

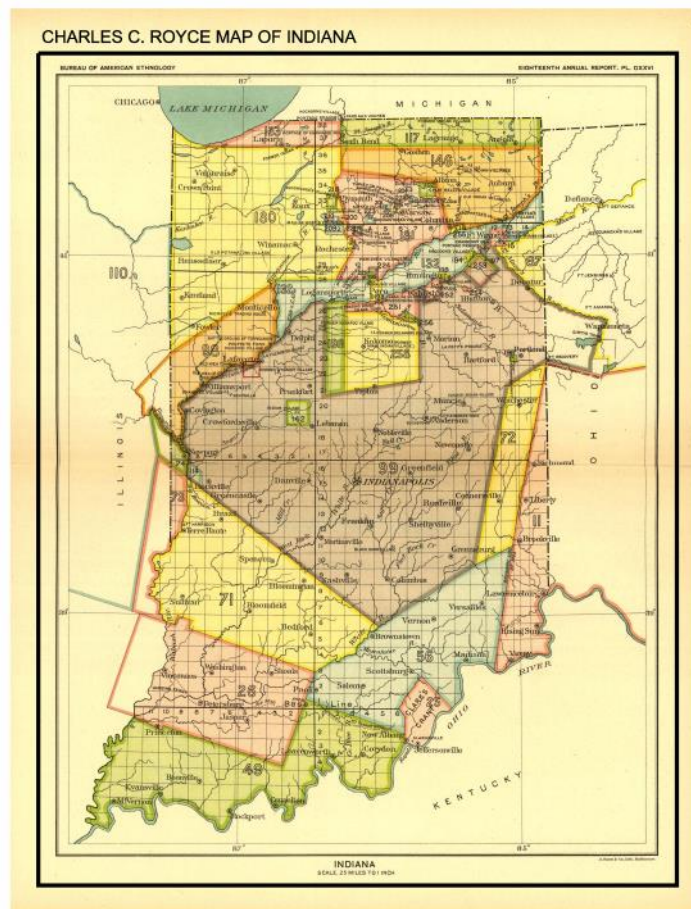
HOOSIER SURVEYOR

QUARTERLY PUBLICATION OF THE INDIANA SOCIETY OF PROFESSIONAL LAND SURVEYORS, INC.

AFFILIATED WITH THE NATIONAL SOCIETY OF PROFESSIONAL SURVEYORS, INC.

VOLUME 43 • NUMBER 2 • FALL 2016

ISPLS, INC.



Surveying Indiana—Treaties and Surveys at the Time of Statehood

The figure above shows what ultimately happened in the State of Indiana with respect to treaty boundaries and the survey of the public lands. This map by Charles C. Royce, created for the Bureau of American Ethnology, shows the limits of the native treaty boundaries along with the six-mile township grid of the Public Land Survey System. Most lines shown on this map originated between 1795 and 1840, approximately twenty years each side of Indiana statehood.

Read more on pages 18-22

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HOOSIER SURVEYOR

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EDITOR'S NOTES

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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Legislative Update

By Heather Willey, Partner at Barnes & Thornburg, LLP



Barnes & Thornburg LLP is pleased to represent the Indiana Society of Professional Land Surveyors (ISPLS). With the election fading into our memory, we are faced with a new administration and new opportunities. The new Governor will take office on January 9th and announce his priorities in the State of State Address in mid-January.

The start of the 2017 Indiana Legislative Session is also rapidly approaching. Following the November 8th election, legislators returned to the Statehouse for Organization Day on Tuesday November 22. During Organization Day, new legislators are sworn in and policy committees are announced. The 2017 session will reconvene on Monday January 2, 2017.

The 2017 session is a long session (budget session). During the session, the legislature will formally outline spending priorities for the state. Road funding will continue to be a top priority and will likely be addressed in the budget or through separate legislation. In 2016, the legislature provided local government with more options to access local reserves and tools to raise additional revenue to address infrastructure needs. It was expressed that this was likely only the beginning and nearly everyone agreed that roads and infrastructure would have to be further addressed during the next budget session. The legislature continued the conversations over the summer interim through the Funding Indiana's Roads for a Stronger and Safer Tomorrow Task Force (FIRSST Task Force). The Task Force is set to make final recommendations to the Legislative Council this fall.

Other items we will continue to monitor include any efforts to expand the power of the Indiana Professional Licensing Agency (IPLA) to increase continuing education and reporting. We will also be monitoring introduced legislation as it is introduced in early January.

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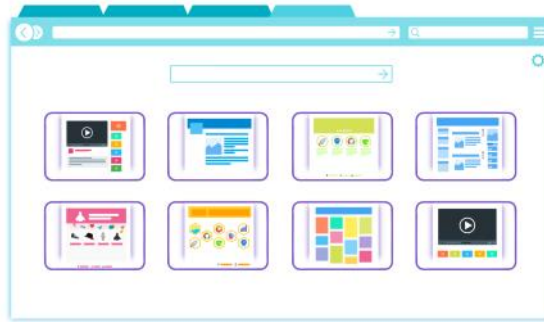
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7 Things You Should Never Do Online

By Kim Komando



We all have bad habits, like biting our nails or drinking straight from the milk carton. While they're bad form, they won't steal your life savings. They won't target your children.

But I cringe when people confess their hazardous digital activities and unacceptable digital etiquette. It's time to quit the bad behavior. Here are seven things you should never do online.

1. Don't Be Gullible

It doesn't take much effort to create a convincing hoax. With the right phrasing and a dab of digital wizardry, you could convince millions of people that a celebrity has committed suicide, or that drilling a hole in your iPhone 7 will reveal a hidden headphone jack. (It won't by the way, but [here's the video that has over 15 million views and fooled some into destroying their iPhones.](#)) (Note: Links may also be found in the online article, which is cited at the bottom of page 7.)

There's a hoax that claims Facebook's privacy policy has changed, that all your pictures, posts and messages will now become public, and that people should post a statement that they do not give Facebook permission to share their private content. This particular post, like many others, cites a news source along with mumbo jumbo legal statutes.

It's hard to tell what's real and what isn't, but if you hear something shocking, run a quick internet search before you believe it. You may save yourself a lot of embarrassment, and the pranksters will have less reason to fool people.

2. Never Skip Setting up 2FA

Don't let the fancy name "two-factor authentication" throw you. It just means that to log in to your account, you need two ways to prove you are who you say you are. It's like the bank or DMV asking for two forms of ID.

Most major services and companies, including Amazon, Google, Facebook, Microsoft and Apple, offer two-factor authentication. It's essential to set it up, because it prevents people from accessing your account if your password is compromised. Some sites ask for your cellphone number, so they can text supplemental access codes to you if a password reset is enacted. You can also get alerts every time your account is accessed from an unfamiliar browser or device.

I have the steps necessary to set up 2FA on my site. It takes just a few minutes, so do it now, while you're thinking about it. [Click here to protect yourself from hackers, scammers and snoops.](#)

3. Never Use the Same Password for Multiple Sites

Passwords used to be so easy. Your pet bunny was named "Pinky," so that became your password. Nowadays, passwords look more like JaYW1x%BuUnZ#. Even if you could remember this gobbledygook, do you really want to dream up more than one password that looks like this?

Security is vital these days, and complex passwords are the way to go. But there is a simple way to remember good passwords that are also unique to each site. [Click here to learn why "ilovefreshsashimitunawithalittlesoyandwasabi" is a great password.](#) Trust me: Passwords are annoying only until someone commandeers your account. Using the same password is a mistake you only have to make once.

(Continued on page 7)

4. Don't Sync Your Social Media Accounts

It's difficult keeping up with all your social media accounts. Services like Buffer, Hootsuite, and SproutSocial help you manage your social presence across several platforms from one dashboard. Unfortunately, some people make the mistake of scheduling the same message across all their profiles. Remember, tweets and Facebook posts are very different things, as are Instagram and Google+.

Social media is an art. It's a little more time-consuming to tailor your announcements to each type of social media, but it's like the old carpenter's motto: measure twice, cut once.

5. Don't Share Too Much Information About Your Kids

Sharing a few cute photos is fine, but posting too much private information can be very dangerous. I even warn the parents in my family: Suppose your 8-year-old daughter is at soccer practice, and a stranger approaches and says, "Hi, Susie. I work with your father, John, at the dentist's office. He just had an accident in his blue 2014 Honda Accord and he asked me to drive you to him at St. Vincent's Hospital."

Today, it's easier than ever for predators to find your child's name and your professional and personal data. Aggressive predators might even track down schedules for sporting events and after-school clubs. Don't give them a chance to sound credible.

6. Don't Use Public Wi-Fi Without Giving It Much Thought

Most people feel very comfortable walking into a hip urban café and logging onto the local Wi-Fi. But is it really the local Wi-Fi? Lots of people log on to systems with names like "CoffeeShop" or "ILoveFood" and have no idea that they belong to data-hungry hackers.

These hackers set up their own fake public Wi-Fi with a misleading name. Upon logging in, the victim's keystrokes are recorded and stolen, making it easy for the hackers to obtain personal information. Hackers will also send malware disguised as updates to a victim's computer. Once the malware is installed, the hackers gain full control of the computer without the victim's *knowledge*.

That's why you want to use a virtual private network, or VPN. A VPN service lets you create an encrypted connection with one of its servers, and you use that server to use the internet. The connection is encrypted through the server, so the VPN can't see your traffic either. It's a bit more complicated, but that's the result. [Click here to learn more about VPNs and get links to free programs on my site.](#)

7. Never get into arguments on social media

We have all stumbled into a meme that makes us angry. Or someone sends us a forwarded message that sounds totally misinformed. Or some troll posts a series of vicious comments. My advice: Do not engage.

There's nothing tackier than a social media argument. Even well-intended comments can sound snarky and mean-spirited. Friendships often fall apart after sparring on Facebook or Twitter. If you need to sort out your differences, it's best to do this in person or over the phone. Most social media arguments end badly.

Bonus: Don't be an internet-trained MD

Medical diagnosis sites can be very handy for basic info, but for most physicians, they are the bane of their existence. Patients storm into waiting rooms, claiming to have dengue fever and Zika virus.

Hypochondria and the internet are a very bad mix. Believe me, online medical advice isn't the second opinion you're seeking. Looking for other ways to behave better online? Be sure to listen or download my podcasts, or [click here to find it on your local radio station](#). You can listen to the [Kim Komando Show](#) on your phone, tablet or computer. From buying advice to digital life issues, [click here for my free podcasts](#).

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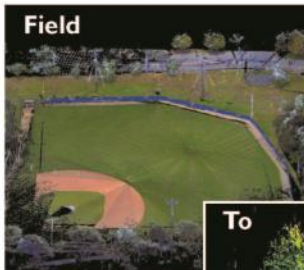
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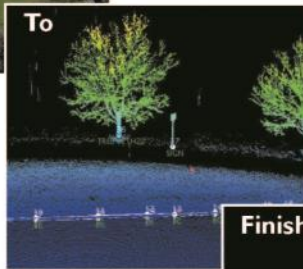
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Are Your Employees Entering Confined Spaces?

By Ronald E. Koons

I was recently on a large construction project and encountered a surveying crew. I was doing some work with Confined Spaces and asked them if they ever entered manholes, lift stations, etc. They responded their companies had a policy that they were not to enter them at any time. Many companies have a policy that employees are not to enter any Confined Spaces. Then jobs are given to field crews that almost beg for someone to enter. If your employees are entering Confined Spaces then you have not only a *liability*, but a *responsibility* to give them the requisite knowledge to perform their job safely. We probably need to start by covering the basics for defining Confined Spaces (CS) and Permit Required Confined Spaces (PRCS).

A Confined Space is defined as:

- An area which has adequate size and configuration for employee entry.
- An area that has limited means of access or egress.
- An area which is not designed for continuous employee occupancy.

A Permit Required Confined Space:

- Must meet the criteria for a Confined Space.
- Must have the potential for: Hazardous Atmospheric Conditions (Toxic, Flammable, or Asphyxiating), or Engulfment, or Hazardous Configuration, or any other recognizable hazard.

The obvious normal PRCS's that a surveyor may come across would include both sanitary and storm manholes, vaults, lift stations, pits, inlets, and other underground structures. No one seems to question that if a worker climbs down into a 20' deep manhole that they have made a Confined Space entry. The first question that arises is if it is a *Permit Required Confined Space*. As you can see by definition there has to be some hazards associated with the entry for it to be considered a PRCS. However, you can't rule out any possibility when planning the entry. Could there be a lack of oxygen? Could there be Carbon Monoxide? If a field vehicle is left running and a storm sewer inlet is close there could be a direct path for the CO to enter and overcome an entrant. In an active system we never know what a business or even homeowner might put into the sanitary or storm system, If that flow hits just when someone is in a sewer there could be an instant disaster if preparations for rescue haven't been made in advance.

Let's try now to clear up the original question about when the entry actually takes place. The generally accepted definition at OSHA is that entry takes place "when any portion of your body breaks the plane of the confined space". That could be a finger, your foot, and ear, heck even your nose. In a manhole the plane of entry is generally accepted to be the point at which the lid sets into the receiver. So keep in mind that your entire body or even a major portion of your body doesn't have to actually be in the confined space for an entry to occur. Just sticking a flashlight into the space while lying on your stomach is definitely a confined space entry. If there are hazards present, then you will have to make certain your employee is protected. If you are simply opening the manhole lid and observing the condition from above by sticking the flashlight into the space then you will first have to determine if there are any gas hazards. That can be done in most cases by taking gas readings even before the lid is removed by putting the probe into a vent hole. If no vent holes are present then you may have to move the lid just a small amount to get the probe into the area for readings. At any time that an employee breaks the plane of the Confined Space you must take all precautions just like you would if you *knew* there was a hazard until the point you can prove that there *isn't* a hazard.

So now we know that breaking the plane of a Confined Space with any portion of our body is when entry occurs. Or is it? Several years ago a worker was checking on the level of a raw sewage tank. There was evidently something wrong with the level indicator. A manhole lid was removed and the worker simple bent down to look into the tank. *No entry was planned at that time!* What the worker didn't know was that the vent for the tank had been blocked. When the lid was removed vast amounts of gas came out of the tank. This caused the worker to pass out and fall into the tank. The cause of death was from drowning in the raw sewage. OSHA cited the company for Confined Space violations. So in this case OSHA determined that if the Confined Space can harm you on the outside the Confined Space regulations still apply!

(Continued on page 10)

(Continued from page 9)

Making all of this more confusing is that OSHA never had a Confined Space Standard in the Construction Regulations until just recently. While the basic regulations are the same as General Industry, there are some construction specific differences. These include continuous monitoring for gases, and many other dangers such as increased flow or hazardous discharges. A Competent Person must evaluate the site to identify any confined spaces and make certain everyone has been notified. A major item is that if you are relying on 911 emergency services for rescue you must notify them of your entries so they can let you know when they will not be available. I am still not certain how that will work.

So how do we protect our employees even if an entry is not planned? I always recommend that gas readings be taken even if you are just opening the Confined Space and don't really intend for a human to enter. That will let you know up front if there are any potential hazardous gases that may cause a problem. By the way, has entry occurred when you use a pick to pull up the manhole lid?

...and the crew I spoke with up front? They finally admitted they enter confined spaces probably 1-2 times per month because they are given work that required they enter.

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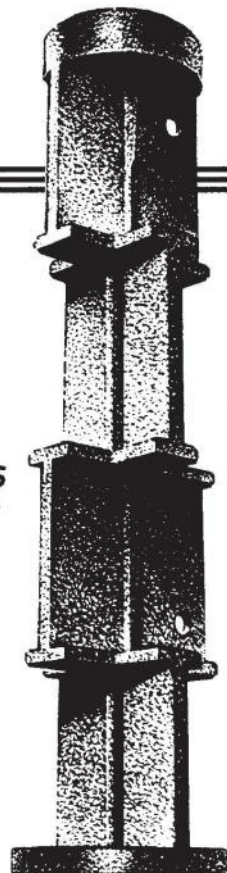
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Robert Eugene Campbell



Robert Eugene Campbell, 93, of Louisville, passed away Tuesday, Sept. 27.

Robert was a Navy World War II veteran, a retired lieutenant commander in the U.S. Naval Reserve and member of the Seabees. He graduated from Rose-Hulman Institute of Technology and was a civil engineer and land surveyor. He was a former Jefferson County Surveyor and member of the Kentucky Association of Professional Surveyors, registered in Indiana and Kentucky as a Professional Land Surveyor. Robert also was a member of Theta Xi Fraternity, American Society of Civil Engineers and Meadowview Presbyterian Church, where he was an usher for many years, an elder, a deacon and taught Sunday school.

He was preceded in death by his parents, Ward and Helen (Taylor) Campbell and brothers, William and Richard Campbell. Robert is survived by his wife of 64 years, Beverly J. (Cottrell) Campbell; son, David Craig Campbell; daughter, Karen Sue Campbell; sister, Martha Teets, and brother, Donald Campbell.

His funeral service was held Wednesday, Oct. 5, at Highlands Funeral Home, 3331 Taylorsville Road, Louisville. Expressions of sympathy may be made to Hosparus of Louisville.

Maciej Zurawski

Maciej Zurawski, a former surveyor in training and member of the Central Indiana Chapter of ISPLS, died Oct. 5 as the result of prolonged health complications. He was 47. Maciej had been paralyzed since 2009 after being shot in the back when burglars broke into his home on the east side of Indianapolis.

He is survived by his mother, Elizabeth, and sister, Agatha. He was preceded in death by his father, Philip. A funeral Mass was held following a visitation Oct. 21 at St. Lawrence Catholic Church, Indianapolis. Interment was in Our Lady of Peace Cemetery, Indianapolis.

Maciej worked in positions ranging from instrument operator to right-of-way engineer for Banning Engineering, United Consulting Engineers and HNTB. When he was injured he was four months shy of having the four years of experience needed to take the Land Surveyors exam. He graduated from Brebeuf Jesuit Preparatory School in 1987 and later received a Bachelor of Science degree in Construction Technology from the Purdue School of Engineering and Technology at Indiana University-Purdue University Indianapolis.

As a youth he was an Eagle Scout in Troop 9, sponsored by Irvington United Methodist Church, Indianapolis, and later became a counselor. In 2003 he proposed that the troop create a Year Round Camper Award to recognize Scouts who participated fully — including being present ahead of time to load camping gear and then staying afterward to help unload it — at all of the troop's yearly activities. The award continues to be presented.

Maciej also was one of the ISPLS volunteers in April 2008 who dug holes, poured concrete and placed bronze markers at corner positions to create a permanent Boy Scout Surveying Merit Badge course at Camp Belzer in Lawrence. He also assisted at a workshop a month later when the first six Scouts from the Crossroads of America Council ran traverses on the course to earn the merit badge.



Maciej Zurawski assisted Chris Davidson of Boy Scout Troop 910 in May 2008 as Chris plumbed the rod with a bipod on the new Surveying Merit Badge course at Camp Belzer. Six Scouts earned the merit badge that day with assistance from Maciej and six other ISPLS members. (Photo by Jason Coyle)

IPLS Foundation Grants Scholarships to Two Purdue University-Calumet Students

The Indiana Professional Land Surveyors Foundation, Inc. (IPLSF) awarded two deserving Purdue University-Calumet students a Scholarship Award in the amount of \$500. The IPLSF Board of Directors selected Brandon Lauster and Karl Rhoads based on their academic achievements and desire to join the surveying profession.



A Madison, IN native, **Brandon Lauster** recalls initially having no idea what being a land surveyor actually entailed. Today, he works for Weihe Engineers and is driven by the unique challenges he encounters daily as a land surveyor. "Sometimes I'm investigating a previous surveyor's work as I attempt to understand their madness. Another day I could be working in the field dealing with the physical and environmental challenges. Other days I'm a mathematician attempting to close boundaries. Everyday has its own unique challenge which is why I am continuing to pursue this career path." Brandon is now taking courses online at Purdue University-Calumet. Once his courses are completed, he will sit for his exams and hopes to receive a professional license in land surveying in the state of Indiana. When he's not studying or working with the cutting-edge drone technology program at Weihe Engineers, Brandon enjoys biking, running, CrossFit and cheering on the Indiana University basketball team.

Karl Rhoads grew up in rural southeastern Montgomery County near the town of New Ross, IN and was introduced to the land surveying profession in high school. "I did a one day job shadow as a sophomore in high school that turned into a summer job later that year. I realized shortly thereafter that I would enjoy a career in the land surveying profession." A Purdue University-Calumet student, Karl enjoys the flexibility of taking courses online while maintaining a 40+ hour work week in the land surveying industry. After completing the necessary courses, he will sit for his exams in order to continue down the path to become a license surveyor. He hopes to one day become a partner in ownership of a professional engineering and surveying firm. In his free time, Karl enjoys canoeing or kayaking down Sugar Creek, golfing and is a Purdue, Colts and Pacers sports fan.



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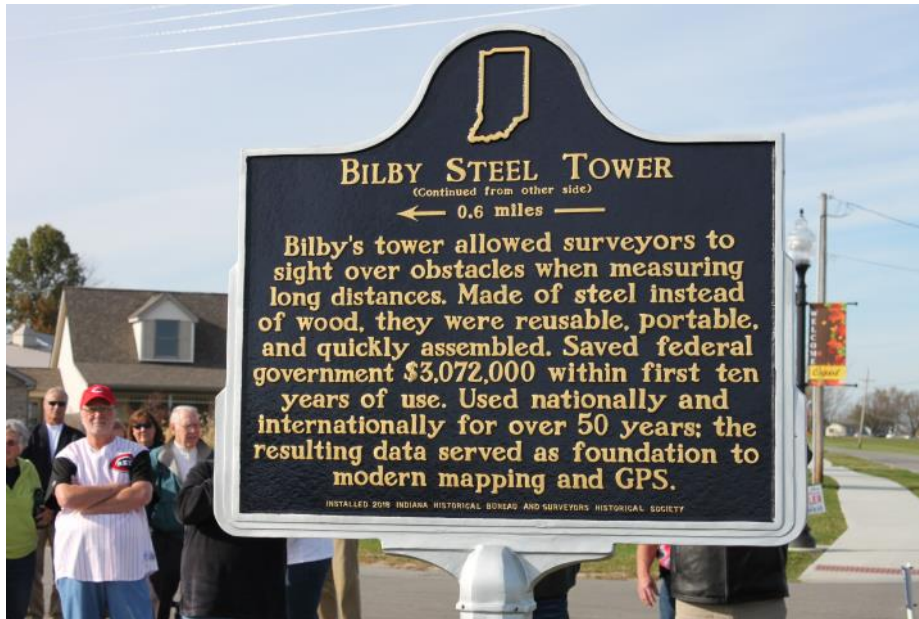
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Bilby Marker Dedication



The new Indiana State Historical Marker commemorating the site of the Jasper Bilby Steel Triangular Tower near Bilby's hometown of Osgood was dedicated Nov. 5 on the southwest corner of the intersection of U.S. 421 and West County Road 300 North. This view is looking north, and the text begins as follows on the other side of the marker: "Jasper Sherman Bilby, internationally known surveyor, moved to Ripley County by 1893. Joined U.S. Coast and Geodetic Survey in 1884. He performed geodetic surveys, accounting for the curvature of the earth, for commercial and infrastructure purposes. Invented Bilby Steel Tower, 1926-27; improved efficiency and cost. Herbert Hoover commended Bilby's invention in 1927." (Photo by Janet Wagner)



Members of the Jasper Bilby family – and Ripley County Surveyor Jeff French (at right) – prepare to unveil the new Indiana State Historical Marker commemorating the Bilby Steel Triangulation Tower near Osgood. From left are Janine Stratton, Jeraldine Humphrey and Janine's grandchildren (Libbie, Grace and Greg Stratton), and Jenny Schwipps, Carole Michel and Jenny's grandchildren (Ryan and Evan Schwipps). Janine Stratton is a great-granddaughter of Jasper Bilby; Jeraldine Humphrey is a granddaughter-in-law; and Jenny Schwipps and Carole Michel are great-granddaughters. The youngsters are all great great great grandchildren of Bilby. (Photo by Janet Wagner)



Six years after it was discovered on an island near New Orleans, a 74-foot-tall Bilby Steel Tower for Triangulation was again an attraction in Osgood Walking Trails Park in Ripley County. A reception followed the Nov. 5 unveiling of an Indiana State Historical Marker on U.S. 421, six-tenths of a mile east of the tower, commemorating the tower and Jasper Sherman Bilby, who invented the steel structures in 1926. Casey Pfeiffer, manager of the Historical Marker Program, said Bilby's towers revolutionized the accuracy and efficiency of geodetic mapping. "Today, many rely on maps or GPS navigation to get them from place to place," she said. "Routes are easily plotted and traveled, without regard to those who made this possible. This topic provides us the opportunity to educate the public on the science behind surveying and its impact on transportation, land use, technology and the economy." (Photo by Sue French)

LEGAL SURVEYS

Bryan F. Catlin, PS



Bryan F. Catlin, PS

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.

Brian L. Boyland; Jennifer K. Boyland; Anthony S. Climer; Lisa J. Climer; Sydney A. Climer; Anthony S. Climer and Lisa J. Climer, as parents and next friends of Lydia J. Climer v. Kenneth Hedge, in his capacity as Boone County Surveyor; Boone County Drainage Board; Boone County Board of Commissioners; JP Morgan Chase Bank, N.A.; Specialized Loan Servicing, L.L.C.; and PNC Bank, Indiana Court of Appeals Case No. 06A05-1509-CT-1383, July 15, 2016

Here the Boylands and Climers own two residences along County Road 300 South in Boone County which are at a lower elevation than the road and appear to “sit in a bowl” beside Dickey Ditch, a tributary to Big Walnut Creek. The residences have experienced flooding several times since 2002. In 2005, the Boylands filed a lawsuit against the Boone County defendants which was dismissed. Hedge was notified of a flooding event after the dismissal and persuaded the Drainage Board to obtain an engineering study of the ditch. Christopher B. Burke Engineering, Ltd. prepared a report which included potential measures including replacing existing culverts, eliminating a culvert, increasing the ditch size, removing sediment related to beaver dams, acquiring the properties, and lowering an area effectively functioning as a levee. In 2008, a representative from Burke presented findings to the Drainage Board (three members of which are also County Commissioners). It was explained that replacement of existing culverts could cost more than \$870,000.00 and flooding risk would be reduced but not eliminated. Also reconstruction that resulted in a large bridge classification would require inspection every two years. No vote was taken or “potential measures” adopted. In later years there was some tile repair, brush removal and destruction of beaver dams (with some related sediment removal). The homeowners filed a complaint on October 20, 2011 in the Boone Superior Court which was amended in 2013 following more flooding seeking injunctive relief, and asserting negligence, trespass and inverse condemnation. The Boone County defendants asserted a defense of discretionary function immunity. The two sets of claims went forward on separate tracks. After a bench trial, the court agreed the Boone County defendants were entitled to immunity. On August 19, 2015, the trial court granted summary judgment to the Boone County defendants on the remaining counts against them.

On appeal, the judgment of the trial court with respect to immunity and inverse condemnation was affirmed. There is quite a bit of analysis in the full opinion if you want to learn more about how the court sees these topics.

Darrell Birge and Sandra Birge v. Town of Linden, Indiana, Indiana Court of Appeals Case No. 54A01-1509-PL-1495, July 25, 2016

Here the Montgomery Circuit Court heard a case where the Birges filed a complaint alleging that, among other things, the Town, in an effort to reduce flooding, had improperly used the right-of-way of the Hose Drain. The Hose Drain is a regulated farm drain, and the complaint claims that the Town and the County Drainage Board had conspired to improperly use the right-of-way and statutory powers of the Drainage Board to wrongfully assess payment for the Town storm drain from the owners of agricultural land in the watershed. Apparently the Hose Drain was cut and blocked, and now approximately 13 acres of Birge farm land is chronically wet and bog-like, and their home value and habitability is affected as is a portion of their land in a platted subdivision. The complaint sought an injunction ordering the abatement of the nuisance and asserted a claim for inverse condemnation. “On March 2, 2015, the Town filed a motion to dismiss for failure to state a claim, which the trial court granted.” This appeal followed.

Here the appeals court found that the trial courts conclusion that it was clear on the face of the complaint that discretionary function immunity applies and that the Birges failed to allege facts supporting a claim for civil conspiracy was incorrect. The decision was reversed and remanded for further proceedings.

(Continued on page 17)

On July 19, 1957, Duke's predecessor in interest, Public Services Company of Indiana, obtained an easement five feet on either side of the utility lines on property now owned by Bellwether. Over the years since 1957, the Indiana Utility Regulatory Commission has adopted versions of the National Electrical Safety Code (NESC), most recently the 2002 version. Bellwether wanted to expand a structure on their property and contacted Duke about their plans. Duke responded that Bellwether could not build the planned expansion because the plan did not provide the horizontal strike clearance required by the 2002 NESC (since the type and voltage of the current lines require approximately twenty-three feet of horizontal strike clearance) and that 170 I.A.C. 4-1-26 and the 2002 NESC provided Duke with control over the entire twenty-three-foot strip in and around the easement.

On June 30, 2015 Bellwether filed a Class Action Complaint in the Monroe Circuit Court alleging one count of inverse condemnation. Duke moved to dismiss the claim arguing that it fell outside of the six-year statute of limitations. The trial court agreed with Duke and dismissed the complaint. This appeal followed.

The Court of Appeals weighed whether the incorporation of the NESC by the IURC provided sufficient notice of the regulations Duke cited sufficient to trigger the statute of limitations among several other questions. Two of the appeals panel agreed that it did not, since information about the type of utility lines and voltage were solely in the possession of Duke, so neither 170 I.A.C. 4-1-26 nor the 2002 NESC placed Bellwether on notice that Duke's control over land surrounding the easement had expanded. The trial court's order was reversed and remanded.

A dissenting opinion was filed, noting that in 2015, the Indiana Supreme Court had overturned an appeals court opinion that the statutory definition of synthetic drugs and look-alike substances were void for vagueness. So if an "ordinary Hoosier" can be charged with knowledge and understanding the complex drug statute, Bellwether should be charged with knowledge that there were horizontal strike clearance requirements, what the requirements were, and that they applied to the Bellwether easement.

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.

Surveying Indiana—Treaties and Surveys at the Time of Statehood

By Jim Swift, PS

In December, 1816, Indiana joined the United States of America. Stretching from the banks of the Ohio River to the shores of Lake Michigan, the new state promised settlement, growth and development. With land to farm and towns to build, a new society was ready to spring forward in the western wilderness. The U.S. government anticipated significant, critical revenues from the sale of land to private settlers. Promise and hope abounded as the key players looked to the future in this newly defined state.

But there was a catch. The United States of America did not actually own much of the land defined as being within the State of Indiana. Though officially declared a state, more than half of the area was not owned by the United States. The northern part of the new state, comprising nearly two-thirds of the total territory, was owned and occupied by native inhabitants. The Indians of Indiana.

The young U.S. Government, just past the War of 1812, needed money. Having fought two wars with borrowed funds, the federal government depended on the sale of lands of the public domain as a means to generate revenue. Hence, an early goal of the U.S. Department of the Treasury was the sale of public land to private individuals. To such an end, the government first needed to purchase the land from the natives, which included much negotiation and surveying. Then the land had to be surveyed into a regular system of well-defined parcels which could be sold. This resulted in an enormous land surveying project, executed and funded by the U.S. Government. As we celebrate Indiana's bicentennial and we look back at the situation on the ground in the earliest years of statehood, it seems clear that the matters of establishing treaties with native tribes and surveying the newly available lands were of particular importance to the young state. This article addresses the time of early statehood with specific focus on how the land of Indiana was transformed from native wilderness to a grid full of pioneers.

With respect to Great Britain, France, Spain and other formal governments, the United States of America maintained exclusive rights to the lands of the Northwest Territory. France had ceded claims to Britain in 1763 and Britain, in turn, had ceded them to the United States at the end of the American Revolution. But the lack of claim by other international powers did not mean that the land belonged to the United States. It was clearly understood that the land belonged to the native tribes who occupied it. Treaties had to be signed and ratified in order for the U.S. to take full possession and ownership of the land. Article III of the Northwest Ordinance of 1787 states, "The utmost good faith shall always be observed towards the Indians; their lands and property shall never be taken from them without their consent; and, in their property, rights, and liberty, they shall never be invaded or disturbed, unless in just and lawful wars authorized by Congress; but laws founded in justice and humanity, shall from time to time be made for preventing wrongs being done to them, and for preserving peace and friendship with them..."

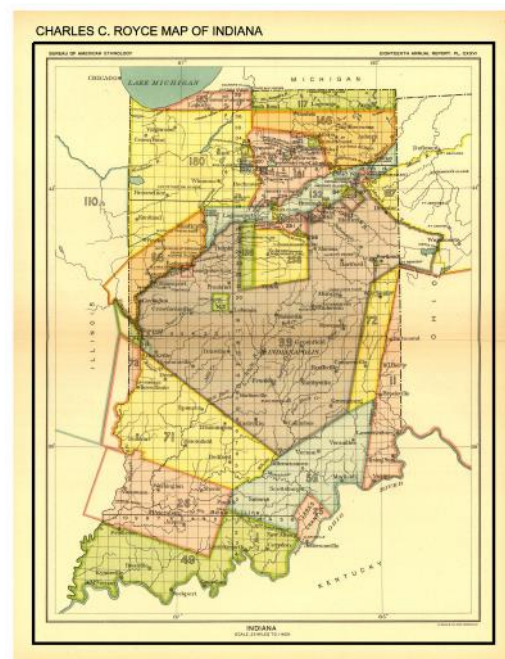


Figure 1 shows what ultimately happened in the State of Indiana with respect to treaty boundaries and the survey of the public lands. This map by Charles C. Royce, created for the Bureau of American Ethnology, shows the limits of the native treaty boundaries along with the six-

FIGURE 1 – CHARLES C. ROYCE MAP OF INDIANA

Figure 1 shows what ultimately happened in the State of Indiana with respect to treaty boundaries and the survey of the public lands. This map by Charles C. Royce, created for the Bureau of American Ethnology, shows the limits of the native treaty boundaries along with the six-

(Continued on page 19)

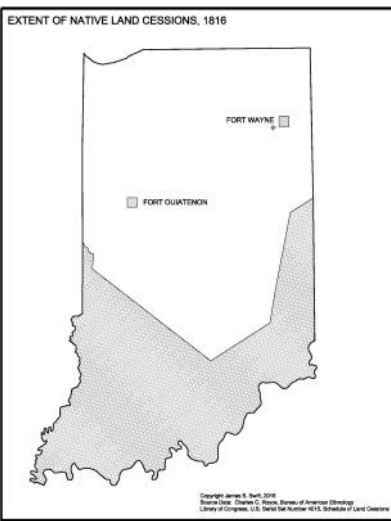
mile township grid of the Public Land Survey System. Most lines shown on this map originated between 1795 and 1840, approximately twenty years each side of Indiana statehood

At the time of statehood, 1816, numerous treaties had already been signed. The southern portion of the state had passed to ownership of the U.S. government and most of that area was surveyed. A significant amount of land had been sold out of the public domain into private ownership.

Figure 2 demonstrates the extent to which treaties were in effect at the time of Statehood in 1816.

The isolated squares around Fort Wayne (previously called Fort Miamis) and Fort Ouiatenon (near Lafayette) represent parcels which had been brought under treaty in 1795. It is noted that the rights to passage on rivers throughout the region, along with the land around the forts at Detroit and Chicago, had also been secured in 1795.

While Figure 2 is distilled to marks on a map, the story behind these marks represents an interesting chapter in the titanic struggle between two societies. The history of ethno-European settlement across lands recently inhabited by Native Americans is



remarkable in myriad ways. It is a story of mass human displacement and migration, the yielding of an ancient way of life and relationship with the land to a new approach. A story of heroism and tragedy, spanning across centuries, it encompassed most of the Western Hemisphere. In all that long history, the settlement of the southern portion of Indiana presents a particularly interesting chapter. In summary, Territorial Governor and eventual U.S. President William Henry Harrison meets the great Shawnee Chief Tecumseh. Harrison is executing the orders of President Thomas Jefferson to secure rights to the land while Tecumseh is determined to resist by attempting to unify all of the natives in opposition to the white men. Numerous native tribes, displaced by previous events, are squeezed together into a territory which is, in turn, being taken from them. Native religious revival by Tecumseh's brother, Tenskwatawa – the Prophet – expands beyond the traditional cultural boundaries of numerous tribes. A pan-Indian revitalization tries to bloom but meets tragedy at the Battle of Tippecanoe. William Henry Harrison, Tecumseh and the Prophet. A remarkable chapter in history, bound to the land treaties of southern Indiana.

FIGURE 2 – EXTENT OF NATIVE LAND CESSIONS, 1816

Harrison and the United States Governments prevailed and ownership of the lands of the southern portion of the Indiana Territory was secured. The next step was to survey the land into a regular grid of parcels which could be sold. Figure 3 demonstrates the grid pattern of the six-mile townships which had been surveyed by the federal government at the time of statehood, 1816. Note, this figure shows only the six-mile townships. The full Public Land Survey System is a much denser grid, with each township subdivided into thirty-six sections of one square mile each. The blank areas on the bottom and left were not surveyed by the standard grid system. Clark's Grant, given to General George Rogers Clark and his soldiers for service in the Revolutionary War, was surveyed under a grid system which predates the Ordinance of 1785. The area around Vincennes was dominated by earlier land grants from the government of France to private individuals and was surveyed accordingly.

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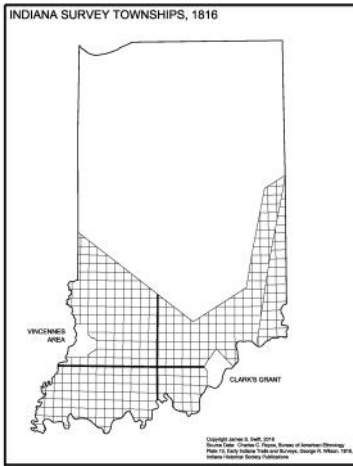


FIGURE 3 – EXTENT OF SURVEYED TOWNSHIPS, 1816

Much as the treaties of southern Indiana represent a remarkable chapter in the human story of America, the grid shown in Figure 3 represents a significant step in the history of surveying the country. The Public Land Survey System was proposed by a committee led by Thomas Jefferson and adopted under the Land Ordinance of 1785. The goal was to create a system by which the lands of the public domain could be defined and sold in an orderly fashion. The system quickly evolved into townships of six miles square to be divided into one-mile square sections. The system began in Ohio where various approaches to the survey were followed. Ohio is both the birthplace of the Public Land Survey System and a curious mix of survey procedures. Indiana is the first state for which a vast north-south area was surveyed by a common, specific set of procedures. Led by Jared Mansfield, Surveyor General of the Northwest Territory, the survey of the southern portion of Indiana is notable for the introduction of several important innovations. A man of mathematics and precision, Mansfield was appointed by President Thomas Jefferson in

1803. He took charge of the survey of public lands as William Henry Harrison was securing title to the lands of southern Indiana. Applying a scientific, mathematical approach to the survey of southern Indiana

and the remainder of Ohio, he brought an order and precision to the federal survey which set a precedent for the execution of the survey of the public lands across America to the west coast. Jared Mansfield served as Surveyor General up to the War of 1812. In 1814 he was appointed Professor of Mathematics and Natural and Experimental Philosophy [Physics] at the fledgling U.S. Military Academy at West Point, which post he held until his retirement.

As the nation celebrated the success of the War of 1812, the Indiana Territory became a state in 1816. Hope and promise abounded for the pioneer leaders. But there was a catch. Though boundaries had been drawn on a map and plans were already being made to establish a state capital in the middle of the state, the center and northern portions of the state were owned by natives. They were certainly not surveyed. Jonathon Jennings, first Governor of Indiana, was aware of this and was keenly interested in securing title to the remainder of the state. Conditions were different after the War of 1812. Tecumseh was dead, his multi-tribal alliance, based on the charisma of the leader, had crumbled. His brother was discredited. The evidence of the subsequent treaties indicates that the Shawnee tribe was no longer considered a viable partner in the treaty negotiations. Tribes which were considered viable included the Miami, the Delaware, the Wea, and the Pottawatomie. Governor Jennings and U.S. federal agents engaged in intense negotiations with the native chiefs, determined to get the land. In October, 1818, several treaties were signed at St. Mary's, Ohio. By this combination of treaties, commonly called the New Purchase, the U.S. Government secured title to the central part of Indiana. Subsequently, the Treaty of Missinninewa, 1826, enabled the purchase of more lands to the north. Figure 4 demonstrates the extent to which the United States had secured land treaties as of the tenth anniversary of Indiana statehood.

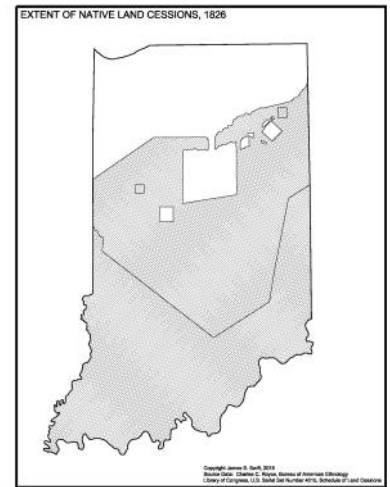


FIGURE 4 – EXTENT OF NATIVE LAND CESSIONS, 1826

With new territory available, the survey of the Public Land Survey System was executed in earnest. The well respected and eminently competent Edward Tiffin took over as Surveyor General of the Northwest Territory. A former governor and senator from Ohio as well as the original Commissioner of the U.S. General Land Office, Tiffin left Washington and returned to his native Ohio to direct the survey of the lands north and west of the Ohio River. He contracted with deputy surveyors who led large survey parties into the wilderness. With compass, chain, and axe, but no promise of security, they went off into the woods to mark the land. Self-sufficient, living on their own for months at a time, with no return to town, and rarely a day for rest, they surveyed up to six miles a day through the wilderness. They set wooden posts every half mile while marking the trees along the section lines

(Continued on page 21)

so the pioneers who followed them could know what they had purchased. One can imagine that in the evenings they carved numbers on posts to be set the next day while eating food which they had hunted on-site. Hundreds of men surveyed thousands of miles. In general, they did an excellent job.

Ten years after statehood, the central part of Indiana was largely surveyed. Figure 5 shows the status of the six-mile township grid as Indiana celebrated its tenth birthday.

Note the consistency of the grid. It appears to cross most previous treaty lines seamlessly. Indeed, it covers some areas which, as shown on Figure 4, were not yet under treaty. This is because Mansfield had established, and Tiffin continued, the practice of surveying the primary township grid through some Indian reservations in order to maintain the regularity of the grid. The reservations were not subdivided into mile by mile sections until the U.S. had purchased title to the land, but the township grid was marked and is therefore shown as surveyed.

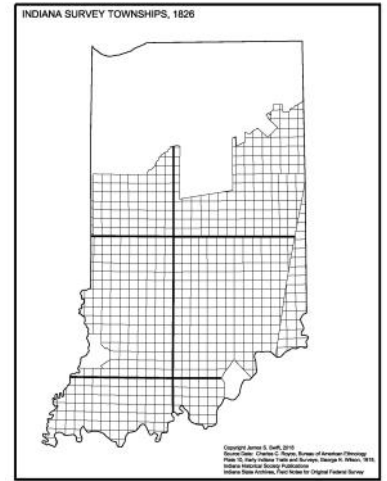


FIGURE 5 – EXTENT OF SURVEYED TOWNSHIPS, 1826

Note also the thick horizontal line through the center of the state where the grid becomes offset. This is Tiffin's Correction Line of 1819. A notable moment in the history of surveying, Tiffin and his deputies were compelled to address the fact that it is impossible to accurately lay a square grid onto the round earth. Meridian lines become closer to each other as they bear north. The first large north-south area in America to be comprehensively surveyed into a regular grid, this became a problem during the survey of Indiana. The six-mile townships were coming out closer to five miles east-west, yet still six miles north-south. In order to account for this convergence of the meridians, Tiffin directed his surveyors to establish a new east-west base line from which to measure fresh six mile squares. This represents perhaps the first significant, purposeful geodetic correction to the PLSS grid. As the survey extended west across the U.S.A., increasingly refined procedures were adopted to account for issues associated with a marking a square grid upon a sphere.

As the State of Indiana passed its tenth birthday, land sales began to climb significantly. Effects of the Financial Panic of 1819, which had slowed land office activity in the earliest years of statehood, were receding. Throngs of settlers began moving into the central part of the state. The pressures on the remaining native inhabitants were intense. As the center of the state was being transformed from forest and prairie to farms and towns, the natives in the northern part of the state were experiencing a significant degradation of their former way of life. Aggressive negotiations by the state and federal agents, with promises of better living to the west, caused the natives to relinquish more land. Through a complicated series of treaties, demonstrated on the Royce map in Figure 1 of this article, the federal government gained title to most of the remainder of Indiana. By the time of Indiana's twentieth birthday, only the Big Miami Reserve in the center of the state and several smaller reserves were left to the natives. Figure 6 demonstrates the extent to which treaties had granted ownership of the land to the federal government by 1836.

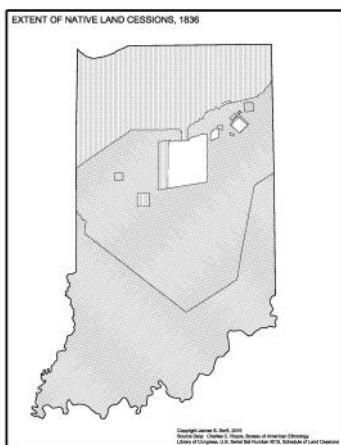


FIGURE 6 – EXTENT OF NATIVE LAND CESSIONS, 1836

(Continued on page 22)

Meanwhile, the surveyors worked apace. As land became available, the surveyors marked it. Two additional correction lines were added as the great grid was extended to the shores of Lake Michigan. By 1836, twenty years after statehood, the township grid was largely complete. Figure 7 shows the extent to which the six-mile townships were surveyed as of 1836.

In 1840, the Miami Tribe of Indians, isolated in the changed landscape, relinquished the “residue of the Big Reserve” and many moved on. Many, but not all. Through strong treaty negotiations, many members of the Miami tribe retained private grants of land and stayed in Indiana. Miami Indians have always remained a notable presence in the state.

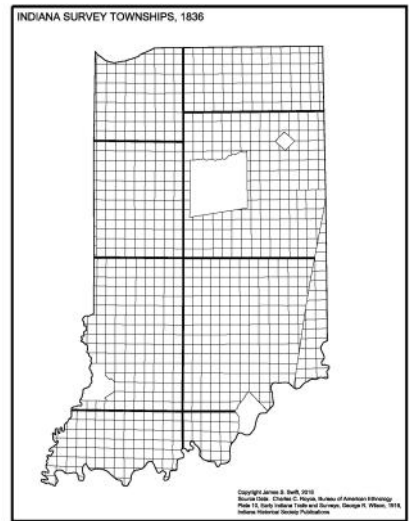
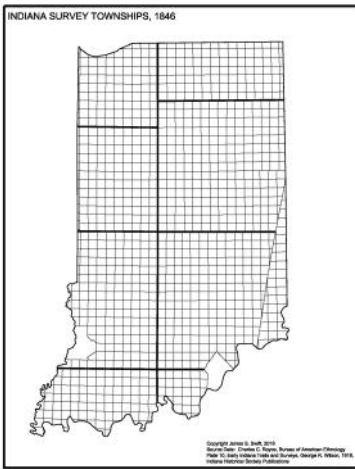


FIGURE 7 – EXTENT OF SURVEYED TOWNSHIPS, 1836



With the Miami Reserve available, the surveyors swiftly accomplished the remainder of their task. The base grid of Indiana was fully surveyed, as shown on Figure 8.

Thousands of miles surveyed, through forest, prairie and swamp. Across creeks, along rivers and around lakes. Posts in the ground, lines marked, the land ready for sale. Indiana had completed its transformation. By Indiana’s thirtieth birthday, the state was well surveyed with roads and towns appearing across the landscape. For better or worse, the native population had generally left and the pioneers were building their new society upon a fully surveyed, pre-marked grid.

FIGURE 8 – EXTENT OF SURVEYED TOWNSHIPS, 1846

Jim Swift is a Professional Surveyor registered in the State of Indiana. His primary professional focus is perpetuating the original grid of the Public Land Survey System in Boone County, Indiana. Jim lives in Crawfordsville, Indiana with his wife, Beth, and their children.



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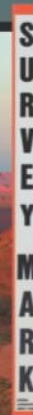
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