



MISSOURI SURVEYOR



A Quarterly Publication of the
Missouri Society of Professional Surveyors

Jefferson City, Missouri

June 2022

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CALENDAR OF EVENTS

2022

June 15, 2022

Surveying the Riparian Tract
Virtual

July 16, 2022

Board Meeting
MSPS Office, Jefferson City, MO

August 15-17, 2022

Review Course
Jefferson City, MO

October 6-8, 2022

65th Annual Meeting and Convention
Sheraton Westport Hotel, St. Louis, MO

December 3, 2022

Board Meeting
MSPS Office, Jefferson City, MO

Additional Dates for Spring Workshop

May 3-May 7, 2023

May 1-May 5, 2024

2023

September 28-30, 2023

66th Annual Meeting and Convention
Oasis Hotel, Springfield, MO

Cover: Instrument Operator
Danny Kibel of Allgeier Martin
& Associates of Joplin, in an
abandoned limestone quarry
near Carthage, Missouri.
*Photo courtesy of
Andrew South.*

Donald R. Martin, Editor



Notes from the Editor's Desk

Donald R. Martin



Greetings all and welcome to the June 2022 *Missouri Surveyor*. It has been a busy spring for MSPS members! Working on legislation and holding the Spring Workshop in April has been mixed with the day-in-day-out surveys throughout Missouri. I don't presume our members have been anxiously awaiting this edition with all their activities going on, but here it is, so check it out!

Our *cover* is unique – a first for us; a panoramic photograph! It's provided courtesy of H. Andrew Andy South of Allgeier, Martin and Associates in Joplin. Thank you, Andy! Moving into the inner contents, don't miss the announcement for our *2022 Map/Plat Competition*. Next is the solemn news of the passing of two of our finest; PLS *Scott Allen "Big Scott" Richards* of Cape Girardeau and PLS *George "Wayne" Wiley* of Hillsboro. This is followed by another entry of *Meet Our Members*. Next is an announcement and details about the *Comparative Error Analysis Workshop* by Stan Emerick to be held at the MSPS Annual Meeting and Convention in October; make plans to participate. The announcement includes an aerial image of the planned test course to be used during the workshop. News of this year's legislative efforts and successes in up next in *Capitol View*. An expression of gratitude follows honoring our fine vendors who joined us at the Spring Workshop in *Thank You Exhibitors*. The recent passing of legendary MSPS member *Norman Brown* is honored on our center pages with his *obituary*, a remembrance written by Darrell Pratte titled *Norman Brown: The Old Surveyor*, a photo tribute, and a sincere *letter from Dan Govero*. Probably the most recognizable member of our surveying community, Mr. Brown was an MSPS past President and frequent workshop presenter.

Another renowned Missouri surveyor offers our next article in Dick Elgin's *Early American Surveying Equipment*. While the piece is a fine report of ancient tools, Dr. Elgin also shares commentary on the importance of surveying equipment being displayed. Our friend Larry Bollinger returns to our pages with another humorous anecdote in *Move It!*, a reflection on surveyors as peacemakers. From the real estate email newsletter Propmodo comes the next item in our edition with *Land Surveying's Evolution from the Doomsday Book to Drones* by Kyle Hagerty. It effectively connects the past to the present while recognizing surveying's links to representative government and private property ownership. The saga *Thoughts on Professional Practice and Education* by Knud Hermansen continues with articles three and four in our pages. They are *Eliminate Experience Requirement for Licensing* and *Business and Management in Education*. Please read and see if you agree! This is followed by an opinion piece from David Cox, the executive direction of NCEES. *Downgrading Licensing will Weaken Consumer Protections* is an important article on the licensing of surveyors and engineers and serves to caution the general public about legislative efforts of anti-licensing moves under the guise of boosting the economy and eliminating regulatory burdens. Finally, a small item hidden within the pages of the newsletter is *From the Chapters* with news from the SW and Ozark Chapters of MSPS.

With that, I best break-it-down and bunch-it-up so I can start getting ready for the next 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

Brad McCloud, PLS



It was great to see so many at the spring workshop and MSPS meeting in April. I have a couple key takeaways. One was how to look up documents in the Land Survey Index. The other was the Value Based Business presentation as a whole. This presentation engaged our whole group and was interactive with tools that can be utilized in many work environments. Golf, well, the weather didn't cooperate. This is really too bad as I was having a very memorable game.

Our meeting had three additional updates/reports that I thought you all might find interesting as well. MoDOT representative, Melvin Distler, updated the board on their GPS Network. Updates include: replacing or updating base stations in rural locations to include the Galileo and BeiDou constellations into the network solution. A proposed a budget has been submitted to update or replace all the base stations in the network to include the two previous constellations by the end of their next fiscal year.

JB Byrd with NSPS gave us a report on legislative activities with Missouri Senators and Representatives. The next NSPS meeting will be in Tulsa, Oklahoma in October. The FIG (International Federation of Surveyors) will be holding their FIG Working Week in Orlando, Florida in May of 2023.

Mike Oetterer from State Technical College of Missouri reported on a proposed 2-year surveying program. This program would be an in-seat curriculum with a class size of 28 to be considered by administration. He has asked MSPS to advise and support this program as they get started. We will be creating a sub-committee under the current education committee to assist. If you are interested in serving on the committee, please let us know.

We finally had some good news on the legislative side, House Bill 2149 passed the house and was sent to the governor for his signature. This bill changes the educational requirements from 12 to 15 hours of approved surveying courses, requires six hours of legal principles instead of the current two and the amount of time of experience is based upon education path. It also changes the Land Surveyor in Training title to Surveyor- Intern. Changes go into effect January 1st, 2024.

Plat Contest was approved and there will be a cash payout for the best three plats overall, so get those entries in. Stay tuned for dates.

I enjoyed seeing everyone at the meeting. Please feel free to reach out to me with any questions on any of the upcoming items listed in the message. 🇺🇸

Brad

Thank You to Our Speakers at the Spring Workshop

Matt Davis, Seiler Design Solutions • Mike Freeman, PLS, Freeman Land Survey
Scott Holman, Stop Clowning Around • James McDonald, PLS, Goodwin Brothers Construction
Ray Riggs, PLS, Riggs Brothers Surveying • Mark Schnesk, Seiler Design Solutions
Robert 'Bob' Shotts, PLS • Jacque Walters, Land Survey Program

MISSOURI SOCIETY OF PROFESSIONAL SURVEYORS

2022 MAP/PLAT DESIGN COMPETITION

Entrants should be MSPS Member or Non-Member sponsored by a Corporate Member of MSPS.

Freehand and machine or computer drafted maps and plats completed after 6/30/2021 are eligible for entry. No more than two entries per category will be considered.

The maps or plats submitted can be black and white (halftone/shaded), blueline or color prints.

Maps Accepted ELECTRONCALLY in PDF Format Only.

Submissions must be a single drawing. They may originate as a set but must be entered as a single sheet.

All entries must be received by or **July 31, 2022**.

Use one entry form per document submitted.

Winners will be Announced and Displayed at the MSPS 2022 Annual Meeting. Payout to Top 3 Best Overall.



CATEGORIES

(check appropriate categories)

- * Subdivision Plats
- * Boundary/Cadastral Maps
- * Topographic Maps
- * ALTA/NSPS Survey Maps

JUDGING CRITERIA

- * Content
- * Data Relevance
- * Accuracy of Scale
- * Layout Innovation
- * Interpretability
- * Applicability
- * Presentation Neatness

ENTRY SUBMISSION

mmps@missourisurveyor.org

DEADLINE

July 31, 2022

ENTRY FORM

Name _____

Address _____

City, State, Zip _____

Email _____

Phone _____

Employer _____

Title of Entry _____

Description of Project _____

SPONSOR

SELF (active/current MSPS member)

MSPS Corporate Member

Sponsor Name _____

Sponsor Email _____

Sponsor Phone _____

All entries will be judged on adherence to the Missouri Standards (Title VI, Chapter 60) or ALTA/NSPS Standards and NSPS Model Standards for Topographic and Property Surveys visit www.nsp.us.com > Resources > Standards. The judges will consider content, innovation in layout, interpretability, presentation, applicability to typical client or persons using this type of map, and correctness. Neatness and accuracy of scale will also be considered. The decisions of the judges are final. Prizes will be given in categories where three or more entries are received. **No entries will be returned .**



CATEGORIES

(check appropriate categories)

- * Subdivision Plats
- * Boundary/Cadastral Maps
- * Topographic Maps
- * ALTA/NSPS Survey Maps

JUDGING CRITERIA

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ENTRY SUBMISSION

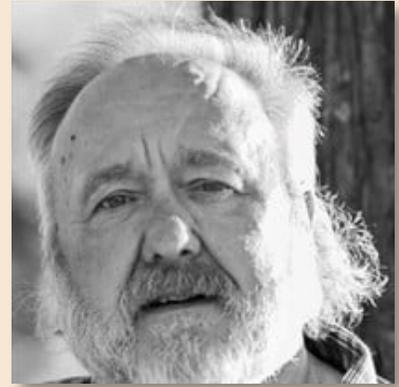
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DEADLINE

July 31, 2022

In Memory of Scott Allen (Big Scott) Richards

Scott Allen Richards (Big Scott), 64, passed away Saturday, April 9, 2022. He was the owner of Richards Land Surveying in Cape Girardeau. Born on March 21, 1958 in Moline, Illinois to the late Francis (Dick) and Mary Rumler Richards, Mr. Richards was recruited to play basketball for the University of Nevada, Reno and then Southeast Missouri State University where he earned a Business Degree. He continued his education at Southern Illinois University, study surveying which led to his registration practice surveying in Missouri, Illinois and Arkansas. He began his surveying career apprenticing with his wife's father, Richard T (Papa) Kogge.

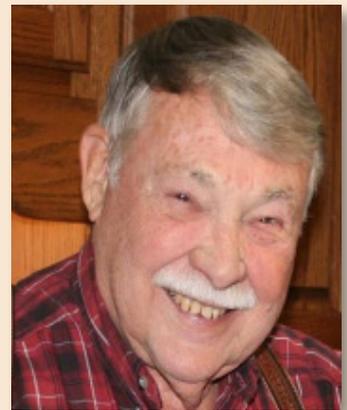


On October 16th, 1982, Scott married his sweetheart, Mary Louise (Kogge) Richards. Together they spent the past 39 years building a home and running a successful business, while raising their two daughters and enjoying their 6 grandchildren, nieces and nephews. Big Scott enjoyed the outdoors, being with family by the pool, going to yard sales and spending his weekends in Peckerwood Holler with his treasured wife Mary. Known as Bebo or Gampa to his beloved grandchildren, he loved going metal detecting with them, taking them to the park and running errands with them. Not a quiet man; he had a wonderful laugh with a booming voice which will be missed dearly.

Scott is survived by his loving wife, Mary, his children, Kate Reeves (Jared) of Cape Girardeau; Megan Frazier (Mark) of Cape Girardeau and sister, DeAnn Thompson, (Kelly) and family, of Ava Missouri as well as Pauline Richards. He is celebrated through the lives of his grandchildren Josh, Luke and Drew Reeves, as well as Haddie, Millie and Norah Frazier. He was preceded in death by his parents; Francis Junior (Dick) and Mary Mildred (Rumler) Richards; his brother Steven Richards and his father and mother-in-law, Richard T (Papa) and Patricia Ann (Nana) Kogge. 🇺🇸

In Memory of George 'Wayne' Wiley

George "Wayne" Wiley, 82, of Hillsboro died May 9, 2022, in St. Louis. Mr. Wiley was the founder of Associated Land Surveyors. He was a member of Zion Lutheran Church in Hillsboro, the Hillsboro Lions Club, the Rotary Club, the Hillsboro Chamber of Commerce, the St. Louis Gateway Two-Cylinder Club, Gideons International, Scottish Rite, Moolah Shriners and the Masonic Lodge in Hillsboro. He also was a board member of the Hillsboro Food Pantry. Born Sept. 16, 1939, in Hillsboro, he was the son of the late George and Vera (Schubel) Wiley.



He is survived by his wife: Elizabeth "Sharon" (Thebeau) Wiley of Hillsboro, who he married on January 1, 1995, in Hawaii; four sons: Mark (Debbie) Wiley of Hillsboro, David (Keena) Wiley of Hillsboro, Charles (Kim) Bieser of Hillsboro and David Bieser of Festus; a daughter: Mary Beth (Terry) Stanfield of Hillsboro; many grandchildren, great-grandchildren, great-great-grandchildren; other family members and friends.

He was preceded in death by a brother: Norman Wiley; a sister: Dr. Joyce Sheets; a daughter: Jacqueline Bieser; a nephew: Jason Wiley; a granddaughter: Justine Elizabeth Bieser; and a great-granddaughter: Alexis Wiley. 🇺🇸

Wayne quietly slipped into the hills this May. While we may ask "why did you put it there" he will answer no more. Dad was always moved by the friendship and camaraderie the surveying profession shares, and in that spirit, I share this sad news.

One day we hope and pray to hear the words "Well done my good and faithful servant."

Mark Wiley, PLS



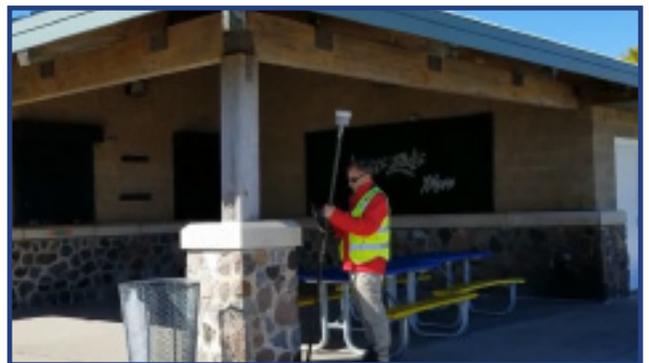
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Meet Our Members!

PLS Members

Caitlin Miller

Jackson County, Missouri

Position:

Co-Owner

Onwiler Contracting, LLC



Focus of survey practice:

Boundary surveys, plot plans, flood studies, topo's; we cover it all. The areas we work most in are property boundaries and contract services for field work and drafting to other surveying firms in metro Kansas City.

Most memorable project:

It's not so much a particular project as it is the whole of the work encompassing a survey. From initial client contact, to working with the county when it comes to large lot splits, to being able to show a client what they had envisioned for their land, to setting property corners and issuing a survey. While this can be a frustrating process, I learn something from it every time.

Likes about surveying:

There are never two days that are exactly the same. One day I may be retracing a survey from the late 1800's, the next it's a large lot split in rural Cass County, and by Friday doing a boundary and staking for fencing in a newer subdivision. I like the variety!

Why a member of MSPS:

To grow my knowledge of surveying and never become stagnate in my field.

Finding surveying as a career:

I had interned for Shafer, Kline & Warren as part of a drafting class in high school through my uncle Tim Johannes. Once I graduated, I worked for them during summers while I earning my degree from Missouri State University. During my senior year at MSU I also interned with Anderson Engineering. The sheer amount of knowledge possessed by the guys I worked with was astounding. Part lawyer, part historian, part math geek, part construction wizard, all surveyor. And every one of them was willing to take the time to explain the "why". I couldn't imagine doing anything else! 🇺🇸

T.C. James

Vienna, Missouri

Position:

Owner,

Show-Me Land Surveying



Focus of survey practice:

Having worked in surveying for 12 years split between Archer-Elgin of Rolla and the Missouri Land Survey Program, I opened my own business in the fall of 2020. My preference is rural boundary work.

Most memorable project:

It seems all surveys have something memorable about them. I would say my most memorable would be the State Line projects along the Missouri/Iowa border completed while working for the Land Survey Program. The combination of looking for evidence in the field along with the research on the history of the line was very interesting.

Likes about surveying:

The uniqueness of every project. No matter how many surveys you do that look the same on the surface (whether it's breaking down a section or a lot survey) they are all unique. One small difference may completely change the solution.

Why a member of MSPS:

I am a member for two reasons. One is for the conferences/PDU's. The other is to help support the profession. I see it as an organization that helps bring together the individual surveyors and give them a bigger voice when it comes to anything that will affect surveyors. Whether that is stopping something that will adversely affect the profession, or promoting something to move it forward.

Finding surveying as a career:

I wish I knew the answer! I kind of stumbled into it without really knowing what it was about. By the time I understood what was involved, I was in too deep to turn around! There are days I would like to go back in time and knock some sense into myself, but others that I wouldn't change it for anything...mostly the latter...I think... 🇺🇸

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Comparative Error Analysis Workshop

(Understanding the difference between *Precision* and *Accuracy*) at the 2022 MSPS Annual Meeting & Convention

When a surveyor signs his certificate, and it includes a statement that his work was done in accordance with standards, he is also affirming that that work meets the accuracy requirements defined therein. If called to task to defend his accuracies, can he do it?

This workshop will lay out a roadmap for approaching that challenge. We will design a test course. We will review sample data sets. We will lay the groundwork for how one goes about analyzing that data by applying a comparative error analysis. We will discuss some of the pertinent topics involved in the process, such as standard deviations, root sum square errors and levels of certainty. We will compare the results to see if it meets both the Missouri and ALTA accuracy standards.

The main purpose of this workshop is to analyze and compare coordinates collected utilizing survey quality GPS equipment. As there seems to be some debate regarding the quality of data collected using a single unit or a dual unit system, the primary goal of this workshop will be to see if there is any appreciable difference between the two. And with the recent introduction of tilt correction units, a secondary goal will be to test these units, to see if data collected employing this procedure approaches boundary survey quality.

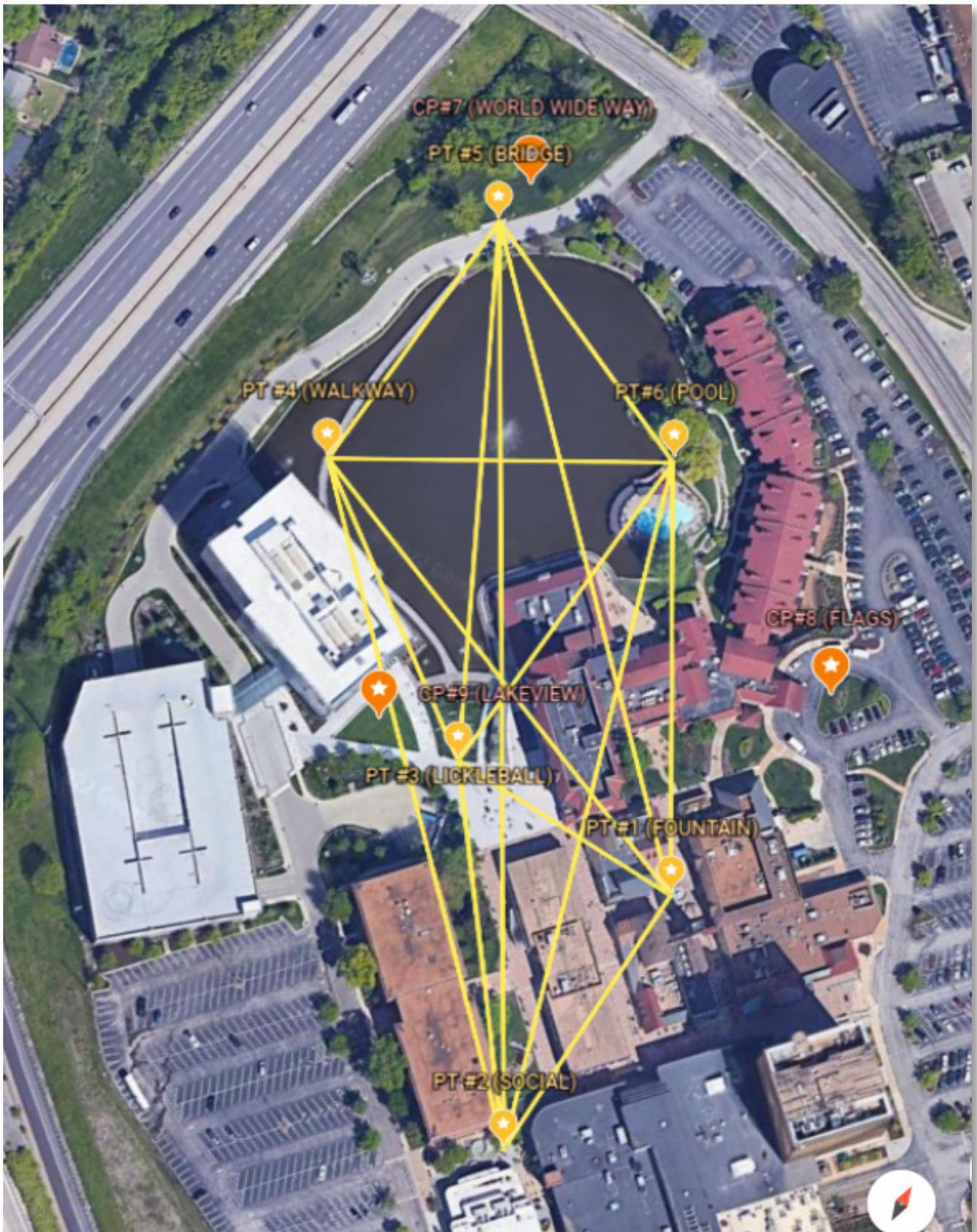
Since the advent of electronic instruments, a fundamental constant for doing accurate surveying work has been the necessity to be plumb over a point. With the addition of inertial measurement units (IMU) to GPS receivers, that constant may no longer be a requirement. According to manufacturers, the IMU units can determine the tilt and direction of the head unit, and combined with the length of the pole, can apply corrections to position and elevation (XYZ coordinates) for the subject point. As this novel concept represents a significant shift in tradition, its relevancy to producing precise surveying measurements needs to be tested.

This workshop will attempt to address the above referenced topics with the following activities:

- 1. We will set up a test course around the Plaza, setting two primary control stations (with fixed MGS83 coordinates). We will also set up six secondary stations with unknown values. Some of these stations will be in readily accessible locations (with open sky). Others will be set in peripheral locations, with marginal (limited) constellation visibility.*
- 2. Coordinates for the primary stations will be determined by static GPS survey observations run through the National Geodetic Survey Online Positioning User Service (OPUS)*
- 3. Coordinates for the secondary stations will be determined by individual users utilizing one of the two primary collection systems, a two-unit base & rover system or a one-unit system employing the Missouri Highways and Transportation Commission Global Navigation Satellite Real Time Network. (All observations utilizing plumb poles.)*
- 4. Additional coordinates for the secondary stations will be determined by individual users employing IMU tilt compensation units. One set each will be collected with a fixed location unit.*
- 5. A second set of tilt correction coordinates will be determined by individual users employing IMU tilt compensation units while applying a wobbling (or drift) location.*
- 6. Unadjusted coordinates will be collected by the group's party chief and provided to the analyst. After processing the data, a presentation on the results of the comparative error analysis will be given on Saturday afternoon.*
- 7. As part of a separate exercise from the workshop's drone collection session, a set of coordinates for each station will be extracted from drone collected cloud data and will be compared against the results of the primary error analysis.*

In hopes of enhancing the experience for the participants, we may include a dead-reckoning contest to the course. At each station, there will be an opportunity for each participant to guess the angles or distances or elevations to nearby objects. Prizes will be awarded to the winners for the closest guess at each location. 🇺🇸

**Thursday
October 6, 2022
65th MSPS Annual Meeting and
Convention
Sheraton Westport Lakeside Chalet
St. Louis, MO**



The Test Course layout on the grounds of the Sheraton Westport Lakeside Chalet and the Westport Plaza business and entertainment district.

Capitol View

A Look at Surveying Legislative Matters

On May 13th (Friday the 13th!) the 101st General Assembly came to a close. Passing 20 bills on that last day prevented the legislative bodies from being the least productive in Missouri history. In total this session produced a mere 43 non-budget bills. The fewest ever was during the pandemic-shortened session of 2020 when 31 bills cleared the body. The short list of achievements in the session of 2022 may be most notable for the passing of the largest budget in Missouri history, while there was some news regarding surveying...

Truly Agreed and Finally Passed

Coming to be known within MSPS as the “Education Bill”, numerous proposals to change the qualifications to becoming a Missouri surveyor found in Revised Statutes 327 became bundled into House Bill 2149.

On April 28th, Legislative Committee Chair Jim Anderson reported to the MSPS Board of Directors that with only two weeks left in the legislative session little progress was being made on any legislation. Yet, at that time HB2149 was still “alive” and headed to conference with the educational reforms sought by MSPS intact. By May 9th, MSPS Legislative Consultant Lynne Schlosser reported the bill and the changes supported by MSPS made it through conference and needed one more vote in both the House and Senate. Then, on May 11th, with an enthusiastic “woop woop!,” Ms. Schlosser was able to proclaim, “HB2149, with MSPS Surveyor education language included was just *Truly Agreed and Finally Passed*. Next stop, the Governor’s desk.”

This legislative accomplishment has been in the works a long time by MSPS, with previous attempts not coming to fruition. Part of the success found this time was achieved through the stewardship of two key players, Senators Mike Bernskoetter (District 6) of Jefferson City and Karla Eslinger (District 33) of Wasola.



Corners Reestablishment Rules

Representative Don Mayhew continued his effort to remove ambiguous elements in Chapter 60 of the statutes pertaining to double proportionate measurements, lost corners on township exteriors, and quarter-section corner offsets. These required changes to RSMo. 60.301, 60.315 and 60.345.

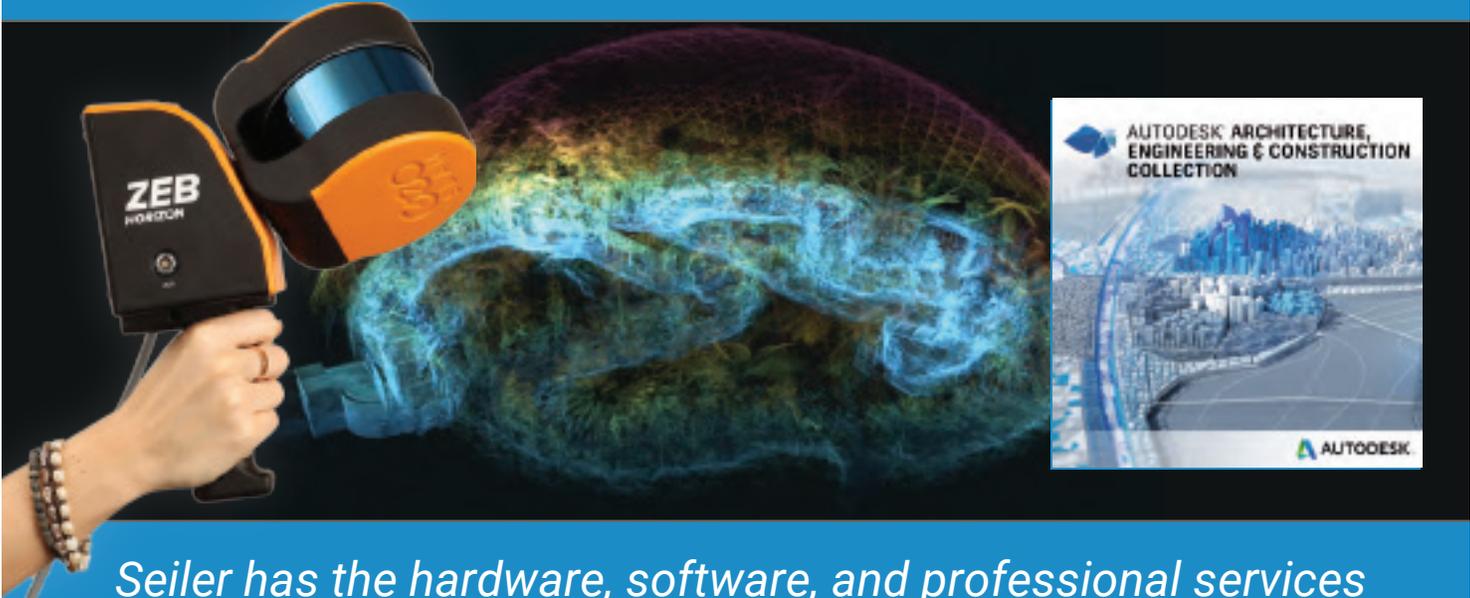
These changes were placed into the “Ag omnibus bill” assigned as House Bill 1720. HB1720 touched a wide variety of issues relevant to agriculture, the soybean producers assessment, the Family Farm Livestock Loan Program, regulations of anhydrous ammonia and tax credits for wood energy, meat processing investments, and ethanol and biodiesel retailers as well as including land surveys.

On May 10th, HB1720 was *Truly Agreed and Finally Passed*. 🇲🇴

Mark Your Calendar for the 65th Annual Meeting on
October 6-8, 2022 at the Sheraton Westport Chalet Hotel
in St. Louis, Missouri



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Norman L. Brown, PS, PE: Surveyor Extraordinaire, 1937-2022

Well known Missouri surveyor Norman L. Brown died March 26, 2022 in Rolla at age 86. Norman was born to Doyle and Ruby Brown in Texas County, Missouri in 1937. He graduated from Houston (MO) High School, spent four years in the U.S. Air Force maintaining the Convair B 36 bomber, then used his GI Bill benefits to attend the Missouri School of Mines (Rolla). He received his BSCE, then MSCE while serving as a Surveying Teaching Assistant. His MS thesis title was "The Density of Horizontal Control in Missouri" (1968). On graduation, Norman and the late Mike Manier established Big Piney Surveying & Engineering (Houston, MO) and became the Texas County Surveyor. When the Missouri Land Survey Authority was formed in 1971, Norman was hired as its first field surveyor. He and other early staff members were instrumental in gathering GLO notes and plats, records from county courthouses, railroad plans and private survey records that became microfilmed and part of the Land Survey's Repository. Norman spent the remainder of his professional career at the "Land Survey," retiring in 2001.

During Norman's 29 year career at the "Land Survey" he supervised field surveys, conducted innumerable corner investigations, conducted several large scale dependent resurvey projects on the USPLSS, and restored a 6 mile segment of the 5th Principal Meridian. During this time, he restored or reestablished about 600 USPLSS corners. But perhaps more important to the Missouri professional surveying community was Norman's contributions of mentoring young surveyors and his willingness to share his vast knowledge of surveying. Always the teacher, he influenced and assisted many surveyors to become a licensed Professional Surveyor. A very interesting and entertaining presenter, Norman likely made more presentations, on all aspects of surveying, than any other Missouri surveyor. His audiences were not just professional surveying societies, but included service clubs, student groups (from kindergarten to university), historical societies and genealogists.

Norman was a Past President of the Missouri Society of Professional Surveyors (MSPS), was a member of other state and national professional societies, served on committees, wrote newsletter articles and contributed questions (to NCEES) for the national surveyors' exam. In 1991, he received the Robert E. Myers Service Award from MSPS.

In one of Norman's more memorable presentations, through his dress, speech and surveying equipment he became the character of famed Government Deputy Surveyor Joseph C. Brown. (No known relation, but it had to be close.) Joseph (Norman) told the story of his survey of Missouri's west and south boundary (1823). As Norman told the interesting (and at times humorous) story, it was quite easy to truly believe you were listening to Joseph C. Brown. He loved telling (and embellishing) a good story.

During the years of the retracement "Rendezvous" workshops (put on by Ralph Riggs, Bob Shotts and Craig Ruble) Norman was a speaker and acted as Chief Cook, demonstrating his considerable skills as a Dutch Oven cook. He was always assisted by other surveyors anxious to sample the food and to hear Norman's amazing stories that accompanied his amazing cooking.

Norman and two close associates were dowsing experts. They are credited with locating burial sites, previously unknown. For you not familiar with dowsing, Norman would tell you that only those with deep and true faith can be successful at dowsing. Norman was a man of deep faith.

Norman is survived by his wife of 63 years, Roberta, their four children, Doyle, Roberta, Sara and Susan, and nine grandchildren. 🇺🇸



Norman Brown: The Old Surveyor

by Darrell Pratte

Norman Brown was not an old surveyor. Norman Brown was The Old Surveyor. In character Norman would take on the *persona* of a chain carrier, sometimes working along the Fifth Principal Meridian under the supervision of Deputy Surveyor Prospect K. Robbins. Other times he would associate with Deputy Surveyor J. C. Brown along the West, South, or North Boundaries of Missouri. Returning to his own character, Norman still associated with the old Deputy Surveyors that marked, measured and inventoried the vast territories destined to become part of the United States.

It is interesting to note that Norman personified a chain carrier. He could have taken the part of the Deputy Surveyor, the man that led his survey party into the woods. But Norman preferred the part of a member of the party. A person that observed the goings on of the party, and related those observations to an audience nearly two centuries after commencement of the surveys of the Missouri Territory. Instead of relating how things were done under instructions of the Surveyor General, Norman reported on what he saw while “working” as member of the party and recounting the tasks he performed and those he observed others performing. Instead of explaining the Bowditch method of navigation, Norman might say something to the effect of, “the Surveyor would look up at the stars, and then look at Bowditch’s Treatise on modern navigation, then yell, ‘yonder’s north’”. A chain carrier did not feel obligated to explain the math. The Deputy Surveyor might have bored his audience to tears explaining the observations and calculations employed to determine north. Norman wanted to see smiles, not tears.

Of course, Norman could explain the mathematics Nathaniel Bowditch used for navigation, if called upon. As well, he could explain the methods, rules and regulations under which the Deputy Surveyors were instructed to perform their operations. He could also explain what instructions the chain carrier may have received during those operations, instructions that might require fewer measurements, fewer footsteps, and a faster payday.

Norman lived much of his professional life as an observer. Norman could look at a problem from every which way, and about the time a *protege* thought the obvious solution would spill forth, Norman could find a new direction, a new argument, and present a new conclusion. Norman would never say, “This is the answer” He would look, over the top of reading glasses, and say something like, “I don’t know if this is what happened, but if it did, this might be a reason to go back out and take another look at the evidence.” Getting a straight answer from Norman could be an exasperating process which at the very least involved another trip to the field.

There are a generations of Missouri surveyors that look at Norman as their mentor. Norman’s influence over the Missouri surveyors of an era is replete. Their praise of this man is singular. The generation that worked beside and behind Norman has reached retirement age. The next generation, the current leaders of Missouri surveying, learned under his tutelage. They have seen Norman teach and they have heard his stories (both those he told and those about him). Missouri surveying’s newest generation of



Norman Brown leading MSPS seminar.

(continued on next page)

Norman Brown: The Old Surveyor *(continued)*

surveyors now live his legacy. They will learn the tails from those privileged to have looked upon the gentle, soulful surveyor and pass on his lessons, his advice. It is the fortunate who have heard his descriptions of life in the survey party camps during the era of the Original Government Surveys in Missouri. Or witnessed him demonstrate the two string method of determining the variation of the compass. His explanation of his chain being a half inch too short is timeless and will now not known by the youngest practicing surveyors. Gone is our old professor dressed in buckskin and wool, holding an old compass of Rittenhouse design, capturing the life of an 1820's field surveyor.

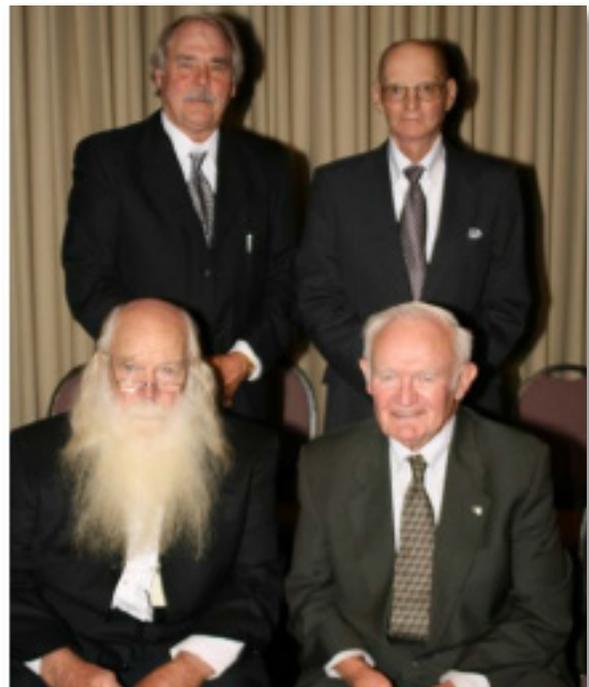
With Norman's death is the loss of a vast repository of knowledge. Norman was never shy about sharing that knowledge as a story. He did not seem to have an interest in writing those stories and saving them to posterity. Perhaps it was the source of his knowledge. Sourcing knowledge is a daunting challenge. He often said he did not remember how he knew something; he just *knew he knew*.

I've known Norman for 42 years and worked with him for 15 years. About five of those years he was my direct supervisor. I asked him hundreds of questions, I do not remember he ever gave me one answer. He did impart some wisdom, share a story or two, maybe three. He might recount something he recovered retracing the same Deputy Surveyor, or what an Old County Surveyor found in 1894, in the next County over. He put dots of information all through my head. All I have to do today is connect the appropriate dots with the proper line work, and a picture comes into view.

There are a lot of Land Surveyors that can say, "Norman Brown is one of my mentors" I am very proud to say, and share that sentiment. Just being around Norman caused a process of osmosis that seemed as if his knowledge was imparted, and attached to those in his wake. 🇺🇸



This figurine is in homage to Norman. Craig Ruble accessorized the marionette and displayed it in his office for several years. The puppet is a fair representation of Norman as The Old Surveyor. Except the eyes. The dolls eyes are sad, but Norman's eyes had a twinkle as though he was up to something. And generally, that was the case. But...he was always thinking.



(left photo) Norman married Roberta on December 19, 1959. They were inseparable. Rarely did a person see one without seeing the other. Our hearts go out to Roberta, she lost more than a husband, she lost her lifelong friend and constant companion. (photo right) The Missouri Land Survey Program all-stars: clock-wise from Norman in the lower left, Mike Flowers, Dan Lashley and Bob Myers.

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Remembering Norman Brown

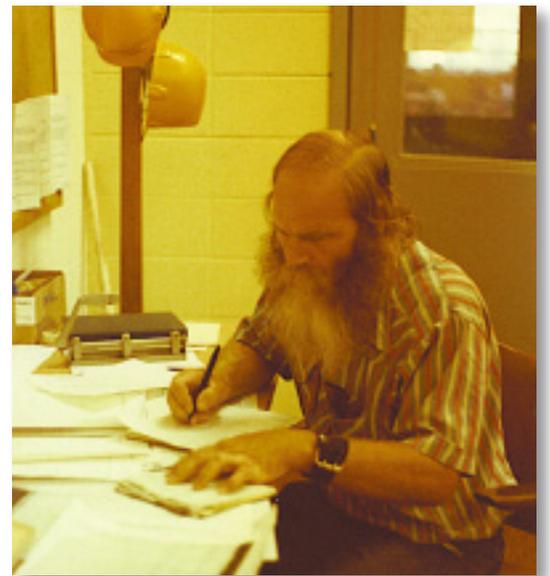
Photos courtesy of Sandy Boeckman, Dick Elgin, Mike Flowers, Carol Payne and Bob Shotts



Norman with Dan Lashley (l) and Duck Bader.



Norman while working for the Land Survey Program in the 1970's.





Norman Brown (left) during a campfire discussion during a Surveyor's Rendezvous; (right) in solemn thought.



2002 Surveyor's Rendezvous; Norman describing 19th Century surveying and use of the compass.

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The world of Professional Surveying has lost another Great Surveyor, Norman L. Brown, PLS, PE., who passed away on Saturday, March 26, 2022, in Rolla, Missouri.

Norman dedicated his life to surveying and engineering, and we are going to miss him and his knowledge and presentations of the history of surveying.

I will always remember Norman, as he proctored the test when I took it at the Old Governor Hotel in Jefferson City. Shortly after I received my license, I saw Norman at a meeting in St. Louis and he congratulated me, and said, "Remember this is not the end, only the beginning." He must have known something I didn't because he was correct. As I started my career in surveying, I became involved with MARLS, now known as MSPS (Missouri Society of Professional Surveyors), and I continue to serve MSPS as part of the Education Committee for the past 34 years.

Norman was a wonderful teacher and would make presentations at our seminars. He passed his knowledge on, especially at one seminar at the USPLS and the topic was Running of the State Boundaries in which he showed how the west line of the State of Missouri was established. I also remember one particular seminar that Norman presented at Castlewood State Park on, "Finding Corners." Norman began naming off a variety of trees and other items, it was impressive. Later, I asked him how he knew all the information about the trees, etc., and his response was, "Who's going to know if I was wrong?" He definitely had a sense of humor.

Over the last 50 years, through every seminar and presentation, Norman has shared his expansive knowledge and passion of surveying and surveying history to the rest of us. We are all better off from knowing and learning from such a great and wonderful man, as is the Surveying Profession.

Thank you, Norman L. Brown, PLS, PE for your insight, dedication and love of Surveying. You will be greatly missed!

Daniel L. Govero, PLS
Govero Land Services, Inc.

Early American Surveying Equipment

by Dr. Richard L. Elgin, PS, PE

America's Requirements

Much of America's surveying practice descended from the English, but our early surveying equipment did not. The Old World used the delicate, expensive theodolite to divide its lands, sighting on points and measuring angles on a divided, graduated circle. American surveyors needed to establish boundaries over vast wildernesses which were difficult to traverse and they needed to do it quickly and cheaply. Enter American innovation, technology and craftsmanship to improve a device used by mariners for hundreds of years, a form of which was being made in England, the magnetic compass. The result was the rugged, inexpensive standard American compass. As one commentator said of the American compass "where accuracy can be sacrificed to speed and cheapness."



The face of a Goldsmith Chandlee (1751-1821) vernier compass; Winchester, VA, circa 1800. Eagle holding banner with "John Orndorf" for whom the compass was made.

The Compass

Rugged, the compass with its body of wood or brass, two sight vanes, a leveling device and placed on a staff or tripod, required only a balanced magnetized needle resting on a sharp point. The needle aligned itself with the earth's magnetic field and pointed to magnetic north. Magnetic north was known to move and hence was a poor direction with which to reference boundaries. This movement was well known, being noted in some 1746 instructions that it "...may in time occasion much confusion in the Bounds...and, Contention." Variation, the angle between True Meridian (a line of longitude) and Magnetic North was known to differ at different locations on earth and the angle was known to change in amount over time and location. True North was a better reference direction and in 1779 Thomas Jefferson wrote that the plats of surveys were to be drawn "protracted by the true meridian" and the variation noted.



(left) The standard American vernier compass by W. & L.E. Gurley. This form with vernier, outkeeper, sights, level vials, was made from about 1860 and remained in the Gurley catalogs into the 1930s. It attached to either a tripod or Jacobs Staff. (right) A rare Solar Compass by a very rare maker, John S. Hougham; Franklin, IN. Compass was made about 1861.

The first standard American compasses were "Plain" compasses. They used magnetic north and had no mechanism for applying the variation angle, converting magnetic direction to true direction.

David Rittenhouse (1732-1796) was an American man of science. He is generally credited with adding a vernier to the plain compass so one could "set off" the variation, the needle still pointing to magnetic north, but the bearing to the object sighted read on the compass circle being the true bearing. Thus the "plain compass" became the "vernier compass," a great advancement in the American compass.

(continued on next page)

Early American Surveying Equipment (continued)



The Land Ordinance of 1785 specifies that all lines be surveyed “by the true meridian...the variation at the time of running the lines thereon noted.” Tiffin’s Instruction of 1815 (the first written instructions issued by the GLO to its Deputy Surveyors) specified “a good compass of Rittenhouse construction, have a *nonius* division....” This is a vernier compass, “*nonius* division” meaning a vernier. Thus, the vernier compass became the standard instrument for surveys of the USPLSS. Until.....

William Austin Burt and his Solar Compass

William Austin Burt (1792-1858) was a GLO Deputy Surveyor, who, in 1835 while laying out townships in Wisconsin noted unusual deviations in the lines surveyed using his compass. He began work on a method and form of compass that would determine the direction of the true meridian independent of magnetic north. He invented an ingenious device that uses the observer’s latitude, the sun’s declination and local time to determine true north. The device mechanically solves the PZS (PoleZenithStar) Triangle. The prominent Philadelphia maker, William J. Young (1800-1870) built the device, and Burt was awarded Patent 9428X on February 25, 1836.

Burt made improvements to his solar compass and an improved version was patented in 1840. In 1850 Burt’s patent expired which allowed other makers to produce the solar compass. (The circumstances of the expired patent are a sad story.) There are about 12 known post-1850 makers of solar compasses. All the solar compasses made prior to 1850 are marked “Burt’s Patent” and “W.J. Young” or “Wm. J. Young,” he having made them. They are not dated or numbered. Those made by Young after about 1852 are numbered.

Is it a transit or a theodolite?

Generally the theodolite refers to an instrument with divided circles to measure both horizontal and vertical angles to high precision, the telescope is relatively long and will not transit (rotate 360 degrees) about its horizontal axis. The more common term “transit” refers to an instrument with both horizontal and vertical circles (only horizontal on early transits), a 4-screw leveling head, bubbles for leveling and a telescope that will transit. William J. Young is credited with building the first dividing engine in America. That allowed him to cut circles and he is credited with building the first American transit in 1831.

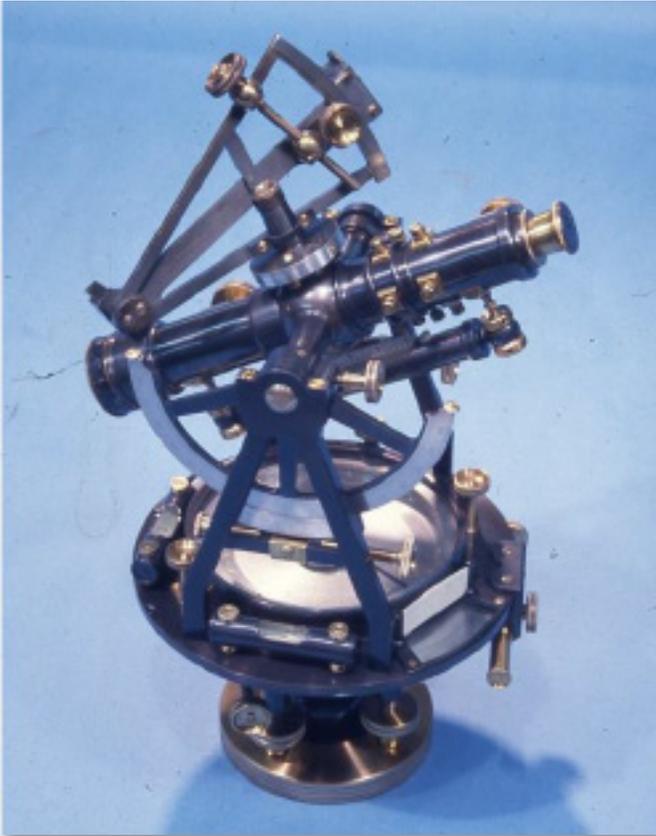
The transit developed and attachments, such as a variation on Burt’s solar compass, was added by many manufacturers. For mining applications, parallel telescopes were added, thus allowing sightings at large vertical angles into steep mine shafts. Large precise transits were constructed for control surveys and astronomical observations. Horizontal circle diameters can be as large as 18 inches.



Telescopic compass (not a transit) by Blattner & Adam; St. Louis, MO. Late 1800s

Collecting and Values

Early and vintage surveying equipment is highly collectible. It is the surveyor's heritage, it represents about 200 years of advancing measurement technology, and some illustrate incredible craftsmanship and artistry (especially of the early makers). As with other collectibles there are highly desirable, usually rare instruments (such as the solar compass). And, there are the early Virginia and Pennsylvania makers that made compass that are works of art. But, even instruments by the prolific makers like W. & L.E. Gurley and Keuffel & Esser are desirable.



(left) Solar Transit by W. & L.E. Gurley; Troy, NY. (right) This is one of the first transits made in American. William J. Young, Philadelphia. Three minute least count, bullseye bubble. Was made in the very early 1830s.

There are many collectors of early American surveying equipment, some with very large collections. Most collectors buy and sell instruments, research makers and surveying equipment, and a few offer repair and restoration services. Most collectors focus on a particular maker (or two), and others focus on the makers of a particular city (St. Louis, for example), and others are interested in a particular instrument form (transits with unusual attachments, for example). There are online resources for early surveying equipment. Some are: www.surveyhistory.org run by David Ingram. The Facebook page, "Antique Surveying Instrument & Ephemera" run by Dale Beeks. And, www.compleatsurveyor.com by Russ Uzes. Among the collector community there is broad and deep knowledge of early American surveying equipment, but that knowledge is not well documented. There are not many reference books on the makers and their equipment. A few have been covered in articles and short treatises but there are not good reference materials on the broad topic.

What are we going to do with Grandpa's surveying stuff, and what's it worth?

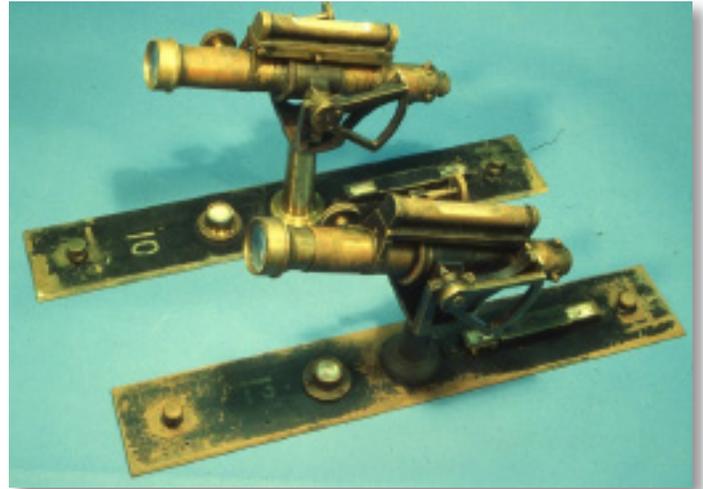
Regrettably, there is not a national museum or repository where surveying equipment can be donated. Beloved equipment left to families or owned by old surveyors and seeking a home have limited options. The Smithsonian will not accept any such equipment, except for historically important equipment with known provenance. Most such equipment is not highly

(continued on next page)

Early American Surveying Equipment (continued)

valuable. It is likely 90 percent of such equipment would be worth less than \$1000 per piece. Eight percent would likely be worth up to \$10,000. One and onehalf percent up to \$100,000. And the last 0.5 percent over \$100,000. Most collectors will have no interest in about 90 percent the equipment offered to them (they already have plenty of early to mid1900's Gurley and K&E transits and levels). The best recipient for most low to midlevel surveying equipment may be a local museum, particularly if the equipment was used in the area by a local surveyor.

As with most collectibles, old or vintage surveying equipment is not worth what it was 10 or 20 years ago. The rare, unusual, historically important pieces have not lost their value during that time period and can easily be sold.



Two alidades by Fauth & Co., Washington, DC.

The Future

Boundary surveyors, being mensurators, detectives and historians have an appreciation for the equipment that laid out America. The equipment is our heritage, to be preserved, admired, studied and displayed. Every boundary surveyor needs an old compass and a chain proudly displayed on their desk. 🇺🇸

Dr. Elgin is a surveying practitioner, educator, researcher and author. He owns a large collection of early American surveying equipment. He is expert in the Chandlee family of makers, John S. Hougham (Indiana) and the St. Louis makers. He's written several books including Riparian Boundaries for Missouri, Legal Principles of Boundary Location for Arkansas and The U.S. Public Land Survey System for Missouri. He coauthored the Sokkia (Lietz) Ephemeris. He can be reached at: elgin1682@gmail.com

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Move It!

by Larry L. Bollinger, PLS 1671

Author's note: This article is written for Land Surveyors. However, others can enjoy it as well, simply ignore the survey jargon and you will be fine.

Once upon a time there were two neighbors. The neighbor to the east was Picket W. Fence and the neighbor to the west was Pallet Woods. They both lived on the north side of Possum Hollow Lane in Somewhere County, Township 102 North, Range 22 East of the MSPS Principal Meridian. Today, for simplicity, we are going to use only the first names of the two main players, Picket and Pallet, for this article.

Now Pallet did not maintain the exterior of his property in a park like manner. In fact, it was somewhat of a junk yard in a fairly nice neighborhood. The grass needed to be mowed and the weeds had grown up around the stacks of wooden pallets (maybe stacks is a poor choice of words, piles of broken up pallets heaped up would be more descriptive). The pallets were especially noticeable along the common property line between Pallet and Picket. Pallet and the Woods family owned a saw mill in the area. The manufacturing of wooden pallets was a source of income for them.

Now Picket was somewhat the opposite of Pallet. Picket spent a considerable amount of time doing yard work. The grass was always mowed and the flower beds and garden area were well maintained. Picket and the Fence family owned a fence store near Hattie's restaurant. The selling and installation of picket fences was a source of income for them. I think it would be safe to say, Picket did not see much beauty in those wooden pallets on the Pallet property.

Several years ago, I received a call from Picket and he indicated he wanted to erect a fence between him and Pallet. Picket indicated he wanted to screen off the view of the pallets with a six foot high picket fence. Picket said he did not know where the property line was but according to his deed there was an angle point somewhere, about half way down the property line. Picket asked if I could come out and mark the property line for him. I had done survey work for the Fence family before. They were good clients and paid their bills in a timely manner. I indicated to him that I was somewhat booked up but could do the work in about two weeks. Picket indicated that he also had a back log of fence work to do and the two week timetable would work.

Well, a Friday came and it was raining outside. Not a good day to do field work. Therefore, I decided that I would do my record research at the court house for the upcoming Picket survey. Both the Picket and Pallet deeds did not call for any pins, stones, etc. markings at the property corners, just bearings and distances. However, both deeds referenced them as being part of a larger parent parcel prior to it being split into smaller tracts. The Pallet parent parcel was surveyed by The Elbring Company and likewise for the Picket parcel which had been surveyed by the Clayton Surveying Company. These older deeds did call for stones at the property corners with adjacent bearing trees noted. This was good news as the Elbring and Clayton surveying companies were well known and reliable firms who took pride in their work. Both of the parent deeds referenced a stone with and matching bearing trees at the angle point in the common line between Picket and Pallet.

I personally knew some of the surveyors that worked for the aforesaid firms. Those surveyors that I did not personally know had proven to be reliable as well as I had previously followed in their footsteps on other surveys. As a surveyor, I was anxious to go to the field and search for the boundary markers my brother surveyors had previously set years ago for me to find and use someday.

Monday morning about 40 some years ago, the sun was out and it was time to get out of the office! The Picket survey was the scheduled activity for the day. I was anxious to search for the old stones, etc. set by my brother surveyors, and some of them were set 80 years ago. Eureka! Hallelujah! Praise the Lord! I was able to find some of the called for stones cited in the parent parcel deeds and a few remains of some bearing trees. I was very happy about this. It took me most of the morning to bring in my control for the front and rear corners of the Picket parcel. I had a little surplus over the deed distances, about 0.30 of a foot (less than 4 inches) which was well within tolerable limits for rural property.



(continued on page 37)



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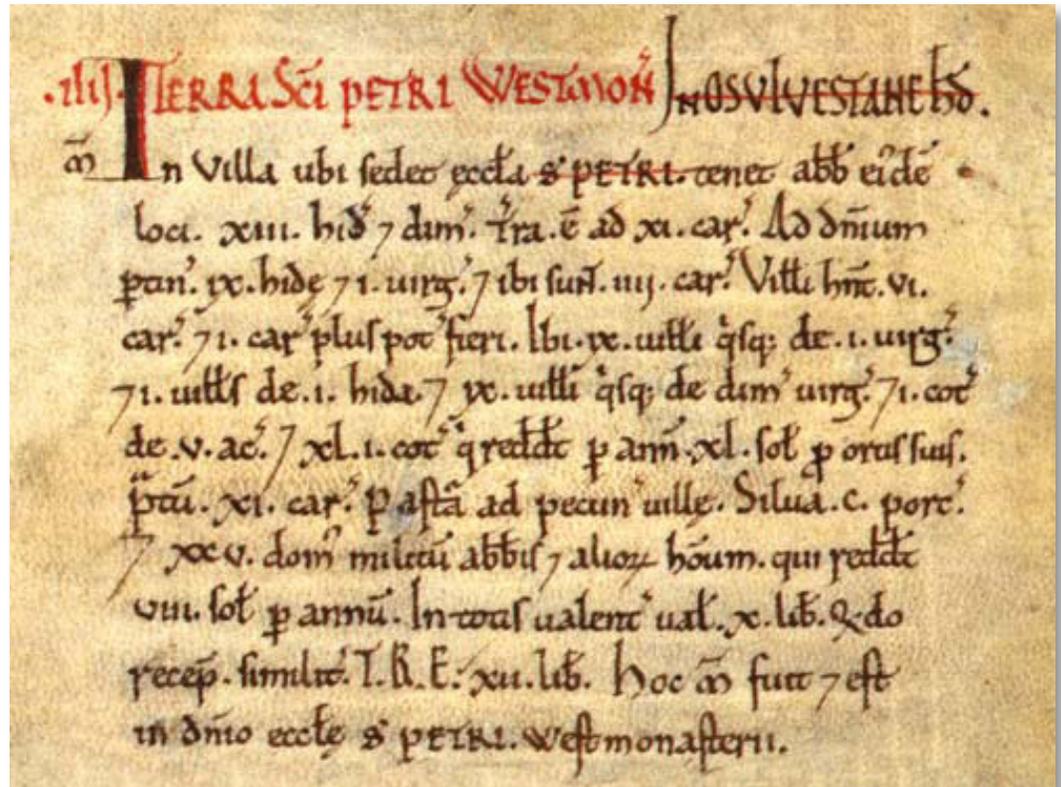
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Land Surveying's Evolution from the Domesday Book to Drones

by Kyle Hoperty, November 14, 2021, Propmodo

All real estate traces its roots back to land surveying, it's the very foundation the property industry is built on. Centuries of deal-making form a chain of ownership all the way back to the very first surveys. Technology is changing land surveying, evolving the way we understand land and ownership at the center of every transaction.

The Domesday Book, or Domesday Book in Middle English, formed the basis of property ownership across England and much of Wales for centuries. It may be the most important historical document you've never heard of. After defeating the Anglo-Saxons in 1066 during his invasion of England, Norman king William The Conqueror demanded his new fiefdom be surveyed to determine who still alive owned what land, what type of people they were and what they now owed their new king. After such a monumental upheaval, William needed to reassert his claim to the land granted to him by his new crown. It wasn't till nearly two decades later that work began under William II. Exact numbers and timeframes are hard to know, but men were sent all over the countryside, holding public inquiries attended by every lord and representative of every township.



An extract from Domesday Book, this is an inventory of a lord's manor in Westminster. The pasture and woodlands of the manor are described in terms of the number of sheep, cattle and pigs supported by the parcel. On this manor, there are 11 teams of oxen sustained in the meadow and 100 pigs in the woodland. (National Archives of the United Kingdom)

The survey went far beyond recording the names of landholders and the size of their holdings. The Domesday Book created a national valuation list, estimating the value of all landholdings across the country at the time of Edward the Confessor's death, when the new owners received it, at the time of the survey and its potential value. Four different value assessments for every tract of ownership. The survey, written in Latin unreadable to most native English, was a full account of a kingdom's financial resources via land holdings, the most important source of national wealth at the time. The total value of the land recorded in the Domesday Book was roughly £73,000, a King's ransom considering a wealthy household earned just £10 a year. So thorough was the survey it was as if God himself had surveyed his domain, making lasting, unalterable decisions, like those of Judgement Day, giving the books its name. The Domesday Book was born, immediately becoming an invaluable resource, stored at the national treasury, referred to simply as 'the book.' It would remain that way for centuries until another complete survey of England happened in 1873.

The Domesday Book was a marvel of recordkeeping but relied on the same basic techniques employed by the Romans, Greeks, Chinese, Mesopotamians, and Egyptians. Basic distances and boundaries were measured with rope or string, sometimes a crude compass, to establish boundaries recorded in exacting detail. It wasn't until the 18th century that mapping became a critical part

(continued on next page)

Land Surveying's Evolution from the Domesday Book to Drones *(continued)*

of surveying, using theodolites, precise instruments using a tripod and compass, to illustrate each plot.

The Industrial Revolution of the 1800s created more demand for land surveying than ever before as cities across the globe experienced explosive growth. Surveying became a profession, hired by cities, transportation departments, railways, and frontier speculators. As the value of national economies and land grew exponentially, so too did the importance of accurate land plot measurement and exact boundary descriptions. Surveyors set out across America to explore possible routes for a transcontinental railroad, using theodolites modified with scopes and tools for triangulation.

Surveying in the 21st century is a technically advanced endeavor. Theodolites have given way to total stations, using electronics and advanced optical instruments, onboard computers to perform triangulation calculations and even robotics to perform basic surveying. Satellite positioning systems measure features and land boundaries with speed, accuracy, and scale only capable from space. Laser scanners using Light Detection And Ranging (LIDAR) technology trace the shape of land and buildings with near-infrared lasers. LIDAR surveying devices can be attached to planes, helicopters, and cars to survey at speed. Software then collects and analyzes all the surveying data to create rich maps with extreme detail compiled through multiple surveys.

Once limited to the ground except at great cost, surveying has gone aerial with the use of drones, able to conduct photogrammetry, 3D mapping, and land surveying at a fraction of the cost of other forms of aerial surveying. Drones are being used by developers and construction professionals to make crucial site planning decisions, carrying LIDAR surveyors and other advanced optics. Surveying was one of the first commercial applications for drones and has been widely adopted.

When it comes to recordkeeping, everything is now online. Far from relying on one book, land catalogs, surveys and tracts are kept on city, state, and federal databases, accessible to practically anyone with just a few clicks. The blockchain is useful in establishing verifiable title records and transfers as a digital distributed ledger. Land ownership is public knowledge, leading to developers having to rely on crafty techniques like holding companies that obfuscate their deals. In the United States, the Bureau of Land Management (BLM) and General Land Office (GLO) provide live access to more than five million Federal land title records issued between 1788 and the present.

No matter how advanced the technology or recordkeeping of surveying becomes, they will always be tied to older iterations like the Domesday Book. Claims established by the original Domesday Book were invoked in a property dispute as recently as 2019. The BLM bases its online databases on 1,582 original General Land Office tract books. That's because land surveying, even with the most advanced technology, is an inherently historical endeavor, built on centuries of established titles, boundaries, and transfers. Throughout history, some of the most brutal wars, costly deals, and hottest legal issues have centered around land surveying establishing who has a claim to what. As technology and recordkeeping advance, settling such disputes has gotten easier, easing tensions among neighbors and nations.

Building new surveying and recordkeeping tools must account for the centuries of work done by governments, academics, and surveyors. Real estate's storied place in the global economy is backed by decades of meticulous recordkeeping, creating rich historical documents that the very foundations of bureaucracy and private property holdings are based on. Just as the Magna Carta established the idea of consultative government that led to liberty and democracy, the Domesday Book and other historical surveys established the first record of private property ownership that forms the basis of our capitalist economic system. 🇺🇸

About the author: Kyle Hagerty

Born in Dallas, Kyle is a proud lifelong Texan. He's dedicated himself to covering a state as big as life itself. After graduating from Texas A&M, he moved to Houston, where he covers real estate and technology. With a degree in economics he worked on construction sites, in classrooms and on trading floors, before finally settling into a career as a full-time business reporter. These days, you can find him digging up a story down on Houston's bayous. He is an associate editor at Propmodo

This article appears courtesy of Propmodo, the email newsletter covering how emerging trends and innovations affect the business of commercial real estate. The article is available as originally published at: <https://www.propmodo.com/land-surveyings-evolution-from-the-domesday-book-to-drones/>

Thoughts on Professional Practice and Education

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

Article 3: Eliminate Requirement for Licensing

This is the third article I have prepared in a series giving thoughts on professional practice and education. This topic, I have no doubt, will leave blood on the walls – a metaphor only. I will have good friends that take issue with some of my thoughts. Old age allows opinions to be expressed in a manner that youth cannot do or does so inappropriately. When I was young, I often cared what people thought of my opinions. Having reached an old age, I have come to realize another person’s opinion about me has never paid a single bill I owed. Living to an old age allows friends to mature and enemies to be cultivated.

I will not give a long discourse on my experience, education, and practice. Suffice to say my first of many survey licenses was achieved in 1978 before many that will read this article were born. I will even surmise that my last professional license, that of an attorney, was achieved before many readers of this article were born. I have seen and experienced much in my life that allows for many opinions.

In this missive I will touch the often-sensitive topic of experience requirements for the surveying program graduate. I will begin by stating I am not so much advocating for change as I am suggesting the profession consider changes. As is so often the case, the way a person did things in their past causes them to feel that way is the best way to do things in the future. I had six years of experience before obtaining my survey license based entirely on my experience. That is my story. Why isn’t my way the best way in this case? Old age has taught me there is often a wide chasm between what was done and what should be done - what is wanted is not always what is needed.

I hoist the target as I once did fifty years ago as a young Marine working the ‘butts’ at the rifle range. Here is the target: I suggest that experience not be required for licensing of a graduate of an accredited surveying program. There I have made my statement and shown the target. I can already hear the shots and bullets passing through my hoisted target from readers. Some reader is already writing to the editor stating in so many words, with heated passion, that my unsolicited advice is meddling and is not welcome. What is present,

“Old age has taught me there is often a wide chasm between what was done and what should be done...”

works. Perhaps that thought will be the consensus of most of the individuals that read this article.

Why would I make such a statement? Surely as old as I am, I must recognize that experience has taught me far more than four years of surveying education, if not more. I must have learned important knowledge that was never available through education. My answer to both statements is a resounding ‘yes.’

I must emphasize that important knowledge, complete knowledge, or extensive knowledge is not the purpose of licensing. Licensing’s purpose is to protect the public. Licensing is to ensure the licensee has attained the minimum level of knowledge, established by the profession that is thought necessary for competent practice.

Let us not fool ourselves in thinking two or four years of experience is a constant learning process for an individual. It is not. In many cases, experience is merely the repetition of a limited number of survey tasks repeated over many years. An individual that has spent four years surveying urban lots has probably gained the extent of new knowledge after only three months of employment and after surveying one or two of their first urban lots.

Some readers will counter by claiming that rather than less experience, more detailed experience is required in the licensing application. The application would have to show various complexities and scope of services for experience to count toward licensure. I would suggest that such specificity to experience qualifications will deny licensing for many individuals that work for small survey firms with limited clientele needs or individuals working for large firms that are slotted in specific services offered by the large firm. Such a move will further limit the number of licensees in our profession. The number of licensed surveyors is already declining from a lack of new and younger licensees.

Back to my days in the Marines, I have cause to look at the large target over my head. There is a new hole from the shooter. The shooter states that my suggestion would allow someone to graduate, be licensed, and provide services to the public soon after graduation. Valuable property rights will be in jeopardy because services will be entrusted to the licensed surveyor without any experience. Incompetence will run unchecked within the profession. The professions’

(continued on next page)

Thoughts on Professional Practice and Education *(continued)*

good reputation will collapse. Millions of dollars in property values will be jeopardized.

I think not. Over 34,000 lawyers graduate each year from law school. Every law school graduate can take the bar exam immediately following graduation. Within months of graduation every one that passes the bar exam can legally practice law without showing one single day of experience. These new, inexperienced lawyers can prepare deeds, write estate plans, argue for clients in court, and so much more. Do they? Of course not. A very few lawyers perhaps - but most work under the guidance of experienced practitioners. I expect the vast majority of surveyors licensed upon graduation after passing their exams will work for experienced surveyors. Very few would set up a practice on their own soon after graduation.

I could go on and shall do so only to beat this argument to reasonable size for some to swallow. There are over 14,000 pharmacists that graduate each year, are licensed after graduation, and dispense controlled and potentially dangerous and deadly drugs. There are over 155,000 nurses that graduate each year and become licensed RNs mere weeks after graduation and make life and death health decisions for patients, dispensing drugs, taking care of injuries, and so on. There are over 10,000 officers commissioned each year without any prior experience in combat leadership that are placed in charge of soldiers, sailors, airmen, and marines or multi-million-dollar airplanes and make decision affecting lives in combat. (The Lord knows as a Marine sergeant I had my concerns about some new 2nd lieutenants.) I could go on with statistics and facts about ministers, doctors, dentists, cosmetologists, teachers, and other professions that allow graduates to have licenses soon after graduation. I believe I have made my point. Surveying and engineering are in a small minority of professions that continue to require experience in addition to their education before licensing.

So, what is wrong with requiring experience before licensing? I believe it hinders efforts to attract new members to our profession. For an eighteen-year-old high school graduate, the time required to obtain a four-year surveying degree along with four-years of relevant experience to become licensed as a surveyor is a long commitment. The high school graduate can be a licensed engineer in the same time, or become a teacher, nurse, military officer, accountant, forester, electrician, and plumber four years sooner or a lawyer, doctor, dentist, pharmacists, minister, veterinarian, occupational therapist, and architect in one year less. Must the surveying profession erect barriers upon roads that few choose to travel anyway?

Having given my opinion, I now offer advice by suggesting the NCEES model law be changed to allow licensing with a four-year degree and state legislatures adopt this option. At the very least, states should allow graduates to take both their fundamentals of surveying and professional surveying exams near graduation allowing licensing as soon as experience has been achieved. Some licensing boards have already adopted this option. I will speak more on this latter option in a subsequent article.

† Other books and articles by Knud can be found at <https://umaine.edu/svt/faculty/hermansen-articles/>

Article 4: Business and Management in Education

This is the fourth article I have prepared in the series offering thoughts on professional practice and education. The focus of this article, I hope, will assuage some individuals that I offended by my last article and will give hope to friends that will see I am now writing with the sense that I appear to have lost with my last article.

I know I am not alone when I say I wish I knew as a young surveyor what I now know about running a business. I can stand in front of a dozen or more surveyors that run their own surveying business, some for decades, and discuss rules and regulations that by law apply to them. What I reveal shocks many of them as they realize the deficiencies in their knowledge and business practice. They were unaware or confused about rules and regulations they should be adhering to or should have adhered to when running their business.

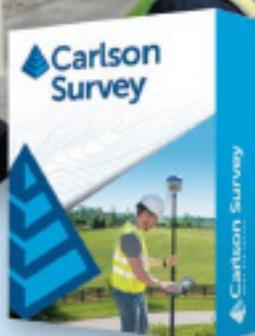
I might quickly add, I will not claim to know the entire plethora of knowledge on government regulations as applied to businesses. Who would know all the governing rules except for the most dedicated bureaucrat or regulator? Sadly, the federal, state, and local governments continue to do their best to create more difficulties in starting and running a business – especially if you contract with the government.

The first time a surveyor hears the phrase ‘cash flow’ should not be during their first year of owning a business as they sit in their office, the time near midnight, the pay for employees due the next day. Having never heard of the term

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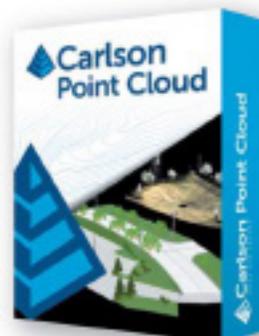
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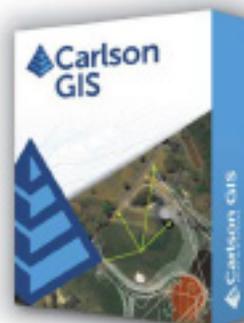
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Thoughts on Professional Practice and Education (continued)

‘cash flow,’ the new business owner cannot understand how they must pay sooner using what they won’t have until later.

The new graduate that is checking into the human resource manager at the onset of their surveying career should not wonder what is meant by a 401k, employer match, vesting periods, and pre-tax contributions.

This missive is not meant to discuss politics or even the various subjects that may fall under the concepts of ‘business’ and ‘management’ education. Rather, the focus is to advocate that relevant business and management topics be presented to students studying in a four-year surveying program.

Faculty would be disappointed when collecting alumni data to discover graduates described their job title as ‘survey technician’ ten years after graduation. After ten years, the graduate is expected to be licensed and in management. Yet, many survey programs have failed to give students any relevant knowledge that would aid the graduate to take on management positions where survey graduates are expected to spend most of their professional careers.

I would opine the lack of adequate business and management courses in surveying programs stem from two conditions. The first condition arises because of the lack of business and management experience that faculty have. Many faculty do not have the experience, training, or knowledge to teach relevant business and management courses. Even survey programs at larger universities can’t always draw on the business school faculty to help educate the surveying student in relevant business courses. While the business school faculty may be able to educate the surveying student regarding contracts, business entities, employee law, etc. topics such as mechanics liens, survey fee makeup, right of entry laws, road safety laws, Dig-safe, OSHA, federal contracting, and other such survey specific areas will not be covered in a course taught by the business school.

The second condition thwarting the introduction of business and management courses into a surveying program is the difficulty in fitting more courses into a surveying degree program. Universities limit the maximum number of credits for a bachelor of science degree. ABET accreditation requires certain courses and credit hours. NCEES has established topics covered in the FS exam that must be covered in the academic program. Finally,

the university requires all students at the university take certain courses for the regional accreditation the university maintains.

If the reader will indulge me, I will get upon a soapbox regarding the last limitation mentioned - that is University accreditation requirements. I have found it frustrating that regional accreditation often requires courses such as diversity, artistic expression, humanities, and other general education courses popular among liberal arts faculty but worthless in a business or a professional environment. (Not all general education is dismissed by practitioners. Course such as communication and writing courses are the exception. These courses and their content are appreciated by employers.)

For 30 years I have examined hundreds of employment-surveys prepared by alumni and survey employers sent by the University for program self-improvement. In those 30 years and after review of hundreds of documents, I have yet to see a single employer or alumni say how useful artistic expression and similar courses have been toward their career. The mention of these courses is a common occurrence but only under a category where alumni cite courses of no use in their life and wasted tuition money.

Having given my opinion, I now offer advice by suggesting professional societies that advocate for surveying programs also look at the courses in the survey program to ensure there are business and management courses that provide the graduate with the knowledge to become leaders in both the profession, community, and a surveying business. 🇺🇸

† Other books and articles by Knud can be found at <https://umaine.edu/svt/faculty/hermansen-articles/>

“...[I] advocate that relevant business and management topics be presented to students studying in a four-year surveying program.”



Downgrading Licensing will Weaken Consumer Protections

by David Cox, NCEES Chief Executive Officer

With the recent enactment of the Infrastructure Investment and Jobs Act, engineers and surveyors will be called upon to work with similar professionals to improve the physical infrastructure in our country. They will work to improve the safety of the roads we drive, the bridges we cross, the water we drink, and countless other areas that impact our daily lives. The public can have confidence in the safety and integrity of the work engineers and surveyors will provide thanks to our current licensing system, which was first established in the U.S. more than 100 years ago. However, it is imperative that state lawmakers recognize the importance and value that the existing licensure requirements and processes provide in protecting the public.

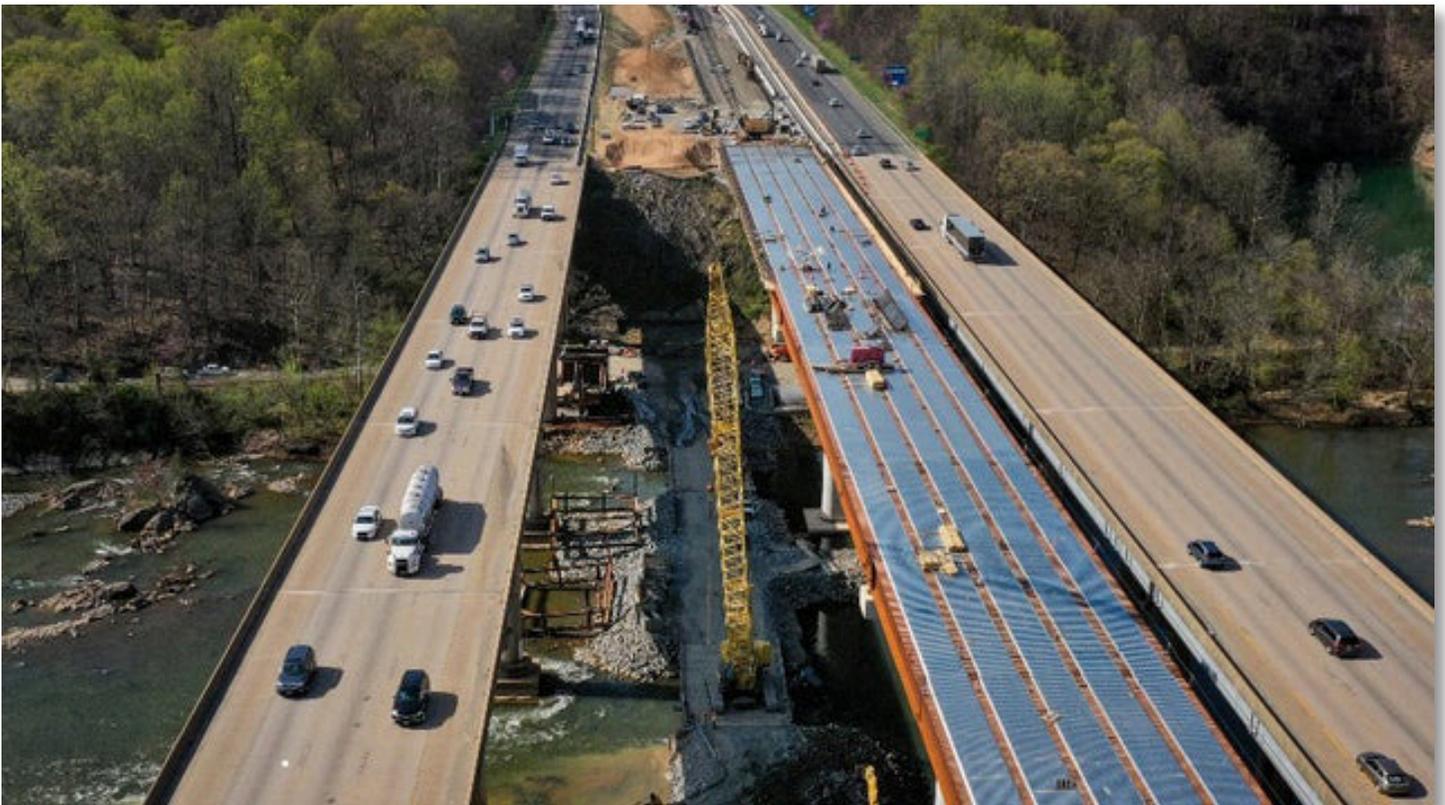
Publisher's note: The views expressed by contributors are their own and not the view of The Hill.

With so many large and extraordinary projects on the horizon that will impact the health, safety, and welfare of the public, state lawmakers must resist calls to weaken or eliminate the consumer protections afforded by rigorous professional licensing standards.

In many states, lawmakers are proposing to downgrade licensing for professions with high public impact such as architects, CPAs, engineers, landscape architects and surveyors with the hope of boosting the economy. Lost in many of those proposals are the unintended consequences on the same consumers the anti-licensing movement purports to help.

In most cases, consumers can choose a service provider based on recommendations and decide whether to continue using them based on their level of satisfaction. However, in the case of some highly-technical professions, such as engineering and surveying, consumers do not get to choose who builds the bridges and roads they drive on every day. They must rely on lawmakers to ensure their safety through licensing standards that require engineers and surveyors to demonstrate a minimum level of competence through education, examinations, and experience.

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Downgrading licensing will weaken consumer protections *(continued)*

The steady weakening — or in the most extreme cases, the proposed wholesale elimination — of licensure standards for engineers, surveyors, and other highly technical professions will put the public at an increased level of risk.

Since the first engineering and surveying licensure laws were established, lawmakers in every state have taken seriously their responsibility to protect the health, safety, and welfare of the public in situations where the public is unable to do so for themselves. This commitment to public protection must continue.

Public protection will be impacted if the long-standing requirements for engineering and surveying licensure are swept-up and swept-out as part of broad-brush efforts to remove barriers to entry for some occupations.

Too often, licensing critics conflate occupations with professions to make their case. There is a critical difference between occupations and highly complex, technical professions that are responsible for the integrity of our physical and financial infrastructure.

Any attempt to change state licensing requirements should reflect this important distinction. Engineering and surveying rightly require necessary standards for education and experience and the ability to demonstrate a minimum level of competence through examinations. If any of what we call the “3 Es” — education, examinations, and experience — are downgraded in one or two states, the ripple effect throughout the country would have a devastating impact on consumer protection due to existing interstate cooperative licensing processes that allow engineers and surveyors to become quickly and easily licensed in additional states.

Consumers intuitively know that downgrading licensure requirements is an unreasonable and unacceptable risk. This instinct was reflected in a poll commissioned last year by the Alliance for Responsible Professional Licensing (ARPL) which found that 71 percent of voters believe professional licensing should be required unless it can be proven that eliminating licensing will not have a negative impact on public health and safety. The same poll also found that 67 percent of voters believe that consumers are best protected by a system that regulates education, examination, and experience standards — all of which are overseen by a state licensing board.

As Benjamin Franklin once observed, “an ounce of prevention is worth a pound of cure.” When it comes to building our critical physical and financial infrastructure, responsible professional licensing overseen by state licensing boards is the best method of prevention.

State lawmakers, licensing boards, engineers, surveyors, and others practicing within other highly technical professions must never lose sight of their shared obligation to protect the public. And the best way to honor that commitment is to provide effective licensing models that are designed for public protection. Downgrading the long-standing licensure requirements for highly technical professions will ultimately cheapen our investment in infrastructure and our investment in the health, safety, and welfare of the public. 🇺🇸

David Cox is the CEO of the National Council of Examiners for Engineering and Surveying (NCEES).

This article first appeared in The Hill, January 18, 2022 at –
<https://thehill.com/opinion/finance/590264-downgrading-licensing-will-weaken-consumer-protections>

Move It! (continued)

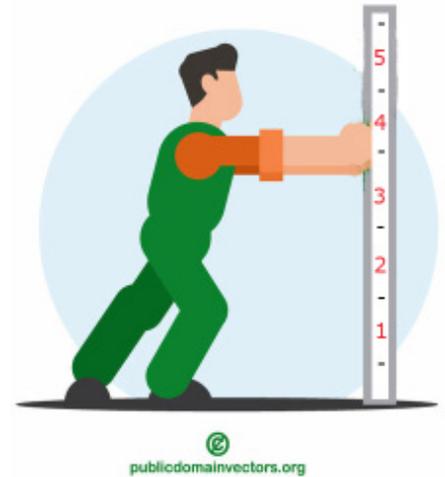
I had a little time before lunch so I moved on to search for the angle point in the Picket parcel. I did not find the old called for stone but I did find remains of two of the three bearing trees. I pulled off the remaining stumps of the old bearing trees and set a temporary nail for the angle point. Measuring from my temporary nail to the front and rear corners I was long, about half a foot, to the front corner and short, about half a foot, to the rear corner. Yes, a no brainer, I would place an iron pipe, marking the angle point in the Picket and Pallet property line, one-half of a foot towards the road from my temporary nail. I was at a good stopping point and lunch was overdue.

To the east down Possum Hollow Lane, a mile or so was a mom and pop country confectionary store named Hattie's. Hattie made excellent hamburgers and most days they had a luncheon special. Hattie's husband, Frank, took care of the feed and seed portion of the operation. This was a good place to catch up on all of the latest gossip. In the summer time, the old men in the neighborhood would gather on the front porch, do some whittling with their pocket knives and spit their tobacco chewing's off the porch onto the ground. In the winter, they gather around the wood burning stove in the center of the store with spit tunes (a bucket with ashes in it) were used. Almost any issue could be solved by these men, especially how to run the government in Washington D. C.

Sorry, I got side tracked a bit. I am in my truck headed to Hattie's for lunch. Some of you may recall the TV series called MASH. It had stories about a Medical Unit in Korea during the war over there. I liked the program as it brought back memories of my military days in Korea. I was assigned to the Survey Section of the Headquarters and Headquarters Company of the 802nd Engineering Battalion, Camp Humphreys, Korea. In the TV series the company clerk, Radar, often referred to having a grape Nehi soda in his hometown back in Missouri. Well guess what, Hattie's sells Nehi soda. I like the cream flavor more so than the grape flavor. I am turning into Hattie's, will get back with you after lunch and drinking an ice cold Nehi.

I am now back at the Picket property and setting an iron pipe to mark the south west corner of the Picket tract. I drove that 24 inch iron pipe flush with the ground and stood up when I noticed a man standing next to me. I extended my hand and introduced myself. The man didn't seem too eager to shake my hand but he did and said "Pallet is mine". Afterwards, I wish I had just said hello as his stature was of the Paul Bunyan type and he almost crushed my hand. Pallet said, "What is that wood stick with red stuff tied on it?" I replied, "Sir, it's a wooden lath set adjacent to the property corner so your neighbor will know where his property

corner is". Pallet then said, "I don't like it!" I removed the lath and put it back in my stake bag. Pallet spoke up, "What is that thing you have driven into the ground?" "Sir, it's an iron pipe marking the property corner between you and Picket." Pallet, "Would I be correct in saying that the property line goes through the center of that pipe?" I replied, "Well yes, I guess you could say that." Pallet comes back, "If the property line goes through the center of that pipe, half of it is on my property and I don't want it there, MOVE IT!" Well, I could see that things were going downhill fast so I said, "Let me go talk to my client and let him know what's going on".



Picket was home and I informed him about the incident with Pallet. Picket was really upset and wanted to confront Pallet. I picked up on the fact that the two had differences in the past. I said to Picket, "Try and calm down, confronting Pallet right now is probably not a good idea." I suggested that I remove the iron pipe that Picket wanted moved. I would then mark the property line using offset points set totally on the Picket property. Picket agreed to this and we decided to use 5 feet offset points. Picket was a small man and wore glasses. I suggested that he stay inside while I finished my survey work. I remember just shaking hands with Pallet was painful and I certainly did not want to see any skirmish take place between the two of them. It would have not been pretty!

Well, I am finishing up my survey, setting my last corner, an offset iron pipe, and I see Pallet walking towards me. Pallet asks me, "What is that?" I told him it was an offset point from the property corner and that I had removed the iron pipe that he wanted moved off his property. Pallet asks me, "How much of an offset?" I responded, "Sir that is confidential between me and my client." I was nice but I just could not resist, I gave Pallet my business card and indicated that if he needed to know where his property line was located, he could hire me to do survey work for him. Pallet said, "I don't need a survey." Pallet then threw my business card on the ground, turned around and headed for his house.

(continued on next page)

Move It! (continued)

I was ready to call it a day. I picked up my business card off the ground, put my survey equipment in the truck and told Picket that I hoped things would go well when he decided to erect his fence. In addition, I would be mailing him a survey drawing in a few days. Picket said that would be fine and be sure and include his survey bill. I assured him that I could do that.

Several months had passed since completing the Picket survey. I had another survey job near Hattie's restaurant. Therefore, I made it a point to have lunch at Hattie's and have a good cold Nehi on the porch. You guessed it; I just had to go by the Picket property to see if Picket had built his fence yet. There it was! A 6 foot high white vinyl picket fence along the entire length of the property. It looked somewhat like a stockade fence; there were not any spaces between the pickets, they butted up to one another. In addition, it looked like Picket had dug a trench and placed the bottom of the pickets into the ground. Not really the type of fence I would choose for my property, but knowing some of the background, I understood why Picket built it the way he did. The fence did screen off Picket's view of the pallet piles.

Somewhat of a side note here, Picket paid his bill with a check; upon doing so he spelled out his full middle name. Guess what the middle initial "W" stood for. His full name was Picket White Fence. I wonder if there are any Chain Links in the family. Now I truly love my profession as a land surveyor but for sure I was not going to give any of my children survey related names, such as Plumb Bob, Total Station, Bench Mark, Cross Hairs, Dump Level, etc.

I was about ready to leave when I saw Pallet coming out of the house heading towards his mail box on Possum Hollow Lane. I decided to wait for him just to say Hi. I rolled down my window and he acknowledged me with a smile. I said, "I see your sign, dressed rabbits, \$1.50." Picket informed me that he liked rabbits, more so than any other type of meat. He further indicated that the pallet piles along his property line were excellent places to raise rabbits. Somewhat of a human briar patch that provided the rabbits protection from the coyotes. He had several rabbit traps set out. He would trap a sufficient number to keep him in fresh meat. If he trapped more than he could use, he would put out his sign and sell them.

I like rabbit meat myself. I told Pallet I would take one of his dressed rabbits. I had a cooler in the truck but no ice. Pallet said, "\$2.00 with ice". I said "\$1.75". Pallet reluctantly said, "I will take \$1.75 but you would have had to pay \$0.50 for ice down at Hattie's."

I got my rabbits with ice and was about to leave. I noticed a sort of a smile come over Picket's face. He told me, since Picket put up that fence, he missed seeing Cyclone chase those rabbits. Cyclone, that's the nickname I gave to Picket's wife. She would come flying out the back door of their house with her broom in hand. She was like a whirlwind chasing those rabbits out of the garden and yard. Those rabbits sure did like the lettuce bed. One time Picket heard me refer to his wife as Cyclone. He didn't like it much, but I thought it was fitting with their last name being Fence etc. I was just trying to keep their family tradition going. I just smiled and realized it was time to depart.



Pallet spoke up. Before you leave, give me one of your business cards, I don't think I have one. You never know I may hear of someone who needs a survey and I will give them your card. I gave him three. I waved goodbye to Pallet and proceeded down Possum Hollow Lane thinking, just another day in the life of a Professional Land Surveyor. What will tomorrow bring?

As some may know, old surveyors love to tell war stories and it is commonly known that they may juice them up a bit. That is considered OK and not out of bounds to do so. The above Article is laced with both truth and fiction. However, I hope you will pick up on some underlying meanings that are important to all of us. All good stories need to have a good ending and I think I have one for you. Please read on.

I have truly enjoyed being a Professional Land Surveyor all my life. At 80 years old, it is easier to write about them than to fight the day to day obstacles that one encounters in such a profession. We deal with the weather, mean dogs and bulls, briars and brambles, poison ivy, snakes, yellow jackets, etc. etc. but probably the most challenging of all is a creature called Man. Picket and Pallet in the above article certainly lived different life styles. However, it is of great value if we can coexist and live in peace. I feel like I played a role in keeping the peace on Possum Hollow Lane. I also feel that other land surveyors have endured many incidences where they have played a vital role in being peace makers.

In closing "Blessed are the peacemakers:"

What do you think? 🇺🇸

From the Chapters

News and events from the MSPS local chapters

SW Chapter

Meeting monthly throughout the spring of 2022, the SW Chapter is making the most of the post-pandemic renewal of gathering and coming together. In March, members of the chapter participated in a regional outreach event sponsored by the Neosho Chamber of Commerce. An annual showcase by the Chamber and their members, the Sho-Me Expo served as a popular event for business-to-business fellowship and business-to-consumer introductions. Held March 18th and 19th, the Southwest's booth was manned by Jim Herre of Indian Creek Surveying, Brian Atnip of MJ Surveying and Rick Black of MoDOT. Their fellow SW members proudly report the trio did a great job representing the Chapter and the surveying profession.



During their April meeting, the group discussed plans for further retracement surveying along the Osage Treaty Line in continuation of the work begun by the late Joe Clayton. They also discussed finding a location along the Line to pay tribute to Mr. Clayton with a memorial.

The Chapter's meeting of May 14th was more than business – it was their annual Bar-B-Que. The Chapter served a feast to family members and guests. Held at Jim Herre's place, activities included shooting clays and fishing.

Ozark Chapter

May the 10th was the time, and Springfield was the place for the Ozark Chapter's Annual Picnic. Partaking in the feast of burgers, brats and all-the-fixin's teasingly referred to as "grocery chuggin'" the group made the most of gathering by working in a bit of continuing education. Dick Elgin joined the Chapter's members in the fun and then gave presentations. The meals and the PDU's were compliments of the Ozark Chapter! 🇺🇸

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