

OZARK CHAPTER MSPS NEWSLETTER

March, 2008

OZARK CHAPTER, MSPS ANNUAL SURVEYOR RECOGNITION

Pete Stevens, PLS

Matthews and Associates

During the January meeting of the Ozark Chapter, President Bagley introduced the idea of starting yearly awards to recognize local land surveyors who have made significant contributions to the surveying profession. The awards could possibly be presented at the annual Christmas dinner. The matter was tabled for further consideration and was subsequently brought up at the March meeting. Unfortunately, President Bagley was not in attendance, but Vice-president Paul Taylor, sitting in for Mr. Bagley, raised the issue and the idea was generally favored by the members. Except for agreeing that we should limit ourselves to just one award annually, it was agreed that a number of issues needed to be decided. I volunteered, and this is my attempt, to try to organize the various questions that need to be considered.

The first consideration is what exactly do we wish to recognize?

Looking at MSPS's annual awards, I found that the December issue of *Missouri Surveyor* describes the awards. The **Robert E. Myers Service Award** is given to "a MSPS member who, over an extended period of time has given exemplary service and dedication to the surveying profession and in particular to the Society".

Continued on page 3

INSIDE THIS ISSUE

- 1 MSPS local surveyor award.
- 2 Jack Dill's GPS Corner.
- 4 "The System" from Pete Stevens.
- 7 The not so funny page.

The passing of Dan Lashley

Mike Gray, PLS

Gray and Associates

With information from Null and Sons Funeral Home.

Our hearts go out to the friends and family of Dan Lashley, who passed away on March 15, 2008. Dan was a professional land surveyor with the Missouri Department of Natural Resources. He amassed many honors over his years of service including the MSPS Surveyor of the Year Award and the James Hadley Williams Public Service Award.

Dan was more than a surveyor; he was a husband, a father, and a grandfather. He enjoyed hunting, fishing, working with old tractors, playing with grandchildren and portraying an old time surveyor.

He will be missed.



"My respect for Dan is immeasurable; not in rods, chains, feet or meters."

Jerry Bader

Deep Thoughts about GPS.

*Jack Dill, PLS
City of Springfield.*

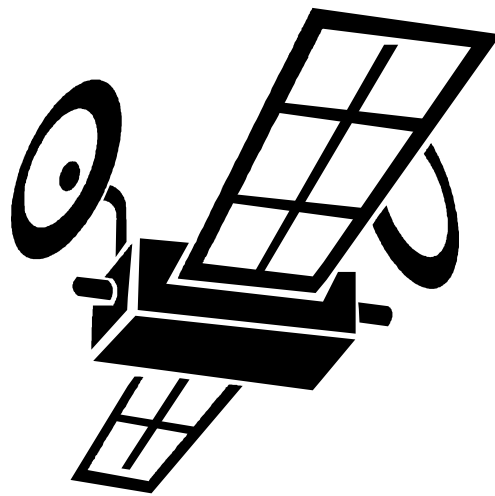
Real Time Kinematic (RTK) surveys are not radial surveys. I've read lots of articles that claim RTK is radial in nature. The most common method I have seen recommended for checking RTK derived positions (due to RTK's mythical radial nature) is to set up the base in a different location and reshoot the rover positions from the new base position. This is a perfectly good way of checking the positions but I don't think it's any better than several other methods. Here's the reason I say RTK is not a radial surveying method and that almost any sensible method of checking positions is just fine.

*...and that almost any
sensible method of
checking positions is just*

First, you have to understand how differential GPS works, in this case, RTK GPS. There must always be at least 2 receivers involved. One receiver is at a "known" location, whether the known location is derived by the receiver using the Coarse Acquisition (C/A) code from the satellites or if you set up on a DNR monument. If you are just trying to get good relative positions between section corners, the C/A code position will work just fine. Remember, the satellites are reference monuments in the sky. We get our positions by trilateration (fancy distance-distance intersections) from the reference monuments (satellites). The problem is the signals from the satellites are affected by their passage through the atmosphere. The rover receiver can't know how much the signals were disturbed by the atmosphere but the base knows. The base knows because it is at a known position and the satellites are at known positions; therefore, the base receiver knows how long it should take for the signal to reach it and compares that to the amount of time it actually took for the signal to make the trip. The time difference is called a correction and the correction is computed for each satellite the base is tracking. The rover is tracking the same satellites (hopefully) and computing an uncorrected position for itself until it receives the corrections (pretty much continuously). The rover receiver corrects the travel time for the signals it is receiving and computes its position. In other words, the rover gets its position from the satellites, not from the base. The only thing the rover gets from the base is the corrections. So, except for the corrections, there is no other contact between the base and rover. The rover now has a good position (again, hopefully) for the point it occupies and you store that position. How is that a radial position from the base?

So, moving the base and shooting the rover positions a second time is a great check but you could also leave the base where it is, wait for the satellites to move to a different geometry, and then reshoot all the points. Or, you can set up a second base that is transmitting on a different channel. Or, you can shoot a point, cause the rover to lose lock on the satellites and then reshoot the point. Or, set 3 traverse nails in the vicinity of the point you just shot and use a tape (if you still have one) to measure between all the points. Or, shoot the same points with different rovers. Or, you can gather static data on the point for an appropriate amount of time and post process using the base data and see if you get the same position.

Anyway, because of the way a rover gets its position, almost anything you do to obtain multiple positions on a point increases the level confidence in the position. I guess it doesn't matter if you believe RTK is radial or not (it isn't). The point is, check your survey data by some appropriate method for the conditions. I've gotten wrong positions, but I've never gotten the same wrong position twice.



Stock picture

continued from page 1

The MSPS **Surveyor of the Year** is awarded to one who has given “freely of his time and efforts to the organization and toward the betterment of the surveying profession”. It is further described as “the most prestigious and gratifying for a member of this society”.

The only differences I find are that the Myers award seems to emphasize service given over an extended period of time, and that the Surveyor of the Year award is a little more prestigious.

My recommendation is that the Chapter award reflect the same basic values as the State awards, with the recipient’s service having been given to either the Chapter, the State organization, or to the profession in general, and being restricted to an Ozark Chapter member.

The name of the award could be “Surveyor of the Year” although this implies service given in the current year, to which we might not want to restrict ourselves. As with the Myers award, we could name it after a distinguished local surveyor, which becomes a re-cognition in and of its self, and might lead us to the first recipient of the award (was Bob Myers the first recipient of the Myers award?).

While the recognition of your peers is the ultimate reward, a plaque or trophy of some kind would be a nice keepsake for the recipient. The annual Ozark Chapter Christmas Dinner seems like the obvious venue for the presentation of the award.

Selection of the recipient needs to be considered. A nomination process would need to be decided upon, and a selection made from the slate of nominees. A special committee could be named to facilitate the process, or the Executive Committee could be charged with the responsibility (as likely as not, a nominee could find him or her self sitting on the committee, providing an awkward moment for the hapless surveyor). I think any chapter member should be able to nominate someone, although they should have to demonstrate their sincerity by providing (in writing) good reasons for their selection. A nomination form could be drafted to assist those not gifted in the literary arts.

Selection of the recipient could be made by the committee, or could be voted upon by the general membership from a list of the top 3 or 4 nominees chosen by the committee. My recommendation is to charge the committee with the selection. This way, while the general membership’s voice would still be heard through the nomination process, the committee could take extra time to review and discuss the nominees’ qualifications in a private setting. Also, nomination should be considered an honor, the open voting process can create the perception of someone being the “loser”, and this is not what we’re after.

I think this covers all the general issues that would have to be addressed. I propose that we discuss them at the next regular meeting and see where it leads.

CALENDAR OF EVENTS

If you have any upcoming events you would like to have highlighted in our Calendar of Events please email them to the secretary of MSPS. Be sure the event is more than a month out or it might pass before the next printing.

Next month’s newsletter will be the last to be mass snail mailed. Contact the secretary if you have problems viewing on the website or prefer that it is mailed.

JUNE MEETING COOKOUT

PLACE: TECHHOUSE

TIME 6:00 PM JUNE 10

1 PDU for utility marking

JULY MEETING

PLACE: CONSERVATION NATURE CENTER

TIME: 6:00 PM

1 PDU for tree identification

SCA PIG ROAST

PLACE JONES RANCH BUENA VISTA

TIME 6 PM

MSPE shrimp feed.

PLACE BY FANTASTIC CAVERNS

TIME 6PM

An open letter to the Ozark Chapter of MSPS.

Pete Stevens, PLS

Working with surveyors who have been enrolled in the various survey classes at Missouri State University provides a rich source of topics to discuss. I find those enrolled in the Legal Aspects of Surveying class are exposed to a new perspective on their field of study. Up to entering the class, much of their work experience, and almost all of the class experience, has been devoted to solving problems that have specific formulas that will give a set solution. The Legal class however, exposes them to concepts and principles that must be explored and understood so that they can be utilized in solving the more ethereal problems that they will undoubtedly be faced with in the future. The difference in perspectives is that of the technician and that of the professional, the skill sets of both perspectives is required to solve boundary survey problems.

One of the main dilemmas faced by the professional land surveyor is whether or not to accept a monument found in the field as the property or land corner. How close does the found monument need to be to the record location? How do we assess the nature of the monument found in relation to what the record data says was set for the corner? How much weight should be given to evidence of occupation as it relates to the corner? Each question has multiple factors that need to be considered. How do we weigh the evidence, and against what scale do we assess its value?

Mulling these questions over I began to wonder if a formulaic “system” could be created that would assign a value to a monument that could then be compared to some predetermined “threshold of acceptability” where it would simply pass or fail. The prospect of taking the “guess work” out of the dilemma for my fellow surveyors was a calling that could not be denied (... too much time on my hands).

I’m envisioning a system by which one would assign a numerical value to the monument from each of several categories, the individual values would then be added together and the total would need to meet or exceed a predetermined “threshold of

Acceptability value” arrived at by a cabal* of the greatest minds in surveying (just myself so far).

Three categories come to mind for rating purposes:

The first category would be “Accuracy of Location”. This category would rate how close the monument is to the expected location from record data such as lot dimensions in a subdivision; bearing/distance calls in a deed description; GLO plat distances, etc. The closer the monument is to the record location, based on a percentage of the “Referenced Distance”, the greater the value assigned to it. I could see three different scales for assigning values depending on the age of the monument. Recent monuments, set since 1980, would have a higher expectation of accuracy due to the availability of electronic distance measuring technology. Monuments set before 1920 would have the lowest expectation of accuracy, due to the reliance on chains for distance measurement and relatively primitive transits for angle measurement. Monuments set between 1920 and 1980 would have a mid-range expectation of accuracy, with steel tapes and improved transits available for measuring.

The second category would be “Comparison to the Record”. This category would assign a value based on how well the monument matched the description of the corner monument as stated in the record. Records of monuments set for an original survey such as GLO plats, subdivision plats, and other surveys that created new tracts of land would be of higher value than re-tracement surveys. A monument matching the record description closely would get a higher value than one with a questionable match.

The third category would be “Occupational Harmony”. This category would assess the monuments’ relationship to the physical evidence of ownership such as fence line locations, tree lines, roadbeds, and building locations. The quality of the occupation lines would be determined by age and permanence of the evidence.

Although some tweaking of the values, distances, and category definitions may be required, “the system” would appear something like what follows.

**ca-bal: a group of persons secretly united in a plot.*

THE SYSTEM

The “system” requires Tables for each category so that assigning values to the monument is effortless:

ACCURACY OF LOCATION TABLE

Pre 1920	Distance from Expected Location		Post 1980	Value
	1920 – 1980			
.5' + .1% of “Referenced Distance”	.4' + .1% of “Ref. Dist.”	.2' + .05% of “Ref. Dist.”		100
1.0' + .1%	.8' + .1%	.4' + .05%		80
1.5' + .2%	1.2' + .15%	.8' + .1%		60
2.0' + .3%	1.5' + .2%	1.2' + .15%		40
2.5' + .4%	2.0' + .3%	1.5' + .2%		20
3.0' + .5%	2.5' + .4%	2.0' + .25%		10

Calculate the highest value available for your discrepancy based on the “Referenced Distance”.

COMPARISON TO THE RECORD TABLE

The found monument:	<u>Value</u>
Matches exactly as described in a deed or original survey	100
Matches closely as described in a deed or original survey	80
Matches exactly to a subsequent or retracement survey.....	60
Matches closely to a subsequent or retracement survey.....	40
Is at a location for which there is no specific record	20
Does not match any description of a monument at that corner.....	0

OCCUPATIONAL HARMONY TABLE

The found monument:	<u>Value</u>
Matches signs of occupation of long standing.....	100
Matches relatively new signs of occupation.....	60
Matches some occupational evidence, but does not match other evidence	40
Only loosely matches occupation evidence.....	30
Is at a location where no evidence of occupation is discernable.....	20
Does not match existing signs of occupation.....	0

Proposed “threshold of acceptability” = 140

Alright then, let’s try some examples.

Example #1:

A bare 5/8” rebar is found within 0.3’ of a 165’ description call from a 1985 deed, calling for an iron pin, there is no evidence of occupation at the site.

Accuracy value	= 80	(post 1980, 0.3’ is within <u>.4’ + .05% of 165’=0.48’</u>)
Record value	= 80	(Matches closely as described in a deed or original survey)
<u>Occupation value</u>	<u>= 20</u>	(Is at a location where no evidence of occupation is discernable)
Total value	180	

This monument exceeds the “threshold of acceptability” (140) and should be considered the true location of the property corner.

Example #2:

Looking for a section 1/16th corner, a 4” x 10” stone is found set in the ground. A pre 1920 county survey indicates a 5” x 12” stone was set at the corner. Based on data from the county survey, the stone is 5.5’ east of the expected location based on a 1320’ tie to a known corner. A relatively new fence corner is 6’ west of the stone.

Accuracy value	= 40	(pre 1920: 5.5’ is within <u>2.0’ + .3% of 1320’=5.96’</u>)
Record value	= 80	(Matches closely as described in a deed or original survey)

Occupation value = 30 (Only loosely matches occupation evidence)
 Total value 150

This monument exceeds the “threshold of acceptability” (140) and should be considered the true location of the land corner.

THE SYSTEM cont.

Example #3:

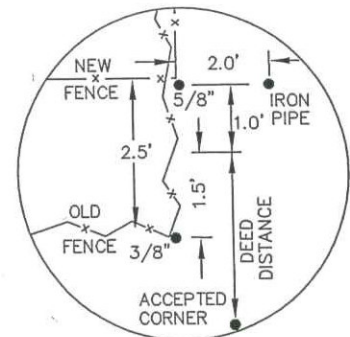
In a 1958 subdivision, an iron pipe is found at a new fence corner. The plat indicates 1/2” iron pins were set at all lot corners. The iron pipe is 1.6’ away from the pro-rated location between two accepted lot corners, 201’ apart.

Accuracy value = 60 (1920-1980: 1.4’ is within $1.2' + .15\% \text{ of } 201' = 1.5'$)
 Record value = 0 (Does not match any description of a monument at that corner)
Occupation value = 60 (Matches relatively new signs of occupation)
 Total value 120

This monument’s value does not meet or exceed the “threshold of acceptability” (140) and should be rejected as the true location of the land corner.

Example #4: (This ground breaking system can also be used to solve the problem of multiple monuments at a corner, simply rate each monument and go with the winner!)

The deed for a metes and bounds tract created in the 1930’s calls for an iron pin at the corner. A 1988 subsequent survey by a private survey company indicates no monument was found and that a 5/8” capped rebar was set at the corner. An old rusted 3/8” iron pin is found at an old fence corner, a 5/8 uncapped rebar is found 2.5’ to the north at a newer fence corner, and an iron pipe is found 2’ east of the 5/8” rebar (the classic “pin cushion” scenario). There is an accepted corner 660’ south of this mess, the distance from the accepted corner to the 3/8” iron pin is 1.5 feet short of the deed distance.



The 3/8” iron pin:

Accuracy value = 60 (1920-1980: 1.5’ is within $1.2' + .15\% \text{ of } 660' = 2.19'$)
 Record value = 80 (Matches closely as described in a deed or original survey)
Occupation value = 40 (Matches some occupational evidence, but does not match other evidence)
 Total value 180

The 5/8” iron pin:

Accuracy value = 60 (post 1980: 1.0’ is within $.8' + .1\% \text{ of } 660' = 1.46'$)
 Record value = 40 (Matches closely to a subsequent or retracement survey)
Occupation value = 40 (Matches some occupational evidence, but does not match other evidence)
 Total value 140

The iron pipe:

Accuracy value = 80 (1920-1980: 1.0’ is within $.8' + .1\% \text{ of } 660' = 1.46'$)
 Record value = 0 (Does not match any description of a monument at that corner)
Occupation value = 30 (Only loosely matches occupation evidence)
 Total value 110

Although the 5/8” iron pin meets or exceeds the “thresh hold of acceptability”, the 3/8” iron pin, with its impressive 180 rating, is accepted as the true location of the property corner.

At last... a system of eliminating the need for professional judgment in the determination of the acceptability of corner monuments. Pleas, feel free to utilize “the system” to your advantage (although no warranty is implied as to the accuracy of determinations based on “the system”).

Let me take this opportunity to accept the praise of my admirers and reject the scorn of my detractors in advance.

Peter W. Stevens, PLS
 pstevens@mai-eng.com

The not-so funny pages.



The following description is from a recorded deed dated January 11th 2001. It is from Rick McCallister. Thanks Rick. I am truly confused. For all you hotshots out there see if you can plot this description or even follow it.

A FRACTION OF THE SE ¼ NW ¼ AND A FRACTION OF THE SW ¼ NE ¼ OF SECTION 33, TOWNSHIP 24 NORTH, RANGE 14 WEST, DESCRIBED AS FOLLOWS: BEGINNING AT A POINT IN THE CENTER OF THE PUBLIC ROAD 66 FEET FROM THE NE CORNER OF THE STORE BUILDING, THEN FOLLOW THE MIDDLE OF THE ROAD IN AN ALMOST NORTHERLY DIRECTION TO THE BED OF THE BRANCH, THEN FOLLOW THE BED OF THE BRANCH NORTHWEST TO THE NORTH LINE OF THE SE ¼ NW ¼, THEN WEST 20 RODS TO WHERE THE WIRE FENCE INTERSECTS SAID LINE, THEN FOLLOWING WIRE FENCE SOUTH 33 RODS AND 2 ½ FEET TO THE SW CORNER OF THE GARDEN, THEN EASTWARD 27 RODS AND 6 ½ FEET TO THE CHANNEL OF THE BRANCH BACK OF THE STORE BUILDING, THENCE FOLLOWING THE CHANNEL OF THE BRANCH BACK TO PLACE OF BEGINNING. AND EXCEPTING OUT OF SAID TRACT THE MILL HOUSE AND LAND IT STANDS ON; AND EXCEPTING THAT PART FORMERLY CONVEYED FOR HIGHWAY PURPOSES.

This one is from Kevin Tyler. Actual deed description only the names have been omitted to protect the incompetent. I 'm not sure but I believe a surveyor did not pen this masterpiece.

THE NW ¼ NE ¼ OF SECTION 33, TOWNSHIP 27, RANGE 15, THE NE ¼ NW ¼ OF SECTION 34. THE E ½ SW ¼; THE SE ¼ : THE S ½ S ½ NE ¼ AND THE SE ½ SE ¼ NW ¼ ; ALL IN SECTION 14. ALL THAT PART OF THE NW ¼ SW ¼ AND THE SE ¼ SW ¼ OF SECTION 13 WHICH LIES WEST OF THE BLUFF, A PART OF THE SW ¼ SW ¼ OF SECTION 13, DESCRIBED AS COMMENCING AT THE SW CORNER OF SAID QUARTER AND RUNNING THENCE NORTH. WITH SAID LINE TO A POINT 15 FEET SOUTH OF THE SPRING, RESERVING A 15 FOOT LANE FROM THERE TO CORNER AT OR NEAR AN APPLE TREE, THENCE NORTHEAST, INTERSECTING THE NORTH LINE OF SAID TRACT TO A SASSAFRAS TREE, THENCE EAST WITH SAID LINE TO THE NORTHEAST CORNER OF SAID FORTY, THENCE SOUTH WITH SAID LINE TO THE SOUTHEAST CORNER, THENCE WEST WITH SAID LINE AND TO THE SOUTHWEST CORNER TO PLACE OF BEGINNING: ALL IN DOUGLAS COUNTY, MISSOURI.
SUBJECT TO RIGHT OF WAY FOR COUNTY ROAD, AS IT NOW RUNS.

Disclaimer: *The above deeds are presented for your reading enjoyment. They are not meant as an outline for you to follow.*

A man is flying in a hot air balloon and realizes he is lost. He reduces height and spots a man down below. He lowers the balloon further and shouts: "Excuse me, can you help me? I promised my friend I would meet him half an hour ago, but I don't know where I am."

The man below says: "Yes you're in a hot air balloon, hovering 30 feet above this field between 40 & 41 degrees latitude and 120 and 124 degrees West longitude."

"You must be a Surveyor," says the balloonist.

"I am" replies the man. "How did you know?"

"Well" says the balloonist, "everything you have told me is technically correct, but it's of absolutely no use to me and I still don't know where I am."

The man below says, "You must be a contractor."

"Well yes" replies the balloonist, "but how did you know?"

"Well", says the man, "You don't know where you are or where you're going. You've made a promise that you can't keep, but now you expect me to solve your problem. You're in the same position as you were before we met, but now it's my fault."

Submitted by Ref Bagley

MINUTES FROM MARCH 11, 2008



ATTENDANCE

PAUL TAYLOR CHRIS STRONG STEVE NELSON DEBRAH WOLFE PETE STEVENS GARY BOCKMAN
MIKE GRAY^{1, 2} LOYD TODD GREG MAYNARD FORREST MAYNARD KEVIN TYLER RICK McCALLISTER

I. Call to order

Paul Taylor called to order the regular meeting of the **Ozark Chapter MSPS** at 6 pm on 3/11 at Western Sizzlin.

II. Approval of minutes from last meeting

Minutes were approved as read from last meeting

III. Open issues

- a) Committee formed for local surveyor of the year.
- b) Chris Strong set up to special meetings at different locations with pdu's.
- c) Group monumenting project.
- d) Spouses program announced.

IV. New business

- a) Chapter letter to Greene County Assessor about map.
- b) In need of chapter representatives for state msp meetings.
- c) Path to licensure discussed dropping one avenue. Hot topic which led to talk of mentoring, rural and urban surveyors.
- d) Web site paid for five more years. Vote unanimous.
- e) Kevin Lambeth solicited discussion on the topic of construction staking by const. companies.

V. Adjournment

Paul Taylor adjourned the meeting at 8:07

Invitation for membership

Ozark Chapter MSPS annual dues are as Follows:
Member \$20.00 Student Member \$5.00
Associate Member \$5.00
Sustaining Member \$30.00

Education Committee:

Peter Stevens - Chairman

pstevens@mai-eng.com

Web Page Committee:

Steve Nelson, Gaylon Smith

Dick Cox

Please remit registration and fees to:

OZARK CHAPTER MSPS

Mike Gray

Gray & Associates, LLC

909 E. Republic Rd. Ste. B204

Springfield, MO 65807 417-891-9962

E-mail: secretary@ozarksurveyor.org

Ref Bagley - President

Kevin Tyler – President-elect

Paul Taylor– Vice-President

Mike Gray– Secretary-Treasurer

Directors- Stephen Nelson Peter Stevens Gaylon Smith



OZARK CHAPTER MSPS

www.ozarksurveyor.org

Michael David Gray

Gray & Associates, LLC

909 E. Republic Rd. Ste. B204

Springfield, MO 65807 417-891-9962

E-mail: secretary@ozarksurveyor.org