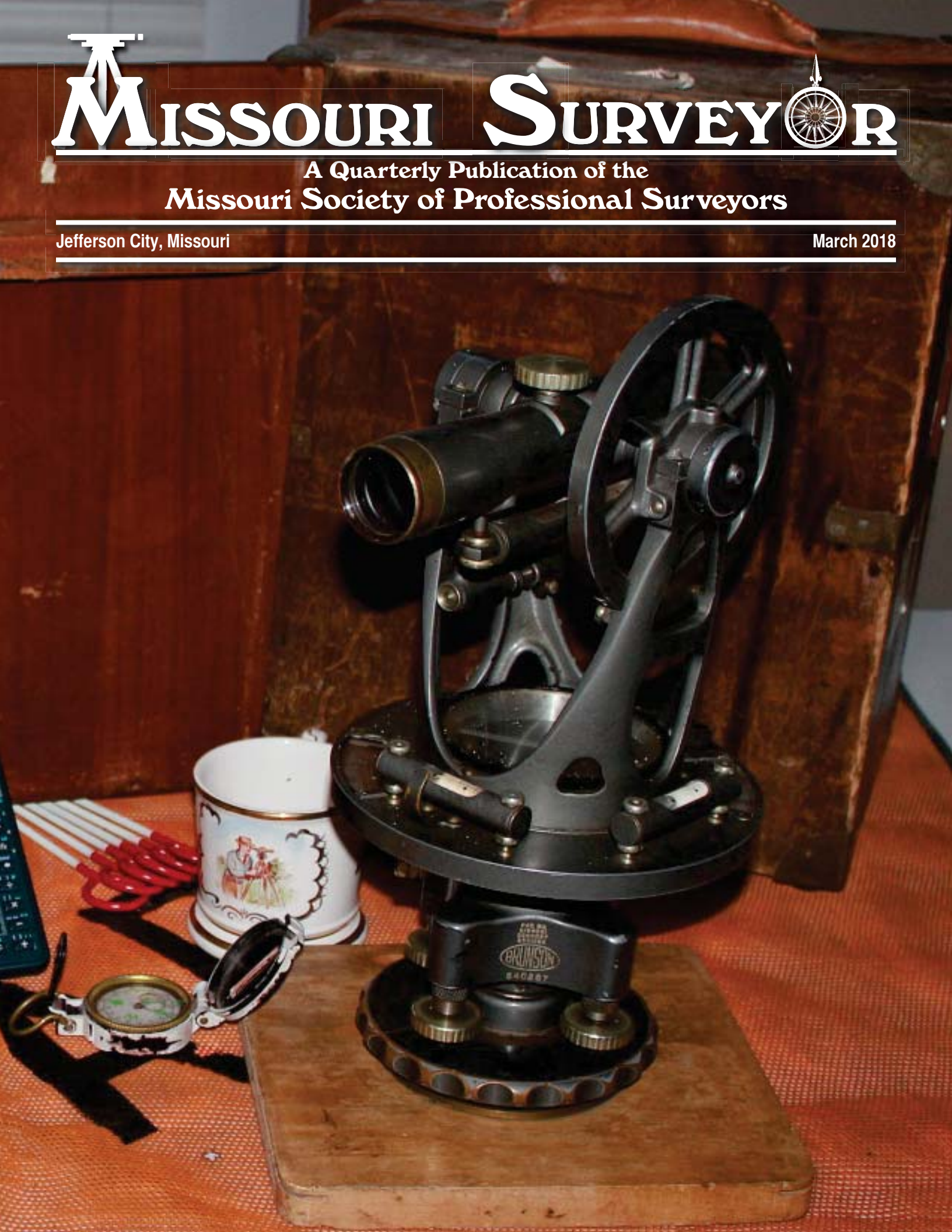
Missouri Surveyor

A Quarterly Publication of the
Missouri Society of Professional Surveyors

Jefferson City, Missouri March 2018



CALENDAR OF EVENTS

2018

May 3-5, 2018
Board Meeting, Golf Tournament and
40th Annual Spring Workshop
Lodge of Four Seasons,
Lake Ozark, MO

July 14, 2018
Board Meeting
MSPS Office,
Jefferson City, MO

August 22-24, 2018
Review Course, Best Western
Capital Inn,
Jefferson City, MO

October 3-6, 2018
61st Annual Meeting and Convention
Tan-Tar-A Resort,
Osage Beach, MO

December 1, 2018
Board Meeting
MSPS Office,
Jefferson City, MO

Cover:
Photo by Margaret Martin

Donald R. Martin, Editor

Notes from the Editor's Desk

Donald R. Martin

Welcome readers to the March 2018 Edition of *Missouri Surveyor*. Our ol' pard Tripod the three legged groundhog celebrated the year's biggest Holiday on February 2nd then dug in for a month (or was it 6 weeks?) of watching winter games. There was the Superbowl, Olympics, Daytona and Mizzou basketball – the little land beaver needs some TV sports detox! Guess the little woodchuck forgot that the best news and entertainment is found in the pages of the MSPS *Newsletter*. So instead of going for the gold, gaining ground on the gridiron, grinding gears and goaltending, let's get going in this gazette! We have…

- *News & Views* from the National Society of Professional Surveyors.
- A surprise surveyor is recognized in passing with *Who Knew*?
- Another slice-of-the-surveying-life from our talented humor writer/surveyor Ray Riggs in *Close Encounters of the Porcine Kind*.
- A feature shared by Point of Beginning Magazine, *Traversing the Law: Rise in Law Suits Against Surveyors* by Jeffery Lucas.
- *Art of Surveying*, a unique and creative bit of plat drafting.
- A treatise on traditional practices, *Reminisce of An Old Surveyor Measuring a Distance by Taping* by Knud E. Hermansen.
- An offering from Dr. Dick Elgin in "*The St. Francis River, One of Missouri's Riparian State Boundaries*".
- Notes from a briefing by the USGS, *3D Elevation Program (3DEP)*.
- Helpful information in *Board of Registration List of College Courses*.
- Photographic evidence of fun and friendship between Rolla area members in *Old Surveyors Have Lunch*.
- A *Governmental Affairs* notice from NSPS.
- Two announcements regarding a national effort with *Helping To Improve the Next Hybrid Geoid Model* by Missouri Geodetic Coordinator Jess Moss and *AAGS /GNSS Data on Bench Marks* from the American Association of Geodetic Surveying.

Fellow readers and members, I want to take this opportunity to send out a plea. Just as this edition illustrates, the best *Missouri Surveyor* content is that which comes from Missouri surveyors. Dick Elgin, Jess Moss and Ray Riggs have each given us gems to learn from, enjoy and reflect on. You can do that too! So please, be a *Missouri Surveyor* contributor! Your thoughts, your ideas, your recollections; the most engaging information we ever publish is that which our own members provide. Keep the *Newsletter* in mind for sharing a piece of your mind. And don't forget, *Be a Magazine Cover Model* and share those photos!

Well, I best break-it-down and bunch-it-up so I can start getting ready for the June Edition …I'll get back with ya' then…

Donald

THE MISSOURI SURVEYOR

Published quarterly by the
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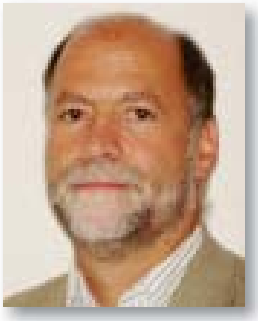
*The **Missouri Surveyor** is published quarterly by the Missouri Society of Professional Surveyors, to inform land surveyors and related professions, government officials, educational institutions, contractors, suppliers and associated businesses and industries about land surveying affairs. Articles or opinions appearing in this publication do not necessarily reflect the viewpoints of MSPS 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. Articles may be reprinted with due credit given.*

President's Message

Gerald Bader, PLS



Good Day and what a *Winter*! I have always said if it's going to be that cold, it should be white outside. I'm not sure about the rest of Missouri, but Ste. Genevieve got very little snow. I believe we may have had more ice then snow this year. Come on *Spring*!

I've always enjoyed watching the Olympics and this year was no disappointment. Even more so, I look forward to the Paralympics and the Special Olympics. I believe they are the true athletes. I had the pleasure to meet and get to know a gentleman by the name of *Josh Pauls* who is on the US Olympic Sled hockey team. If you get the chance, you should check out a game – those athletes are true inspirations.

In December I was honored to swear in the new officers at the *Southwest Chapter Christmas Dinner*. Congrats to President Rick Black, President-Elect Chris Stewart, Vice-President Darrin Carpenter and Secretary/Treasurer John Birner. Thanks to the Chapter for the accommodations, dinner and conversations. I thoroughly enjoyed the evening.

On February 24 the *County Surveyors* met in Rolla to reorganize the association. The meeting was well attended as they too installed new officers; President Lloyd Todd, President-Elect Terris Cates, Vice President Matt Thomas and Secretary – Treasurer Dennis Amsinger. Congratulations to them all! Thanks to the Land Survey Program for hosting the meeting. After the meeting the Land Survey Program had a presentation on the *County Surveyor's CO-OP Program.*

Note: The County Surveyors have the privilege of participating in the County CO-OP program, sponsored by the Land Survey Program and the participating county. The Land Survey Program will contract with the county, and the county in turn contracts with the County Surveyors to re-monument corners to the Public Land Survey System. This program has re-monumented over 10,000 monuments since 1980. This is a WIN-WIN program, especially for the PLSS. Any surveyor can participate in the Land Survey Program's *Private Surveyor's Program*. For more details contact the Land Survey Program. Check it out!

NGS and our State Land Survey Program are looking for a few good surveyors and has asked for more help with the "*GPS on Benchmarks*" campaign. In 2010, many of you collected GPS static on various benchmarks across Missouri. NGS is requesting observations on 165 benchmarks. If you would like to participate, see the page 42 article from Jess Moss, PLS Missouri Geodetic Coordinator, for more details.

I would like to invite everyone to attend the *MSPS Spring Workshop*. Mark your calendar for May 4-5. It will be held at the Lodge of the Four Seasons. See the insert for more information. Thanks again to Dan Govero for his dedication and for providing outstanding programs. Contact Dan If you have an idea for a topic you would like to see presented. The next *MSPS Board Meeting* is May 3rd at the Spring Workshop. If you have a question or comment and would like to address the Board, contact MSPS and get on the agenda. Volunteers are always welcome and appreciated, so join a committee. It is rewarding to get involved, so rewarding you may want to run for office. See you at the Spring Workshop.

In closing, do not forget to pause and reflect "*the marble*".

Jerry!

3DEP coalition plans appropriations strategy

February 22, 2018

A 3DEP coalition, managed by NSPS lobbyists John M. Palatiello & Associates, Inc., met February 15 at the Capitol Hill offices of the National Association of Realtors to plot strategy for securing funding for the USGS LiDAR data elevation initiative. Representatives of a broad cross section of stakeholders, including groups from surveying, mapping and geospatial; real estate; home building; flood management; science; mining; insurance, agriculture and infrastructure met to plan activities seeking an increase in appropriations from Congress for the program, authorization legislation tied to major applications, and state legislation. The group received a briefing (see page 29) by USGS and the office of the Secretary of the Interior on the current status of the program, applications, and the funding request in President Trump's proposed fiscal year 2019 budget.

Senate panel advances bill protecting the Brooks Act in Federal contracting

February 22, 2018

The "Construction Consensus Procurement Improvement Act of 2017", S. 2113, introduced by Sens. Rob Portman (R-OH) and Mazie Hirono (D-HI), was approved by the Senate Committee on Homeland Security and Governmental Affairs last week. The legislation would limit the use of one-step design-build and the use of reverse auctions for surveying and mapping services in federal procurement of design and construction services. The Senate bill is now ready for action by the full Senate, while the companion House bill, H.R. 679, has also cleared committee and is awaiting further action on the House floor. The bills are supported by NSPS and COFPAES, a coalition of which NSPS is a member. (Draft of S.2113 available for viewing at https://www.congress.gov/115/bills/s2113/BILLS-115s2113is.pdf.

IMAGES Act introduced in Congress to improve FEMA flood mapping

February 7, 2018

Representatives Alex Mooney (R-WV) and Vicente Gonzalez (D-TX) introduced H.R. 4905, the bipartisan "Improvement of Mapping, Addresses, Geography, Elevations, and Structures (IMAGES) Act", a bill to improve the flood mapping associated with the National Flood Insurance Program (NFIP) of the Federal Emergency Management Agency (FEMA).

The bill reforms NFIP mapping by leveraging elevation data collection through FEMA's participation in the 3D Elevation Program (3DEP), and associated structure data nationwide, including parcel and address data, as well as strengthening streamflow data nationwide, among other reforms, all of which will help improve the assignment and management of flood map risk. Each of the reforms was recommended by the NSPS Government Affairs Committee.

NSPS-supported bill on private sector utilization slated for U.S. House committee action next Tuesday; Grass roots alert seeks members' emails, phone calls

January 31, 2018

Next Tuesday, February 6, the Committee on Oversight and Government Reform ("OGR") of the U.S. House of Representatives is scheduled to mark-up (vote in committee), H.R. 1339, the Freedom from Government Competition Act. NSPS has historically been in strong support of this bill and included it in its Hill visits during Lobby Day on several occasions. This mark-up is a major victory for NSPS. It is the first BIG step in getting the bill passed. NSPS members should contact members of the U.S. Houses of Representatives from their state who are members of the House Committee on Oversight and Government Reform and urge a "Yes" vote on H.R. 1339, the Freedom from Government Competition Act. Remember, this is targeted - NSPS members should communicate ONLY with members of the House Committee on Oversight and Government Reform - not other members of the House, not the Senate, for now. See the NSPS Issue Paper (below) on private sector utilization.

Private Sector Utilization

A positive public-private partnership model is needed so that there are clearly defined roles and responsibilities to provide synergy between the public and private sectors in the Federal level, and particularly with regard to surveying, mapping and geospatial activities. Geospatial technology, identified by the U.S. Department of Labor as one of the top three emerging technologies for the 21st century, is estimated to be a $100 billion worldwide market growing at an annual rate of 10-15%. In this difficult economy, government agencies should be utilizing private sector geospatial firms to the maximum extent practical, not duplicating or directly competing against them.

The federal government has more than 1.2 million employees who are involved in performing commercially available activities, such as surveying, mapping and geospatial services. These are activities that can be found in the "Yellow Pages" from private companies, including small business, on Main Street USA. Numerous government studies have identified surveying, mapping and other "geospatial" activities as prime examples of commercial activities in which the federal government competes with and duplicates the private sector.

There is a need and role for government in surveying, mapping and geospatial activities. Agency personnel should be focused on inherently governmental activities such as enforcement of standards and specifications, development of requirements, coordination, and administering contracts.

Commercial activities, including data acquisition, processing, applications, and value added services should be left to the qualified, competent and capable private sector in surveying and mapping.

In the 115th Congress, Representative John J. "Jimmy" Duncan, Jr. (R-TN) and Senator John Thune (R-SD) have introduced the "Freedom from Government Competition Act" (H.R. 1339/S. 506). This legislation will codify the "Yellow Pages" test, applied by Mayors and Governors, both Democrat and Republican, that says if you can find private sector firms in the Yellow Pages providing products or services that the government is also providing, then the service should be subject to market competition to break up the government monopoly and prove a better value to the taxpayer. This bill will not only make government smaller and more efficient, but can save more than $27 billion annually and improve the quality of services.

ACTION REQUESTED:

MAPPS and NSPS respectfully urge members of Congress to act to increase Federal agency utilization of the private sector for commercial activities, including surveying, mapping and geospatial services. Representatives are asked to cosponsor H.R. 1339 by contacting Don Walker in Representative Duncan's office at 5-5435. Senators are urged to cosponsor S. 506 by contacting Jon Abdnor in Senator Thune's office at 4-2321. For more information, contact John Byrd, MAPPS and NSPS Government Affairs Manager, at jbyrd@jmpa.us or (703) 787-6665.

(continued on page 7)

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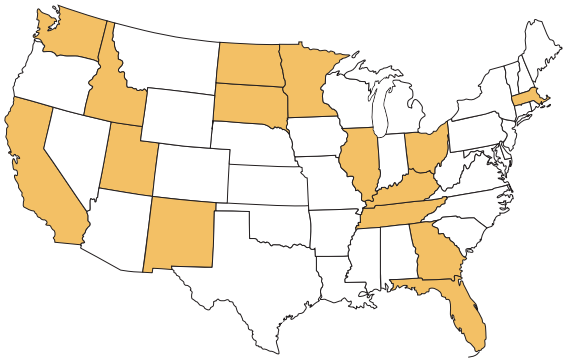
The Federal Land Rights Series — Exploring boundary and title issues in the federal context

January 24, 2018

Brian Portwood is a licensed professional land surveyor, federal employee and historian of land rights law, providing material for the ongoing professional education of all members of the land rights community. This article is part of a series on the wide variety of title issues associated with boundary and easement disputes which arise in the federal context, emphasizing the importance of understanding federal land rights, from the perspective of a professional land surveyor. This edition takes us on a veritable tour of the country, reviewing a variety of enlightening historical cases from several different states, which pertain to the topic of sovereign authority. Our featured case, which comes to us from Massachusetts and leads us into a discussion of the sovereign immunity concept, exemplifies the issues that arise at the intersection of state law and federal law. Read more at http://www.multibriefs.com/briefs/nsps/westfield.pdf.



Virginia, Maryland surveyors promote Workforce Development on television

January 24, 2018

Many of the state surveying societies have taken the lead in support of the national effort on Workforce Development and the Future of Surveying. Following up their previous successful activities in support of this effort, the Virginia Association of Surveyors (VAS) and Maryland Society of Surveyors (MSS) last week earned television coverage promoting a career in surveying. WHSV channel 7, the ABC affiliate based in Harrisonburg, Virginia visited the VAS annual convention in nearby Staunton to interview incoming VAS President Kevin Shreiner and East Tennessee State University (ETSU) surveying student Jacob Owens, airing two stories. Meanwhile, Bryan Haynie of Century Engineering, chairman of the MSS Workforce Development Committee and MSS's Baltimore Chapter and Malyk Pilgrim, a 2017 summer intern at Century Engineering, discuss the Future Surveyors Program, a collaboration between the Mayor's Office of Economic Development and MSS. The interview for the "Game Changers" program appeared on Charm TV, a Baltimore cable network. The MSS program in Baltimore was the cover story in P.O.B. magazine in July of last year and the mentors and intern/proteges were featured in a session held at the MSS annual convention in October.

NSPS invited to participate in cultural exchange

January 18, 2018

A representative of the American and China International Foundation (ACIF), a 501 (c) nonprofit organization, recently contacted NSPS regarding a surveying competition program for a 20-member delegation of surveyors from Beijing's Federation of Trade Unions, regarding urban affairs and studies. The purpose of the delegation's visit is to learn, take part in a mutual exchange of "best-practices", and hold a "friendly competition" to inspire professional excellence in the field of surveying. More details will be available soon for NSPS to consider.

(continued on next page)

NSPS News & Views *(continued)*

Licensing reciprocity proposed by South Dakota governor

January 18, 2018
NSPS recently learned of a proposal to ease the path for cross-border practice of licensed activities. An article recently printed in the *Washington Examiner* (as well as one in the *Wall Street Journal*) lays out information regarding a plan by the Governor of South Dakota to "ease the licensure requirements for professionals moving across state lines". A report from NSPS Director (South Dakota) Beau Koopal noted that this was a topic of discussion during the recent SDSPLS Conference, during which an AD-HOC committee was formed for this legislation. NSPS is monitoring the issue along with SDSPLS. It is also reported that NCEES is aware of this and watching to see what actually occurs as far as the South Dakota bill being introduced.

NSPS 2018 election results

Janauary 10, 2018
Congratulations to Mark Sargent (NH) who was elected as NSPS Vice President. In accordance with current Bylaws, Mark begins a four-year commitment serving successively as VP, President-Elect, President, and Past President. His most recent position in NSPS was as the NSPS Director representing the New Hampshire Land Surveyors Association.

In what is a testament to the quality of the candidates for Vice President, Mark and Danny Martinez (NE) ran the closet race in memory. NSPS is extremely proud of them both, and is fortunate that they will continue within leadership with Danny continuing in his role as NSPS Director representing the Professional Surveyors Association of Nebraska.

NSPS thanks all members who participated in the election which also resulted in passage of all three proposed (3) Bylaws changes.

Who Knew? Astronaut/Survey Rodman John Young has Passed Away

Legendary astronaut John Young, who walked on the moon and later commanded the first space shuttle flight, died January 5, 2018. NASA called Young one of its pioneers - the only agency astronaut to go into space as part of the Gemini, Apollo and space shuttle programs, and the first to fly into space six times. He was the ninth man to walk on the moon.

Young grew up in Orlando, Fla. He became interested early on in aviation, making model planes. He spent his last high school summer working on a survey party. The job took him to Titusville due east of Orlando; he never imagined that one day he would be sitting on rockets across the Indian River, blasting off for the moon. A survey rodman went to the moon! Who knew?

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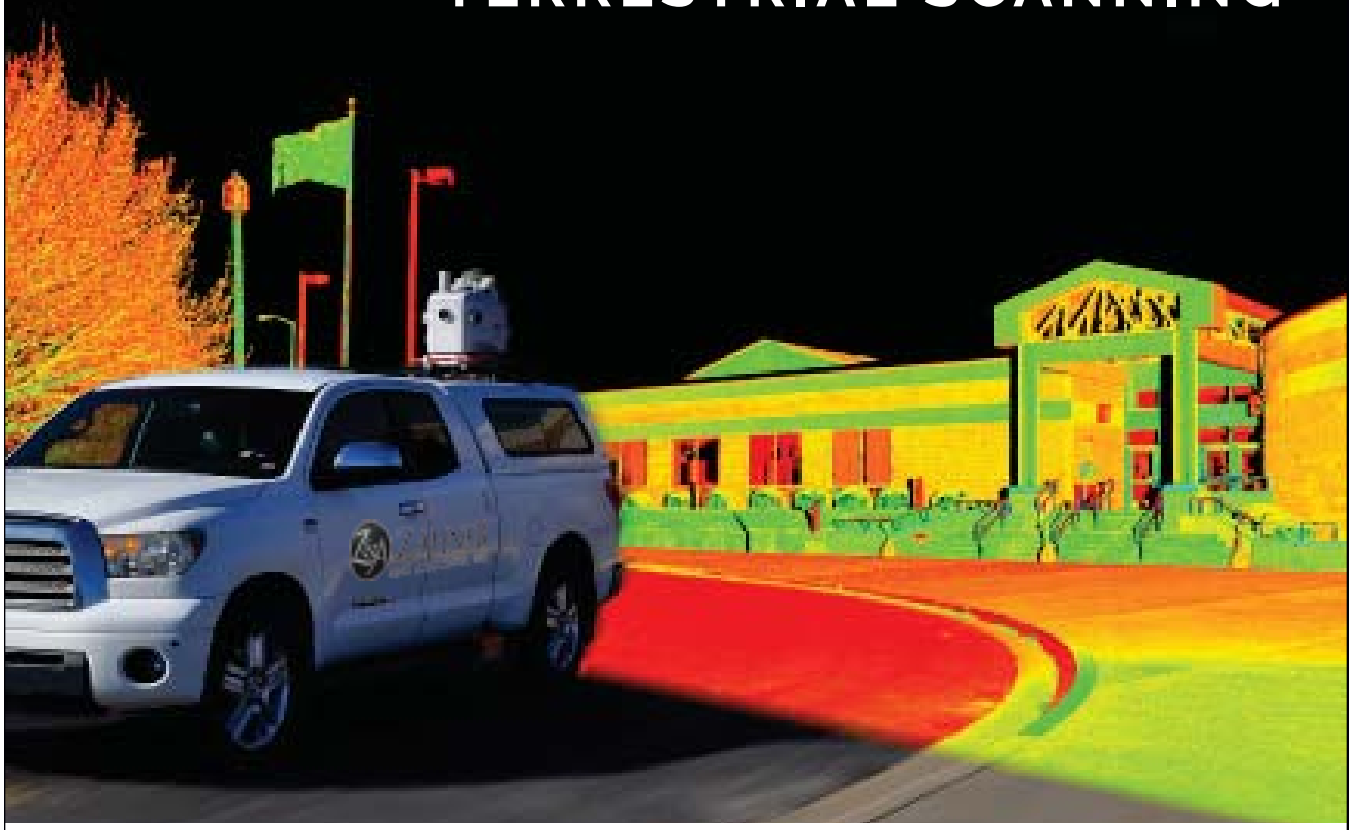

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Close Encounters of the Porcine Kind

by Ray L. Riggs, PLS

Whether you are an "Urban Surveyor" or a "Rural Surveyor", you probably have had a close encounter with some kind of animal. It may have been a psycho dog in a big city back yard or a full sized Bull Buffalo that wanders up to your total station setup in out-county Missouri (This actually happened to me.) Either way, survey long enough and the assorted species of the animal kingdom will make for some interesting experiences.

And some of these experiences just deserve an honorable mention.

We were traveling back to the office on 160 Highway from a long, hot summer day of surveying in the "Big Woods" of western Oregon County. My brother Ralph, Rolan Norsworthy and I, had been following an empty cattle trailer, (traveling very slowly) for a few miles and had made it over "Radio City Hill", just outside of West Plains, when everything started going south.

About the time we made it to the flat at the foot of the hill, and just before we got to the KWPM radio station; the back gate on the cattle trailer swung open... And Behold!, we discovered that the cattle trailer was not empty!

While all of us watched with stunned amazement and amusement, a huge Yorkshire sow came wandering back to the now open gate! She stood at the edge of the trailer and looked down at the highway speeding past her nose at 35 miles an hour...

Hold on! There's more... While the old sow stood placidly looking out the back of the trailer, about six or seven little piglets wandered back and lined up right beside Mammy!

By this time, Rolan had begun to flash his headlights and honk at the truck pulling the "Piggy" trailer, trying to get him to stop; And the pigs continued to be blissfully unaware of the catastrophe lurking mere inches from their snouts!

The driver of the truck and trailer finally figured out that something was amiss and pulled over at Allen Street, right at the city limits. And that was where the fun began...

When the truck and trailer stopped rolling, we were right behind it, to try to keep the pig and piglets IN the trailer. It worked really well... with the piglets. The old sow however? She saw the open gate for what it was... FREEDOM!!!

The very second the trailer stopped rolling she was out and makin' tracks for Arkansas!

We piled out of our truck and were joined by the pig's owner and some other men that had stopped, in an impromptu (un-greased) Pig Scramble! Whoa Nellie! We chased her down the street, across yards, through business parking lots, all the while trying to keep her from going across the busy traffic on Highway 160. In a few minutes, there were enough of us to corner her and then, (if it were possible) things got even more exciting.

It was time to decide how best to get her back into the trailer. We had already seen how herding her went down. So we decided just to CARRY her back to the trailer... Remember, this is a sow and she will weigh 500-600 pounds!

We didn't want to get bit so the handiest thing at the front end was ears. So, two men latched onto an ear apiece. The rear end provided three handholds... two legs and the tail. The only person I vividly remember with a hand on the pig was Ralph...he had a back leg.

Did you also know that a pig can kick with its back legs? The very instant the old sow went airborne, she started kicking! Not little, slow, soft kicks... But rapid fire, bone jarring, honest to goodness piggy kicks! Poor ole Ralph's teeth were chattering, his head was rattling, his arms were being jerked a-mile-a-minute and all while trying to hustle toward the back of the trailer!

Did you know that pigs squeal? Did you also know that a pig's squealer goes into overdrive when they are picked up and unceremoniously toted around?

It was quite the raucous parade!

When we got the old sow to the back of the trailer, another problem arose. How do you put her in without her immediately turning around and escaping again? The little piglets had been herded behind a cross gate in the trailer so there was no danger of them escaping... So we decided a "Bacon Launch" would do just fine.

We stood at the back of the trailer and did the old "One-Two-Three!" and sent old porker sailing into the trailer and quickly slammed the back gate shut!

The pig's owner thanked us, we climbed back into the truck and continued on to the office... Tired but satisfied that we had done our good deed for the day...

Traversing the Law: Rise in Law Suits Against Surveyors

***by Jeffery Lucas,* Reprinted with permission from *Point of Beginning (POB),* Copyright 2018, https://www.pobonline.com**

As we continue to Traverse the Law, I am seeing a general rise in litigation against surveyors over the results of their surveys. One charge in particular seems to be in vogue with attorneys suing surveyors, and that is slander of title. There are many reasons for this, but I suspect that the main reason could be the damages associated with a successful prosecution of the charge.

If a surveyor jumps over the existing fence along the established boundary line and drives irons in the ground, a charge of trespass would yield nominal damages and could also result in an award of actual damages for any property actually damaged. Unless the survey cuts a few trees down or destroys some crops in the process of driving the irons in the ground, actual damages could amount to an award of nothing. Black's Law Dictionary defines nominal damages as:

"A trifling sum awarded to a plaintiff in an action, where there is no substantial loss or injury to be compensated, but still the law recognizes a technical invasion of his rights or a breach of the defendant's duty, or in some cases where, although there has been a real injury, the plaintiff's evidence fails to show its amount." Id.

So even a successful prosecution of a trespass charge will not yield enough in damages to pay the filing fee of the lawsuit.

Professional negligence is another popular charge in an action against a surveyor. Damages in a professional negligence case are intended to be awarded in an amount that will make the plaintiff whole, or put the plaintiff back in the position the plaintiff was in before the negligent act.

Damages in a negligence case of a doctor amputating the wrong leg will be substantial. Damages in a negligence suit against a surveyor for driving an iron in the wrong place—not so much.[1]

Court costs, attorney's fees, and fees of expert witnesses may or may not be considered as damages to the plaintiff and recoverable. There are only three ways to get your money back for the cost of litigation in the American system of jurisprudence. One way would be under the terms of a written contract, whereby the parties agree that the winner of a court action on the contract will be repaid for any costs. In a boundary dispute case your potential plaintiffs are your client and all adjoining landowners. You will not have a contract with the adjoiners, so only your client will be able to recover under the terms of a contract.

Another way to recover your cost is if there is legislation that allows for recovery of fees and costs. Reverse condemnation cases come to mind, but this method will not generally affect you as a practicing surveyor. There could be other legislative remedies for the cost of litigation under special circumstances, but I don't have an example off-hand.

The final way is if you live in one of the states that recognize the court-made rule for the recovery of litigation costs, and it occurs quite often in boundary disputes cases but only in those states where the courts recognize the rule. The rule basically says that if actor A is forced into litigation to defend his or her rights because of the actions of B and C, then recovery may be possible.

"There is a substantial body of case law which holds that where the wrongful act of one person has involved another in litigation with a third person or has made it necessary for that other person to incur expenses to protect his interests, litigation expenses, including attorney's fees, are recoverable."[2]

(continued on page 31)

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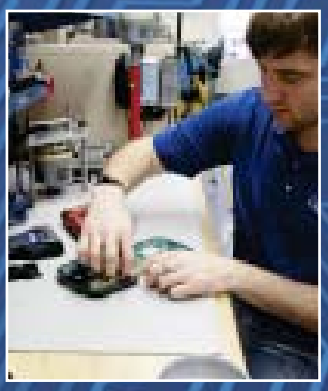

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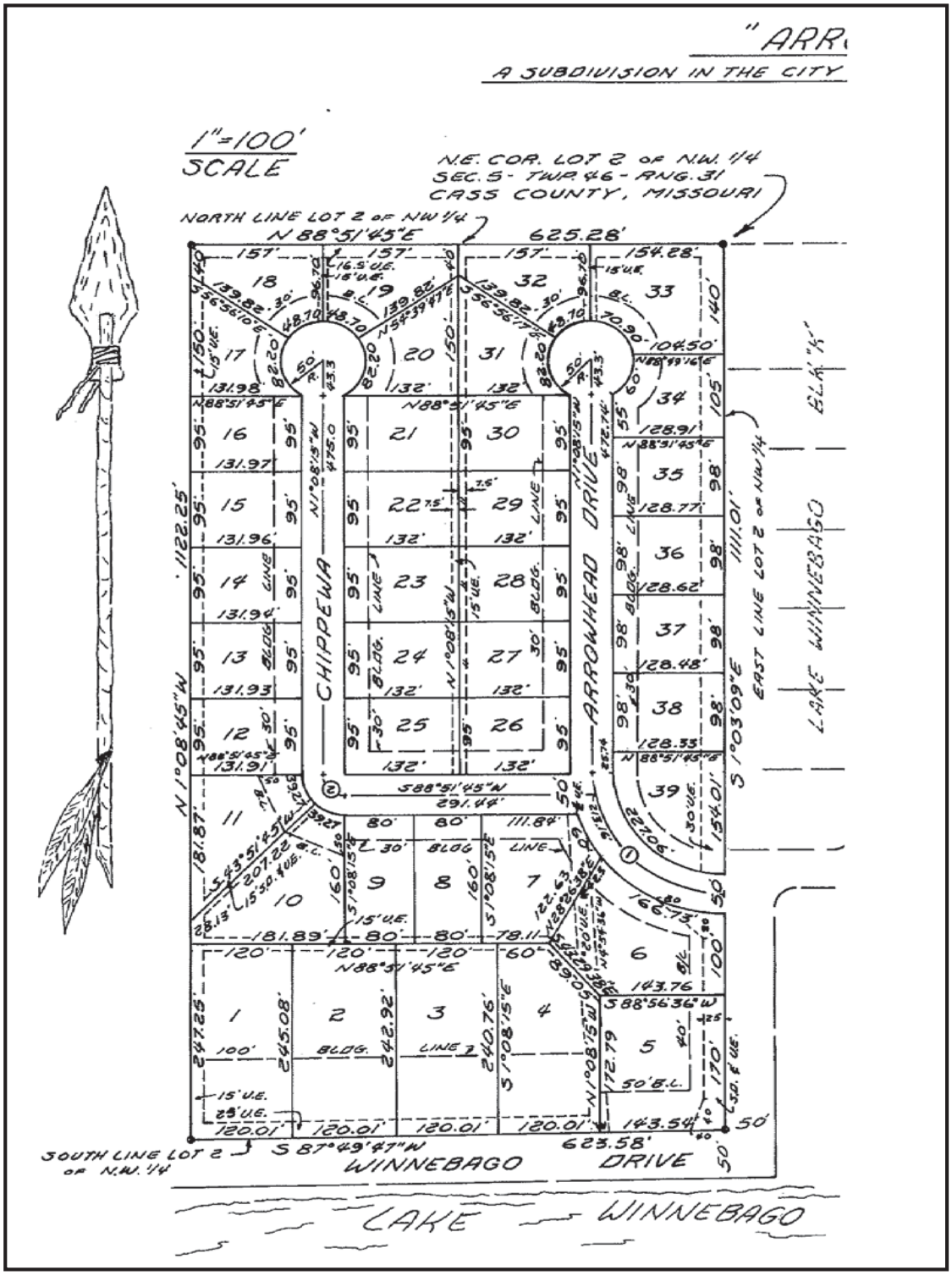
Art of Surveying

by Howard Sherman



Known for including sketch art on his plats, Howard Sherman included a literal North Arrow on this subdivision plat.

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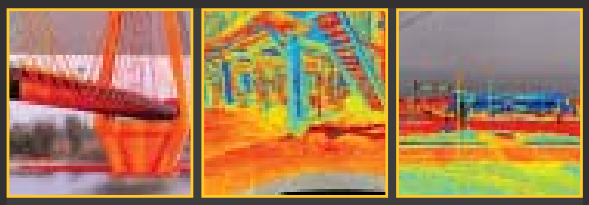

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Reminisce of An Old Surveyor Measuring a Distance by Taping

by Knud E. Hermansen, P.L.S., P.E., Ph.D., Esq.

I don't like to think of myself as old but I am. I have been surveying for close to 50 years. The difference between how I used to survey and how surveying is done now is different. This difference was brought to the forefront of my thinking one day when I was surveying with a young surveyor. As we compared the distance we measured between two corner monuments to the distance set forth in the original survey performed in 1968, the young surveyor was appalled that the original surveyor was off six tenths of a foot between the two monuments. Until this young surveyor spoke I was thinking that the 1968 surveyor had done some exceedingly good measuring given the fact that the distance between the monuments was almost 2,000 feet across uneven landscape filled with puckerbrush. My young associate had never used a tape to measure a long distance. Had he done so, I think that he too would have marveled at the accuracy of the 1968 surveyor.

I would be surprised to hear that any surveying firm operating at this time still tapes long distances. If there is some firm that still practices this ancient art, surely they cannot compete on a fee basis with another firm.

So my young colleagues in the profession will better understand how the boundary they are now retracing was measured, I will reminisce about the lost art of taping a long distance.

Taping required at least two people in the survey crew. Three were ideal, with a person on each end of the tape and one person on the instrument to keep the two people on a straight line between the end points.

My employers at the time were somewhat tight-fisted with expenses so most of my taping was done with one other person.

With the direction to be measured selected, a distant object was chosen to use as a point of reference to guide us while taping. I suppose when taping across open land, a pole was included as part of the survey equipment. The pole was placed in the ground on line with the direction to be taped and used to guide the taping crew. Where I surveyed there was always some natural object that could be used or an appendage of a tree or bush where ribbon could be hung to serve as a guiding point.

Unless we were in farmland or urban land there followed some physical labor as brush and other vegetation was cut and removed from the direction to be taped. Of course if the distance to be taped was part of a traverse, the direction of the traverse was often selected so as to avoid the denser portions of vegetation thereby saving a great deal of physical labor involved with cutting a traverse line. If memory serves me, I seem to remember more time spent cutting a clear a line in preparation to taping the distance than actually measuring the line.

My employer favored a 200 foot steel tape. Most surveyors employed the standard 100 foot steel tape. I heard of a few surveyors that employed a 300 foot steel tape. The longer tape meant fewer markings on the ground that I shall explain later. However, the longer tape made a wicked sag unless extra tension could be exerted on the ends of the tape to reduce the sag. Of course the extra tension made plumbing the tape more difficult. Still, I came to appreciate the longer tape and used it when I first practiced on my own after becoming licensed.

Now I will say here and now that I was well familiar with tape corrections such as sag, tension, and temperature. We never made those corrections nor do I remember a surveyor that I met at this time that did so though they were common subjects in academic learning. I do not believe these calculations were omitted from ignorance. It must be remembered that calculations during these times were done without benefit of an electronic calculator. As a result, any calculations involving multiplication and division were a tedious undertaking.

Also, the errors associated with the failure to make tape corrections were often as not dwarfed by other factors present in the boundary survey. Would a temperature or sag correction to the steel tape make much of a difference when the corner monument was a 22 inch diameter tree or a three foot diameter stone pile?

My employer did deem it important that the taping be

done on a straight line and as near to horizontal as possible unless the end of the tape could be placed at the instrument allowing a vertical angle to be read and used to reduce the slope distance to a horizontal distance. I do not remember ever employing a hand level to check to insure the tape was horizontal, the level of the tape being accomplished by a fair estimate with the eye.

Leveling the tape required a plumb bob be suspended from at least one end of the tape and usually at both ends of the tape. Even on relatively level ground it was necessary to suspend the tape above the ground and employ plumb bobs or else the tape would weave up and down over brush we had cut, fallen trees, stones, and high grass that was normally present on the line of taping.

I don't believe a plumb bob can be found among the equipment of the modern surveyor. Perhaps it may be found buried in the equipment box on the survey truck yet. The plumb bob does not hang from the belt of the surveyor like it did decades ago. To come to the field without a plumb bob was a serious omission – akin to forgetting the tripod. Not only was the plumb bob necessary for taping but it was a necessary piece of equipment to hang under the tripod in order to place the instrument over the point, the optical plummet not being present on transits and compasses that were used to measure directions at that time.

Beginning at the instrument, the tape was laid out in the direction to be measured. Perhaps laid out is the wrong word - for the procedure was to grab the 'zero' end of the tape and drag it in the direction to be measured until the rear tape person would yell "stop" or some other recognizable command. Now in doing this simple task it was important that someone watch the tape or at least be sensitive to the resistance to the drag offered by the tape to prevent the tape from looping upon itself where continued tension would cause the loop to collapse and the steel tape to break. Careful observation was especially important when turning the tape back upon itself. Breaking a tape would cause the ire of even the most placid employer because there was no reason for this event to occur but for negligence. I am sure some survey crew members did try their best to think of some other plausible excuse that would explain a broken tape and not attach blame to themselves.

Having dragged the tape to its farthest extent without causing the tape to break, the forward tape person would be directed to the right or left by the rear tape person so as to cause the forward tape person to be on a straight line between the two points where the distance was required. This is where the pole or point of reference spoken of earlier assists the taping crew.

More times than not it seemed this simple task would reveal that the forward tape person had passed on the wrong side of a tree or bush requiring the forward tape person to drag the tape back to the offending tree or bush and pass on the correct side of this transgressing vegetation. Surely if the tape did not kink or break in laying the tape out, the risk of a break by kinking the tape increased with this realignment because the forward tape person was looping the tape back upon itself and was now agitated with the extra effort necessary to make the measurement. In their frustration they would tend to pull on the tape harder than good practice should allow.

In some instances, it would be determined that rather than drag the tape back and go on the other side of the offending vegetation, the vegetation could be cut and removed. This idea was good in theory but often fraught in practice. More than once I have seen a good swing of the machete or brush hook designed to cut the offending brush not only cut the brush but go on to cut the tape as well, the tape being next to the offending brush because of the circumstances I have mentioned.

It was always a discussion among survey crew members whether the employer will think the intelligence of an employee to be less if they broke the tape with an overlooked kink or the result of a powerful stroke of a machete. Thankfully that is one conversation and confession that will no longer occur with modern survey practice.

Once satisfied the tape is aligned properly in the direction of the survey, the tape would be raised off the ground in a manner to effectuate a level line. In raising the tape, the taping party often discovers that the recent maneuvering with the tape has allowed the tape to seep under some brush that had been previously cut in clearing the line and allowed to remain in the vicinity. The discovery of the offending vegetation occurred when an effort is made to raise the tape and one or more pieces of brush would also rise with the tape. At this discovery some vigorous attempt is made at shaking the tape to throw off the offending brush. This effort seldom worked other than to jerk the end of the tape out of a person's hand.

(continued on next page)

Reminisce of An Old Surveyor *(continued)*

With the failure of shaking the brush off, it became necessary for someone to once again walk along the length of the tape and remove offending pieces of brush that had found their way to laying on the tape rather than under the tape.

If a person is following this story and is counting the trips along a particular segment of line, they will realize that the distance of the tape has probably been walked three or four times. First, a person must walk the line to cut a clear sight along the line. Second, a person will walk the line to drag the tape to set up the measurement. The third walk occurs when retracing the steps in order to come back around the correct side of a tree. Finally, the fourth walk of the line is to throw off brush and vegetation that has climbed on the tape. I know that vegetation can't move or climb on its own but if you had been there you would swear it does just that.

Finally, the tape could now be raised off the ground to effectuate as near as possible a horizontal line that could never be a straight and level line since the weight of the steel tape always caused a sag. To remove some of the offending sag, tension had to be applied to the ends of the tape. I suppose there were surveyors that employed tension handles in the field that allowed the tension, measured in pounds, to be carefully applied to the tape's length but I have never met the field crew that used them in the field doing a boundary retracement survey. Perhaps a diligent survey firm would have had at least one tension handle in their office in order to show a new employee what 15 to 20 pounds of tension felt like.

For those surveyors that have never seen a tension handle, a close similarity can be visualized by thinking of certain weight scales with a handle at one end and a hook at the other end that are sold to fisherman to weigh the trophy fish they plan to catch. I suspect that some of the survey tension handles that were purchased by surveyors were used more often for weighing fish rather than applying tension on a tape.

With the tape raised off the ground, great skill must now be employed to do several tasks at once. The tape person had to keep the tape level, at a consistent tension, and steady enough to fix a point on the ground using a suspended plumb bob.

The rendition of these tasks in print does not begin to describe the difficulty of combining these tasks in practice. First, the plumb bob string must remain fixed and immovable on a mark found on the tape. This requires one hand be employed to clamp the plumb bob string securely to a mark etched on the steel tape. The other hand is employed pulling on the end of the tape to keep a constant and desired tension. It must be remembered that the steel tape is a smooth ribbon but for some minor roughness caused by marks on the tape surface indicating feet, tenths and hundredths of a foot. The last two mentioned etchings only present at the ends of the tape. The combination of the tension, tape smoothness, and liberal sweat on the hands resulting from the physical labor involve in surveying at the time and the reader can deduce the challenge required in making a measurement while exerting tension on the tape. Usually a leather thong at the end of the tape was used rather than holding the tape itself. A consistent tension was employed by tucking the hand next to the body and leaning the body in the direction away from the other person in order to render the desired tension.

Where a leather thong was not present or 'breaking the tape' required, often as not the tape person would grab hold of the tape and bend the tape down at their hand to afford a better grip – much as a person would do when pulling a rope to get a better grip. This grip often left a 'jog' in the tape at the completion of the measurement. After years of usage, a tape would no longer lay flat but would have rises and dips along its length that would be coupled with a few points of extra thickness where the tape had been repaired.

Let me pause in my rendition of taping to state that when I speak of 'breaking the tape' in this instance, I am not speaking of physically breaking the tape. Rather the phrase was used to indicate the entire length of the tape was not to be employed in making the measurement required.

Long ago, some entrepreneur invented a tape clamp. The tape clamp was a handy little gadget that allowed the user to firmly secure the tape with the clamp using the two finger rings that were part of the clamp. Using the finger rings, the tape could be easily pulled without bending of the tape or permitting a slippage along the tape.

I doubt much money was made from the invention. The

survey firms that had purchased this gadget were likely as not to leave it unused in the office. When brought to the field, it never seemed to be with the tape person that needed it.

Having mastered the combination of holding the tape level, keeping pressure on the tape, and keeping the plumb bob string firmly attached to a mark along the tape, the tape person could now focus their attention to the suspended plumb bob that was likely as not swinging over the ground much as a lookout does in a crow's nest over a ship in rough seas. Restraining the plumb bob from wild gyrations required the tape person to periodically tap the plumb bob into the ground until the swinging of the plumb bob settled down.

The person at the rear of the tape had a mark that the plumb bob had to be over. When he was satisfied that he had wrestled the plumb bob and by extension the appropriate part of the steel tape over this point he would repeatedly shout some agreed upon term to the forward tape person to let that person know that a measurement could now be reliably made by the forward tape person.

I have seen the patience of the rear tape person sorely tested by the inability of the lead tape person to make a timely mark or reading. The rear tape person will make repeated statements of "good" or "mark" to indicate that he is over the point and the measurement can be made. After some repetition, the rear tape person will become agitated by his own endless repetition and may be heard to stop the repetition in order to yell: "god damn it, I'm good at this end. What is taking so damn long."

If the forward tape person was not measuring to a previously established point, they would tap the plumb bob point onto the ground to make a mark in the dirt, having previously kicked away grass, leaves, and twigs to clear a space on the ground. Once the forward tape person was satisfied the mark made by the plumb bob point represented a fair measurement, they would release the tension in the tape and put a pin into the ground at the mark. This pin would become the basis for the rear tape person to advance upon and measure over.

As I previously mentioned my employer was a kindly man but did not feel justified in purchasing equipment that was not absolutely necessary. Rather than using chaining pins, as they were commonly known, to fix the limit of the tape measurement, we would use nails or sticks with flagging tied to the end of the stick.

Having marked the length of the tape on the ground, the forward person would drag the tape in the direction of the survey to begin again the process of making the next measurement. The rear tape person would follow with the other end of the tape. Now if the rear tape person was not paying attention, they would likely as not kick the pin or nail out of the ground before they spotted it. If the rear tape person did a good job of kicking the pin loose from the ground, the taping would have to begin anew back at the starting point with numerous expletives used against the rear tape person for not paying attention to where they placed their feet. To avoid repeating the process of taping or bringing upon themselves embarrassment and attracting the ire of the other crew members, more than one rear tape person made a best guess where the pin may have resided before they inadvertently kicked it out. If possible the misfeasance was corrected without the forward tape person realizing what was being done.

I should mention that had the forward tape person measured into a mark or corner already fixed, his job was a little more difficult. Rather than stick a pin, nail, or stick in the ground, he had to find a way to maintain the tension, keep the tape horizontal, maintain a steady plumb bob over

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the point, and read the marks on the tape at the plumb bob string.

This was done by firmly clasping the plumb bob string over and on the tape using the index finger and thumb and sliding the string along the tape until the plumb bob was over the desired point. The tension was then released while still keeping a firm grasp of the string on the tape. Once all the other distractions were eliminated, the forward tape person could peak under his thumb and see what incremental hundredths of a foot mark the string was held upon.

At this point it is worth mentioning a problem that has plagued surveyors using a tape or chain for a couple of centuries – keeping track of the whole lengths that are used when measuring between two points. When a survey crew measures long distances, it is necessary to tally the number of full tape lengths used. Now it would be wise for a crew member to make a mark in a field book each time a tape length is achieved. What is wise and what was done are two different things. If field books were not available putting notches on a stick or moving stones or acorns from one pocket to another was employed. Despite the best efforts, there are numerous distances where a tally was lost or added that should not have been.

I have alluded to a plumb bob suspended from the tape to the ground. The term 'suspended' is only accurate after some effort is obtained to stop the plumb bob from swinging in arcs over the ground. It is not possible to get a plumb bob to hang from the tape to the ground without some swinging. The plumb bob was determined to be contrary when let loose to hang. There were times when the plumb bob was stationary but not vertical as in the case when the plumb bob had to be dropped from chest height and there was a strong wind blowing across the open field. It seems to me that the wind was usually combined with cold temperatures. To all the other problems I have alluded to in trying to keep the plumb bob steady over a mark must be added the lost sensitivity of the fingers when using gloves and the shaking of the body from the cold temperature.

Eventually, the plumb bob was finally settled into compliance by tapping the plumb bob upon the ground until finally the tip of the plumb bob was confined to a small area meeting the tolerance of the tape person. Of course before the tapping could take place, the forward tape person usually had to expose the ground by kicking away sod, sticks, leaves, and other debris using the toe of his boot. This often accounted for the delay that caused the agitation of the rear tape person that I have previously mentioned.

I must not close this reminisce on taping before adding a few more tidbits that provide some added insight into taping practice.

Many tapes were not marked or inscribed like a more recent steel tape or the fiberglass tape still found in the surveyor's tool kit. What I mean is the tape did not contain marks to the hundredth of a foot along the entire length of the tape. The old tapes were only marked every foot except for the very end of the tape where the tenths and hundredth of a foot marks could be found. This necessitated the rear tape person find a whole foot mark to hold to and the forward tape person use the end of the tape to measure the increments of a foot. To set this up involved the forward tape person yelling back to the rear tape person to 'take a foot' or 'give a foot.'

While on the subject of marks on the tape, I must state that dragging a tape along the ground for days, weeks, and years often succeeded in smoothing the tape and erasing the stampings of the whole feet and making the marking of whole feet difficult to read. More than once I had to look up or down the tape to find a readable mark and work my way back to the mark I was to hold at in order to know what whole foot I was holding at.

I have about exhausted my memory of taping but for three situations often encountered in taping. One situation is the delicate taping required when taping through an electrified cow fence with a steel tape. I need say no more on that topic as the reader can well imagine what often happened. I must add that in addition to the electrified wire, once the survey crew has cleared the electric fence and entered the field, the reason for the electrified wire becomes obvious. Curious cows tend to congregate about the surveyor and become a hindrance in the taping process. However, I suppose a curious cow or heifer is far better than the bulls I encountered from time to time that took offense at the red often worn by the surveyor.

The second situation not fondly remembered is taping upon a concrete or asphalt surface. Since such surfaces were often flat and without obstructions, the tape was laid flat on the surface. Tension was put on the tape ends during the measurement with knuckles touching the asphalt or concrete. In such cases one tape person usually released their tension unexpectedly with the result that the other tape person often left some skin from their fingers on the rough surface of concrete or asphalt.

The third situation that still can incite bad dreams occurred when taping across a busy road or sidewalk. You did not have to experience this situation in order to imagine the peril of a tape suspended above the road surface when a car is observed much too late traveling down the road. Dropping the tape quickly to the road surface would often preserve the tape. Yet, there is many a time the survey crew returning to the office with a broken tape that claimed this very event to be the cause of the broken tape. Of course, there was nothing they could have done to prevent this happening. At least that is what they claimed.

I will close this reminisce by speaking about securing the equipment used in taping. The tape was coiled with attention paid to making consistent sized loops. The tape was then thrown. I don't mean heaved to the side. I mean that the tape was made into a figure 8 then into a compact circled loop using a twisting of the hands. Throwing a tape was an art that was often done at a surveyor's convention to show prowess. If a person did not know how to throw a tape it turned into a wrestling match where the tape refused to cooperate and often as not ended in a jumble rivaling any fishing line tangle. If the person did know how to throw the tape, a person watching would have the unmistakable impression that a magic trick just occurred. One minute the tape is in a large loop and the next it is neatly coiled in a compact loop.

The other item of equipment deserving some effort at storage was the plumb bob. To see a plumb bob being stored with the string hanging loosely from the end of the

(continued on page 38)

"The St. Francis River, One of Missouri's Riparian State Boundaries"

by Dr. Dick Elgin, PS, PE, Archer-Elgin Engineering, Surveying and Architecture, Rolla, MO

The St. Francis River rises in the granite mountains of Iron County, Missouri and dies in the Mississippi River, just upstream from Helena in Phillips County, Arkansas. Along the west side of Missouri's Bootheel, the St. Francis is the boundary between Arkansas and Missouri. But exactly where in the River is the state boundary? Section 7.001 of Missouri's Revised Statutes contains the boundary description for the state, and part of it reads "… thence west, along that [36°00'] parallel of latitude, to the St. Francis River; thence up and following the course of that river, in the middle of the main channel thereof, to the parallel of latitude thirty-six degrees and thirty minutes; thence west along…." Arkansas' Constitution, when describing that state's St. Francis River boundary likewise calls for the "middle of the main channel of the St. Francis River." (It's always good practice to review the adjoiners' deeds, hoping the two deeds mirror each other, looking for gaps, overlaps or conflicts, although Missouri's "deed" would be senior in this case, becoming a state in 1821, while Arkansas became a state in 1836.) So, this 65-mile reach of the River forms the states' boundary, being the west line of Dunklin County, Missouri and the east line of Clay County and most of Greene County, Arkansas.

The only attempt at defining the river boundary would have been in October, 1824 when Deputy Surveyor Joseph C. Brown, surveying Missouri's south boundary (36°30' latitude) from west to east, "…arrived at the upper south boundary line of the State of Missouri on the St. Francis River…." Brown began surveying the meanders of the St. Francis to the south, on the river's east side, but after a couple of miles could no longer detect the river. "It appears like an immense swamp and I cannot go on with the meanders. I therefore quit the meandering of the river and explore it with our canoes….On proceeding down the river there appears to be a swamp for as far as the eye can reach." After much toil, Brown finally found a "point of land" where he observed the latitude on five stars, and set off the requisite distance (south 56 chains) to reach 36°00' north latitude, then surveyed east along that line to the Mississippi River. At the southwest corner of Missouri's Bootheel (where he started surveying east), he noted "…from the channel of the [St. Francis] river to dry lands not measured but guessed at 40 chains."

Arkansas became a state in 1836. The next attempt to define the Arkansas/Missouri boundary was in October, 1843. The accuracy of Brown's 1823-1824 survey of Missouri's south line came into question, so the states formed a boundary commission to produce a new survey. This was not a retracement of Brown's lines, but a new establishment of the 36°30' and 36°00' lines of north latitude which formed the states' boundaries. Bazil Gordon was hired to resurvey the lines. In October, 1843, he started on the west bank of the Mississippi River at his position for 36°00' latitude and surveyed west to "the Saint Francois River…being about a mile wide." Gordon did not survey the meanders of the St. Francis River to the north, no doubt facing the same difficulties as Brown in 1824. But, he moved north, and on November 22 made an observation for latitude on the west side of the St. Francis, offset to 36°30', and erected a mound which he designated "Mile 0" and started surveying west along 36°30' latitude.

Today there is a Missouri Department of Natural Resources, Land Survey Program monument at Mile 0, a restoration of Gordon's position. Gordon's lines for 36°30' and 36°00' are used and recognized today as the Arkansas/

(continued on page 27 & 28)

Missouri Society of Professional Surveyors

Spring Workshop

MAY 4-5, 2018

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Deeds...Descriptions and Beyond

Based on Missouri Law and Missouri Court Cases

SPEAKER
KRIS KLINE, PLS, 2POINT, INC.

Missouri Society of Professional Surveyors
Est. 1957

Agenda

Thursday, May 3, 2018

9:00 am	Board Meeting
1:00 pm	Golf Tournament at the Cove
6:00 pm	Exhibitor Set-Up

Friday, May 4, 2018

7:00 am	Registration
8:00 - 9:30 am	**Deeds and Descriptions: Do's Don't and Depends** The class begins with: elements of a deed, types of deeds (warranty, quitclaim, gift etc.), reservations and exceptions, calls for a plat. In addition, we will consider rules of construction, calls for adjoiners, the critical link between monuments and deeds, and key words and phrases for various types of descriptions. This is followed with guidelines and tips for providing sufficient descriptions without introducing ambiguities or unnecessary complexity. The latter part of the class includes hands-on exercises where students will split up in groups to write descriptions for various types of deeds, including classic boundary descriptions, deeds of easement, riparian boundaries, and/or mineral estates. Students will then analyze the descriptions produced by the various groups. *Kristopher M. Kline, PLS, 2Point, Inc.*
9:30 – 10:00 am	Break to View Exhibits
10:00 - 12 noon	**Deeds and Descriptions continued**
12:00 - 1:00 pm	Lunch with Exhibitors
1:00 - 2:30 pm	**Deeds and Descriptions continued**
2:30 - 3:00 pm	Break to View Exhibits
3:00 - 5:30 pm	**Deeds and Descriptions continued**
5:30 pm	Wine, Beer and Cheese Reception with Exhibitors
6:30 pm	Young Surveyors "Meet & Greet" *Firepit at the Pool Patio*

Agenda

Saturday, May 5, 2018

7:00 am — Registration

BREAKOUT SIMULTANEOUS SESSIONS

8:00 - 12 noon — **Standards and Statutes: The 2017 Standards and the Statutes Guiding the Rule-Makers**

The Missouri Standards for Property Boundary Surveys are the rules, promulgated jointly by the Missouri Department of Agriculture Office of the State Land Surveyor and the Missouri Board for Architects, Professional Engineers, Professional Land Surveyors, and Landscape Architects, regulating the practice of land surveying in Missouri. The newest version of the standards became effective in July 2017. This presentation will review the standards and look at the Missouri Statutes, which form the basis of the Missouri Standards.

Speaker: Darrell D. Pratte, PLS, Project Surveyor, Department of Agriculture, Land Survey Program

8:00 - 9:30 am — **Unlikely Easements and Servitudes: Created, Modified and Extinguished**

This course focuses on incorporeal rights and servitudes that are created or modified by actions, implication or operation of law rather than by express language in the record documents. Part I of the class considers "non-standard" methods that can create incorporeal rights, including: Implication, Estoppel, Common Scheme Doctrine, Custom, Prescription and Part Performance. Part II covers mechanisms that can modify or extinguish a servitude, including: Estoppel, Cessation of Purpose, Frustration of Purpose, Adverse Possession/ Castle Associates Rule, and Part Performance.

Kristopher M. Kline, PLS, 2Point, Inc.

9:30 - 10:00 am — Break

10:00 - 12 noon — **Unlikely Easements and Servitudes continued**

12:00 - 1:00 pm — Lunch

1:00 - 2:30 pm — **Unlikely Easements and Servitudes continued**

2:30 - 3:00 pm — Break

3:00 - 5:30 pm — **Unlikely Easements and Servitudes continued**

Registration Form

Registration Information

Registration fee is $250 for MSPS Members and $400 for Non-Members. Deadline for registration is April 20, 2018. After this date, a 10% processing fee will be added to registration fees. The fee includes instructional materials, refreshment breaks, luncheon on both days, cocktail reception and two continental breakfasts. To register, complete the registration form and mail it with your check to MSPS, 722 E. Capitol Avenue, PO Box 1342, Jefferson City, MO 65102. For more information on this course, call Sandra Boeckman at 573-635-9446.

Technician Rate

A special rate of $150 is available for non-licensed technicians (Associate Members of MSPS). Registration fee plus 2018 Associate Membership is $185.

Golf Tournament

Register to play in the Golf Tournament Fundraiser for the MSPS Scholarship Fund to be held at The Cove, The Lodge of Four Seasons beginning at 1:00 pm. The cost is $85 per person which includes two mulligans per player.

Location and Lodging

The Lodge of Four Seasons , 315 Four Seasons Drive, Lake Ozark is the location for the 2018 Spring Workshop. A block of rooms has been reserved at the Lodge at a rate of $121.00 for single or double occupancy. Deadline for reservation is April 10, 2018. Make your reservation by calling the Lodge of Four Seasons at 888-265-5500.

Cancellation Policy

MSPS reserves the right to cancel the program and return all fees in the event of insufficient registration. A participant may cancel a registration up to two weeks before the course date and receive a refund less a $25 processing fee. **NO REFUNDS AFTER APRIL 20, 2018.**

Continuing Education Credits

This course has been approved for 15 PDUs or 15 hours of continuing education (7.5 each day) by the Missouri Board for Architects, Professional Engineers, Professional Land Surveyors and Landscape Architects. Four hours of Standards will be available on Saturday, May 5th.

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Return your registration form to MSPS before April 20, 2018.

Breakout Sessions

Check the session you plan to attend.

❒ New Surveying Standards from 2017 or ❒ Unlikely Easements and Servitudes

Registration Fees

❒ MSPS Member	$250
$125 per day, indicate which day	
❒ Non-Member	$400
❒ Technician	$150
❒ Standards Only	$100
❒ Golf (per person)	$85

"The St. Francis River, One of Missouri's Riparian State Boundaries" *(continued)*

THE ST. FRANCIS RIVER, A RIPARIAN STATE BOUNDARY

(BOUNDARY MAPPING FROM ARKANSAS GIS OFFICE)

"The St. Francis River, One of Missouri's Riparian State Boundaries" *(continued)*

Missouri boundary, not Brown's. And no, by today's measurements, Gordon's lines are not at exactly 36°30'00" or 36°00'00" north latitude. For more on the history of the early surveys of the Arkansas/Missouri boundary, see "The U.S. Public Land Survey System for Missouri" by the author of this article.

Eventually the Missouri townships east of the St. Francis River were surveyed and subdivided, closing on the river from the east and meandering the river. The Arkansas townships west of the river were also surveyed and subdivided (later), closing on the river from the west and meandering the river. In some locations, the meander lines on each side of the river are more than a mile apart.

During 1912, 1913, 1914, 1922, 1931 and 1932, surveys were performed in Arkansas by the GLO to resurvey the meanders on the west side of the St. Francis River. Some of these retraced the original meanders by adjusting the courses and distances between recovered meander corners to the new measurements. Others were new surveys apparently finding the original survey to be wrong or non-existent. These resurveys were in Township 18 North and townships to the south. In Township 19 North and north, no resurveys were conducted. It is only after the River passes through Crowley's Ridge, at the Chalk Bluff, that the river widens out to become a swamp. Upstream from Chalk Bluff the meanders closely follow the River.

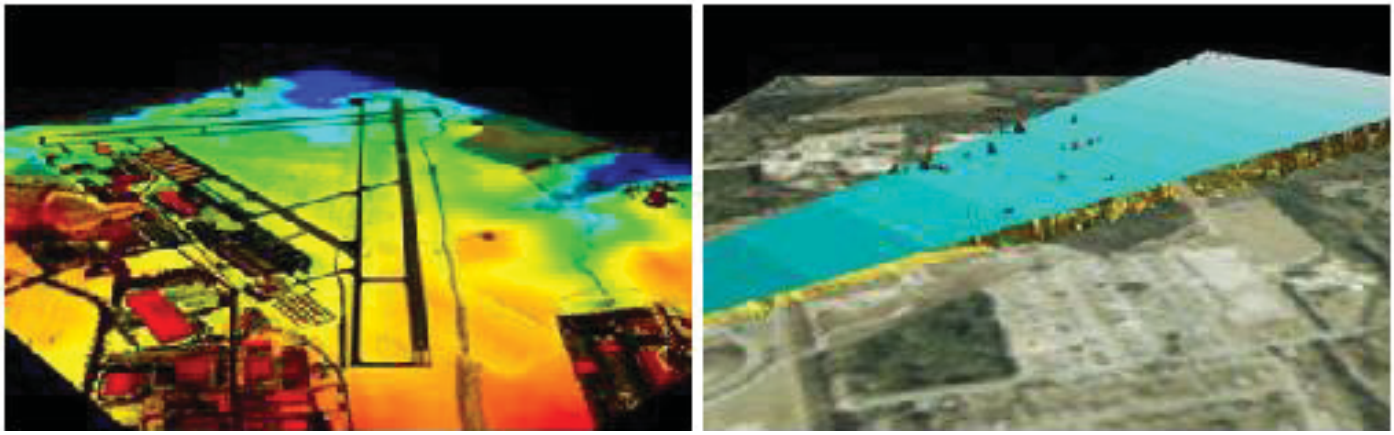
There have been no decisions of Supreme Courts of the United States, Arkansas or Missouri which have litigated the location of the state boundary in the St. Francis River. (This is unusual because most state riparian boundaries have been litigated.) Some survey research in both states shows no surveys of record along the St. Francis which locate the state boundary.

So, where's the state boundary today? The riverscape is different today compared to the early to mid-1800's when Brown and Gordon lead their survey parties into the area. Now well-walled by drainage district levees on both sides (south of Crowley's Ridge), the St. Francis still winds its way, slowly, south. Having never been surveyed or litigated, the state boundary would still be the "middle of the main channel" of the St. Francis River as located when it was first created and described as a boundary when Missouri became a state in 1821; but, as modified by the fluvial processes and their accompanying legal principles of erosion, accretion and avulsion, whether by natural or artificial processes since 1821.

Dick Elgin wrote "The U.S. Public Land Survey System for Missouri" and "Shoulda Played the Flute," his memoir of flying helicopters in Vietnam. This article is from his current project, a book about Missouri riparian boundaries. Semi-retired, he works for Archer-Elgin Engineering, Surveying and Architecture in Rolla, Missouri. He lives in St. James, Missouri.

3D Elevation Program (3DEP)

USGS



Lidar modelng used to detect potential obstacles that present hazards to air navigation.

The 3D Elevation Program (3DEP) initiative is being developed to respond to growing needs for high-quality topographic data and for a wide range of other three-dimensional representations of the Nation's natural and constructed features. The primary goal of 3DEP is to systematically collect enhanced elevation data in the form of high-quality light detection and ranging (lidar) data over the conterminous United States, Hawaii, and the U.S. territories, with data acquired over an 8-year period. Interferometric synthetic aperture radar (IfSAR) data will be collected over Alaska, where cloud cover and remote locations preclude the use of lidar over much of the State. The 3DEP initiative is based on the results of the National Enhanced Elevation Assessment.

3DEP Data Acquisition Partnership Opportunities

FY18 USGS Broad Agency Announcement (BAA) for the 3D Elevation Program (3DEP)

Partnership Opportunities

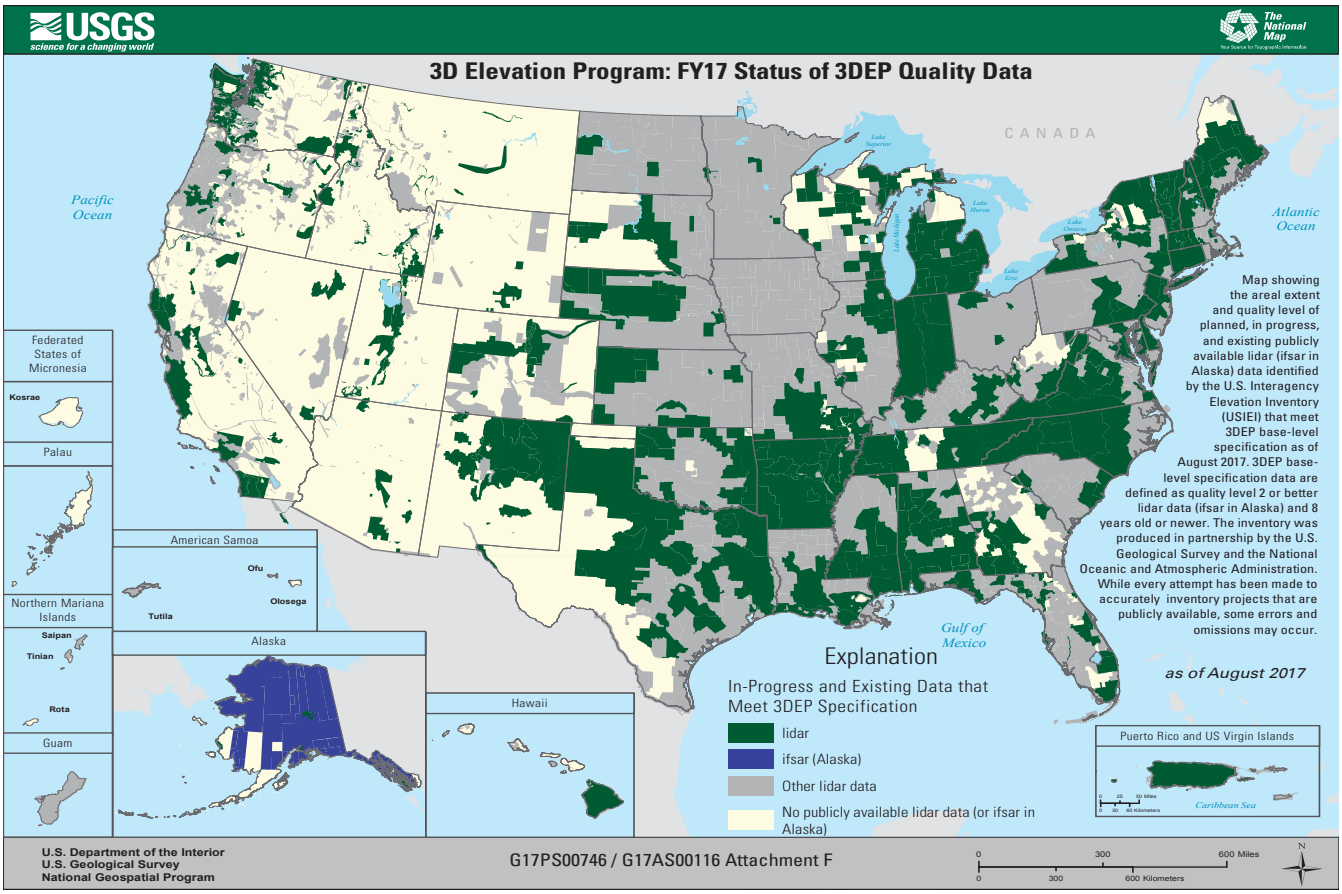
The FY17/FY18 Broad Agency Announcement (BAA) for the 3D Elevation Program (3DEP) was released on August 16, 2017. The BAA provides detailed information on how to partner with the USGS and other Federal agencies to acquire high-quality 3D Elevation data. Information and contacts are available at Fed Biz Opps (Search for Reference Number: G17PS00746) and Grants.gov (Funding Opportunity Number: G17AS00116). Applicants may contribute funds toward a USGS lidar data acquisition activity via the Geospatial Products and Services Contracts or they may request 3DEP funds toward a lidar data acquisition activity where the requesting partner is the acquiring authority. Federal agencies, state and local governments, tribes, academic institutions and the private sector are eligible to submit proposals.

Public Webinars

The USGS hosts a set of public webinars each year to introduce the BAA opportunity to the broadest stakeholder community possible and to provide a summary of the application process.

(continued on next page)

3D Elevation Program *(continued)*



Applications - A Few Examples

3DEP will provide expanded benefits to a range of Federal, State, local, and private industry applications. Some examples of the value of improved elevation data include:

- The Federal Emergency Management Agency (FEMA) expects that a national enhanced elevation program could reduce the amount of time needed to update its flood maps. These enhanced data could provide significant benefits to the communities and citizens that are customers of the National Flood Insurance Program. For example, updated information could be delivered to affected communities and homeowners more quickly.

- Using lidar data, U.S. Geological Survey (USGS) scientists discovered a surface rupture along the Tacoma fault in the State of Washington. This discovery led to a redesign of the structural elements of a $735-million suspension bridge across the Tacoma Narrows. When lidar data enable the identification of active faults near major infrastructure, mitigation steps may be taken to avoid potential catastrophes.

- In the State of Alaska, poor-quality elevation data pose an ongoing threat to aviation safety. Improved elevation data for cockpit navigation and flight simulators may save lives each year by reducing accidents resulting from the inability to safely fly over obstacles in airspace.

In 2010, an estimated 262.3 million acres of farm lands were harvested in the United States at total product values of $356.2 billion. The value to America's farmers of public domain lidar for all precision agriculture nationwide is believed to be potentially worth up to $2 billion annually.

All of this has led to a relative lack of litigation against negligent surveying activity because very few people are able to sue the surveyor due to a lack of funds and a general inability to recover costs even if the plaintiff wins the case. This has also led to the belief (by some) that surveyors are immune to prosecution. Don't be mistaken, surveyors do get sued (see endnote 1, below), but it takes a special plaintiff with disposable funds do to so.[3] Also, surveyors often end up in court proceedings, but they are not personally sued even though they caused the "train-wreck"—because there is nothing to recover.

Slander of Title

Slander of title is a potential game-changer and this, I believe, is why I am seeing more activity with this cause of action. Slander of title has the potential to be a large payout for a plaintiff because the damages are measured by the impact on the salability of the property. If the plaintiff owns property worth $1,000,000 and the result of the surveyor's survey is to place a cloud on 10 percent of the property, reducing the salability to $900,000, then the damages are $100,000.

"Disparagement of title, also known as slander of title, occurs when a person, without a privilege to do so, publishes a false statement that disparages title to property and causes pecuniary loss. The elements of the tort are (1) publication, (2) absence of justification, (3) falsity and (4) direct pecuniary loss. What makes conduct actionable is not whether a defendant succeeds in casting a legal cloud on plaintiff's title, but whether the defendant could reasonably foresee that the false publication might determine the conduct of a third person buyer or lessee. The gravamen of the tort is the damage to the salability of the property."[4]

Publishing in a slander action simply means telling someone else the slanderous accusation about the plaintiff's good title. In other words, when you deliver your survey to your client which indicates a cloud on the neighbor's title, you have published. You may also have just started the lawsuit.

The Litigation Privilege

The litigation privilege is all about slanderous accusations made in the course of litigation. It comes to us from the English common law where it was deemed that judges, lawyers and witnesses needed to be protected from the fear of reprisal lawsuits for things that they might say in court that could otherwise be characterized as libelous. The early Massachusetts case of McLaughlin v. Cowly[5] explains:

"It was stated in the opinion of this court … that it seems to be settled by the English authorities that judges, counsel, parties and witnesses are absolutely exempted from liability to an action for defamatory words published in the course of judicial proceedings; and that the same doctrine is generally held in the American courts, with the qualification, as to parties, counsel and witnesses, that their statements made in the course of an action must be pertinent and material to the case. … The qualification of the English rule is adopted in order that the protection given to individuals in the interest of an efficient administration of justice may not be abused as a cloak from beneath which to gratify private malice." Id.

The privilege is not unfettered. Given that the United States is largely a common law country, it is probably safe to assume that the privilege is applicable in most jurisdictions. The question, it seems, is how far the privilege extends. Does it only include judges, lawyers and parties to the litigation, or does it extend to expert witnesses as well? Does it only apply to proceeding in actual litigation or to proceedings and activities leading up to litigation, such as a survey of the property in preparation for litigation? Unfortunately, these are questions that can only be answered on a jurisdiction-by-jurisdiction search for the court's treatment of the privilege.

A series of Florida cases seems to have cleared up some of these questions, at least in Florida. In the DelMonico v. Traynor[6] decision, the Florida Supreme Court made a clear distinction between "absolute immunity" as "the principle of the litigation privilege in Florida, essentially providing legal immunity for actions that occur in judicial proceedings"[7] (including quasi-judicial proceedings and depositions), and a "qualified privilege" that applies to "ex-parte," and "out-of-court" actions not subject to

(continued on next page)

judicial oversight. This would include surveying activity leading up to litigation.

In the Fischer v. Debrincat and Debrincat[8] decision, the Florida Court of Appeals reaffirmed Delmonico and other Florida Supreme court decisions on the issue of the privilege of immunity.

The Florida Supreme Court eventually extended the litigation privilege doctrine beyond its traditional application to defamatory statements, holding that "absolute immunity must be afforded to any act occurring during the course of a judicial proceeding, regardless of whether the act involves a defamatory statement or other tortious behavior … so long as the act has some relation to the proceeding." The supreme court reasoned: "Just as participants in litigation must be free to engage in unhindered communication, so too must those participants be free to use their best judgment in prosecuting or defending a lawsuit without fear of having to defend their actions in a subsequent civil action for misconduct."[9]

In the case of Echevarria, et. al. v. Cole,[10] the Florida Supreme Court explained that "[t]he litigation privilege applies across the board to actions in Florida, both to common-law causes of action, those initiated pursuant to a statute, or of some other origin."[11] In the Fischer case, the Court of Appeals reaffirmed Echevarria while carving out the lone exception to coverage under the absolute privilege of immunity doctrine, being "malicious prosecution." From a surveyor liability standpoint, this is a positive movement in the law.

In my experience, the litigation privilege applied to surveying activity does not seem to be on defense attorneys' radar, but now you know it could be protected if you are sued for slander of title because of a survey. As I have said for a long time, you need to know the law that governs your practice.

Endnotes

1. I realize that larger firms will generally carry liability insurance as well as many small surveying companies and solo-operators, and that the insurance company may want to pay a settlement fee on these small issues to avoid the cost of litigation, but that is somewhat beside the point of this column.
2. Bull v. Pinkham Engineering, 752 A.2d 26, (Vt.2000).
3. Title companies come to mind, if, for instance, they remove the survey exception and because of your negligence they have to pay out on the policy.
4. Buddhist Monastery and Zen Temple v. Nelidov, 2006 Cal.App. Unpub. LEXIS 2766, 2 (Cal. App.2006). Unpublished opinion, overturned on other grounds. Curiously enough, overturned on the applicability of the litigation privilege.
5. McLaughlin v. Cowley, 127 Mass. 316, 319 (Mass.1897).
6. DelMonico v. Traynor, 116 So.3d 1205 (Fla.2013).
7. Id. at 1214.
8. Fischer v. Debrincat and Debrincat, 169 So.3d 1204 (Fla.App.2015)
9. Id. at 1206, 1207.
10. Echevarria, et.al. v. Cole, 950 So.2d 380 (Fla.2007).
11. Id. at 384.

Jeff Lucas is in private practice in Birmingham, Ala. He is president of Lucas & Co. LLC, and publisher of "The Lucas Letter," a legal newsletter for the surveying and engineering community. He can be contacted through www.LucasAndCompany.com. For a more in-depth study of the legal principles that affect our everyday practice, subscribe to "The Lucas Letter" at www.LucasAndCompany.com.

Don't miss Jeffery Lucas' latest book, The Pincushion Effect.

Board of Registration List of College Courses

January 30, 2018

Ms, Sandy Boeckman
Missouri Society of Professional Surveyors
722 E. Capitol Avenue
Jefferson City, MO 65012

Dear Ms. Sandy,

Please know that the Professional Land Surveying Division members met at their quarterly Division meeting on January 29, 2018 at which time they reviewed and updated the Board's "Acceptable Surveying Coursework" listing that is posted on the Board's website as a resource to those who are pursuing a career as a Professional Land Surveyor in the state of Missouri and I have been directed by the Division Members to share this updated listing with the Society as a reference for its members. I am therefore enclosing a copy of this listing. It can also be reviewed from the Board's website at the following link: http-.//pr.mo.qov/boards/apelsla2/apelsla/Acceptable%20Coursework% 20for%20Enrollment.pdf.

Should you have any questions or if I can be of further assistance to the Missouri Society of Professional Surveyors please do not hesitate to contact me.

Very truly yours,

MISSOURI BOARD FOR ARCHITECTS, PROFESSIONAL ENGINEERS,
PROFESSIONAL LAND SURVEYORS AND PROFESSIONAL LANDSCAPE ARCHITECTS

By: Ms. Judy Kempker
Executive Director

ACCEPTABLE SURVEYING COURSEWORK

Metropolitan Community College-Longview 2700 E. 18" Street Kansas City, MO 64127	**SRVY 135 - Elementary Surveying**
Mineral Area College 5270 Flat River Road Park Hill, MO 63601	**TEC 1540 - Surveying 1** **TEC 1560 - Surveying 11** **TEC 1260 - Topo Map Drafting** **TEC 1590 - Legal Principles of Surveying**
Missouri State University 901 S. National Avenue Springfield, MO 65897	**GRY 275 - Introduction to Plane Surveying**
Missouri University of Science and Tech. 1870 Miner Circle Rolla, MO 65409	**CV Eng 2401 - Fundamentals of Surveying**
Missouri Western State University **4525 Downs Drive** **St. Joseph, MO 64507**	**EGT 202 - Surveying 1**

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Board of Registration List of College Courses *(continued)*

Oklahoma State University
(Surveying Technology A.A.S.)
900 N. Portland Ave
Oklahoma City, OK 73107

SURV 1101 - Introduction to Surveying
SURV 1133 - Fundamentals of GIS
SURV 2232 - Route Surveying
SURV 2233 - Civil CAD Drafting I
SURV 2433 - Civil CAD Drafting 11
SURV 2242 - Residential Subdivision Design
SURV 2413 - Remote Sensing & Photogrammetry
SURV 2614 - Surveying I
SURV 2623 - Legal Principles of Surveying I
SURV 2633 - Legal Principles of Surveying 11
SURV 2643 - Advanced Surveying
SURV 2733 - Programming for Surveyors
SURV 2734 - Applied Survey Computations
SURV 2743 - Fundamentals of GIS

St. Louis Community College
3400 Pershall Road
St. Louis, MO 63135

CE 240 - Survey 1
CE 250 - Survey 11
CE 247 - Legal Aspects of Boundary Surveying
CE 248 - Fundamentals of Land Surveying

State Technical College of Missouri
One Technology Drive
Linn, MO 65051

CVT 240 - Surveying I
CVT 241 - Surveying 11
CVT 242 - Land Records: Researching and Rules of Const. (formerly called Fundamentals of Surv.)
CVT 243 - Legal Aspects of Boundary Surveying

Texas A & M University

(Corpus Christi)

GISC 2470 - Geospatial Plane Measurement I - (Equivalent to Survey 1)
GISC 3412 - Geospatial Plane Measurement - (Survey 11)
GISC 4315 - Satellite Positioning
GISC 4318 - Cadastral Systems
GISC 4340 - Geospatial Computations and Adjustment

Three Rivers Community College
2080 Three Rivers Blvd.
Poplar Bluff, IVIO 63901

CIVL 116 - Surveying 1
CIVL 216 - Surveying 11
CIVL 226 - Legal Principles in Surveying
CIVIL 236 - Computers in Surveying

University of Maine
Raymond Hintz
5711 Boardman Hall Rm. 119
Orono, ME 04469

CMJ1 03 - Fundamentals of Pub. Communication
PHY1 07 - Technical Physics 1
SVT1 00 - Intro. To Surveying Technology
SVT1 10* - Instrumentation and Data Collectors
SVT 121* - Autocad for Surveyors I
MAT 122* - Pre-calculus
CET1 01 - Plane Surveying
ENG1 01* - College Composition
PHY1 08* - Technical Physics 11
SVT1 22* - Autocad for Surveyors 11

(continued on page 32)

Seiler Instrument

Over seventy years ago our firm started with optics with manufacturing and servicing surveying instruments and microscopes. We have continuously expanded and evolved with the surveying industry to support, promote, and educate our customers on new GNSS technologies.

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- Seafloor Systems
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- AGL
- Autodesk
- Optimal Ranging
- Intuicom
- Laser Technology

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St. Louis, MO 63122
Direct: 314-218-6339

Kansas City Office
918 N. Scott Ave.
Belton, MO 64012
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Board of Registration List of College Courses *(continued)*

CET202* - Construction Surveying
MAT215 - Intro. to Stat. for Business & Econ.
MAT232 - Principles Statistical Inference
TME253 - Applied Calc. for Eng. Tech.
CET332* - Civil Eng. Tech.
ENG212* - Persuasive & Analytical Writing
SVT201 - Adjustment Computations
SVT221 - Boundary Law
SVT331* - Photogrammetry
SVT322 - Preparing Effective Property Desc.
SVT329 - Site Planning and Sub. Design
SVT341 - Advanced Surveying
MET484* - Engineering Economics
SVT418* - Fundamentals of Surv. Exam Overview
SVT437* - Practical GPS
SFR400* - Applied Geographic Info. Systems
SVT490* - Surveying Capstone
SVT501 - Adv. Adjustment Computations online)
SVT511 - Geodetic Aspects of the U.S. Public Land Survey System (online)
SVT532 - Lidar for Surveying Applications (online)
SVT541 - Geodesy(online)

University of Wyoming
1000 E. University Avenue
Laramie, WY 82071

CE 2070 - Engineering Surveying
LS 2010 (CE 2072) - Engineering Surveying Lecture
LS 2015 (CE 2072) - Engineering Surveying Laboratory
LS 2020 (CE 2090) - GPS for Land Surveyors
LS 2100 (CE 2076) - Records Research for Surveyors
LS 2110 (CE 2050) - Real Property Law
LS 2400 (CE 2089) - Basic Geodesy for Today's Land Surveyor
LS 2410 (CE 2083) - GIS in Surveying
LS 3100 (CE 2088) - Real Property Descriptions
LS 3110 (CE 3760) - Boundary Evidence
LS 3120 (CE 3740) - Boundary Principles
LS 3110 (C E 2085) - Public. Land Surveys
LS 3200 (C E 3710) - Route Surveying
LS 3210 (CE 3720) - Advanced Surveying
LS 3230 (CE 3760) - Applied Least Square Adjustments
LS 3300 (CE 2074) - Ethics for the Professional Surveyor
LS 3400 (CE 4750) - Remote Sensing/Photogametry for Surveyors
LS 4110 (CE 4700)* - Coastal Water Boundaries
LS 4120 (CE 4730)* - Inland Water Boundaries
LS 4130 (CE 4740) - Advanced Public Lands

***THESE COURSES WOULD ONLY BE ACCEPTABLE IF MAKING APPLICATION UNDER BOARD RULES 20 CSR 2030-14.020 AND 20 CSR 2030-14.030 - WOULD NOT QUALIFY UNDER BOARD RULE 20 CSR 2030-14.040.**

Revised January 30, 2018

MSPS Online Education Portal

Many Missouri surveyors have now gone to the MSPS online education portal (accessible through the MSPS website) to take continuing education courses for surveyors' professional development. While the majority of enrollments have been for the former Minimum Standards Courses, there have also been enrollments for other general surveying material on topics varying from ALTA surveys to state plane coordinates to RTK surveying to geodesy and more.

We are pleased to report that with the help of Missouri State Surveyor Ron Heimbaugh and his staff, we are creating new courses reflecting the new Missouri Standards for Property Boundary Surveys as well as other content taught by other staff within the Missouri Land Survey.

By the time this article prints, some, if not all of the new courses will be available for your enjoyment. Check them out!

Get to the portal at the MSPS website: www.missourisurveyor.org
Click on the Online Learning Portal badge; read about the portal and click again to go to the portal to register, review the catalog, and take your courses

MSPS: *bringing knowledge to your desktop anytime, anywhere you have Internet access*

Reminisce of An Old Surveyor *(continued)*

plumb bob would reflect poorly on the owner. At some point, another inventor came up with a gammon reel that wound the string up unless the owner resisted the urge of the gammon reel. Before the gammon reel arrived at the scene, a plumb bob string would be carefully wrapped around the head of the plumb bob and a slip put into the string to hold the string in place. A carefully tug on the string would unwrap the string from the plumb bob. A knot in the plumb bob string spoke of an untrained crew person.

A knot in a plumb bob string was akin to a hang nail on the finger – it's presence always felt and always hanging up at inopportune times.

Keep this rendition of the taping process in mind young surveyor before disparaging that old surveyor that taped those long distance one small segment at a time.

Old Surveyors Have Lunch

In the photo are members of the Rolla Area Old Surveyors Club. Left to right they are: Rich Howard, Hugh Parsons, Dick Elgin, Ken West, Mike Flowers, Norman Brown, Lou Gilbert, Johnny Young, John Stevens, Steve McLaughlin and Rick Stewarat. This group represents about 400 years of boundary surveying practice. They have worked for the Conservation Commission, in private practice, Missouri Land Survey, BLM, and the Forest Service. At the lunch, deceased members of the Club were remembered; the old surveying "war stories" were retold with further embellishment, and great new ones were invented. The Club meets when it feels like it. It has no president or officers, no dues, agenda, constitution, bylaws, committees or mission and only one rule: No politics can be discussed at lunch. All in attendance had a wonderful time. What a great bunch of surveyors!

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Volunteers Needed to Run for the MSPS Board of Directors for a Three Year Term.
Must be a PLS and a Current MSPS Member in Good Standing.
Send Email Inquiries to Joe Clayton, MSPS Nominating Committee Chair, josephclaytonpls@gmail.com

Award Nomination Form

to be awarded at the
Annual Conference
October 2018
Tan-Tar-A Resort

Person Nominated: _____

Name of Award: _____

On a separate page highlight the reason(s) for your recommendations/nomination.

Mail or fax completed form to the Mail Society of Professional Surveyors, PO Box 1342, Jefferson City, MO 65102 or Fax: 573-635-7823, no later than September 1, 2018. If you have questions contact Joe Clayton, Awards Committee Chair.

Awards

Surveyor of the Year Award has been given since 1987. This award is given to an MSPS member who has given freely of his/her time and efforts to the organization and toward the betterment of the surveying profession.

* Must be a Member of MSPS
* Should enjoy an outstanding reputation for his/her knowledge, integrity and professional competency.

Robert E. Myers Service Award has been given since 1990. This award is given to an MSPS member who, over an extended period of time (ten years minimum) has given exemplary service and dedication to the surveying profession and in particular to the Society.

Past Recipients Include

Surveyor of the Year Award - Joe Clayton, Richard Elgin, Stan Emerick, Robert Ubben, Darrell Pratte, Chris Wickern, Mark Nolte, Ralph Riggs, John Teale, Shane Terhune, Mike Gray, Don Martin, Dan Lashley, Richard Cox, Jim Mathis, Jim Anderson, Robert S. Shotts, Troy Hayes, Craig Ruble, Gerald Harms, John A. Holleck, John Stevens, Richard Barr, Erwin Gard, Charles Kutz, Robert Myers, Dan Govero, Jim Anderson, Mike Flowers, Bob Pirrie, and Jerry Day.

Robert E. Myers Service Award - Darrell Pratte, Robert Ubben, Gary Bockman, Sharon Herman, Troy Hayes, Rich Howard, Stan Emerick, Don Martin, Robert Myers, Charlie Kutz, John Teale, Jim Mathis, Robert S. Shotts, Stan French, Gaylon Smitth, Dan Lashley, Gerard Harms, John A. Holleck, J. Michael Flowers, Erwin Gard, Rich Norvell, David Krehbiel, Richard Elgin, Dan Govero, Jim Anderson, Rich Barr, Norman Brown, and Harold Schulte.

Governmental Affairs

by the National Society of Professional Surveyors

The Committee on Oversight and Government Reform ("OGR") of the U.S. House of Representatives is working on H.R. 1339, the *Freedom from Government Competition Act*.

NSPS has historically been in strong support of this bill and included it in its Hill visits during Lobby Day on several occasions.

NSPS members should contact members of the U.S. Houses of Representatives from their state who are members of the House Committee on Oversight and Government Reform. Here are points to make in a telephone call or email:

- Please vote "Yes" on H.R. 1339, the Freedom From Government Competition Act, in the House Oversight and Government Reform Committee next Tuesday, February 6.
- A positive public-private partnership model is needed so that there are clearly defined roles and responsibilities to provide synergy between the public and private sectors in the Federal level, and particularly with regard to surveying, mapping and geospatial activities.
- Federal agencies should be utilizing private sector geospatial firms to the maximum extent practical, not duplicating or directly competing against them.
- The federal government has a total of more than 1.2 million employees who are involved in performing commercially available activities, with several thousand in surveying, mapping and geospatial services. Many of these activities that can be found in the "Yellow Pages" from private companies, including small business, on Main Street USA. Numerous government studies have identified surveying, mapping and other "geospatial" activities as prime examples of commercial activities in which the federal government competes with and duplicates the private sector.
- There is a need and role for government in surveying, mapping, and geospatial activities. Federal agencies (such as National Geodetic Survey - NGS) provide critical services and data access for use by the private sector to support their daily operations, and the private sector provides data to agencies to enhance government data sets. This collaborative relationship should continue, allowing agencies to focus on inherently governmental activities such as establishing and enforcing standards and specifications, development of requirements, coordination, and administering contracts, while the qualified, competent, and capable surveying and mapping private sector should provide commercial activities (including data acquisition, processing, applications, and value added services).
- The "Freedom from Government Competition Act" (H.R. 1339) will codify the "Yellow Pages" test, applied by Mayors and Governors, both Democrat and Republican, that says if you can find private sector firms in the Yellow Pages providing products or services that the government is also providing, then the service should be subject to market competition to break up the government monopoly and prove a better value to the taxpayer. This bill will not only make government smaller and more efficient, but can save more than $27 billion annually and improve the quality of services.
- Please vote "Yes" on H.R. 1339, the Freedom From Government Competition Act, in the House Oversight and Government Reform Committee next Tuesday, February 6.

Remember, this is targeted - NSPS members should communicate with members of the House Committee on Oversight and Government Reform - ONLY, not other members of the House, not the Senate, for now.

Helping To Improve the Next Hybrid Geoid Model

by Jess Moss, Missouri Geodetic Coordinator

The National Geodetic Survey (NGS) currently has a "GPS on Bench Marks" campaign; the data acquired through this program will be used to improve the next hybrid geoid model and improve the 2022 transformation tools. The 2022 transformation tools will enable conversions to be made to the new vertical datum, called the North American-Pacific Geopotential Datum of 2022 (NAPGD2022).

NOAA's National Geodetic Survey encourages anyone with survey-grade Global Positioning System (GPS) receivers to help perform GPS on Bench Marks (GPS on BMs) to support the development of GEOID18 and transformation tools that will be produced for NAPGD2022. GPS on BM data will be accepted through the end of August 2018 for GEOID18 and NGS will continue to accept data through 2020 for the development of the transformation models for 2022.

The Missouri Department of Agriculture Land Survey Program has been participating in this campaign for a few years, coordinating efforts with Brian Ward, Regional Geodetic Advisor for NGS in the Central Plains Region. During this time, the Land Survey Program has performed approximately 300, four-hour observations on benchmarks throughout the state of Missouri and submitted the data to NGS. Utilizing the observations provided by the Land Survey Program and other contributors, NGS has developed a map showing the potential changes from GEOID12B to GEOID18. See Figure 1 for the Missouri portion of the map emphasizing potential geoid changes in Missouri. To confirm these changes, NGS has recently developed a new list of benchmarks to be observed for the Missouri portion of this campaign.

Currently, the Land Survey Program is coordinating with other government agencies, private firms, and individuals to perform GPS observations on the 165 benchmarks noted on the list provided by NGS. By occupying and sharing the GNSS data on these benchmarks, surveyors in Missouri will achieve more accurate North American Vertical Datum of 1988 (NAVD 88) orthometric heights and improve models needed to transform vertical data from NAVD 88 to the future NAPGD2022.
The Land Survey Program is assisting with the coordination of this effort within the state of Missouri. If you would like to participate, please contact Jess Moss or Ron Lather by phone at (573) 368-2300 or email at jess.moss@mda.mo.gov or ron.lather@mda.mo.gov . The Land Survey Program wishes to extend thanks to those who have already committed time and effort to this undertaking.

For more information about "GPS on Bench Marks" and how to collect data, please visit: https://www.ngs.noaa.gov/GPSonBM/Observe.shtml. A prioritized list of marks may be accessed: https://www.ngs.noaa.gov/GPSonBM/prioritize.shtml. A map of the benchmarks may be accessed: https://www.ngs.noaa.gov/GPSonBM/webmap.

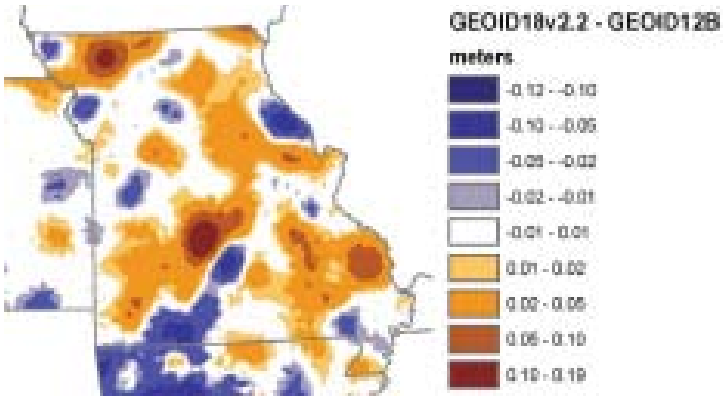

Figure 1: Missouri Portion of the Potential Geoid Change Map (Map Courtesy of NGS)

Jess Moss, PLS
Project Surveyor
Land Survey Program
Missouri Geodetic Coordinator

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AAGS/GNSS Data on Bench Marks

by the American Association of Geodetic Surveying

February 13, 2018

Missouri Society of Professional Surveyors President Gerald Bader:

The American Association for Geodetic Surveying (AAGS) would like to make you aware that the National Geodetic Survey (NGS) is actively improving the accuracy of its hybrid geoid model and will replace GEOID12B with GEOID18 in early 2019. This new hybrid geoid model will improve the derivation of orthometric heights (elevations) referenced to the North American Vertical Datum of 1988 (NAVD 88) using Global Navigation Satellite System (GNSS) technology. The new model will also thereafter serve as the official means for obtaining NAVD 88 heights via GNSS.

NGS will use GNSS data collected on bench marks to create the new hybrid geoid model. Recent analyses have revealed areas in your state where additional GNSS data will either confirm or update the relationships between ellipsoid, orthometric, and geoid heights.

In addition to improving the geoid model, the collection and submission of GNSS data on bench marks will also enable NGS to develop more accurate models for transforming survey data referenced to NAVD 88 to data referenced to the future North American-Pacific Geopotential Datum of 2022 (NAPGD2022). Surveys starting in 2022 involving flood plain maps and so forth will require establishment of vertical control using GNSS; therefore, improving the accuracy of the geoid model is an important endeavor.

NGS has developed a prioritized list of bench marks. Data collected and submitted on these marks prior to August 31, 2018, will be used in the development of GEOID18. NGS will also continue to accept data on marks through 2020 for the development of the transformation models for 2022. New prioritized lists to support the transformation models will also be made available over the next few years as analysis of data requirements progresses.

AAGS has obtained a prioritized list of bench marks for your state from NGS (attached). This priority list is also shown in a useful, online tracking map at https://geodesy.noaa.gov/GPSonBM/webmap/.

This is an opportunity for your society to help all constituents in your state in need of orthometric heights. Your state society could organize an effort using your chapters to occupy as many of these bench marks as possible. The provided list contains all of the bench marks that NGS would like to have occupied with GNSS and then shared with them. Surveyors can increase the local accuracy of the geoid model in their area by collecting GNSS data on the identified marks, and this effort will thereby help improve the accuracy of future GNSS surveys for deriving orthometric heights referenced to the national datum in their area. It is also in your best interest to contribute data as it will improve future models for transforming vertical data in your state or local area to the future geopotential datum.

For the bench marks included in the prioritized list, NGS recommends contributing in two ways:

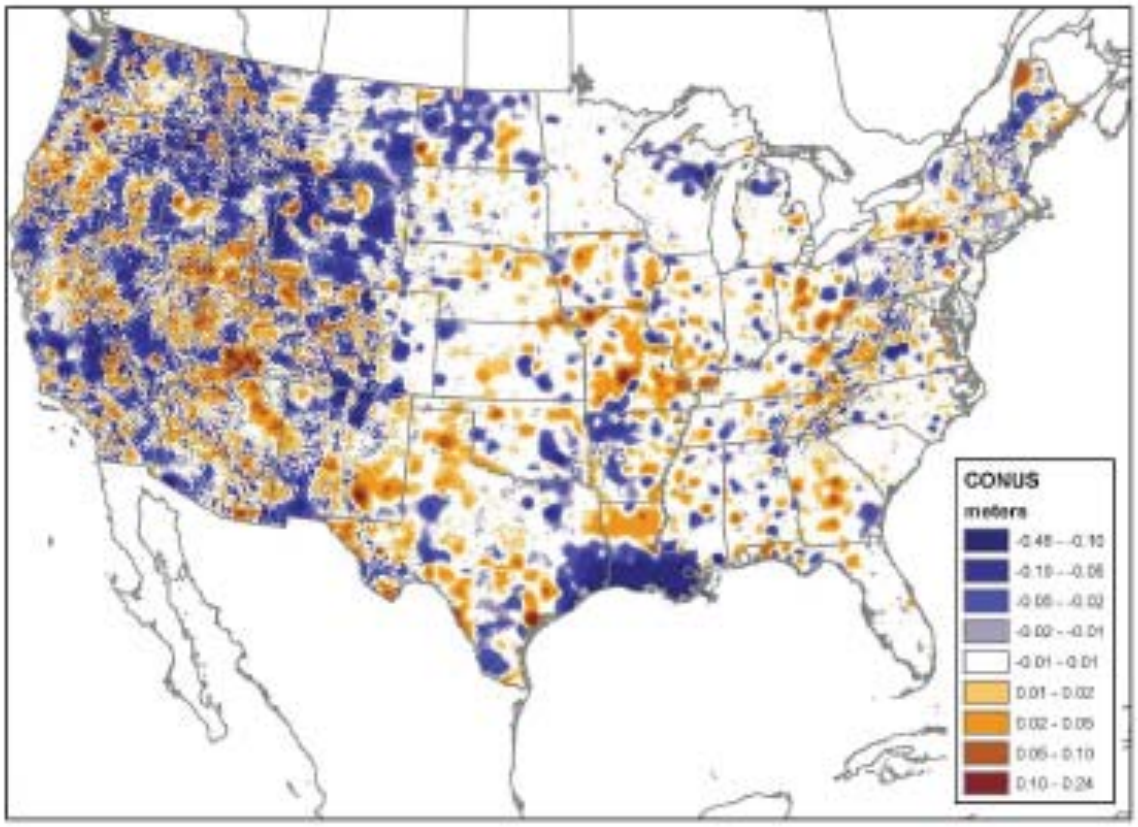
1. Attempt to locate the marks on the list and submit a mark recovery through DS World. Check this NGS page for more information on mark recovery.
2. Collect 4 or more hours (more is better) of GNSS data on the mark following NGS guidelines, submit the data to OPUS and select the option to Share. When sharing an OPUS solution, NGS will also request a brief description and photos of the mark for quality control. Two independent OPUS solutions for each mark are highly desirable for confirming results.

The list indicates how many observations NGS has received on each bench mark (see the "obs_cnt" column). The aforementioned tracking map also shows the number of new, independent observations NGS is requesting for the marks. Please note that this tracking map will be updated as OPUS solutions are accepted by NGS, so we recommend checking it often.

It is also worth noting that marks on this list may be inaccessible, destroyed, or at sites that are unsuitable for collecting GNSS (e.g., trees, buildings, etc.). If this is the case, please locate and observe another nearby NAVD 88 bench mark, within ~10 km.

Attached is a map showing the potential changes between GEOID12B and the new hybrid geoid model. While data would be helpful on or near all of the marks on the list, you may consider focusing your data collection efforts by looking for areas in this map that show large changes in your region. For further information or to discuss options for collaborating with other regional partners, please consult with your NGS Regional Geodetic Advisor and/or State Geodetic Coordinator. Questions to NGS may also be directed to ngs.GPSonBM@noaa.gov.

For additional information, Dave Zilkoski recently published an article on this topic for GPS World, which can be viewed at http://gpsworld.com/ngs-2018-gps-on-bms-program-in-support-of-napgd2022-part-5/.



Sincerely,
John Hamilton
AAGS Board member / Immediate Past President

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"How" you may ask? By sharing photos, stories and news with Missouri Surveyor! It is really that simple. Just as this edition's cover features Missouri surveyors you and your work may be featured as well. All content is welcome! For the cover, high quality images in landscape format at an aspect-ration comparable to 17"x11" work best; stories and articles merely need to be in Microsoft Word.

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