

Unfortunately, there will always be some issues that can’t be fixed in the data processing. In these cases, an experience technician can help direct the surveyor for exactly what supplemental information needs to be collected by re-flying or on the ground. Often it is not as black-or-white

as needing to throw away an entire project — a trained eye can identify what data can be salvaged. Often the photogrammetrist can basically pull specific spot-elevations or locations from the drone data, and potentially even use this to create an interpolated surface.

The ultimate goal with a drone program is be able to avoid as many of these pitfalls as possible, in order to get the maximum efficiency benefits of the drone. This happens when the loop between field data collection and office data processing is closed, basically connecting the surveyor operating the drone in the field with the photogrammetrist in the office. In our team, this is the role of the “Flight Operations” group, who proactively guide our clients on how to sidestep pitfalls through the drone data collection. This way by the time the drone data reaches our photogrammetrists’ desks, it is of the best quality possible and we can create the highest accuracy deliverable possible.

For surveyors to benefit from drone technology, they need to know that the surveys they’re creating from the drone data are as accurate and consistent as possible. Often the

most challenging part of ensuring this is to even identify that a problem may have occurred — something that an automated data processing service or novice technician would easily miss.

Once a problem has been identified, locating the source, resolving or mitigating it, and then coaching the surveyor doing the drone data collection all require considerable expertise. In our experience, the only way to ensure the level of accuracy and consistency surveyors require is to have an ASPRS Certified Mapping Scientist or Technologist involved, hands-on, managing each and every project.

Logan Campbell and Daniel Katz are co-founders of Aerotas, where they provide drone photogrammetry and linework drafting solutions that enable surveyors to reduce project time on topos, ALTAs, and more by 90% in the field and office. Learn more at www.aerotas.com.



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COMPLETED CAREERS: ROBERT BRUCE BIGELOW

MERRILLVILLE, IN - Robert Bruce Bigelow, age 79, of Merrillville, passed away on Sunday, April 14, 2019 at VNA Hospice Center in Valparaiso, IN.



Robert is survived by his wife: Judy; son: David (Pam) Bigelow of Wheeling, IL; daughter: Jennifer Webber of Syracuse, IN; sister: Margaret (Larry) Beeman of Morehead, KY; brother: James Craig (Carol) Bigelow of Desoto, TX; several grandchildren, nieces, nephews and cousins.

Robert was preceded in death by his parents: Lawrence and Ruth Bigelow.

Robert graduated from Horace Mann High School and Purdue University. He worked as a land surveyor and in construction supervision. Robert is a past president of the Indiana Society of Professional Land Surveyors. He also served on the Merrillville Plan Commission and Board of Zoning Appeals.

Robert served in the Navy, was active in Boy Scouting for over 55 years, enjoyed singing bass with the Chorus of the Dunes, delivered for Meals on Wheels, and was an active member of New Day Community Church (formerly Merrillville United Methodist). Robert also served his profession as a Past President of the Indiana Society of Professional Land Surveyors (ISPLS) in 1985 and was a Life Member of the Society.

Visitation was held from 4 to 8 p.m. April 17 at Geisen Funeral Home in Crown Point, with a Boy Scout Broken Arrow Ceremony at 7 p.m.

Funeral services were held April 18 at the funeral home, officiated by Pastor Jared Jenette. Interment followed at Calumet Park Cemetery in Merrillville.

In lieu of flowers, donations may be given to the Boy Scouts, Meals on Wheels, VNA Hospice Center or New Day Community Church.

To view or sign Robert's online guestbook, [click here](#).

Obituary originally published by [Geisen Funeral Home](#).

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CENTRAL INDIANA CHAPTER 2019 GOLF OUTING RECAP

By Mike Davis

Eighteen teams and a total of 73 participants took part in the Central Indiana Chapter's Annual Golf Outing on Oct. 4, 2018 at Dye's Walk Country Club in Greenwood. The event raised more than \$2,700 for the CIC Scholarship Fund.

The winning team, representing Topcon Solutions Store, consisted of Dee Baxter, Chad Dodge, Mike Philips and Eric Scotten. Corey Fosdick, from the Beam, Longest and Neff team, won the Longest Drive award. Steve Roeschelin, of 7NT Engineering, topped the Closest to the Pin competition.

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- Seiler Instrument
- The Underground Detective
- Topcon Solutions Store
- United Consulting
- USI Consultants
- VS Engineering
- Weihe Engineers

Chapter volunteers for the golf outing were Dee Baxter, John Campbell and Derek Fuller.

The 2019 CIC Golf Outing is scheduled to return to Dye's Walk on Thursday, Oct. 3.



Topcon Solutions Store had the winning team at the Central Indiana Chapter Annual Golf Outing, held Oct. 4 at Dye's Walk Country Club in Greenwood. Team members included (from left) Chad Dodge, Mike Philips and Dee Baxter — as well as Eric Scotten, who is not shown. (Photos by Mike Davis)



Corey Fosdick (left), of the Beam, Longest and Neff team, won the Longest Drive competition at the Central Indiana Chapter Annual Golf Outing. Also shown is Steve Roeschelin, of 7NT Engineering, who won the Closest to the Pin event.

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