

MISSOURI SURVEYOR

A Quarterly Publication of the
Missouri Society of Professional Surveyors

Jefferson City, Missouri

September 2014



What's in this issue...

President's Message.....	3
Joe Bax: Mapping out MoDOT Plans.....	4
Survey Party at the Arch.....	6
The Surveyor's Library	14
Outline for the Presentaion	18
MSPS Creates Online Learning Portal.....	19
Nominations for 2014-2015 Officers & Board of Directors	20-21
News from the National Geodetic Survey	22
Kari Marlatt awarded the O. Dan Lashley Memorial Scholarship	23
POSITION STATEMENT Update.....	26
Missouri USPLSS Quiz No. 3.....	27
Copyright Basics for Surveyors.....	32

CALENDAR OF EVENTS

2014-2015

October 23-25, 2014

57th Annual Meeting and Convention
Joint Meeting with the Kansas Society
of Land Surveyors
Sheraton Overland Park Hotel,
Overland Park, KS

December 6, 2014

Board Meeting, MSPS Office
Jefferson City, MO

May 8-9, 2015

37th Annual Spring Workshop
Lodge of Four Seasons,
Lake Ozark, MO

October 8-10, 2015

58th Annual Meeting and convention
Tan-Tar-A Resort, Golf Club, Marina and
Indoor Waterpark
Osage Beach, MO

Donald R. Martin, Editor



Notes from the Editor's Desk

Donald R. Martin



Welcome to the September 2014 edition of Missouri Surveyor. A lot is going on for members of this Society as we close out the summer and prepare for some of the best surveying weather of a year – leaf off! Another sign of the season is the MSPS Annual Meeting coming in October. Among the matters to be addressed at this event in Overland Park Kansas is the election of new officers and directors; be sure and check-out their bio's in this edition. Speaking of this edition, as you peruse its pages please note the prodigious package of MSPS member publishings! It may not be an All-Missourian edition but our home state colleagues have contributed a commendable crop of content between these covers. And the guests we do have are first rate – Tom Webb with his book reviews and Knud Hermansen's treatise Copyright Basics for Surveyors.

Throughout the remainder of the newsletter you will find Robert Ubben's outgoing President's Message, a photo feature of Missouri Governor Nixon keeping good company, a local news story starring our own Joe Bax, and a great article and images about the Survey Party at the Arch. This was a magnificent outreach event by our St. Louis Chapter which demonstrated surveying history and technologies while commemorating the 250th birthday of St. Louis. Further on you will find some writings by Dick Elgin, Joe Paiva, our candidates' bio's, news releases from the National Geodetic Survey and a GPS alert from the Civil Global Positioning System Service Interface Committee. Also look for a surveyor's ode to The Good Old Days by our own Jack Housman, a position statement from our Southwest Chapter, and a special message of remembrance for Missouri LS 1417 James Patchett.

I am aware I quick listed this edition's contents – it was done for the purpose of sharing an editorial perspective for our publication. While this publication values and includes serious, technical writings regarding this profession's practice, history, science, math and technology, it also welcomes that which speaks to surveyors as a community. As included in this edition I most welcome any writings or images of our members that may be featured in the non-surveying media. Doing so allows us to celebrate one another's acclaim – a good story about a surveyor is good news for all surveyors! As included in this edition I most welcome news from our chapters. When they work in their communities, they bring recognition to our community! As included in this edition I most welcome sentimental reflections of surveying and the memorializing of surveyors. When individual members speak from their heart, they help us all build our community's soul! Lastly (for now – ha!), expressions of opinions, proclamations or statements are not for this editor to judge. Your newsletter, this newsletter, is a reasonably open forum for ideas, involvement and even idle thought. It is not a venue of group thought, right thought or ill thought. Besides, if you don't like an opinion, counter it – in writing, I could always use the material! And during those tough times of disagreement, do not turn on each other, turn to each other. That engages members, as professionals and as a community.

As you enjoy this edition don't forget my pard Tripod the three-legged ground hog. He's had a good summer lounging around the koi pond, working on his tan, dreaming about goldfish sushi. The next time I write you all he'll be moving back to a burrow and Missouri Surveyor will still be your voice of surveyors leading the way!

Donald

THE MISSOURI SURVEYOR

Published quarterly by the
Missouri Society of
Professional Surveyors

OFFICERS

Robert L. Ubben.....President
Adam Teale.....President-Elect
Jim Mathis III.....Vice President
Joe Clayton.....Secretary-Treasurer
Sandra C. Boeckman.....Executive Director
Sharon Herman...Immediate Past President
Troy Hayes.....NSPS Governor

DIRECTORS

Gerald V. Bader
Robert Ross
Rich Howard
Chris Wickern
Susanne Daniel
Michael Gray

ADVERTISING RATES

	4 issues	1 issue
Full Page	650.00	200.00
Half Page (horizontal or vertical)	400.00	150.00
Quarter Page	250.00	100.00
Professional Card	50.00	N/A

COPY DEADLINE

March Issue — February 1
June Issue — May 1
September Issue — August 1
December Issue — November 1

EDITOR

Donald R. Martin
105 S. Capistrano
Jefferson city, MO 65109
Phone (573) 619-8702
E-mail: editor@missourisurveyor.org

PUBLISHER

Sandra Boeckman
P.O. Box 1342
Jefferson City, MO 65102
(573) 635-9446 FAX (573) 635-7823
E-mail: mspss@missourisurveyor.org

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

Robert L. Ubben, PLS



It has been fun and pleasurable for me to serve as President of MSPS for the last year. My time is about up, and it went by fast. There were many items on the MSPS agenda that we worked on throughout the year making time pass quickly. I am grateful for the opportunity to have served as President of this great association.

The MSPS Board of Directors did meet on May 21 to develop a strategic plan for the next five years. After some discussion, the group identified three areas to focus on in the coming years. The *focus areas* are Curriculum Development, Professional Growth, and creating a Mentoring Program.

Each focus area is assigned to a 3 – 4 member *working group*. The working groups have identified dangers, opportunities, and strengths for each focus area. They have also set goals, defined desired outcomes and established milestones for the strategic planning process. This plan will be ongoing with more information being shared in upcoming newsletters and announced at future MSPS meetings.

At the July Board meeting there was discussion of online learning resources for continuing education. MSPS is working with GeoLearn on developing four one-hour Missouri Minimum Standards courses. Students will “participate” through online video. There will be a portal on the MSPS website that will link to GeoLearn’s site listing the available courses. Planning is underway to select presenters and content for the online video courses. I was given the opportunity to test drive a course and look around the GeoLearn website. It was easy to sign up, easy to navigate, and the portal even offered a feature to track your PDU’s. President-elect Adam Teale and I visited the GeoLearn facility and were impressed with their studio and the equipment used to create the courses. I think the membership will like the end result once this is up and running.

The Missouri State Fair is currently under way and the MSPS and Land Survey Program have a booth in the Agriculture building. MSPS volunteers have been staffing the booth along with Land Survey Program team members. If you went to the fair this year, I hope you were able to stop by and meet some of the volunteers and Land Survey Program staff. It is pretty interesting to interact with the public on what land surveying is. Some are very aware of what we do and others... well... not so much. The St. Louis Chapter of MSPS created a surveying activity for youngsters by mounting survey markers on a board and having kids do a rubbing using carpenter pencils and colored keel. That was a great idea and many people stop to do it and visit! The Land Survey Program also has some new, and very good looking, informational banners showcasing their abilities and work. The booth looks more modern and professional with the new items within it. I’m sure there will be photos in upcoming newsletters.

The 57th Annual Meeting is October 23-25 in Overland Park, Kansas. This is a joint meeting with the Kansas Society of Land Surveyors. It is being held at the Sheraton Overland Park Hotel. There is an agenda that can be viewed on the MSPS website. I look forward to seeing and meeting many of you there as my time ends, and Adam Teale ramps up.

Thanks for the opportunity to serve as the MSPS President. 🇺🇸

Cover Photo: Members of La Brigade au Renault join the St. Louis Chapter for a group photo prior to the Survey Party at the Arch. The Party was held to celebrate the 250th anniversary of the founding of the City of Saint Louis. La Brigade is a living history reenactment group from the Old Mines area.

Governor Keeps Good Company!



MSPS Past-President Mark Nolte (right) is walking with Missouri Governor Jay Nixon (center) on the grounds of the MU School of Law. Mark has taken a break from the practice of surveying to pursue a law degree. He reports, “[I was] charming him (the Gov) a little before I broke it to him I was a no good rotten land surveyor.” That’s okay Mark, a surveyor may be “no good rotten” but as a politician you can bet Governor Nixon has been described with stronger adjectives!

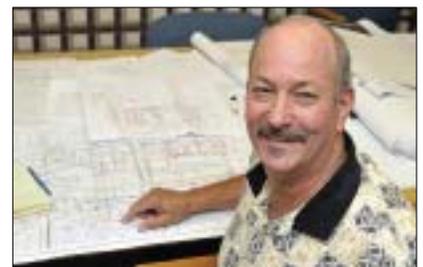
Joe Bax: Mapping out MoDOT Plans

by Olivia Ingle, Jefferson City News Tribune, Sunday, June 8, 2014

Joe Bax’s position as land survey manager for the Missouri Department of Transportation’s (MoDOT) Central District involves a lot of mapping. The agency’s survey department sets boundaries for road projects and maps property boundaries. “It’s so we can tell how much we’re taking from each property owner,” Bax said. Bax has worked for MoDOT for nearly 15 years, and has been district land survey manager for five years. There are seven people in his department — surveyors, land surveyors-in-training and technicians. “We function as a team here,” Bax said. “We try to plan ahead a couple of days or more because there’s a range of projects given to us.” He said it’s his job to assign workers to particular jobs.

To be a land surveyor, Bax said someone must have a college degree in the field or have a specified amount of credit hours in trigonometry and related courses. “Experience is also a trade off,” he said. He said surveyors also map utility lines and anything else MoDOT designers

might need. “We’re involved from the beginning throughout a project,” Bax said. “Once (a project is) built, we will develop a map of the corridor we took.” Bax’s team also takes other surveys, such as ones related to bridges and even high water. “Nothing is good until you check it,” he said. “That’s what we do as surveyors, check all records to make sure they’re correct.”



In the winter, some of his staff also plows snow on state roads. Bax said he loves his job because he gets to act like a crime scene investigator. “It’s all about gathering evidence to find something set back when,” he said. 🇺🇸



Let us help you transition to AutoCAD® Civil 3D®

- Custom Implementation Services
- Custom Civil 3D Template Creation
- Custom Training Programs



*“Excellent Instructor –
Took away a lot of information for engineering current production”*

– Robinson Engineering – IL

“Excellent knowledge base instructor”

– Ayres Associates – WI

“Excellent Class – Easy to follow along”

– Crawford Murphy Tilly – IL

 **AUTODESK.**
Gold Partner
Architecture, Engineering & Construction
Consulting Specialized
Authorized Training Center
Authorized Certification Center

© 2012 Autodesk, Inc. All rights reserved.

 **SEILER** DESIGN SOLUTIONS

Chicago • St. Louis • Kansas City • Milwaukee • Indianapolis • Omaha
Toll Free: 888-263-8918 • Email: cad@seilerinst.com

Survey Party at the Arch

by Stan Emerick

This year marks the two hundred and fiftieth anniversary of the founding of the City of Saint Louis. In recognition of that anniversary, the Saint Louis Chapter of the Missouri Society of Professional Surveyors decided to hold a Survey Party at the Arch. The primary party mission would be to execute a reenactment of the laying out of the first three blocks of the village. The secondary mission would be to engage in a group of activities that demonstrate the expertise of modern surveyors using state-of-the-art technology. Planning for the event was an operose task, involving a considerable amount of research, coordination and fundraising. The end result was a pleasant day filled with notable historical education along with a good deal of camaraderie.

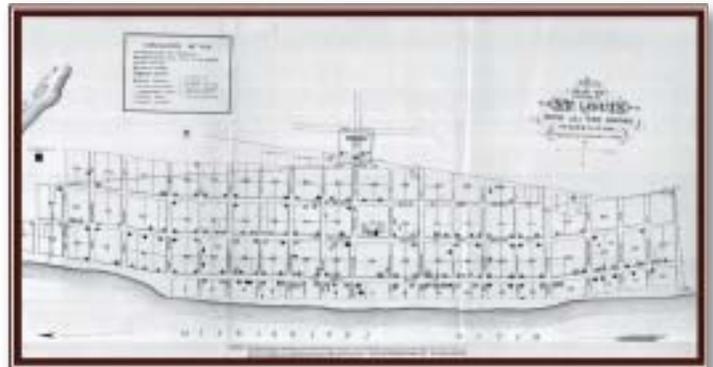
HISTORICAL BACKGROUND

Like many stories in history, the founding of Saint Louis is a tale filled with irony and intrigue. The selection of the village site had as much to do with ironic circumstances as it did with the adeptness of its founder. While Laclede was preparing for his journey, events were taking place half a world away that would not only alter his plans but also affect the course of his family's history. His choice for location, vision for expansion and assumption of governance would all be affected by events taking place elsewhere in the world.

This particular tale begins in the middle part of the eighteenth century when British colonists initiate an incursion in the upper Ohio River Valley, an area considered part of the Louisiana Territory and New France. Resistance from the French inhabitants lead to multiple conflicts, and these conflicts grow into the French and Indian War. The conflict eventually expands to a global theater and becomes known as the Seven Years War.

Around the same time, Laclede arrives in New Orleans and partners with Gilbert Maxent. They form a fur-trading business that deals primarily with Native American tribes along the southern Mississippi River. During the winter of 1762-1763, several events occur that will shape the future of the territory and the settling of Saint Louis.

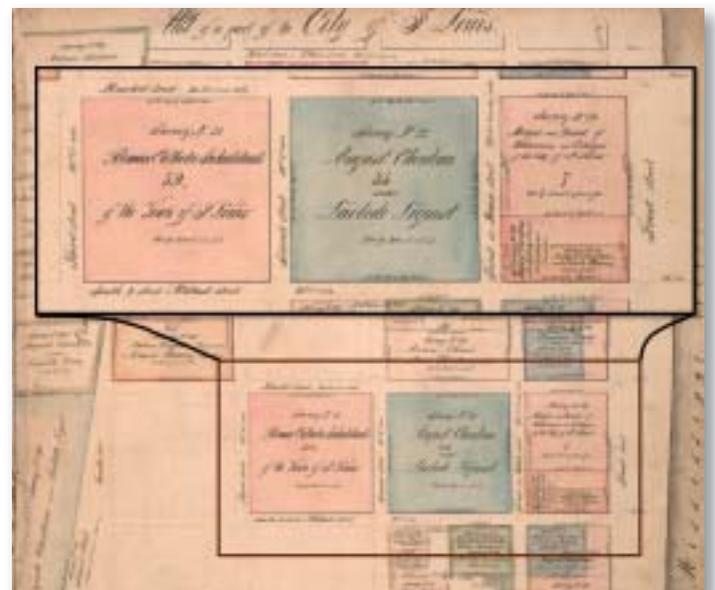
In November, King Louis XV of France recognizes the devastating effects of the war and enters into a secret agreement with his cousin, King Charles III of Spain, to give him control of the Louisiana Territory (the Treaty of Fontainebleau). Unaware of these events, Maxent and Laclede secure a royal license for trading rights



Frederick Billon's plat of the Town of Saint Louis (circa 1804), shows the layout of the early town including the original forty-nine blocks planned by Laclede.

with the Indian tribes along the Missouri River. Laclede commences with plans for a trading post in the upper Louisiana Territory.

In February of 1763, England, France and Spain agree to settle their territorial disputes and end the war. The Treaty of Paris divides the Louisiana Territory at the Mississippi River, ceding control of the eastern portion to Britain while retaining the western portion for France. French inhabitants are given a grace period to relocate from the eastern side.



A General Land Office plat of a part of the City of Saint Louis. The enlarged section shows detailed information of the three central blocks.

Later that year news of the treaty reaches New Orleans and Laclède departs for his journey upriver. The news from the treaty forces Laclède to seek a site for his post on the western side of the river. While spending the winter at Fort Des Chartres, Laclède and Chouteau scout for a location for their post. After choosing the site, Laclède returns to the fort and proclaims that he has found a site that may well become one of the finest cities on the continent. Early the following spring, Chouteau and company arrive at the village and begin construction. Receiving further instructions from Laclède, he begins to lay out the streets and blocks of the new village. Later that year word of the Treaty of Fontainebleau reaches the village and the inhabitants realize that they are now subject to the Spanish crown.

LACLEDE'S PLAN AND FRENCH MEASURE

Although the villagers would eventually cede control to the Spanish, Laclède was intent on modeling the community in the French tradition, similar to layouts he observed at New Orleans. According to Laclède's plan, the settlement would have three main thoroughfares running generally north and south, parallel with the river. All blocks and lots front on these thoroughfares. Northwest of the village would be "common fields" set aside for agriculture. A large "commons" area southwest of the village would be used for grazing and the harvesting of natural resources.

The tracts are laid out using French measure. The standard unit of length was the "Pied du Roi" (the king's foot). In Upper Louisiana it was roughly equivalent to an English foot plus five-sixths of an inch¹. Multiples of six pied were known as a "toise", roughly equivalent to a fathom (six feet, five inches English measure). The next unit was the "perche", equal to three toise. Wooden staves fashioned to a perche length would serve as the measuring tool for the village surveys.

Laclède's settlement had three central blocks residing near the only point of access through a bluff to the river. There was five columns of standard size blocks (three blocks tall) immediately north and south on the central group. Extending on either side of these two groups were four more columns (two blocks tall), that were realigned parallel to the river.

The three central blocks, Place d'Armes (public plaza), Laclède's Block and the Church Block, had a frontage of three hundred (300) pied by a depth of the same dimension. The standard blocks were intended for future inhabitants. They had a frontage of two hundred and forty (240) pied by a depth of three hundred (300) pied. Although the blocks backing to the bluff were generally



Current location of the three central blocks.

shorter in depth than the original plan. The thoroughfares had a width of thirty-six (36) pied whereas the crossing streets had a width of thirty (30) pied.

The standard unit of area was the "arpent" (French for an acre). It also had a lineal component often referred to as an arpent-length. This linear dimension was equivalent to the length of one side of the square arpent or ten perches (180 pied or 192.50 English feet¹). In arpent-length terms, the standard blocks were four-thirds ($4/3$) of an arpent wide by five-thirds ($5/3$) of an arpent deep. This produces a block area of two and two-ninths arpents, or twenty-ninths ($20/9$) of an arpent expressed in the form of a fraction. The fractional expression allows for the blocks to be easily divided into halves or quarters of known area.

A LESSON IN FRACTIONAL SURVEYING

This portion of Laclède's design differs from those of the other French cities. The reason for this deviation may have had to do with the ease in partitioning the blocks into lots of known area. Or maybe Laclède had an ulterior motive. Perhaps he wanted to give his young protégé a lesson in fractional math. Perchance he chose those particular block (and street) dimensions to test Chouteau's mathematical aptitude.

I can imagine a scenario where Laclède asks his young apprentice to calculate the area of each block. And then augments that instruction to include the areas of the lots if they choose to subdivide the blocks into halves or quarters. After some contemplation, Chouteau proudly asserts the answers to his master's inquiries. After congratulating his protégé, Laclède decides to extend the lesson by proclaiming that they will also need to know the area taken

(continued on next page)

Survey Party at the Arch *(continued)*

up by the streets. In fairly short order Chouteau announces that the thoroughfares contain one third of an arpent between the major blocks and four fifteenths of an arpent between the minor blocks. In addition, the cross streets comprise five eighteenths of an arpent, not counting the intersections, which occupy one thirtieth of an arpent. All proper fractions!



A survey crew reenacts laying out the western line of the Place d'Armes. They are measuring the line using two wooden perches.

FOLLOWING IN THE FOOTSTEPS

The primary objective of the Party was to execute a reasonable interpretation of the surveying techniques that may have been employed by Chouteau and company. The problem with that is there does not appear to be any written record of the actual event. Nor is there any record of the types of tools that they may have used. The best available evidence that we could find of the likely techniques employed by the company was a passing reference made by the GLO surveyor Joseph C. Brown in his notes for the Surveys of the School Lands. He mentions in those notes that measurements were done utilizing two staves made of fir, each having a length of twenty feet. A dimension roughly equivalent to the French perche. He goes on to say that the measurements were made by laying the staves end to end in a leap-frogging fashion.

In an old volume of "The Theory and Practice of Surveying" by Robert Gibson, the author makes reference to a technique for measuring lines by utilizing a two pole leap-frogging method. He goes on mention that three, five-foot long, graduated staves generally accompanied the set, and were primarily used for measuring parallel offsets.



Surveyors Materials, Inc.

8875 Frost Avenue
St. Louis, MO 63134
(314) 521-9041

Sales * Rentals * Service

**From Laths and Hubs to Robotics, Network GNSS
&
High Definition Scanners**

- when it has to be right

Leica
Geosystems

SPECTRA
PRECISION

Nikon

SOKKIA

One might ask why the short staves were only five feet in length, when the intuitive length of choice would seem to be a fathom (or a toise). Those being the more readily accepted unit of measure. The answer lies not in the recognition of the conventional unit, but rather in and understanding of Euclidian geometry, or more specifically, the Pythagorean Theorem. The number five appears in the first two primitive Pythagorean Triples (right triangles where the sides are in the ratio of integers). The first primitive pythagorean triple is the standard 3:4:5 triangle. A somewhat lesser known second primitive triple is the 5:12:13 triangle. As noted above, the use of these triples were generally for making parallel offsets. But it is also possible to effectively turn a ninety-degree angle using only the two perches and three short staves. Taking into account that most of the village blocks were designed to be rectangular, coupled with the unlikelihood of Laclede including a compass in his manifest, implies that it is plausible that the lines of the village may have been marked utilizing only wooden staves and pythagorean triples. In can be a rather humbling experience for the modern surveyor when he realizes that the oldest blocks in this state may have been laid out by a clever juvenile using nothing more than a set of wooden poles and a knowledge of Euclidian geometry.

Furthermore, when comparing the results of Brown’s Surveys (along with the works of subsequent city surveyors), with recent field measurements made for this exercise, of the remaining blocks in Laclede’s Landing and Chouteau’s Landing (which conform to the original design), we discover the astonishing fact that the overall length of the central tier of blocks (between Poplar and Vine Streets) is within four pied of the distance proposed by Laclede. That comprises a little more than a yard of error over roughly two-thirds of a mile. One should take into consideration that the colonial measurements were made along the surface of the earth, as opposed to the modern practice of reduction to a horizontal plane.

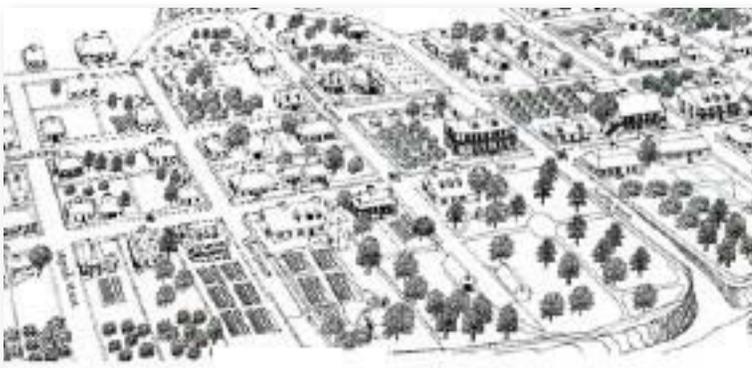


Two views of the encampment set up near the south leg of the Arch (taken from the Zahner & Associates scans).

This could compensate for a portion of the proximity in measurements. Nevertheless, the facts that the distances are as close as noted and most of the blocks are within a couple of degrees of square, lends credence to the postulate that Chouteau and company must have exerted reasonable care when laying out the original village. Furthermore, recognizing that the judicious practice of land surveying has occurred over this same ground for more than two hundred and fifty years only adds to the grandeur of the discovery.

ICING ON THE CAKE

The second half of the Party involved demonstrations on the use of modern surveying technology. Part of that exhibition disclosed how various instruments could be incorporated into the teaching of historical lessons. Among those activities was a GPS guided walking tour to the locations of some of the early residences in the village. National Park Service Ranger Doug Harding, personifying Pierre Laclede, gave wonderful accounts of the activities of those early residents and what life was like in the village. It was clear from his discourse that “Ranger Laclede”



A rendering of the early village. Laclede’s Block is the one bordered by First and Second Streets and Market and Walnut Streets. (Courtesy of Bob Moore of the National Park Service.)

(continued on page 11)

MO Colleges/Universities Where Land Surveying Coursework is Available

The following list will be updated quarterly as new information becomes available.

Longview Community College — Lee's Summit, Missouri

Contact: David Gann, PLS, Program Coordinator/Instructor —
Land Surveying MCC — Longview, MEP Division
Longview Community College
Science and Technology Bldg.
500 SW Longview Road
Lee's Summit, Missouri 64081-2105
816-672-2336; Fax 816-672-2034; Cell 816-803-9179

Florissant Valley Community College — St. Louis, Missouri

Contact: Richard Unger
Florissant Valley Community College
3400 Pershall Road
St. Louis, Missouri 63135
314-513-4319

Missouri State University — Springfield, Missouri

Contact: Thomas G. Plymate
Southwest Missouri State University
901 So. National
Springfield, Missouri 65804-0089
417-836-5800

Mineral Area College — Flat River, Missouri

Contact: Jim Hrouda
Mineral Area College
P.O. Box 1000
Park Hills, Missouri 63601
573-431-4593, ext. 309

Missouri Western State University — St. Joseph, Missouri

Contact: Department of Engineering Technology
Missouri Western State University
Wilson Hall 193
4525 Downs Drive
St. Joseph, MO 64507
816-271-5820
www.missouriwestern.edu/EngTech/

St. Louis Community College at Florissant Valley

Contact: Norman R. Brown
St. Louis Community College at Florissant Valley
3400 Pershall Road
St. Louis, Missouri 63135-1499
314-595-4306

Three Rivers Community College — Poplar Bluff, Missouri

Contact: Larry Kimbrow, Associate Dean
Ron Rains, Faculty
Three Rivers Community College
2080 Three Rivers Blvd.
Poplar Bluff, Missouri 63901
573-840-9689 or -9683
877-TRY-TRCC (toll free)

Missouri University of Science and Technology — Rolla, Missouri

Contact: Dr. Richard L. Elgin, PLS, PE
Adjunct Professor
Department of Civil Engineering
1401 North Pine Street
211 Butler-Carlton Hall
Rolla, Missouri 65409-0030
573-364-6362
elgin@mst.edu

University of Missouri-Columbia, Missouri

Contact: Lois Tolson
University of Missouri-Columbia
W1025 Engineering Bldg. East
Columbia, Missouri 65211
573-882-4377

Missouri Southern State College — Joplin, Missouri

Contact: Dr. Tia Strait
School of Technology
3950 E. Newman Rd.
Joplin, MO 64801-1595
1-800-606-MSSC or 1-417-782-MSSC

FAX 573-483-2777 Ph. 573-483-2777
Cell 573-883-6259

BADER LAND SURVEYING, INC.
GERALD BADER
Missouri P.L.S.

16265 Sugar Bottom Rd. Ste. Genevieve, MO 63670

ROTOLITE
OF SAINT LOUIS

ANDY CANZIANI
DIRECTOR OF SALES

ACANZIANI@AOL.COM
314.277.6343

5301 HAMPTON AVE P. 314.832.2091
ST. LOUIS, MO 63109 F. 314.832.9423

ZAHNER & ASSOCIATES, INC.
PROFESSIONAL LAND SURVEYORS



MICHAEL D. ZAHNER
PROFESSIONAL LAND SURVEYOR

26 N. Jackson St.
Perryville, Missouri 63775
(573) 547-1771 – FAX (573) 547-1452
1-800-773-1771
EMAIL: mikez@zahnerinc.com

Keith M. Brickey, P.L.S. Office: 573 634-3455
Fax: 573 634-8888



CENTRAL MISSOURI
PROFESSIONAL SERVICES, INC.

Engineering • Surveying
Materials Testing • GIS Services

2500 E. McCarty Street kbrickey@cmps-inc.com
Jefferson City, MO 65101 www.cmps-inc.com

Survey Party at the Arch *(continued)*

had a keen understanding of life in the colonial village and relishes the opportunity to share it with visitors.

Another Party activity for the day was a demonstration on the use of laser scanners. Mike Zahner and Waylon Sparkman of Zahner and Associates exhibited a proficiency with their new toy, a Leica C-10 laser scanner. Their scans of the grounds around the living history encampment at the south leg of the Arch are truly something to behold. Preserving a three dimensional historical record of the reenactors and their accompaniments seems rather surreal. Sort of like gazing into a time-warped version of an infinity box.

Working in a parallel universe were John Taylor and Pat Stack of Seiler Instruments. They were busy revealing the capabilities of their most popular model, the Trimble TX8. Their unit did an amazing job of picking up items that would have seemed too distant to observe, including the windows on the observatory at the top of the Arch and the copper dome on the Old Courthouse. Their point cloud does however show some of the limitations of the technology. Particularly when scanning reflective surfaces skewed to acute angles. In their defense, we all know that there is no such thing as a perfect surveying environment.

Examples of both works appear elsewhere among these pages and on the Chapter website. Realizing the astonishing amount of data that these instruments can



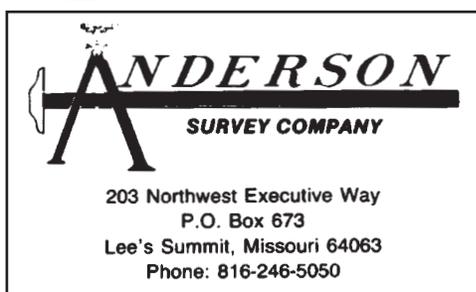
A group of surveyors mimic the Arch inside the birthday cake display.

collect in a brief period of time, makes me wonder how soon it will be before our current instruments end up in a museum display case.

By far the demonstration that garnered the most attention on the day was the painting of the birthday cake. Following a program set up by the Missouri History Museum's STL250 Celebration Committee, the Chapter took on the task of laying out the largest of the two hundred and fifty birthday cake displays scattered around the City. This particular display was set on the grassy knoll immediately west of the Gateway Arch and spanned a distance in excess of two hundred and fifty feet. The feat was accomplished by the efforts of several individuals, with a couple in particular playing a major role. Sam Bova and Kurt Richerson of the Metropolitan St. Louis Sewer District did yeoman's work on designing the layout and recording the activity. A time-lapsed video of the event can be viewed on the Chapter's website.

We are of the opinion that any activity that raises ones awareness of the past is a worthwhile endeavor. Ditto with enhancing our professional image. Had it not been for the diligent effort of a generous group of people, this event would not have accomplished its multitude of goals. The Chapter would like to thank all of those that contributed to making the Survey Party at the Arch a huge success. For more information on this event please visit our website at www.stlsurveyor.org. 🇺🇸

¹ French units of measure varied among the provincial territories of New France (Canada and Louisiana). These measurements were not standardize until after the United States General Land Office took over the surveying responsibilities within the territory acquired by the Louisiana Purchase. In this region the conversion was set as 77 English feet being equal to 72 French feet.





The Saint Louis Chapter of the Missouri Society of Professional Surveyors would like to thank the following for making our Party a success.

Survey Party at the Arch

Our generous sponsors:

Surveyors Materials, Inc.

Farnsworth Group, Inc.

Seiler Instrument Inc.

Govero Land Services

Surdex Corporation

David Mason & Associates

Southwest Chapter of MSPS

Cardinal Surveying & Mapping

Pickett, Ray & Silver

Minnick Surveying, LLC

Engineering Design Source Inc.

Topos Surveying Corporation

Sabur, Inc.

James Engineering & Surveying

Richard & Gail Howard

Positioning Solutions Company

And those who contributed:

Marty Aubachon, Anne-Sophie Blank, Josie Bova, Sam Bova, Ben Boyer, Bob Boyer, Brandon Boyer, Riley Boyer, Trisha Boyer, Bill Conlon, Jim Davidson, Jean Daugherty, Tim Daugherty, Stan Emerick, Dan Evans, Jim Exler, Scott Faenger, Dan Govero, Philip Grout, Jack Hartwig, Bill Hassall, Sharon Herman, Gary Hogbin, Dick Juliette, Joe Maine, Jim McDonald, Ryan McDonald, Jared Minnick, Bob Myers, Ed Owen, Darrell Pratte, Chuck Quinby, Kurt Richeson, Jerry Sansegraw, Dr. Lauren Schmidt, Tom Seiler, Waylon Sparkman, Pat Staack, Charlie Stroud, John Taylor, John Tweedy, Heather Westfall, Mike Zahner.

And a Special Thank You to Doug Harding, Rick Ziino and Bob Moore of the National Park Service, for their kind support.

www.stlsurveyor.org/stl250

WE CARRY ALL OF THE SMALL STUFF THAT KEEPS YOU GOING!

0% Financing available for
A Limited Time

Complete Rover Packages Under \$10,000



- GPS+GLONASS
- Network Compatible
- Integrated UHF+GSM +Bluetooth
- Compact, Watertight and Rugged



GEOMAX

Zenith 25

GNSS Receiver

OZARK LASER

SALES | RENTAL | SERVICE

Prisms • Oak & Pine Stakes • Laths • Hubs
Locators • Measuring Tapes & Wheels • Tripods
Bipods • Prism Poles • GPS Poles • Grade Rods
Tribrachs • Mag Nails • Roll Flagging • Field
Books • Aervoe Paint And Much More!

4 Retail Locations
To Serve Your Surveying
Equipment and
Supply Needs



Contact: Kevin Lindsey
SURVEY PRODUCTS MANAGER

918-964-9360
klindsey@ozarklaser.com

SPRINGFIELD: (417) 877-9245

2247 E. Kearney St. • Springfield, MO 65803

KC Area: Chad Willey
Sales Representative

816-830-1520
cwilley@ozarklaser.com

Springdale, AR
(479) 927-2424

Tulsa, OK
(918) 234-2345

Oklahoma City, OK
(405)-688-5160

www.OZARKLASER.com

Ozark Laser offers a full spectrum of surveying and construction supplies for surveyors, engineers, and contractors. Whether you need to purchase, rent, or repair, we can assist you in finding the tools, supplies, and services you need to get the job done right.

SCHMITZ, KING & Associates, Inc.

Professional Land Surveying Services



Preliminary Engineering Design Surveys
ALTA/Boundary & Topographic Surveys
Construction Layout/Environmental Surveys

18900 West 158th Street, Suite G - Olathe, Kansas - 66062
(913) 397-6080 - Fax (913) 397-6081
Email ska@schmitzking.com



ST. CHARLES ENGINEERING & SURVEYING, INC.

CONSULTING ENGINEERS AND LAND SURVEYORS
MISSOURI AND ILLINOIS

MICHAEL N. MEINERS, P.E.
PRESIDENT

(636) 947-0607 • Fax: 947-2448

Cell: (314) 393-8247

Web: www.stcharleseng.com

801 South Fifth St., Suite 202

E-mail: mmeiners@stcharleseng.com

St. Charles, MO 63301

ENGINEERS
ARCHITECTS
SURVEYORS
SCIENTISTS

Farnsworth GROUP

Stan Emerick, PLS

office 314.962.7900 20 Allen Avenue semerick@f-w.com
Suite 200
St. Louis, MO 63119



Riggs & Associates, Inc.

Land Surveyors

Est. 1987 - Licensed in Missouri, Arkansas, Kansas, & Oklahoma



102 West Trish Knight St.
West Plains, MO 65775
ralph@riggslandsurveying.com

Ralph L. Riggs, PLS
President

Ph: 1-800-317-8125
(417) 256-8125
Fax: (417) 256-6971

www.riggslandsurveying.com

The Surveyor's Library

A Review by Tom Webb

THE U.S. PUBLIC LAND SURVEY
SYSTEM FOR ARKANSAS
By Dr. Richard Elgin and Dr. David Knowles

AND THE U.S. PUBLIC LAND SURVEY
SYSTEM FOR MISSOURI
By Dr. Richard Elgin

The approximately 1500 men and women who are privileged to survey boundaries in Arkansas and Missouri labor in a unique realm; these are the only states west of the Mississippi River where the lines were laid out under the instructions of Edward Tiffin. The same office in St. Louis directed the deputy surveyors for the first 18 years of the great project, and the vast grid of their public land survey system is hung upon the Fifth Principal Meridian. Prospect K. Robbins and Joseph C. Brown, who established the Initial Point of that meridian, along with many others in the band of deputies, traversed boundaries in both states.

Our closing corners on township exteriors and the double corners that result are not generally seen in other states. The crazy quilt of guide meridians and correction lines in Missouri and Arkansas are a contrast to the orderly arrangement of meridians and standard parallels in today's U.S. Public Land Survey System. The clerks that prepared the General Land Office plats from the field notes employed protraction methods for unsurveyed lines and acreage computation not found in other jurisdictions. The surveys proceeded for 28 years before the instructions imposed the first meager requirements for accuracy of measurement or closure.

So it is not surprising that the current Bureau of Land Management Manual of Surveying Instructions contemplates a surveying system very different from that found on the plats and on the ground in Arkansas and Missouri. Nor is it a revelation that the modern pamphlet published by the B.L.M., Restoration of Lost and Obliterated Corners, does not directly address the system that resulted from Tiffin's instructions and the circumstances of surveys in our states.

The two manuals under review are an attempt to provide the surveying practitioners who work inside our unique system with guides for practice which recognize our special challenges. Dick Elgin and David Knowles began an immensely productive collaboration over thirty years ago. In 1984, Dr. Knowles concluded the preface to their first work, Legal Principles of Boundary Location for Arkansas, with these words: "We also hope the study

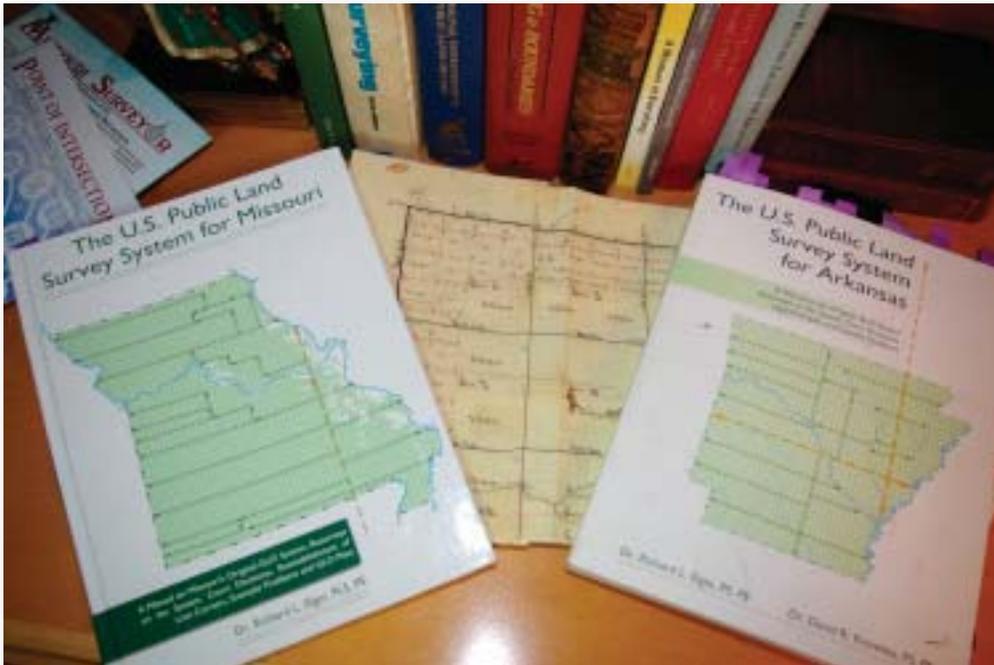
and this resulting book will become a national model for researchers to follow. Someday, perhaps there will be fifty such state studies available." Regrettably, that hope has not come to fruition nationally, but surveyors in our two fortunate states do now have these books which we can consult for useful and incisive discussion of the surveying world we live in. The ranks of contemporary books that provide authoritative analysis of retracement of the public domain are thin, but these two manuals go a long way toward closing the gaps.

David Knowles, Ph.D., PS, PE, professor emeritus at the University of Arkansas taught the surveying associate degree program there which graduated a generation of leaders in the surveying profession. He also tirelessly provided seminars for "experience-only" practitioners. He is a past president and life member of the Arkansas Society of Professional Surveyors. He is presently on an extended sabbatical surveying the many alluring fishing streams in the western states.

Richard Elgin, Ph.D., PS, P.E., is a second generation surveyor who was both owner and president of a surveying firm in Rolla, Missouri, for 33 years running boundaries and filing plats in both states. He is a surveying educator on the faculty of Missouri University of Science and Technology and has for many years presented review courses for those taking the licensure exams in both states. He has unraveled the intricacies of the problems presented in the real world in which we operate. He too has served as president of his state surveying society. Both Knowles and Elgin have long service on the NCEES committee that writes questions for the licensure exam.

While the PLSS in Missouri and Arkansas sprang from the same sources, they evolved in very different ways over the next 150 years or so. The original surveys may have been conducted roughly the same way, but today's resurveyor goes about his task constrained by laws, precedents from court decisions, regulations, and even traditions particular to his or her state. Missouri has an elaborate scheme of statutory law, Revised Missouri Statute Chapter 60 (significantly updated in 1979), which specifies in detail the procedures to be followed in the resurvey of the public lands. Arkansas has no such statutory guidance. In Missouri state agencies have written rules which regulate a wide range of surveying activities: documentation of corner evidence, mapping, accuracy, control, and GPS standards. In Arkansas proposals for substantive rules governing surveying practice have proved to be controversial and therefore are minimal.

So is there reliable guidance for Arkansas surveyors conducting retracement surveys on the Arkansas PLSS? There is no statutory scheme of rules and binding regulations are scant. What about the decisions of the Arkansas Supreme Court? The 11 cases discussed in the Arkansas manual are the same ones that were covered in Knowles and Elgin's 1984 book on boundary location, and the results are disappointing. The review of the cases by the authors left them impressed with the spectacle they revealed of "a confused surveyor, attorneys, and courts" and "how poorly some surveyors seem to have been prepared for court." In situations where the knowledgeable surveyor expert witness could have properly framed and clarified the issues, their testimony instead often only added to the rampant confusion. In short, the court decisions are little help in deducing the best practice for the retracing surveyor. The authors conclude: "The potential for poor quality surveys is high when performed by professional surveyors who have only very limited formal surveying education and who are not given direction by statutes, rules, and regulations. Perhaps this manual will help... "[Emphasis added]. This manual will help, but only if more than the current 90 copies of it are circulating!



Of course, statutes can be just as troublesome as their absence. In 1855 Missouri statutes spoke in detail concerning the methods for re-establishing "decayed or destroyed" (lost) corners, setting the "blank" quarter corners on township exteriors, and subdividing sections into their aliquot parts. Unfortunately, some of these procedures are quite different from those prescribed by modern statutes or those in the BLM manual. Contemporary enactments in Missouri provide that those corners re-established in conformity with superseded laws should be honored. Similarly, it is well known that corners

frequently were set by county surveyors in Arkansas using highly individualistic means. In the absence of guidance, they applied their own practices to allot the lands fairly. If a corner can be identified from the record as having been set before any authority had spoken, can we say they were "wrong" and alter their work?

The two manuals have six chapters covering the same basic topics: early history of the PLSS surveys, the original GLO surveys, resurveys on the PLSS, court decisions, reestablishment of lost corners, and example protraction and resurvey problems. The Missouri manual has a seventh section that uses beautiful full-color, high-resolution

reproductions of GLO plats to illustrate many of the different protractions and retracement situations discussed. In some places the text in the Missouri manual (published 2013) is verbatim from the Arkansas manual (published 2011). However, most of the language in the various sections of the

two manuals augments or contrasts with that covered in the other manual. A practitioner in either state can glean a great deal of useful information about his state from both manuals. This reviewer owns both manuals and considers them a good investment in his education as a professional..

In the Arkansas manual, Elgin and Knowles discuss the 1883 restoration pamphlet published by the GLO at length. Unlike the BLM manuals which were written to guide federal surveyors in their work on original surveys of the public lands, the restoration manuals were intended to help county and private surveyors in retracement surveys or resurveys of the public lands. The 1883 pamphlet was the first issued for this purpose and it deals with the situations typically encountered where Tiffin's instructions guided the original surveys, unlike the BLM manual

(continued on next page)

The Surveyor's Library (continued)

and subsequent issues of the restoration pamphlets. It is reproduced in its entirety in the Arkansas manual. The authors argue, convincingly, that Arkansas surveyors might well turn to it for guidance.

The Missouri manual compares the requirements of RSMo Chapter 60 with its formulation of the "best practices" for resurveys and find the statute to be sound. In both manuals the four indispensable phases of a retracement/resurvey are carefully laid out and justified. They are: research, field investigation, evaluation, and reporting. "Each phase must be accomplished in a complete, thorough, unhurried environment, conducted or carefully overseen by a professional surveyor." And in the end, as the 1883 manual observes: "No definite rule can be laid down as to what shall be sufficient evidence in such cases, and much must be left to the skill, fidelity, and good judgment of the surveyor in the performance of his work." But, of course, she or he must actually be closely involved in the survey, both in the field and office.

"Missouri Takes Shape" is a section in the first chapter of the Missouri manual that tells the fascinating story of the surveying of the boundaries of the state. The 1843-45 resurvey of Joseph C. Brown's placement of the Missouri-Arkansas state line is particularly interesting. There is a detailed exposition of the methods used by the two surveyors to run the latitudes of 36 degrees 00 minutes and 36 degrees 30 minutes which will enthrall most members of our profession.

Richard Elgin is one of the preeminent experts on compass surveying. His discussion of how the original lines were actually run fills in a major blank spot in most surveyors' education (or at least this one's). Equipped with this knowledge, the range of profitable corner searches expands. His discussion(s) of the uses and risks of using closing corners to restore or establish corners along the exteriors of townships is incisive and finely shaded..." it all depends".

On page 5-35 of the Arkansas manual, Knowles and Elgin state: "In today's practice, it is hard to imagine an instance when a lost meander corner need be reestablished, or when a meander line would need to be restored. A meander line was never a boundary, but a surveyed line along a water body to 'define the sinuosities' of the body..." In fact, during the period 1910-1925, the BLM conducted extension surveys of 26 townships to subdivide lands omitted from the original surveys of the "Sunk Lands" in the vicinity of the St. Francis River in Arkansas. The original meanders were determined to be fraudulent –

often many miles from the body of water or surrounding a wholly fictitious lake. The US government declared that riparian rights did not attach to these meanders. Instead they become the permanent boundaries between these tracts and the newly subdivided omitted public domain lands. The old meanders were monumented with capped iron posts. Hundreds of miles of meander line became boundaries and hundreds of tracts have these meanders as part of their boundaries. T12N, R6E is representative of these surveys. The skein of our complex surveying history has tangles enough to trip up even the most astute researcher.

Users of the Arkansas manual should note that page C-3 of the appendix, which is a portion of a reprint of Tiffin's Instructions, is actually a misplaced page from another set of instructions and should be replaced by the copy in the Missouri manual or from another source.

Elgin and Knowles do not hector their readers, calling into question their intelligence and/or ethics should their practice differ at all from their "best practice". Rather, they assume their audience is composed of reasonable professional people who want to do good work. They understand all the different ways to approach surveying tasks, examine the merits, or demerits, of each and recommend one. However, they also recognize the exception to the rule and carefully parse the many surveying questions that must be answered with a preface of "that depends". 🇺🇸

Texas A&M Corpus Christi offering online course on introduction to surveying this fall

Classes begin August 27. Contact Prof. Richard Smith (Richard.Smith@tamucc.edu) for more information on paperwork you need to complete before you can register for the course. You can take the course as a degree candidate or as a non-degree candidate. This course involves field work, and to complete the labs, you must have an agreement with a licensed land surveyor who will agree to supervise your labs, provide the equipment and make sure you follow the lab exercises as written. Course instructor: Dr. Joe Paiva (joepaiva@geo-learn.com). Read about the program and course at http://catalog.tamucc.edu/preview_program.php?catoid=7&poid=553. The course is called GISC 2470 for 4 sem. hrs.

Joseph V.R. Paiva, PhD

A Scene Repeated For More Than 100 Years.

New technologies and old-time customer service. The two go hand-in-hand at Griner and Schmitz, one of the region's most respected surveying and GPS equipment companies.

Since 1910 Griner and Schmitz has blended personal service with the most contemporary tools of the surveying trade. With our staff of factory-trained service technicians, Griner and Schmitz keeps you working and productive.

Come join us and see what the next 100 years will bring.



Griner Schmitz circa 1952



Where old and new go hand-in-hand.



1701 Broadway, Kansas City, MO 64108
(800) 821-3896 | www.grinerschmitz.com

Outline for the Presentation

"TIGER vs. JAYHAWK: A Comparison of Their USPLSS"

Dick Elgin, LS

Archer-Elgin Surveying and Engineering, Inc.
Rolla, MO

Steve Brosemer, LS

GeoTech, Inc.
Emporia, KS

Saturday, October 25

1:00 – 3:00, 3:30 – 5:30 p.m.

Two screens, two podiums. The speakers, Elgin for Missouri then Brosemer for Kansas, will alternate. In this manner comparisons between the states can be made.

Abstract

From reading about the U.S. Public Land Survey System in most surveying textbooks, one would get the impression the system is simple, regular and was uniformly applied from the midwestern states west. Some USPLSS myths include: All Principal Meridians were run north. All Guide Meridians and Standard Lines are regularly spaced. All Townships have 36 Sections and all Sections are a mile square and contain 640 acres. Yes, the textbook says there are a few exceptions, but they are not explained. The two presenters, Elgin for Missouri and Brosemer for Kansas, go back and forth, discussing and comparing the different components of the USPLSS for the two states, how they were surveyed and how they differ. This presentation will be of particular benefit to those intending to become licensed in either of these states. And, will probably contain new information, even to those already licensed.

Outline

1. Overview of the early USPLSS, 1785-1815. (Elgin)
2. The establishment of the Initial Point to the 5th Principal Meridian and surveying the 5th PM. (Elgin)

The establishment of Kansas' "Initial Point", its Base Line and the 6th PM. (Brosemer)
3. Establishing the USPLSS "framework" in the two states: The system of Standard Lines and "Guide Meridians" (although Missouri doesn't have such).
4. Surveying the township exteriors (and some of their variations).

5. Subdividing the townships (and some of their variations).
6. Platting the townships (and some variations and odd township plats).
7. Survey methods of the original GLO surveys. GLO accuracy and closure standards and practices. Fraudulent surveys.
8. Resurveys on the USPLSS for Missouri and Kansas... some differences. (The "blank" quarter corners and center of section, for example.) Differences in statutes.
9. Shaping Missouri and shaping Kansas. How the two got their boundaries.
10. Summary and questions. 🇺🇸



MSPS Creates Online Learning Portal

As technology proliferates and surveyors change the way they get their work done, many of their other work activities, habits and preferences change too. The use of radically new communications devices to communicate with voice, data and video to our co-workers and clients, can generally lead to more complex lives.

Understanding some of these influences on our lives, the Board of Directors of MSPS has chosen to implement an online learning portal for the Society. It accomplishes several goals for members. It provides an option for those needing continuing education PDUs when circumstances prevent them from attending an MSPS event. It also gives those who are driven to get educated in certain topics because of their careers, their job requirements, or simply from curiosity, to achieve this anywhere, anytime. An important reason is that it provides a reliable source for quality education on Missouri-specific topics. As the selection of courses is developed and expands, it can provide education for technicians, whether it is basic training, training for job advancement or to refresh known information that may have fallen into disuse. Remember that in Missouri you can present for renewal of licensure no more than 60% of the required continuing education from online or similar types of non-face-to-face education.

MSPS has teamed with GeoLearn, an online education company, to provide these services to you. You will find the link to the site on the MSPS website...look for MSPS online learning portal. You can view the courses that are currently available. This number is in the high 30s and will grow to 50 courses soon, with even more before the year ends. You will need to register as a user with a simple sign-up process. Then cruise the catalog, checking out previews as you wish at no cost to you. Once you select a course you



A peek at the first page of the MSPS online learning catalog.

will be taken to a payment interface. Courses that carry PDU credit have the option of a final exam at the end. It is your choice. You are given this choice as many states now require some sort of confirmation that you have learned, and if you are licensed in such a state the exam would be mandatory for you if you desire credit with that state.



Tom Bryant demonstrates in the field.

From a content and quality point of view, the Board selected this portal because PDU courses are approved by Texas A&M Corpus-Christi following a rigorous evaluation process. Future courses may include topics that assist those preparing to become certified survey technician (CST). Also on the quality front is that unlike many online offerings, your learning is more effective through 100% video-based presentations. The presenters are highly reputed in the field including Dick Elgin, Gary Kent, Wendy Lathrop, Bill Henning and Joe Paiva. Others coming soon include Dave Doyle, Eric Gakstatter, Dennis Moulard and Christine Gayron.



Veteran presenter Tom Bryant instructs on the RTN.

Collaboration between MSPS, Seiler Instrument, MO DOT and GeoLearn, the portal has available a free course entitled **Getting Started With the Missouri DOT Real Time Network**. In it, Tom Bryant of Seiler presents information on the real time network (RTN) that covers background, benefits, how to use it, equipment you need to use it, how to set it up and how to get access through the MO DOT. He also covers good surveying practices when you use the RTN and he ends the course with a field demonstration.



Dick Elgin talks on plat notes

We will run some Q&A in subsequent issues. We're particularly interested in whether you believe the courses in the portal serve your needs. We're also interested in knowing what you'd like to see added. Already in the planning stage are a couple of one-hour courses on Missouri Minimum Standards. Send an email to mpps@missourisurveyor.org. If it requires a quick response we will do so; but we will also answer them in this publication. Enjoy! 🇺🇸

Nominations for 2014-2015 Officers



President
Adam Teale

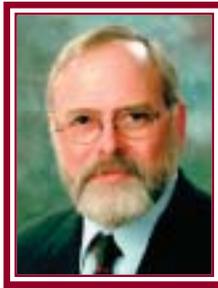
Adam Teale is a Principal at Midland Surveying, Inc located in Maryville and St. Joseph, MO. He is responsible for static GPS control surveys, mission planning, and post-processing of geodetic control. He is also responsible for project scheduling, research compilation and cataloging, analysis and review of field surveys, platting,

and government corner registration. Adam has a B.S. in Geography and Surveying from East Tennessee State University. He is a licensed professional surveying in Missouri, Iowa, and Illinois and obtained certification as a Certified Federal Surveyor in 2009.

Adam and his wife Anna of 13 years enjoy supporting their two children in their various activities.

President-Elect
Jim Mathis

Jim Mathis is owner and operator of a surveying/engineering business in Southeast Missouri and has practiced land surveying for over 40 years. He has extensive experience in contract cadastral surveying for state and federal agencies and is responsible for the perpetuation or establishment and registration of over 3,300 corners of the U.S. Public Land Survey System. He is a past member of the Land Surveying Division of the Missouri Board for Architects, Engineers, and Land Surveyors, and currently serves on the MSPS board of directors.



Vice President
Joe Clayton

Joe Clayton is an eighth generation Missourian with over 30 years of experience in surveying and mapping. Joe has a diverse background that includes work in high-order geodetic surveys, transportation, land surveying, photogrammetry, technical support, training and project management.

Joe is the current head of surveying operations for the Missouri Department of Conservation; in this position Joe manages the statewide boundary and engineering survey programs.

Joe is a graduate of the U.S. Army Field Artillery Survey School; he has under graduate course studies from three Missouri Universities and is a certificate candidate of the Land Survey Program of the University of Wyoming.

Joe is a founding member of the Southwest Chapter of MSPS. Joe is the current MSPS Liaison to the Missouri GIS Advisory Council where he chairs their Policy and Legislation committees. He is the chair of the MSPS GIS/Vision 21 Committee and is an active member of the Legislative, Nominations and Standards committees.

Joe is honored to have this opportunity to serve the Society and the surveying profession.

Secretary-Treasurer
Gerald Bader, PLS

Gerald is the President of Bader Land Surveying, Inc. which began operations in April of 1996. In the fall of 1996, Gerald was elected as Ste. Genevieve County Surveyor and is presently serving his 5th term. Gerald is an advocate for the protection of the Public Land Survey System and has been participating in DNR's County Surveyor Cooperative Remonumentation Program and the Private Surveyor Remonumentation Program since 1996. In addition, Gerald is active in several local civic and professional organizations. He is presently serving on several MSPS committees. Gerald has served as MACS President from 2004-2005 and 2010 through 2012. Gerald coordinated MACS re-monumentation of the Tri-State corner in 2004 and the PK Robbins Memorial Bench in 2006. Gerald is also serving on the Board of Directors for MACS and the St. Agnes School Board.

Gerald and his wife, Denise have two children, Brett; age 18 and Alina; age 11. They live in Ste. Genevieve. He has been an honored to serve on the MSPS Board of Directors and looks forward to serving MSPS and the surveying society.



Secretary-Treasurer
Robert Ross

Robert and wife Chrissy, live in Yukon, Missouri with their two boys; Rylan and Carson. Together they enjoy spending time on Current River, and competitively shooting 600 & 1000 yard benchrest rifles which he has built; at their shooting range (Midwest Benchrest) and across the nation.

Robert attended Southwest Missouri State University (now MSU) in Springfield, Mo., and earned a Bachelor's degree in Cartographic Sciences, with an emphasis in Land Surveying. He has worked for private surveying firms in Branson and Salem, prior to working for the State Land Surveyor's office in Rolla for 8 years, where he worked as LSIT, Project Surveyor, and as Geodetic/Cadastral Section Chief. As Section Chief he was responsible for overseeing section staff, in-house cadastral projects of the Land Survey Program, contract administration of boundary project contracts with private surveyors, and the Private/County Surveyor Cooperative Remonumentation programs; in addition to presenting numerous Minimum Standard/continuing education sessions.

In 2012 Robert was elected to Missouri's House of Representatives for the 142nd District; which encompasses all of Texas County, and portions of Howell, Phelps, and Pulaski Counties. Running for this position required leaving state employment with the State Land Surveyor's office, but has created opportunities for the surveying profession legislatively. Robert has carried and/or assisted in the several recent MSPS legislative priorities that have successfully navigated the process. Serving jointly on the MSPS board, and as a legislator has provided insight into the needs of the profession with the added perspective of the MSPS body.

Following the election, he opened Ross Surveying, Mapping, and Consulting, and works in that capacity as time allows.

Nominations for 2014-2015 Board of Directors

Monnie Sears

Monnie obtained his Missouri surveying license in 1991. He is also licensed in Oklahoma, Arkansas and Kansas. He is a Certified Floodplain Manager (CFM) and a Certified Federal Surveyor (CFedS). Monnie began his career as a draftsman in 1978 after two years of Vo-Tech training.

He has managed the Survey Department at Allgeier, Martin and Associates in Joplin, Missouri since 2002. During this time he also served as Interim City Surveyor for the City of Joplin from August of 2006 through June of 2008. In December of 2010, Monnie was appointed to the position of Floodplain Manager for the City of Anderson, Missouri.

Association memberships include the Missouri Society of Professional Surveyors (MSPS), the National Society of Professional Surveyors (NSPS), the Missouri Floodplain & Stormwater Managers Association (MfSMA) and the Association of State Floodplain Managers (ASFPM).

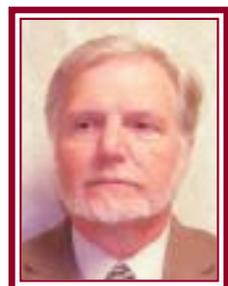
Monnie is a charter member of the Southwest Chapter of MSPS and has served on the Education Committee since the Chapter was founded in 2006. The Education Committee is hosting its 8th annual continuing education seminar this year. He also serves on the chapter's ad-hoc Committee on Mandatory Recording and on the MSPS Recording Steering Committee. He has served as chapter president and is currently serving as a chapter director.

He has been a member of the Anderson Planning and Zoning Board for 14 years and has previously served 16 years on the City Council.

He is an ordained minister, teaches Wednesday night Bible study and is the Director of Bible Warehouse. He has made three mission trips to Zambia for the purpose of training ministers.

Monnie Lives in the small town of Anderson with his wife, Joanna. They have two daughters and three grandsons living close by.

His reason for seeking a seat on the MSPS Board of Directors is to represent the interests of and be a primary spokesman for the surveying profession in Missouri.



Earl E. Graham, PLS

Earl is the Director of Surveying for Grimes Consulting, Inc., in South St. Louis County. He was licensed in Missouri in 1988 and over his more than 35-year surveying career has earned licenses in five adjoining states as well as Colorado. Beginning with transit and chain methods, Earl has experienced the implementation of the modern EDM, the Electronic Theodolite, the

Data Collector, the Total Station, GPS, and VRS networks. Today he leads a surveying department that serves dozens of major commercial and industrial clients and leads surveying efforts for developments across the region. Earl's diverse background includes surveys of large sectional tracts for mining and timber in St. Francois, Madison, Iron, St. Genevieve, and Washington counties, as well as urban surveys throughout Northern Jefferson County, St. Louis County, the City of St. Louis and across the Midwest, including a strong background in

urban redevelopment. Earl earned an Associate of Science degree from Mineral Area College and currently resides in Park Hills. He is the current chairman of MSPS' MoDOT committee and has twice served as the director of MSPS (MARLS).

Jeremy M. Powell

Jeremy M. Powell, PLS, CFedS, has worked in the fields of land surveying and engineering since 1999. His responsibilities have included project management, site planning and design, boundary and topographic surveying, right-of-way mapping and 3D scanning and modeling. Jeremy also has over 20 years of drafting experience with knowledge of many of today's computer aided drafting programs.

Jeremy is a licensed Professional Land Surveyor in Kansas and Missouri and in 2011 he received his Certified Federal Surveyors (CFedS) certification from the U.S. Bureau of Land Management. The CFedS program, which has been approved by the U.S. Secretary of the Interior, was designed specifically to enhance the level of knowledge and expertise in the professional land survey community for survey work performed on federal lands and on Indian trust lands.

In 2005, he formed Powell and Associates, LLC with the goal of providing clients with superior land surveying services. Since its inception, Powell and Associates, LLC has provided land surveying services throughout Kansas and Missouri completing many surveying and mapping projects of both a large and small scale. These projects have included an extensive amount of boundary and topographic surveying, highway mapping, control networks, 3D laser scanning, utility mapping, single beam hydrographic surveys, and construction staking.

Jeremy resides in Grain Valley with his wife Bethany and their two daughters, Brooke and Natalie. He enjoys bass fishing, boating, and spending time with friends and family.



Chuck Quinby

From Northeast Ohio, Chuck joined the Army as a Field Artillery Surveyor at age 18. He earned his High School Diploma from Saint Louis High School in Hawaii, an Associate in Arts and A Bachelor of Science from the University of Maryland while on active duty. Progressing through the surveying "ranks" ranks as Chainman, Recorder, Instrument Operator, Computer and Party Chief he served in South Korea, Germany, Fort Bragg North Carolina, Fort Stewart Georgia and Fort Sill Oklahoma. He attained the position of Chief Surveyor in the 3rd Armored Division, customarily an E-7 positions while still an E-5. His service included being an instructor of Surveying and Land Navigation as well as a Training Developer before closing his Army career in 1993.

Chuck began his civilian surveying career in Snyder Oklahoma as an Instrument Operator. Working his way back to Ohio he returned to school to enhance his transition from Army surveying to civilian land surveying at Columbus State Community College. An opportunity with ABNA Engineering brought him to St. Louis in 2001. He is presently with Engineering Design Source Inc. as their only PLS Party Chief. A past Vice President of the Saint Louis Chapter of MSPS for 2 years, he is their current President!

News from the National Geodetic Survey



Friday, June 27, 2014

June 30, 2014: The National Geodetic Survey (NGS) Releases new Beta experimental geoid height model “xGEOID14B,” spanning one-quarter of Earth’s surface.

The new model - the first to cover the whole of Hawaii, Alaska, Puerto Rico, and the U.S. mainland - incorporates all available satellite, airborne, and surface gravity data and represents a significant step toward defining a new regional vertical datum and contributing to a world height system. This new geoid model will be tested by surveyors, engineers, geographic information specialists, and others interested in defining accurate heights. NGS is collaborating with Canada, Mexico, Central American and Caribbean nations, and Denmark (for Greenland) to provide a unified height model for scientific, engineering, disaster mitigation, and emergency response purposes. For example, this model may improve forecasters’ ability to predict the effects on Florida of storm surge from a hurricane in Haiti.

Tuesday, July 15, 2014

NGS Releases New Series of Videos on Geodetic Datums!

In a new and collaborative effort between the National Geodetic Survey (NGS) and The COMET Program, a series of four, three- to four-minute videos has been developed as an introduction to geodetic datums. The videos are titled “What are Geodetic Datums?,” “How Were Geodetic Datums Established?,” “What is the Status of Today’s Geodetic Datums?,” and “What’s Next for Geodetic Datums?”

The videos are informative and well-presented and will be useful to all those who employ mapping products and other geo-spatial tools. NGS customers and stakeholders will gain a better understanding and appreciation for the effort involved in NGS’ upcoming release of new datums planned for 2022, as well as what they can do to prepare for the new datums. The videos are the first wave of a planned series of collaborative efforts with COMET.® COMET is world leader in support of education and training for the environmental sciences.

The videos can be viewed on YouTube at: [Geodetic Datums Videos](#)
Thursday, July 25, 2014

New Series of Videos on Geodetic Datums

In a new and collaborative effort between NGS and The COMET® Program, a series of four, three- to four-minute videos has been developed as an introduction to geodetic datums. The videos are titled “What are Geodetic Datums?,” “How Were Geodetic Datums Established?,” “What is the Status of Today’s Geodetic Datums?,” and “What’s Next for Geodetic Datums?”

Thursday, July 31, 2014

Remote Sensing Tools Highlighted at Recent Conference

This week, the National Geodetic Survey (NGS) presented a case study of the Post-Sandy topographic-bathymetric (“topo-bathy”) light detection and ranging (lidar) collection and potential applications for coastal resilience at the Management Association for Private Photogrammetric Surveyors (MAPPS) 2014 Summer Conference in Idaho. NGS discussed the innovative remote sensing tools and techniques investigated by the private sector, NGS, as well as other government partners to effectively assess the impacts of Sandy. Discussion focused on topo-bathy lidar technology that offers enhanced capabilities for high-resolution, seamless data acquisition across the backshore, intertidal, and shallow near shore zones. The MAPPS Summer Conference presented a unique opportunity to engage in continuing education on management and geospatial-related technical issues. 🇺🇸

Kari Marlatt awarded the O. Dan Lashley Memorial Scholarship

RTI Drafting & Design Student Kari Marlatt awarded the O. Dan Lashley Memorial Scholarship.

For the Spring, 2014 semester, Kari Marlatt was awarded the O. Dan Lashley Memorial Scholarship at Rolla Technical Institute (RTI) in Rolla. Presenting the scholarship to Kari is selection committee member J. Michael Flowers, PLS. Kari is from Rolla, MO and graduated from the Rolla Technical Institute Drafting & Design Program in May 2014.

The annual \$500 scholarship was commissioned by O. Dan Lashley, a long-time Department of Natural Resources surveyor and Rolla resident, specifically for an RTI Drafting & Design second year student interested in land surveying. Mr. Lashley had a love of surveying, educating young people about the profession, and encouraging them to consider a career as a Professional Land Surveyor. 🇺🇸



Pictured from left: Kari Marlatt, J. Michael Flowers, PLS

In Memory of Jim Patchett, 1938-2014 LS #1417



James “Jim” V. Patchett, 75, of Columbia passed away Saturday, July 12, 2014.

The memorial service was held on Friday, July 18, at Community United Methodist Church.

He was born on Nov. 14, 1938, in Overland to the late William and Barbara (Stokes) Patchett.

Jim married Nancy Hoover in 1961 in Princeton, and she survives.

He also is survived by his children, Jamie Patchett (wife Trisha) of Columbia, Amy Mayberry of Shawnee, Kan., and Adam Patchett (wife Jessica) of Columbia; siblings Jack Patchett of Colorado Springs, Colo., and Phyllis Lawson (husband Larry) of St. Charles; and grandchildren Olivia and Rebecca Mayberry of Shawnee, Kan., and Jackson Patchett, Sydney Scott, James and John Patchett, all of Columbia.

He was preceded in death by his parents, three sisters and two brothers.

Jim was friendly and outgoing and loved to be outside. His grandchildren were his joy. After he served his country in the U.S. Army, he worked as a land surveyor, later forming Patchett and Co. Jim was an avid Cardinals baseball fan. He was an active, involved father who enjoyed coaching his children’s athletic teams.

The Good Old Days.

*Surveying today isn't the same as it was in the good old days,
Trying to keep up with all the latest technology craze.*

*Now you have transits that turn and shoot by them self,
All the while, the Gurley and chain sit on the shelf.*

*They got three dollars per mile, to split among the survey party,
Nowadays it depends on the job, before you even ask, smarty.*

*To ease computations, true on line, they would try to stay,
We can compute in minutes, what it would take them all day.*

*To measure vast distance, they would use a 66foot metal chain,
Now we push a button on the collector, it doesn't even require a brain.*

*We still take our work back to the office to draw up the plat,
They had some of the best draftsmen, I'll have to give them that.*

*Surveying around and over these Mountains that we call Ozark,
Their accuracy and commitment, should stand as a benchmark.*

03/17/2014

Jack E. Houseman

PLS 2005019222



Four Points Land Surveying, Inc.

NORMAN ELLERBROCK, PLS
President

4950 County Road 403
Palmyra, MO 63461
Phone/Fax: 573-406-5533
Mobile: 573-406-3002
norm@fourpointssurvey.com
www.fourpointssurvey.com



Brian Hoffmann
Business Development
Representative

520 Spirit of St. Louis Blvd.
Chesterfield, MO 63005
tel 636-368-4400
dir 636-368-4468
cell 636-627-8196
fax 636-368-4469
brianh@surdex.com

Geospatial Data Services
www.surdex.com

SEILER IS YOUR SOURCE FOR...

SURVEY
RTK/GNSS



UAS



SCANNING



SERVICE
REPAIR



SUPPLIES



TRAINING



Seiler Instrument offers a complete line of high precision instruments for survey, mapping, architectural, construction, civil, mechanical and structural engineers, along with building implementation and plant professionals.

We offer a wide variety of equipment, BIM and application software, mobile mapping and 3D scanning, field supplies for general construction, site layout, site positioning, and much more!

We work with dependable and quality driven manufacturers such as:

- Trimble®
- Spectra Precision®
- CartoPac Field Solutions®
- Laser Technology®
- AGL®
- David White®
- Nikon®
- SECO®

Our experienced field, training, service and support staff will work with you and your organization to provide the best solutions available for your productivity and project success.



Contact Us:

Seiler – Missouri & Southern Illinois
3433 Tree Court Ind. Blvd.
St. Louis, Mo. 63122
Direct: 314-218-6339

Seiler – Kansas City
918 N. Scott Ave
Belton, MO 64012
Direct: 816-331-3383

Toll Free: 888-263-8918
Email: solutions@seilerinst.com

SALES • RENTALS • SERVICE • TRAINING • FINANCING
Website: <http://solutions.seilerinst.com>

POSITION STATEMENT

GENERAL OVERVIEW

The law has long provided that landowners are to record surveys which are copyrighted documents. To protect the integrity of the system as well as uniformity, the current provisions for recording by landowners should not be changed, and the copyright protections of surveys should continue to be honored.

I. MISSOURI LAW - Land Owners Record Survey and Subdivision Plats

Whereas:

The United States Government established the Public Land Survey System to divide land that it owned into parcels and recorded the plats thereof with the General Land Office prior to transferring those parcels to private ownership.

AND

Section 185 of Chapter 137 of the Revised Statutes of Missouri (Section 137.185 RSMo) requires the land owner to record the survey of any tract he sells that is less than an aliquot 40 acres.

AND

Chapter 445 of the Revised Statutes of Missouri (Chapter 445 RSMo) requires the land owner to record the plat of any subdivision surveyed on behalf of the land owner.

AND

Historically the provisions of Chapter 445 RSMo have been enforced and the public record of subdivisions is largely accurate.

AND

Historically Section 137.185 RSMo has not been enforced and the public record of survey plats is severely lacking.

Therefore:

WE SUPPORT continued enforcement of Missouri law that land owners bear the responsibility of recording such survey and subdivision plats because historical and legal, precedent provide that the land owner records the plats of surveys.

WE SUPPORT enforcement of existing: law as being preferable to the promulgation of new laws which create new burdens on surveyors and conflict with Missouri's legislative history.

WE SUPPORT continuing to require land owners to record survey and subdivision plats rather than burdening surveyors with a duty to record because requiring owners to record survey and subdivision plats serves the public interest in assuring that land owners actually create parcels depicted on surveys before they are, officially recorded.

WE OPPOSE changing Missouri law to require surveyors to record survey and subdivision plats because shifting this duty from the land owners to surveyors increases the risk of disputes regarding the terms of the-plats because it is not the I-and owner who records the plat thereby affirming its terms.

WE OPPOSE creating a new legal duty of surveyors to record survey and, subdivision plats because it increases surveyors' exposure to litigation by third parties with whom the surveyor was not contracted, either as a party defendant or witness defending the contents of a recorded survey or subdivision plat.

(continued on page 28)

Missouri USPLSS Quiz No. 3

Two Section, Township, Ranges....Two Different Tracts?

by Dick Elgin, Rolla, MO

In Missouri can there be a section, township, range for which there are two different parcels, some distance apart? That is, might there be TWO DIFFERENT Section X, Township Y North, Range Z Wests?

By the nature of the question, you might surmise the answer is "Yes," which is correct. So, to win the prize, explain the circumstance, or how and why there can be TWO sections with the SAME township and range numbers in two DIFFERENT locations (sometimes, miles apart). The most complete response wins a 1992 Sokkia Ephemeris autographed by its author. Email me at: elgin@rollanet.org. 🇺🇸

Surveyors Materials, Inc.



8875 Frost Avenue
St. Louis, MO 63134

Voice: 314-521-9041
Fax: 314-521-9043

Edward Owen
Vice President

GOVERO Land Services

SURVEYING • ENGINEERING

DANIEL L. GOVERO LS1778
PRESIDENT

8030 Old State Rd.
Infernal, MO 63082
(636) 484-9380
FAX (636) 464-9626
gland@goverlandservices.net

Your deadlines are our deadlines



Custom orders your way ... when you need them.

When your name is on it, our name is behind it.

Berntsen delivers.

The professional's choice in survey products • www.berntsen.com • 877.686.8561

II. MISSOURI LAW - Conflicting and Ambiguous Statutes Should Be Repealed

Whereas,-,

Section 650 of Chapter 60 of the Missouri Statutes of Missouri (Section 60.650 RSMo) pertains to surveys that purportedly create parcels,

BUT

Surveys do not create parcels,

BECAUSE

Parcels are created by the recordation of deeds or by the recordation of subdivision plats.

Therefore:

WE SUPPORT the repeal of Section 60.650 RSMo because it is vague and ambiguous, defective and unenforceable.

WE OPPOSE enforcing a legal duty of surveyors to record any survey pursuant to Section 60-650 RSMo because said Section conflicts with Section 137.185 RSMo and Chapter 445 RSMo, in addition to being vague, ambiguous and unenforceable.

III. FEDERAL COPYRIGHT PROTECTION OF SURVEYS

Whereas:

Article 1 Section 8 Clause 8 of The United States Constitution (U.S. Const. Art. 1 Sec. 8 Cl. 8) provides copyright protection to original writings “to promote the progress of science,”

AND

Surveys contain original writings that are the fruits of a surveyor’s intellectual labors,

AND

As recently as 2012 the United States Supreme Court found in *Golan v. Holder*, 132 S. Ct. 873 (2012) that entry of a copyrightable materials into the public domain does not prevent federal copyright protections of those materials.

Therefore:

WE SUPPORT continued federal copyright protection of certain parts of survey and subdivision plats because those parts contain original manifestations of a surveyor’s intellectual labor.

WE SUPPORT continued federal copyright protection of those portions of surveys which contain the original work of surveyors even if such survey is recorded or filed with the State Surveyor.

WE SUPPORT continued federal copyright protection of those portions of surveys which contain the original work of surveyors even when such survey as a whole enters the public domain.

WE SUPPORT continued enforcement of all civil and criminal penalties allowed by law for the unauthorized use of copyrighted portions of survey or subdivision plats, whether or not such plats are recorded, filed with the State Surveyor, or otherwise entered into the public domain.

WE OPPOSE any act by appointees to bureaucratic positions in the State of Missouri, such as the State Land Surveyor and directors of licensing boards, to contravene surveyors’ federal copyright protections because such protections survive recordation, filing with the State Surveyor, or entry of the survey as a whole into the public domain.

WE OPPOSE, any act or decree which seeks to prevent surveyors from affixing copyright verbiage and symbols to plats.

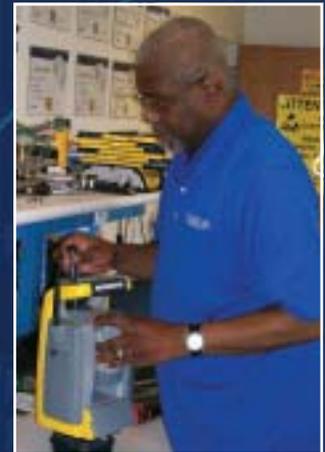
(continued on page 30)



**Over 65 years of
Service Excellence**

SERVICE/REPAIR

- **GPS**
- **Data Collectors**
- **Lasers**
- **Levels**
- **Robotic and
Total Stations**



Toll Free:

877-330-6303



Email:

servicedept@seilerinst.com

ST. LOUIS • KANSAS CITY • INDIANAPOLIS • MILWAUKEE • OMAHA



IV. CONSTITUTIONAL PROTECTIONS PREVENT THE SEIZURE OF SURVEYOR'S COPYRIGHTABLE PROPERTY WITHOUT JUST COMPENSATION

Whereas:

The Office of the Missouri State Surveyor has taken the position that once a survey or subdivision plat is recorded or filed with the State Surveyor such plat becomes a public record,

AND

The Office of the Missouri State Surveyor has indicated that once a survey or subdivision plat is recorded or filed with the State Surveyor, the State Surveyor or any other party may use such plat without compensation to the surveyor.,

AND

Survey and subdivision plats contain copyrightable original work of surveyors subject to the protections of federal copyright law (Section 1.11, supra),

AND

Surveyors may enforce their copyrights by requiring compensation for the future use by third parties of copyrightable original work Contained in survey or subdivision plats..

Therefore:

WE SUPPORT enforcement of federal copyright law regarding those parts of survey or subdivision plats which are copyrightable including just compensation to the originating surveyor.

WE SUPPORT such compensation for use of copyrightable parts of survey I or subdivision plats if any third party makes use of such material in violation of copyright laws, whether recorded, filed with the State Surveyor or otherwise entered into the public domain.

WE OPPOSE third parties using copyrighted parts of survey or subdivision plats, whether recorded filed 'With the State Surveyor or otherwise entered into the public domain without just compensation because such use violates:

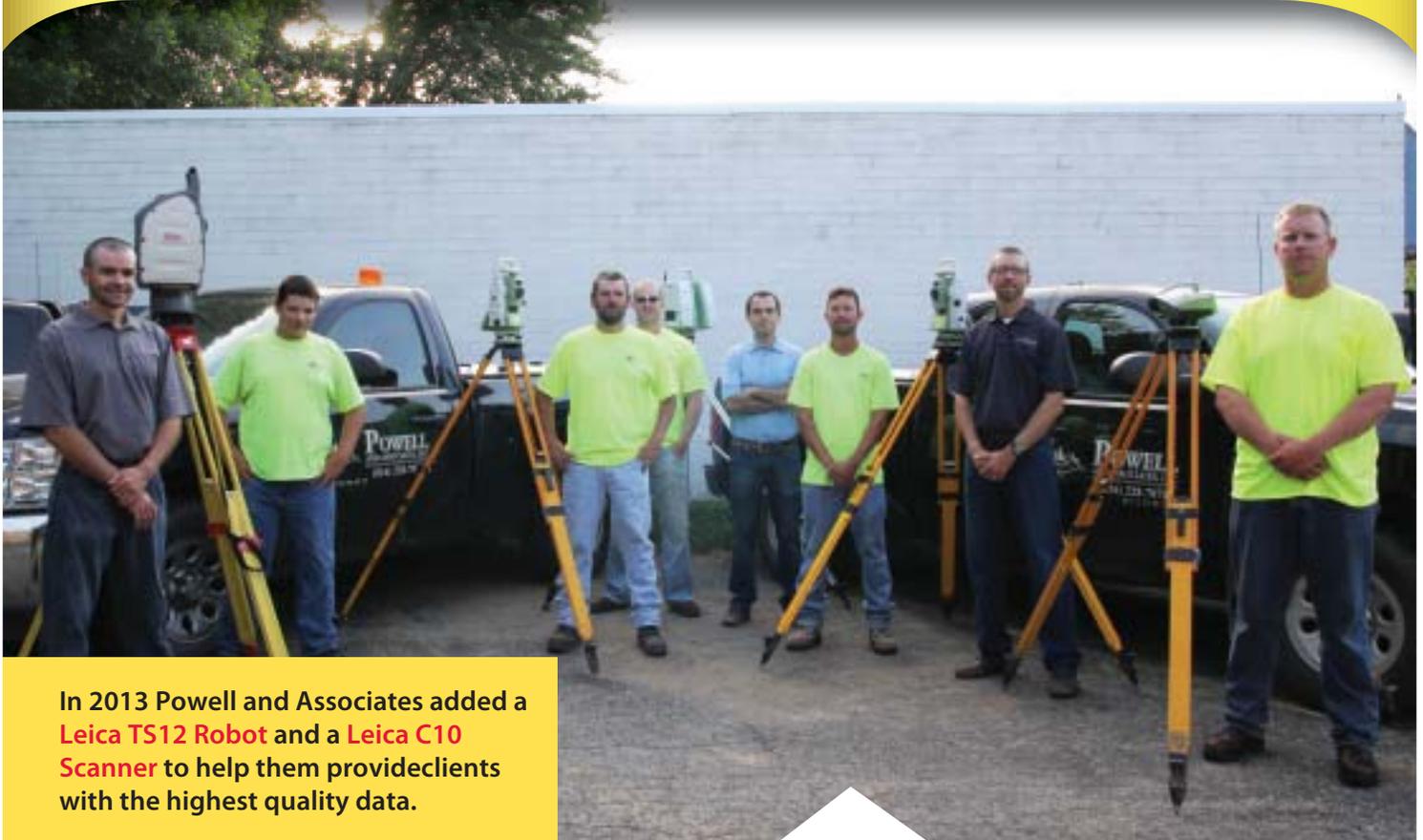
- (1) the 5th Amendment to the United States Constitution guaranteeing that private property shall not be taken for public use without just compensation;
- (2) Section 26 of Article I of the Missouri Constitution states that when private property is taken for public use, the compensation for such property shall be determined by a jury or by a board of commissioners consisting of at least three freeholders;
- (3) the 14th Amendment to the United States Constitution guarantees equal protection under the law and provides no person shall be deprived of their property without due process of law; and
- (4) Section 10 of Article I of the Missouri Constitution states that no person shall be deprived of property without due process of law.

This Position Statement was reviewed and edited by Grant Q. Haden, Esq., to the end that the positions stated therein be defensible at law.



Laser Specialists *Inc.*

Surveying Instruments & Supplies



In 2013 Powell and Associates added a **Leica TS12 Robot** and a **Leica C10 Scanner** to help them provide clients with the highest quality data.



TS12 ROBOTIC TOTAL STATION



LEICA SCANSTATION C10

Leica
Geosystems

Available at **Laser Specialists Inc.**
TOLL FREE 800-377-4272
www.LaserGPS.com

Powell and Associates, LLC was established in 2005 to provide clients with quality land surveying data and hands-on service. Working throughout Kansas and Missouri their projects include boundary and topographic surveying, highway work, site design surveys, utility mapping, ALTA/ACSM Land Title Surveys, and bathymetric surveys.



POWELL
AND ASSOCIATES, LLC
3D LASER SCANNING + LAND SURVEYING + MAPPING

www.PowellSurveying.com
info@powellsurveying.com

901 NW VESPER STREET
BLUE SPRINGS, MO 64015

TEL: 816.228.7070
FAX: 816.228.1545

Copyright Basics for Surveyors

by Knud E. Hermansen†

A surveyor has contracted to provide a subdivision design for a developer. The fee for the service was \$15,000 with three equal payments to be made during the course of the services. The surveyor was paid \$5,000 for preliminary field work (e.g., boundary survey, topography, etc.) and \$5,000 upon completion and approval of the preliminary design. The final payment was to be paid upon setting the corners and submitting the final plan. However, right after the approval of the preliminary design, the client cancels the contract. Three months later, the surveyor discovers the client had found another surveyor who charged \$500 to set the corners and seal and submit the final plan. The final plan had a few minor modifications from the preliminary plan.

In another case, a surveyor has prepared a retracement plat and survey report on a parcel of residential property in preparation for the buyer obtaining a mortgage. The plat and report are delivered to the lender. Because of the buyer's bad credit, the sale falls through. Two months later another buyer is found for the property. The new buyer seeks financing at another bank. Rather than order a new survey, the Realtor obtains a copy of the previous plat and report from the first bank and passes the copies on to the new bank so the next buyer can obtain financing.

In a third scenario, a paralegal in a metropolitan area provides a service whereby she provides copies of recorded maps for any parcel in the metropolitan area for a flat fee of \$45. This includes tax maps, subdivision plans, and retracement surveys recorded in the county surveyor's office.

These three scenarios and similar copying of a surveyor's work products without permission have been repeated many times over across the country and are troubling to the surveyor. Surveyors earn a living selling information and professional opinions. The surveyor's information and opinions have value. Consequently, when information and opinions are copied and transferred to others without compensating the surveyor (author), the surveyor has been denied a fee or chance to seek a fee that the surveyor may have been entitled to. In some cases, the surveyor could have obtained damages or other remedies under the copyright laws of the United States. Consequently, it is in the surveyor's interest to be knowledgeable about certain basic applications of copyright law. Copyright law will be explored using typical questions asked by surveyors.

What is covered by the copyright laws? Copyright laws provide protection to any original works fixed in a tangible medium of expression from which the work can be perceived, reproduced, or otherwise communicated, either

directly or with the aid of a machine or device.¹ In other words, an author's original work that has been codified in a tangible manner (writings, sculptures, photographs, computer programs, vocal recordings, plans, paintings, films, and broadcasts) automatically and inherently have copyright protection. The United States Supreme Court stated: "[C]opyright assures authors the right to their original expression, but encourages others to build freely upon the ideas and information conveyed by a work."²

What typical surveying work products are protected under the copyright laws? Design plans, subdivision plans, reports, letters, opinions, and plat notes would ordinarily be protected by the copyright laws. A retracement plat would not ordinarily be protected. The reason is that the fundamental concepts adhered to in a retracement survey would be stretched to the point of being ludicrous if the retracement plat could be labeled "an original work" while the surveyor (author) maintains the retracement plat correctly depicts boundaries that were located by "following in the footsteps of the original surveyor." Simply stated, a retracement plat, if drawn from a properly performed retracement survey, should be a close if not exact copy of the original surveyor's plans or notes. The same analogy could be applied to the revised description prepared by the surveyor from a retracement survey. In addition, a topographic plat would not ordinarily be protected since it merely shows a compilation of facts. A compilation of facts are not ordinarily protected by the copyright laws.³ However, the notes, certification, legend, and other margin information on both the retracement plat and topographic plat may be covered under the copyright laws.

Are all surveyors and their work products, other than retracement plats, topographic plats, and descriptions, protected? Not necessarily. Original, United States Government work is ordinarily not protected by the copyright laws.⁴ Therefore government surveyors who prepare documents for the United States would not have their work protected under the copyright laws.

Are the lines on a plan protected or just the text on the plan? The answer depends on the circumstances. As a general rule, the arrangement of lines may be copyrighted if the arrangement of the lines is an original creation of the author. Consequently, contour lines that depict actual elevation differences will probably not be covered under the copyright laws (e.g., facts expressed in a typical form), while lot lines on a subdivision sketch plan will likely be covered.

Do I need the "© 1999 [My Name]" to have copyright protection? No, not since 1989 with the adherence

of the U.S. to the Berne Convention has a notice been required.⁵ The notice of copyright is no longer required for the document to be protected under the copyright laws (though certain older works would require the notice).⁶ The surveyor's written or graphical work products are protected the moment the work is put in a tangible form so that it is perceptible either directly or with the aid of a machine or device.⁷ However, because most people are not familiar with the change in the copyright law, it is often advisable to place the notice of copyright on work products to prevent violation of the copyright law by the uninformed. Also, copyright notice gives the name of the person who can give permission for copying. Finally, copyright notice may allow for increased damages if a person improperly copies the work that includes a copyright notice.

Does the previous answer mean that when a government official tells me to remove the copyright notice from my work product before they will approve it, accept it, or record it, that the work product continues to have copyright protection? Yes, the work product would continue to enjoy the benefits of protection under the copyright laws even though the copyright notice is not on or has been removed from the work product. To avoid protection under the copyright laws, the author would have to put a statement of general permission to copy on the work product itself or otherwise make known the document may be copied or displayed at will.

If my work is protected under the copyright laws automatically, why do I hear about having to submit forms to the Government and having to pay a fee? You must submit a completed form, copy(ies) of your work, and a fee in order to register your copyright (not create the copyright). Copyright is automatic, registering the copyright is not. Registration is recommended to give public notice of copyright, obtain a certificate of registration, improve the chance for statutory damages and attorney's fees if a copyright violation is litigated, and, if registration occurs within five years of publication, provide for prima facie evidence of ownership in a court of law.⁸

Can I make copies of a document if I correctly cite the source of the copy? No, plagiarism is not the same as a copyright violation. The fact that the author is correctly cited may alleviate the charge of plagiarism (which deals with manners and moral obligations) but not the copyright law (which deals with the legality of the act).

Once the document is recorded in a public place, does it lose copyright protection? No. Placing a plan or other document in the register of deeds' office or a county surveyor's office no more removes copyright protection than placing a book with copyright protection in a public library.

Does the previous question and answer mean that recorded deeds are protected by copyright laws? Probably not, though there are certainly exceptions such as a deed

recorded in New Hampshire that is written in poetry form. Ordinarily, widely available or frequently used forms are not protected by copyright laws. Facts are not protected by copyright laws.⁹ A deed is ordinarily a combination of facts inserted into a form and those facts typically are not protected by copyright laws. A modicum of creativity is required to gain protection.¹⁰ However, if the deed also included a survey report as an attachment, the survey report may be protected by copyright laws. Copyright protection extends only to creativity elements of the work.¹¹ Furthermore, the vast majority of deeds copied would fall under the "fair use exception" even if the deed itself was copyrighted.

Assuming a development plan recorded in the registry of deeds is copyrighted, can a surveyor copy the plan in order to have the information so that he can retrace the boundaries of the lot shown on the development plan? Yes, the surveyor can most likely copy the plan or at least part of the development plan containing information relevant to the retracement survey. This use would fall under the research exception within the fair use doctrine. In determining if the surveyor's use is fair use for purposes of research, the statute considers: (1) the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes; (2) the nature of the copyrighted work; (3) the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and (4) the effect of the use upon the potential market for or value of the copyrighted work.¹² The courts tend to stress the fourth item.

Assuming there is copyrighted work recorded within the registry of deeds, isn't the registrar violating the copyright laws when she makes a microfilm backup or makes a copy of the document for someone that requests a copy? No, the registrar is not likely violating the copyright law. 17 U.S.C. § 108 provides broad protection for libraries and archives. By a reasonable interpretation, the recorder of deeds' office is an archive. An archive is allowed to make a backup copy. Furthermore, 17 U.S.C. § 108 states "it is not an infringement of copyright for a library or archives, or any of its employees acting within the scope of their employment, to reproduce ... [a] copy ... of a work, or to distribute such copy ... [where] the copy ... becomes the property of the user, and the library or archives has had no notice that the copy ... would be used for any purpose other than private study, scholarship, or research..."¹³ Accordingly, unless the registrar has reason to believe the person intends to violate the copyright laws, the registrar would have no reason not to provide a copy or allow a copy to be made upon request. What many registrars fail to do and should do is post the notices required by the copyright act, 17 U.S.C. § 108, above the copier and on copies they make for others.

(continued on next page)

Copyright Basics for Surveyors *(continued)*

So, how can I copy a document that is protected by copyright laws? You can copy documents that are protected by copyright laws if the copying falls within an exception to the copyright laws such as the fair use doctrine or permission of the author is given. Copying is allowed under the fair use doctrine for such reasons as: criticism, comment, news reporting, teaching, scholarship, or research.¹⁴

I recently read a survey report prepared by another surveyor. I really like how the surveyor (author) wrote several sections in his report. Can I use these sections without her permission so long as I make some changes to the wording? No, changing some of the wording by itself is not enough to remove copyright protection where it is clear that the changed text is a derivative of the original work.¹⁵ However, facts, ideas, methods of operation, and systems presented in the text are not copyrighted.¹⁶ Furthermore, certain copying may be allowable if the copying would fall under the fair use doctrine.

A Realtor recently copied a five-year-old mortgage loan inspection (MLI) I did for a former owner of the property. The Realtor made a copy of the MLI and sent the copy to the bank rather than request another MLI from me or seek my permission to copy the original MLI. Did the Realtor violate the copyright law? That is not an easy question to answer and may hinge on certain factors such as whether the new buyer was charged for the MLI copy or the MLI can be copyrighted. If all or part of the MLI is copyrighted, there are factors that appear to suggest that a copyright violation occurred: The copy was used in a commercial nature. The surveyor (author) had an expectation interest that she or he could profit from their earlier work. It was originally prepared for a commercial purpose. The entire MLI was copied rather than a small part. Finally, the effect of the copying was to deny the surveyor a potential market for additional services or the value of any derivative work arising from the previous work product (MLI).¹⁷

Changing the previous question slightly, would it matter if the Realtor had sent to the bank the original five-year-old mortgage loan inspection (MLI) I gave to the former property owner rather than sending a copy? Yes, it does matter. There is no violation of the copyright laws if the original document is sent rather than a copy. If the Realtor has an original document that you provided to the former landowner, the Realtor is free to convey the original document to the bank without violating the copyright law. This situation would be no different from the situation where you might give someone a novel to read that you bought at a bookstore and have finished reading (known as a first sale doctrine).

I often copy one or two paragraphs from a boundary law book to give to attorneys and others in order to help explain the basis for the evidence I used or why I placed a boundary in a certain location. Is this a violation of the copyright law? No, such copying would probably fall under the fair use doctrine. The fair use doctrine certainly applies where all of the following are present: the amount of material copied or used is a small part of the entire document, no profit is made from the use of the copied material, the economic loss to the copyright holder is insignificant, and there is no intent to publish or display the copied material to the public at large.

If I write an article or a letter to the editor that is published in a professional magazine (as I intended it to be), does the publisher gain the copyright? No, not unless the copyright was specifically transferred. Copyright must be transferred in writing.¹⁸

I gave a person permission to make a copy of my survey report. Later, I found out that person sold that copy to another person. Is that action a violation of the copyright law? Again, the answer to this question can hinge on certain specific facts. However, as a general rule, a person that has a lawful copy of a document may dispose or sell the lawful copy.¹⁹ It would be wise to only give a limited or conditional permission to copy in any situation where distribution or sale of the lawful copy would be cause for concern.

I have a unique logo, sort of a combination north arrow, caricature, and quaint phrase that I have used for many years on all my plans. Recently, I noticed that a former employee is using this logo on his plans. Can I prevent my former employee from using my logo under the copyright laws? No, a logo would have to be protected as a trademark under the trademark laws (unless it is a unique art form). Similarly, inventions, processing methods, and other items you build or use would have to be protected under the patent laws.

I saw a great article on the internet. It was obviously put there for people to read. I downloaded the article and sent a digital copy of this article to several people by e-mail. Where something is so easy to copy and it appears to be begging to be copied, surely the copyright laws wouldn't apply to this situation would it? Absolutely yes! The ease of copying or the fact the document is in digital form on the world wide web does not deny digital material all the protection enjoyed by paper media under the copyright laws.

(continued on page 36)



Let us help you transition to AutoCAD® Civil 3D®

- Custom Implementation Services
- Custom Civil 3D Template Creation
- Custom Training Programs

*“Excellent Instructor –
Took away a lot of information for engineering current production”*

– Robinson Engineering – IL

“Excellent knowledge base instructor”

– Ayres Associates – WI

“Excellent Class – Easy to follow along”

– Crawford Murphy Tilly – IL



 **AUTODESK.**
Gold Partner
Architecture, Engineering & Construction
Consulting Specialized
Authorized Training Center
Authorized Certification Center

 solutions.seilerinst.com
SEILER
Committed to excellence since 1945

Chicago • St. Louis • Kansas City • Milwaukee • Indianapolis • Omaha

Copyright Basics for Surveyors *(continued)*

That answer's ridiculous, how would the author of the web page expect the reader to spread the message found in his article? You send your friends the web address. If the author doesn't mind you sending your friends a digital copy of the article, it is a simple matter for the author to give permission by making a simple statement such as: "send a copy of this article to your friends."

I'm the CAD operator and make a lot of plans and prepare reports for my employer in the course of my employment. Who has the copyright of the plans and reports, my employer or me? Your employer has the copyright. When you are employed and during the course of your employment you prepare an original work, the employer holds the copyright ("work for hire" v. "contractor").²⁰

As a surveyor, when I prepare certain work products on behalf of a client, who holds the copyright? Ordinarily, the surveyor holds the copyright for all documents, plans, and other original works prepared by the surveyor or the employee.²¹ This answer presumes the surveyor is in the legal relationship of a client/contractor and not an employer/employee. The copyright can be assigned to the client by contract either prior to the creation of the work product or after the creation of the work product. Consequently, a sophisticated client will often require that the contract assign to the client any copyright in the surveyor's work products.

What if I give the client all the original survey documents so I have no possession or ownership of the documents. Does the client have the copyright in the documents? Transfer, possession, or ownership of the document by other than the author does not remove the copyright from the author of the work or convey any rights in the copyright from the author to others.²²

I own a business with the name of [XYZ] and Associates. Can I register a copyright under this business name even though it is not a legal name? Yes, you can register a copyright under a pseudo-name. However, you must make sure you note that fact on the registration form.²³

When I went to register my copyright of a subdivision design plan, I didn't see a plan category listed. What copyright form should I use when registering my copyright? Plans are registered in the same manner and the same form as "pictorial, graphic, and sculptural works" are registered.²⁴

How long is my work protected under the copyright laws? Work done since 1989 is protected for the author's life plus 70 years.²⁵

How do I transfer my copyright? Transfers of a copyright must be done in writing and signed by the author or owner of the copyright.²⁶ In some cases, transfers can occur by will or intestacy. A copyright is personal property and may be governed by operation of state law dealing with personal property.

What do I do if I want to pursue what I believe to be a violation of the copyright laws? First you must register your work with the United States Copyright Office.²⁷ In other words, even though your work is protected at the outset, you must register the copyright. Second, you must begin a lawsuit by filing a complaint in the United States District Court where the violation occurred or where the defendant lives or works. It is strongly recommended that an attorney familiar with litigation and intellectual property law be retained for copyright litigation.

Lets assume someone takes one of my reports, copies it, and sells the copy for \$300. I would be lucky to find a lawyer that would write a letter for \$300 or less. Is litigating copyright infringements like so much other litigation in the United States – it will cost more to obtain justice than justice rewards? Not necessarily. A violation of the copyright law could cost the offender the loss of any profits, payment of damages, and payment of your attorney fees.²⁸ If registration is made prior to an infringement of the work or within 3 months after publication of the work, then damages, profits, and attorney's fees will be available to the copyright owner who litigates the claim. However, if the registration does not occur in that time period, only an award of actual damages and profits will be made to the copyright owner.²⁹ It is worth noting that damages are not contingent upon intent. "Innocent" or negligent copying will allow for damages.

How long do I have to file a lawsuit? You have three years from the time of violation.³⁰

What is required for me to register my copyright? To register your work, send: 1) a properly completed application form;³¹ 2) a nonrefundable filing fee of \$20 per application, and 3) a non-returnable copy(ies)³² of the work being registered to the following address:³³

Library of Congress Copyright Office
Register of Copyrights
101 Independence Avenue, S.E.
Washington, D.C. 20559-6000

These questions and answers were meant to provide a general overview of copyright law. Before seeking the resolution or answers to a particular situation you should

consult with an attorney — even if the situation may appear similar or the same as a question stated. The copyright law periodically changes and its application is often fact sensitive. Be sure to seek counsel from an attorney familiar with intellectual property law. For those surveyors interested in studying the exchange of information and pertinent law, especially as it relates to geographic information systems, the University of Maine offers a course on information systems law and an advanced degree in the area of spatial information engineering. For articles on law information policy and spatial databases, readers are invited to visit www.spatial.maine.edu/tempe/tempe94.html or www.spatial.maine.edu/onsrud.html. For more information about the program at the University of Maine contact Dr. Kate Beard at 207-581-2147 or beard@spatial.maine.edu. 🇺🇸

† Knud E. Hermansen is a professional land surveyor, civil engineer, and attorney at law teaching at the University of Maine and providing consulting services in land development, boundaries, and liability.

I would like to give a special thanks to Dr. Harlan Onsrud for his review and comments he provided during my preparation of this document.

¹ This is a codification of the definition found in 17 U.S.C. § 102

² Feist Publications, Inc., v. Rural Telephone Service Company, Inc., 499 U.S. 340, 350 111 S.Ct. 1282, 113 L.Ed.2d 358, 59 USLW 4251, 68 Rad. Reg. 2d (P & F) 1513, 1991 Copr.L.Dec. P 26,702, 121 P.U.R.4th 1, 18 U.S.P.Q.2d 1275, 18 Media L. Rep. 1889 (1991)

³ Feist Publications, Inc., v. Rural Telephone Service Company, Inc., 499 U.S. 340, 350 111 S.Ct. 1282, 113 L.Ed.2d 358, 59 USLW 4251, 68 Rad. Reg. 2d (P & F) 1513, 1991 Copr.L.Dec. P 26,702, 121 P.U.R.4th 1, 18 U.S.P.Q.2d 1275, 18 Media L. Rep. 1889 (1991)

⁴ 17 U.S.C. § 105

⁵ Berne Convention, effective 1 March 1989.

⁶ 17 U.S.C. §§ 401-405; Circular 1, United States Copyright Office <<http://lcweb.loc.gov/copyright/>>

⁷ Frequently Asked Questions, United States Copyright Office <<http://lcweb.loc.gov/copyright/>>

⁸ 17 U.S.C. § 410; Frequently Asked Questions, United States Copyright Office <<http://lcweb.loc.gov/copyright/>>

⁹ Feist Publications, Inc., v. Rural Telephone Service Company, Inc., 499 U.S. 340, 111 S.Ct. 1282, 113 L.Ed.2d 358, 59 USLW 4251, 68 Rad. Reg. 2d (P & F) 1513, 1991 Copr.L.Dec. P 26,702, 121 P.U.R.4th 1, 18 U.S.P.Q.2d 1275, 18 Media L. Rep. 1889 (1991)

¹⁰ Feist Publications, Inc., v. Rural Telephone Service Company, Inc., 499 U.S. 340, 111 S.Ct. 1282, 113 L.Ed.2d 358, 59 USLW 4251, 68 Rad. Reg. 2d (P & F) 1513, 1991 Copr.L.Dec. P 26,702, 121 P.U.R.4th 1, 18 U.S.P.Q.2d 1275, 18 Media L. Rep. 1889 (1991)

¹¹ Feist Publications, Inc., v. Rural Telephone Service Company, Inc., 499 U.S. 340, 111 S.Ct. 1282, 113 L.Ed.2d 358, 59 USLW 4251, 68 Rad. Reg. 2d (P & F) 1513, 1991 Copr.L.Dec. P 26,702, 121 P.U.R.4th 1, 18 U.S.P.Q.2d 1275, 18 Media L. Rep. 1889 (1991)

¹² 17 U.S.C. § 107

¹³ 17 U.S.C. § 107

¹⁴ 17 U.S.C. § 107

¹⁵ Frequently Asked Questions, United States Copyright Office <<http://lcweb.loc.gov/copyright/>>

¹⁶ Feist Publications, Inc., v. Rural Telephone Service Company, Inc., 499 U.S. 340, 111 S.Ct. 1282, 113 L.Ed.2d 358, 59 USLW 4251, 68 Rad. Reg. 2d (P & F) 1513, 1991 Copr.L.Dec. P 26,702, 121 P.U.R.4th 1, 18 U.S.P.Q.2d 1275, 18 Media L. Rep. 1889 (1991)

¹⁷ 17 U.S.C. § 107

¹⁸ Circular 1, United States Copyright Office <<http://lcweb.loc.gov/copyright/>>

¹⁹ 17 U.S.C. § 109

²⁰ 17 U.S.C. § 101; Frequently Asked Questions, United States Copyright Office <<http://lcweb.loc.gov/copyright/>>

²¹ 17 U.S.C. § 101; Frequently Asked Questions, United States Copyright Office <<http://lcweb.loc.gov/copyright/>>

²² Circular 1, United States Copyright Office <<http://lcweb.loc.gov/copyright/>>

²³ Frequently Asked Questions, United States Copyright Office <<http://lcweb.loc.gov/copyright/>>

²⁴ Circular 1, United States Copyright Office <<http://lcweb.loc.gov/copyright/>>; Use Form VA

²⁵ 17 U.S.C. §§ 302-304; Circular 1, United States Copyright Office <<http://lcweb.loc.gov/copyright/>>

²⁶ Circular 1, United States Copyright Office <<http://lcweb.loc.gov/copyright/>>

²⁷ 17 U.S.C. § 412

²⁸ 17 U.S.C. §§ 501-506

²⁹ 17 U.S.C. §§ 411-412; Circular 1, United States Copyright Office <<http://lcweb.loc.gov/copyright/>>

³⁰ 17 U.S.C. § 507



Insurance Program

Committed to specialized insurance for the NSPS members!

NSPS Insurance Program has made a long-term commitment to the land surveying and design professional industry by establishing an insurance program to offer competitively priced policies custom-fit to your specific operations and needs. Our sales agents have extensive experience and in-depth knowledge with the insurance coverage, loss control/risk management, and claims handling required for the land surveyor and/or the design professional.

Working with our multi-carrier partners, the NSPS Insurance Program offers flexible coverage with highly competitive pricing. The program provides industry-specific insurance products via coverage forms written specifically for land surveyors, civil engineers, and GIS professionals that work within municipal, commercial and residential arenas. Our flexible program includes but not limited to; land surveyors who specialize in boundary or property surveys, topographic surveys, photogrammetric surveys, construction stakeouts, geodetic or control surveys, mapping or cartography, and other survey or design related services.

Coverage Options: General Liability ● Surveying Equipment/ Inland Marine Floater including Equipment breakdown ● Personal Property ● Property Off-Premises ● Computers/Media & Data ● Valuable Papers ● Automobile ● Umbrella/Excess ● Workers' Compensation ● Errors & Omissions/Professional Liability ● Pollution Liability including contractors job site ● Employee Benefits Liability ● Bonds

Call the
ONLY ENDORSED
Agency today!



Tele: 888-454-9562
Email: surveyor.insurance@arm-i.com
www.surveyorinsurance.com

Assurance Risk Managers
dba ARM Multi Insurance Services - License #0C73841

All CGSIC:

May 15, 2014

Recently, many GPS users have reported intermittent GPS outages in their devices. After investigating, the U.S. government has linked the problem to flawed processing of GPS satellite data within certain GPS receiver chipsets. The GPS satellite service continues to function as designed and is fully operational and available worldwide.

The problem affects only user equipment that erroneously ignores the satellite health status information broadcast from every GPS satellite. The problem is not related to the April 28, 2014, activation of civil navigation messages on the GPS L2C and L5 signals.

Since March 15, 2014, the Air Force has been conducting functional checkout on a GPS satellite, designated Space Vehicle Number (SVN) 64. SVN 64 broadcasts a data message that clearly indicates SVN 64 is unusable for navigation. Nevertheless, the U.S. government has confirmed that certain GPS receivers are using data from SVN 64, in violation of GPS interface specifications, resulting in outages or corrupted, inaccurate position calculations.

The Air Force testing is scheduled to end in mid-May 2014 at which time SVN 64 will begin normal operation. At that point, these problems may stop occurring. Meanwhile, the U.S. government urges all GPS device makers to review their products for compliance with the GPS interface specifications, and if necessary, to issue software/firmware updates to users as soon as possible. View specifications <http://www.gps.gov/technical/icwg/>

Users experiencing GPS outages should check with their device manufacturers for available software/firmware updates. In addition, any civil user seeing unusual behavior in GPS user equipment should report it to the U.S. Coast Guard Navigation Center (NAVCEN). Aviation users should file reports consistent with FAA-approved procedures. Military users seeing unusual behavior should report it the GPS Operations Center (GPSOC).

Please direct any civil user questions to NAVCEN at (703) 3135900, <http://www.navcen.uscg.gov>
Please direct any military user questions to the GPSOC at (719) 567-2541, DSN: 560-2541,
gpsoperationscenter@us.af.mil <https://gps.afspc.af.mil> Military alternate: Joint Space Operations Center, (805) 606 3514, DSN: 276-3514, jspoccombatops@vandenberg.af.mil

See also:

Technical explanation for device makers (PDF)
[http://www.navcen.uscg.gov/pdf/gps/GPSOC PRN 30-Notice.pdf](http://www.navcen.uscg.gov/pdf/gps/GPSOC%20PRN%2030-Notice.pdf)

V/R

Rick Hamilton
CGSIC Executive Secretariat
GPS Information Analysis Team Lead
USCG Navigation Center
703-313-5930

2014 MSPS Corporate Members

Firm	Street Address	City/State/Zip	Office Phone	Email	Website
ABNA Engineering, Inc.	4140 Lindell Blvd.	St. Louis, MO 63108-2914	314-454-0222	aadewale@abnacorp.com	www.abnacorp.com
Affinis Corp.	7401 W. 129th St., Ste. 110	Overland Park, KS 66213	913-239-1100		www.affinis.us
Allstate Consultants, LLC	3312 Lemone Industrial Blvd.	Columbia, MO 65201	573-875-8799		
Amsinger Surveying, Inc.	101 S. Crittenden, Rm. B-3	Marshfield, MO 65706	417-859-5516	dennis@amsingersurveying.com	
Anderson Engineering, Inc.	2045 W. Woodland	Springfield, MO 65807	417-866-2741	sbrady@aeincmo.com	www.aeincmo.com
Anderson Survey Company	203 NW Executive Way	Lee's Summit, MO 64063	816-246-5050	jsa@andersonsurvey.com	www.ndersonsurvey.com
Bader Land Surveying, Inc.	16255 Sugar Bottom Road	Ste. Genevieve, MO 63670-8613	573-483-2777	baderls@brick.net	
Bartlett & West, Inc.	1719 Southridge Drive, Ste. 100	Jefferson City, MO 65109	573-634-3181		www.bartwest.com
Bax Engineering Co., Inc.	221 Point West Blvd.	St. Charles, MO 63301	636-928-5552	dbax@baxengineering.com	www.baxengineering.com
Bowen Engineering & Surveying, Inc.	2121 Megan Drive	Cape Girardeau, MO 63701	573-339-5900	info@bowenengsurv.com	www.bowenengsurv.com
Buescher Frankenberg Associates, Inc.	103 Elm St.	Washington, MO 63090	636-239-4751	mail@bfaeng.com	www.bfaeng.com
Burdine & Associates, Inc.	1638 Jeffco Blvd.	Arnold, MO 63010	636-282-1600		
Cardinal Surveying & Mapping, Inc.	PO Box 278	Cottleville, MO 63338	636-922-1001	shelly@cardinalsurveying.com	www.cardinalsurveying.com
Central MO Professional Services, Inc	2500 E. McCarty	Jefferson City, MO 65101	573-634-3455	kbrickey@cmps-inc.com	www.cmps-inc.com
Cochran	530 A E. Independence Dr.	Union, MO 63084	636-584-0540	mail@cochraneng.com	www.cochraneng.com
Cole & Associates, Inc.	401 S. 18th St, Ste. 200	St. Louis, MO 63103	314-984-9887	twesterman@colestl.com	www.colestl.com
Doering Engineering, Inc.	5030 Griffin Road	St. Louis, MO 63128	314-487-6913	mdoering@doeringeng.com	www.doeringengineering.com
Engineering Solutions	50 SE 30th Street	Lee's Summit, MO 64082	816-623-9888	esinfo@es-ck.com	www.engineeringsolutionsck.com
Frontenac Engineering Group, Inc.	2725 Sutton Blvd. B	St. Louis, MO 63143	314-644-2200	billb@fe-stl.com	www.fe-stl.com
George Butler Associates, Inc.	9801 Renner Blvd.	Lenexa, KS 66219-9745	913-492-0400		www.gbateam.com
Govero Land Services, Inc.	5929 Old State Rd.	Imperial, MO 63052	636-464-9380	glsland@goverolandservices.net	www.goverolandservices.com
Grimes Consulting Inc.	12300 Old Tesson Road, Ste. 300 D	St. Louis, MO 63128	314-849-6100		www.grimesconsulting.com
Harms, Inc.	PO Box 52	Eldon, MO 65026	573-392-3312	jharms@harmsinc.com	
Hood-Rich, Inc.	801 S. Glenstone	Springfield, MO 65802	417-862-4483	ddrumm@hoodrich.com	www.hoodrich.com
Integrity Engineering, Inc.	PO Box 700, 1714 E 10th Street	Rolla, MO 65402	573-341-2100	terris@integrityeng.com	www.integrityeng.com
John R.M. Nelson, Inc.	PO Box 482	Bolivar, MO 65613	417-326-2777	jnkn@yahoo.com	
Koehler Engineering & Land Surveying, Inc.	194 Coker Lane	Cape Girardeau, MO 63701	573-335-3026	ckoehler@koehlerengineering.com	www.koehlerengineering.com
Marler Surveying Co., Inc.	11402 Gravois Rd., Ste. 200	St. Louis, MO 63126	314-729-1001	marler@marlersurveying.net	www.marlersurveying.com
Midland Surveying, Inc.	501 N. Market	Maryville, MO 64468	660-582-8633	tryhayes@midlandsurvey.com	www.midlandsurvey.com
Migar Enterprises, Inc.	PO Box 528	Grandview, MO 64030	816-966-0839		
Minnick Surveying, LLC	7905 Big Bend Blvd., Ste. 101	Webster Groves, MO 63119	314-721-9500	info@minnicksurveying.com	www.minnicksurveying.com
Musler Engineering Co.	32 Portwest Court	St. Charles, MO 63303	636-916-0444	6rich@muslereng.com	www.muslereng.com
Olsson Associates	7301 W. 133rd St., Ste. 200	Overland Park, KS 66213	913-381-1170	pward@oaconsulting.com	www.oaconsulting.com
Pellin Surveying LLC	208 South Church Street	Union, MO 63084	314-985-5263	pellinsurveying@gmail.com	www.pellinsurveying.com
Phoenix Engineering & Surveying, LLC	3855 S. Northern Blvd	Independence, MO 64052	816-743-9000	wes@phoenix-llc.com	www.phoenix-llc.com
Pickett, Ray & Silver, Inc	22 Richmond Center Court	St. Peters, MO 63376	636-397-1211	dkornia@prs3.com	www.prs3.com
Pitzman's Co. of Surveyors & Engineers	2725 Sutton Blvd.	St. Louis, MO 63143	314-781-5665		
Poeping, Stone, Bach & Associates, Inc.	801 Broadway, Ste. 224, PO Box 190	Hannibal, MO 63401	573-406-0541	psba@psba.com	www.psba.com
Riggs & Associates, Inc.	102 W. Trish Knight St., PO Box 71	West Plains, MO 65775	417-256-8125	ralphr@riggslandsurveying.com	www.riggslandsurveying.com
Robert S. Shotts, Inc.	267 East Third Street	Lebanon, MO 65536	417-588-7877	bob@shottinc.com	www.shottinc.com
Ruble Surveying, Co.	PO Box 367, 801 S. McArthur	Salem, MO 65560	573-729-8740	craig@rublesurveying.com	
Schlagel & Associates, PA	14920 W. 107th St.	Lenexa, KS 66215	913-492-5158		www.schlagelassociates.com
Schmitz, King & Associates, Inc.	18900 West 158th St., Ste. G	Olathe, KS 66062	913-397-6080	dave@schmitzking.com	www.schmitzking.com
Shafer, Kline & Warren, Inc.	1700 Swift Ave., Ste. 100	N. Kansas City, MO 64116-3821	816-756-0444	graham@skw-inc.com	www.skw-inc.com
Shaffer & Hines, Inc.	PO Box 493	Nixa, MO 65714	417-725-4663	chines@shafferhines.com	
St. Charles Engineering & Surveying, Inc.	801 S. Fifth St., Ste. 202	St. Charles, MO 63301	636-947-0607		www.stcharleseng.com
Surdex Corporation	520 Spirit of St. Louis Blvd.	Chesterfield, MO 63005	636-368-4400	brianh@surdex.com	www.surdex.com
Taliaferro & Browne, Inc.	1020 E. 8th St.	Kansas City, MO 64106	816-283-3456		www.tb-engr.com
The Sterling Company	5055 New Baumgartner Road	St. Louis, MO 63129	314-487-0440	ggower@sterling-eng-sur.com	www.sterling-eng-sur.com
Thouvenot, Wade & Moerchen, Inc.	4940 Old Collinsville Road	Swansea, IL 62226	618-624-4488	dtwente@twm-inc.com	www.twm-inc.com
Tri-State Engineering, Inc.	702 S. Main St.	Joplin, MO 64802	417-781-0643	slewis@tristate-engineering.com	www.tristate-engineering.com
West Wildwood Surveying, LLC	8023 Waddell Avenue	St. Louis, MO 63125	636-394-6090	wwsurv@att.net	
Whitehead Consultants Inc.	114 N. Main St.	Clinton, MO 64735	660-885-8311	mtaylor@wcieng.com	
Zahner & Associates, Inc.	26 N. Jackson St.	Perryville, MO 63775	573-547-1771	zahner@zahnerinc.com	www.zahnerinc.com



**Missouri Society of
Professional Surveyors**
P.O. Box 1342
Jefferson City, Missouri 65102

PRSRT STD
US Postage PAID
Permit No. 364
Jefferson City, MO 65101

