

HOOSIER SURVEYOR

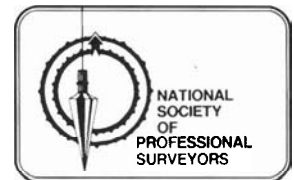


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WINTER 2006



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HOOSIER SURVEYOR

VOLUME 32 NUMBER 3 WINTER 2006

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EDITORS NOTE

Deadlines for copy for various planned issues of the Hoosier Surveyor are as follows: Winter - December 31; Spring - March 31; Summer - June 30; Fall - September 30.

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Articles and columns appearing in this publication do not necessarily reflect the viewpoints of ISPLS or the Hoosier Surveyor staff, but are published as a service to its members, the general public and for the betterment of the surveying profession. No responsibility is assumed for errors, misquotes or deletions as to its contents.

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1 to r, first row: Frank Ballintyn, Sellersburg; Perry Cloyd, Columbus; Harold Hart, Charlestown; Don Bengel, Valparaiso; Richard Hudson, Valparaiso; Ron Wharry, Frankfort; Jim Tibbett, Linton; Second row, 1 to r: Todd Bauer, New Haven; Steve Murray, Battle Ground; Mark Isaacs, Brownstown; Ed Sweetland, Greenfield; Dan Kovert, Fishers.

PRESIDENT'S THOUGHTS

by Frank F. Ballintyn, PLS, Sellersburg, Indiana



I want to thank all of the members that voted, regardless of who you voted for.

My oldest nephew just graduated from Notre Dame on scholastic scholarship, when a month later he was diagnosed with brain cancer. 21 years of age and all of a sudden his life could have ended. We prayed a lot and asked everyone to help pray, and he pulled through really well. The lesson he learned: life can be over just like that, so make the most of it, appreciate what you have.

Our professional organization needs and requires all types of people, young, old, male and female. Don't feel our organization is just for great white fathers or just for people from a certain area of our State. Collectively we can continue to recruit new members to our profession, and enhance the organization we have.

Make our profession a respected profession that polices its own. Be involved, get involved, please serve our profession proudly. Make the most of your life/professional career.

Thanking you all professionally;

Frank F. Ballintyn
Pres. of ISPLS

2006 Convention

The ISPLS Convention Committee extends a sincere thank you to the Northeast Chapter of ISPLS and to all of those who assisted with the 2006 ISPLS Convention. The overwhelming success of the 54th ISPLS Convention was the work of a team of dedicated members. Thank you from the ISPLS Convention Committee.

2006 ISPLS Convention Door Prize Winners

Door Prize #1 - Auto Level Package

Topcon AT-G3 Auto Level with CST fiberglass tripod and Crain 25' fiberglass rod.

Winner: David South, Veedersburg, Indiana

Door Prize #2 - Prism Package

Bi-pod, Prism and Prism Pole

Winner: Joe Kiesel - Cynthianna, Indiana

Door Prize #3 - Metal Locator Package

DML - 2000 Magnetic Locator

Winner: Duane Mast, Goshen, Indiana

Door Prize #4 - Data Collector Package

TDS Recon 200 MHz with 64 Mb Memory Survey Standard Software.

Winner: Mark Landstrom, Palos Hills, Illinois

Indiana Historical Society Surveying Frog

Winner: Pat Cunningham, Battleground, Indiana

Board of Registration News

by Gary Kent, PLS

The Public Hearing for the proposed changes to Title 865 of the Indiana Administrative Code is scheduled for February 9th. There are a number of proposed changes including a major rewrite of the accuracy standards for retracement, original and route surveys; a new section in Rule 12 regarding section corner perpetuation; a requirement that applicants for admission to the LS exam have an associates degree in addition to the requisite surveying, math and science college credit hours; a lowering of the required physics and calculus credit hours by one hour each; and an allowance for the roll-over of 4 elective hours of continuing education. Any comments to the proposed rule, including those made at the public hearing, are requested in writing.

The Board Liaison and the Attorney General's office currently have some 70 case files open on registered surveyors – about half are for non-compliance with the continuing education requirements and the other half are for alleged violations of the Registration Act or other rules of the Board.

Mr. John Stephens of Wabash has been appointed by Governor Daniels to fill the Board position formerly held by E.R. Gray, III of Columbus.

The Board officers for 2006 are: Chairperson - Christine Arnold, Vice-Chairperson - Gary Kent, Liaison to the Attorney General's Office – Randy Miller

ISPLS BOARD OF DIRECTORS MEETING HIGHLIGHTS

by Dianne Bennett, Executive Director

September 10, 2005

The ISPLS Board of Directors held a meeting on Saturday, September 10, 2005 at ISPLS headquarters. President Wharry called the meeting to order at 10:00 a.m.. The minutes and treasurers reports were reviewed and approved with revisions.

Staff Activity Report - A written report was submitted for board review. The report is stated under individual topics listed below.

Dianne reported that the office furniture has arrived and the new windows were put in this week.

Communication - Membership - The following membership applications were reviewed and approved: Associate - Robert Hull, Kirk McCauley, Brendan Montgomery, Garry Ritz and Brian Campbell. Student to Associate - Clayton Baylor and Jennifer Hanigosky. Professional Member - Richard Beaman (reinstate) Life - William Stine. Students - Ryan Selby, Todd Nordyke, Chase Schmucker, Samuel Hawkins, Eric Obermeier, Timothy Goodwin, Robert Weyer, and Shaun Rector.

Hoosier Surveyor - Any articles for the next issue need to be submitted by October 15th.

Professional Development - Education - The BOD reviewed and approved 8 more seminars for the 2006 ISPLS Convention. These seminars have been submitted to the BOR .

The Central Indiana Chapter will host the 2007 Convention.

Scholarship - A motion was made and passed to hire an attorney and an accountant to review the Vincennes and Purdue endowment to see what options ISPLS would have in distributing and/or dissolving.

A thank you was received from Todd Nordyke for the Vincennes scholarship.

Technicians - Nathan Althouse working with Dan Kovert presented a successful program for the technicians for route surveying.

Trig-Star - Tony Gregory reported that this year' state winner placed 3rd in the national competition.

Licensing Exam Review - The next review will be September 16 & 17th. This year the review will be a study session. There are only three people participating.

Government Affairs: Legislation - A letter was submitted to the board from Phillip Bainbridge, Baker & Daniels, LLP asking if we were interested in hiring him as a professional lobbyist.

Board of Registration - The board is currently putting together a provider attendance form that will be submitted electronically to the board. This way they will be able to check the continuing education more efficiently when they are conducting the audit of C.E. hours.

NSPS Governor/Great Lakes Council - Don will be attending the national meeting on October 24th and 25th in Arlington, Virginia.

Internal Affairs - Budget & Finance - The new headquarters lease has been signed.

Nominations - The nominees for President Elect are: Steve Murray and Frank Ballintyn . There was much discussion regarding a President running for a second term and holding two offices

on the board. A motion was made and passed not to accept the nominating committee's recommendation. After much discussion a motion was made and passed to approve Steve Murray and Ed Sweetland for the slate of President-elect for 2006.

Chapters - Northeast - The next meeting will be the second Thursday in September. They will be visiting the Hoosier Bat Company.

Northeast - They held their golf outing on August 5th. Their next meeting will be in October.

Wabash Valley - Jason Miller was elected President for 2006.

Tecumseh - Their next meeting is November 9th.

Central Indiana Chapter - Their golf outing is September 30th. The next meeting is September 20th.

Hoosier Hills - Their next meeting is September 13th. The chapter members are involved in a community project with New Song Mission.

Initial Point - A report was presented about the Initial Point seminars.

Southwest - Their next meeting is September 13th.

Greenville - Their next meeting is January 5, 2006.

Old Business - A proposal to conduct the ISPLS Goal Setting session was submitted from Butler Consulting Group. Ed Sweetland will let the BOD know who will be conducting the session on November 5th.

New Business - Several appeals have been submitted to ISPLS from different organizations asking for donations and help from damage caused by Hurricane Katrina. A motion was made and passed to donate \$5,000 to NSPS for disaster relief fund and match up to an additional \$5,000 given by the ISPLS membership.

November 5, 2005

The ISPLS Board of Directors held a meeting on Saturday, November 5, 2005 at ISPLS headquarters. President Wharry called the meeting to order at 2:50 p.m.. The minutes and treasurers reports were reviewed and approved with revisions.

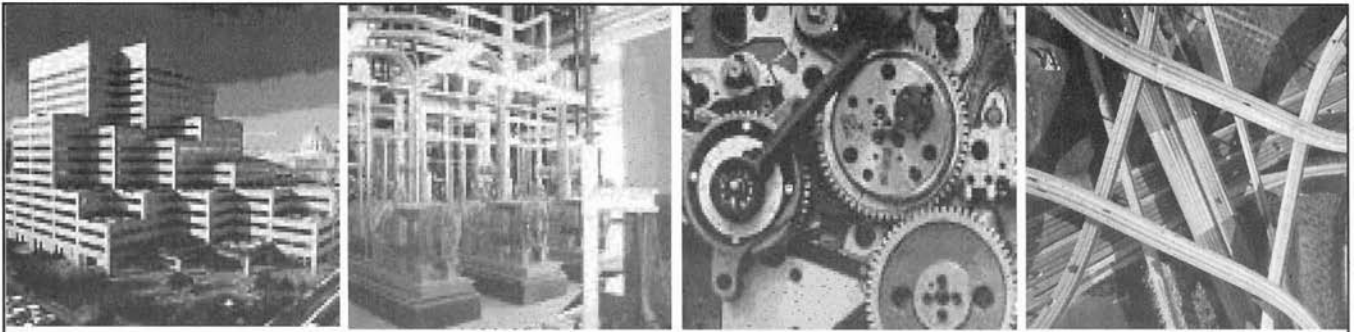
Staff Activity Report - A written report was submitted for board review. The report is stated under individual topics listed below.

Communication - Membership - The following membership applications were reviewed and approved: Professional Member - Earl Spires, Jr. (reinstate); Associate - Mike Hoben, Arthur Wenzel, Dennis Krause, Jr. and David Talbott; Student - Anthony Squellati, Andrew Behle, Edgar Williford, Matthew Carroll, Matthew Thomas, Jeffrey Fox, Nathan Harris, Kristopher Eichhom, Ashley Rose, Peter Procaccio, Andrew Kincaid, Thomas Henderson, Michael Judt, Nay Linn Oo, Casey Menchhofer, Andrew Miller, Derek Fuller, Kenny Garrett, Adam Robinson, Derek Campbell, Shannon Stratton, Travis Shelter, Colby Black, Jacob Beaman, Jarrod Perry, Brock Hudson, Eric McIntosh and Jerrod Rinnert.

Hoosier Surveyor - The fall issue is at the printer. The next issue will be in February.

Professional Development - Education - All of the 2006 convention seminars have been approved by the Board of Registration.

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The Education committee met Nov. 4th at headquarters. Since we had to cancel two seminars; one in the north in the spring and one in the south in the fall; the committee decided to scale back the number of seminars. The plans are to have 2 spring seminars in April, one in Muncie and one in Columbus and have 1 seminar at a state park in September/October.

Scholarship - The board reviewed a letter from ISPLS's accountant regarding the changes Purdue wanted to make in the John McEntyre scholarship. Much discussion followed.

The Purdue interviews for the John McEntyre scholarship are scheduled for November 18th at ISPLS headquarters.

Government Affairs - Board of Registration - The LS presentation ceremony will be November 18th. A plaque will be awarded to the board members that are going off the board at this meeting. The board members are David Blankenbeker and Mike Falk. A motion was made and passed to purchase the plaques for the outgoing members of the BOR since there wasn't any money available for the purchase of these plaques from the state.

HARN/GIS Monumentation - It was reported that the tie-card scanning has been worked out. Steve Murray reported that the GIS standards have been established. Digital submission will be a requirement in the future. The GIS and Standards committee should work on this matter together.

County Surveyors - They had the second annual meeting with good attendance. The County Surveyors would like to develop a

website. Also reported that an appellate court repealed the decision that INDOT does not have to pay county drain assessments.

NSPS Governor/Great Lakes Council - Don Bengel reported that he is still the secretary and that NSPS has a new logo that will come out in the next publications. Also reported is that there is a new ALTA certification.

Internal Affairs - Budget & Finance - A quarterly report was submitted from Wallington Asset Management.

Nominations - The results of the 2006 President Elect were presented. Ed Sweetland will be the President Elect for 2006.

Chapters - Northwest Chapter - The next meeting will be Thursday November 10th. A guard for the tome of the Unknown Soldier will be speaking. Their Christmas outing will be December 8th.

Tecumseh Chapter - Their next meeting is November 9th.

Central Indiana Chapter - Their next meeting is November 15th.

Hoosier Hills Chapter - Their next meeting is November 15th. They are still working on the community project for New Song Mission.

Southwest Chapter - The next meeting is Tuesday, November 8th.

Old Business - Indiana/Michigan State Line - Ron Wharry gave a report on the line between Michigan and Indiana. When it is concluded we as ISPLS will have to sponsor a bill to re-establish the state line.

December 10, 2005

The ISPLS Board of Directors held a meeting on Saturday, December 10, 2005 at ISPLS headquarters. President Wharry called the meeting to order at 10:15 a.m... The minutes and treasurers reports were reviewed and approved with revisions.

Staff Activity Report - A written report was submitted for board review. The report is stated under individual topics listed below.

Communication - Membership - The following membership applications were reviewed and approved: Professional member - Calvin Cash, III, Richard Hodges (Reinstate), Randal Brown (Reinstate), Gale Fansler (Reinstate); Associate - William Henry, James Jabo, Joseph Kiesel (Reinstate), Tammy Lohr-Brown, Jeff Hazel, Michael Barber, Corey Mooneyham, Jerry Ison, and Andrew Wilken; Firm - Smith Neubecker & Associates, Inc.

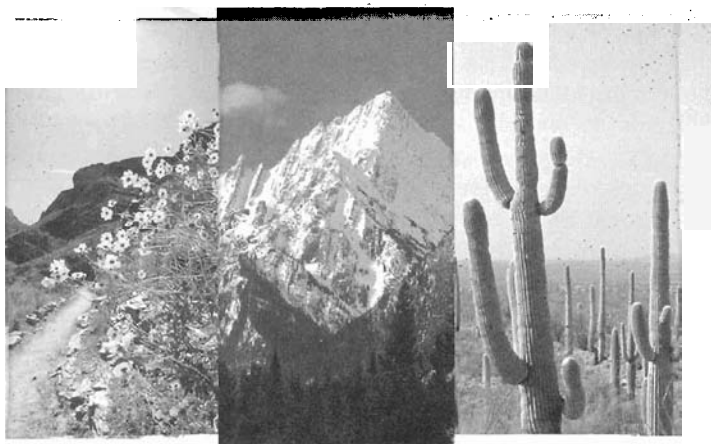
Hoosier Surveyor - Any articles for the winter issue needs to be in by January 15th.

Professional Development - Education - The 2006 convention registration were in the Hoosier Surveyor and an additional mailing was sent November 25th. You can also register on line.

Scholarship - The scholarship committee met November 18th and awarded Clint W. Roos with an award of \$4500 from the John McEntyre Endowment.

Trig-star - The Trig-star program is ready to get started for this year's contest.

Licensing Exam Review - Ron Wharry attended the Exam Review in Atlanta and took the test.



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...continued from Page 5

Government Affairs - There was more discussion about hiring a full time lobbyist.

HARN/GIS/Monumentation - The process in getting tie-cards for section corners on-line for all counties in Indiana is underway.

Internal Affairs - By-laws - There was discussion about the 1954 constitution. There are several items that need to be addressed in the upcoming year.

Nominations - The ballots for BOD were sent out on December 5, 2005. The nominees are: Todd Bauer, Matthew Bertsch, Brad Cramer, Daniel Kover, Jason Miller and James Tibbett.

Chapters - There was discussion about forming a new chapter in the French Lick area.

Northwest Chapter - The Christmas outing was held on December 8th. They raised \$750 to put into the scholarship fund. At the November meeting \$500 was given to the southern Indiana disaster relief.

Northeast Chapter - They held a meeting on November 30th. Their new president is Brian Stoodly. Their next meeting will be in February.

Wabash Valley Chapter - A written report was submitted. Their last meeting was November 9th. Seiler Instrument presented information regarding new robotic total stations and scanning instruments.

Also discussed at their meeting was the rule changes to IAC 1.1-12. They also agreed to donate \$250 to the Katrina Disaster Relief Fund.

At the meeting they approved a request to host the 2008 Convention with the Initial Point Chapter.

Tecumseh Chapter - Their next meeting is in February.

Hoosier Hills Chapter - They are still working on the New Song Mission project in Brown County.

Initial Point Chapter - Their next meeting will be held next week.

Southwest Chapter - Their next meeting is November 8th.

St. Joe Chapter - Held a meeting November 17th. Lisa Jacobs was the speaker from the museum in Michigan.

Old Business - A motion was made and passed to extend the deadline from November 30th to December 30th for the disaster relief to the NSPS for matching funds.

New Business - A motion was made and passed to create a Past-Presidents Council. The charges will be put together and presented for review at the next BOD meeting.

A motion was made and passed to create a budget item for a disaster fund. The BOD will finalize the rules for this before the budget is set.

*National Surveyors Week
March 19-26, 2006*

Six Tricks to Remember Names

Almost everyone has been in the awkward situation where you see someone you've met before but absolutely cannot remember his or her name. You can handle this in many ways, by being honest and saying "I remember you well, but your name has slipped my mind" or look delighted to see them, extend a warm "Good to see you again" or practice some of these tricks to help you remember names in the future:

- * Be Interested - Pay attention when being introduced. Look at the person and get a mental image of them. How are they unique?
- * Picture the name written across their forehead - Franklin Roosevelt remembered the names of nearly everyone he met using this technique.
- * Relate the name - Associate the name with a familiar image, song or famous person. For instance, Arnold could be seen as the "Terminator", Susannah with "Oh Susannah", etc.
- * Use the name frequently - Use it when you first meet, during the conversation and when you leave. Introducing the person to others is an easy way to repeat the name without drawing attention.
- * Ask how to spell a difficult name or glance at the spelling on a nametag, business card, etc.
- * Make a connection to the person's hobby or job.

When we remember someone, we are letting them now we think they are important. Dale Carnegie said, "A person's name is to that person, the sweetest most important sound in any language". So, practice these techniques and eliminate "whatshername" and "whatshisface" from your vocabulary forever.

...reprinted from the *Coordinate (New Jersey) Spring 2005 issue.*

Concerned About Too Many Carbs In Your Diet?

For those of you who watch what you eat, here's the final word on nutrition and health. It's a relief to know the truth after all those conflicting medical studies.

1. The Japanese eat very little fat and suffer fewer heart attacks than Americans.
2. The Mexicans eat a lot of fat and suffer fewer heart attacks than American.
3. The Chinese drink very little red wine and suffer fewer heart attacks than Americans.
4. The Italians drink excessive amounts of red wine and suffer fewer heart attacks than Americans.
5. The Germans drink a lot of beers and eat lots of sausages and fats and suffer fewer heart attacks than Americans.

Conclusion:

Eat and drink what you like.

Speaking English is apparently what kills you.

Coordinate Use in the Restoration of Lost and Obliterated Public Land Survey Corners

Jerry L. Wahl, Cadastral Survey, Eastern States, USDI, Bureau of Land Management

ABSTRACT

The idea of using coordinates to restore lost or obliterated corners has been a frequent topic of discussion within the surveying community however little has been written on the subject. The issues involved are not necessarily technical in nature and resolve to a discussion of under what conditions such restorations are feasible or desirable. This issue may be returning to the forefront now that very precise GPS equipment is readily available to the professional surveyor, and also more accurate reference networks are in place. This paper will attempt to discuss some of the legal as well as technical issues and illustrate with a few examples.

Introduction

The ideal concept of defining property boundaries and corners by absolute coordinates has probably been around for as long as the science of surveying itself. Recent rapid deployment of highly precise GPS technology has probably reawakened this concept. This paper seeks to discuss some of the issues relating to coordinate use and propose some guidelines which the author feels should govern such practice.

GPS is not the only new thing that has revived such hopes in recent years. Over the past 30 or so years there have been a number of similar technological advances which have led to belief in a new surveying nirvana. Photogrammetry was the great hope of the 60's, EDM and electronic computation the hope of the early 70's, inertial surveying and advanced total stations became the saviors of the late 70's and 80's. In each case new technology has yielded hopes for error free surveying or simplified surveying. Virtually all have been followed by some degree of abuse and then a return to or more rational understanding of measurement and legal issues.

This hope for an easy path to avoid the many complexities of boundary surveying seems to get more out of hand if the process produces coordinates as direct output, rather than other forms of data. This can be referred to as "the Magic Coordinate Machine or Black Box" syndrome.

Coordinate outputs can create an illusion of correctness because they bypass attention to normal methods of measurement analysis and consideration of error. All measurement systems have error, and all surveying systems derive coordinates from measurements. However, it is necessary to have a certain amount of information about what the coordinates are, how they were determined, and what errors may be involved in determining them before they can be readily used. Frequently such information is omitted from a coordinate record. Later in this paper more detailed criteria for evaluating a coordinate record will be discussed.

Lost or Obliterated?

The precise meaning of the terms "lost" and "obliterated" are often confused since they deal with similar issues. However, in the context of this discussion, the difference between them is important if not essential. In the PLSS context, it is the author's opinion that once a corner is determined as **lost**, it can only be restored by the Manual procedures for lost corners. These procedures are the

proportions based upon the original survey record (corollary to original deed or plat description) that we are all familiar with. Although these procedures may not always follow the literal "footsteps" of the original surveyor, they have been prescribed and recognized by the courts because they provide **equity**, and not merely as technical procedures.

Note we have still not really defined what lost means. The *Manual of Surveying Instructions, 1973*, which guides many of us in PLSS surveying, seems to define lost more by describing what it is not. For your review, refer to sections 5-1 through 5-9 of the Manual. In part we have the language: 5-5. An existent corner is one whose position can be identified by verifying the evidence of the monument or its accessories, by reference to the description in the field notes, or located by an acceptable supplemental survey record, some physical evidence, or testimony.

Even though its physical evidence may have entirely disappeared, a corner will not be regarded as lost if its position can be recovered through the testimony of one or more witnesses who have dependable knowledge of the original location.

Thus we quickly arrive at the definition for obliterated: "5-9 An obliterated corner is one at whose point there are no remaining traces of the monument or its accessories, but whose location has been perpetuated, or the point for which may be recovered beyond reasonable doubt by the acts and testimony of the interested landowners, competent surveyors, other qualified local authorities, or witnesses, or by some acceptable record evidence."

Basically, if there is any additional information (over the measurements of the original record) that might be used to replace a corner in its original position, then the corner is considered as "obliterated"

It is the author's opinion that the use of coordinates is no different from the use of any other survey record, requiring application of the same type of judgement and assessment of its value, accuracy and usefulness. But what criteria are suitable for evaluating a coordinate record for this purpose?

Evaluation Criteria

Let me suggest that the questions you should ask yourself should be similar to the questions you should ask about acceptance of monument evidence for a corner. There are some unique aspects for a coordinate record, however.

In determining the value of coordinates for relocating an obliterated corner position, consideration should be made of the following factors:

- 1) Who established the coordinates?
- a) What do you know about their expertise and methodology?
- b) How can you validate the reliability of this coordinate record?

To validate a coordinate record you may have to retrace between a number of positions in that record to determine to what degree they represent usable information about position, measurements and evidence, and to answer some of the questions below. It would be difficult to validate such a record on paper, although you

...continued Page 9



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can formulate some questions to ask.

2) How were the coordinates established?

a) What procedures were used?

The accuracy and precision of a control coordinate can be affected greatly by the procedures that were used to establish it. For example, 10 years ago doppler satellite methods were used having an accuracy of only 1 to 3 meters. There can be an extreme variation in the accuracy of photogrammetric data, not to mention conventional traverse methods. In addition sometimes sideshot or unchecked methods have been used.

b) What control was used in the determination the coordinate?

The specific origin of control used to establish coordinates often affects the coordinates obtained. This is especially true with older state plane or geographic coordinates based on pre-NAD83 control, or mixed NAD27 and NAD83 control, although newer control is not immune from this problem. For example, one set of coordinates obtained in a GPS network using HPGN stations may not produce the same results as one done even a few years ago from different nearby NAD83 values.

Since establishing an absolute coordinate involves the combination of errors of the national control network, the local survey network, and imperfect measurement systems, it contains some amount of uncertainty. A different value will often be obtained dependent on the method and networks used and built. Thus the value of the coordinate is often strongly related to the specific way it was established.

c) What datum are the coordinates in?

It is difficult, if not impossible, to properly use a coordinate record without having some idea as to the system it is in. For geodetic surveys, the datum is a key factor. There is no way to tell by looking at a latitude and longitude whether they are NAD27, NAD83 or a subsequent HPGN representation based on NAD83, or even assumed values. It is generally necessary to validate what you have by external information. Even if the value is stated, you cannot always be sure it is what is advertised. For example, a coordinate stated to be in NAD83, may have originated from NAD27 values transformed using NADCON. While this transformation is one of the best you can get, there is no absolute transformation between the datums. Depending on the area such a process can have several feet of error when compared to independently determined new control.

It usually requires recovering and evaluating a number of points in the record in order to determine it's accuracy and orientation. A record based on a local coordinate system or project coordinates are often used in surveys.

d) State Plane all reductions applied?

i) State Planes determined from what control?

ii) NAD83, NAD27, local city, project or company datums?

iii) What units are they in?

iv) What degree of diligence was exercised in making corrections for convergency factors, scale and elevation factors?

State Plane coordinate values have a whole host of problems in use in addition to how the control was run. There are large numbers of coordinates out there that look like state planes, but which are in actuality some form of adulterated system. In order to avoid the computations involved in properly reducing measurements for elevation and grid scale factors, these values are sometimes ig-

nored, or only roughly estimated.

Another practice that we have seen is division of the state plane coordinate value by the local combined scale factors to obtain a "ground state plane". These coordinates can be shifted up to 1000 feet from proper state plane values. It is impossible to determine without some independent information what a state plane coordinate actually represents.

As another example there can be uncertainty in units for NAD83 state plane values. While any given state's enabling legislation for their state plane coordinate system may have specified what units the system is in, this is frequently ignored and most software allows you to define meters, feet (U.S. Survey), and International feet. It is usually pretty easy to define whether a record is metric or feet, however a state plane coordinate defined in U.S. Survey foot can be several feet different if converted back to geographic coordinates based on the SI foot.

3) What monumentation or evidence was found, recovered or set?

A coordinate on the wrong thing will not help you re-establish the right thing, thus in the case of restoration of corners it is usually critical to know what the coordinate represents in terms of monument and other evidence at the time it was determined.

4) Overall does the record give you sufficient confidence that you have sufficient information to rely on it for restoration of the corner.

There are undoubtedly other criteria which should be looked at, but which I have omitted. Suffice to say, that you need to exercise caution and judgement in the use of any survey record and coordinates are no exception.

For additional thoughts, Manual sections 5-9, 5-10 and 5-11 provide guidelines which apply equally well to a coordinate record as to other forms of testimony. By analogy, some of the language in section 5-16 which discusses the use of topographic calls can also provide guidance.

Clearly coordinates can be of great value as evidence of the original corner position if it is properly verified. Since it is positional in nature, the reference for that position must be determined. It is also true that a coordinate value by itself is of little value or can be extremely misleading.

Principal I: a single coordinate has no value in restoration of obliterated corners.

The reason for this is that a single coordinate value has no way to validate it in terms of position, and also there is no information about what evidence the coordinate is purported to represent. A single coordinate may have some value in helping to locate and find direct evidence of a corner, but little else.

Principal II: a set of coordinates has no value in and of itself in the restoration of obliterated corners. A record set of coordinates is only of value when validated by some of the criteria outlined above as to what it is, how it was determined and what it represents and it's use is subject to validation.

Judgement must apply.

As with many situations in land surveying, judgement must be applied to each individual situation and no general rule can be laid down. This judgment should be based on a statistical verification of the record being followed based on other recovered points from



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the same record or source. The criteria described above should be included in the evaluation. The record is suitable for use in restoration (and thus elevating the corner from lost to obliterated status), if the record and method tested will clearly determine position of the original corner more reliably than any other method or proportion.

Absent that level of confidence, the best use of coordinate data is to allow a careful and well defined search leading to the recovery of direct evidence of the monument or it's accessories, or validation of one set of conflicting evidence over another.

Generally, restoration of the obliterated corner from the coordinate record should follow similar methods and procedures that were used in the survey which established them (the coordinates). For example: A corner established by triangulation methods 20 years ago using control points A, B, C and D, could be restored only if such information and the measurement ties were available and should proceed from the same control points, and not by using GPS methods based on completely different control points.

Improper use of coordinates.

Use of coordinates to extend new surveys, under any circumstances, without independent verification of all the required controlling monuments and corners that affect the corner being established is unwise and is an improper procedure. This is in effect establishing corners without survey.

Example 1:

For example, let us imagine a 1988 survey conducted by a county that involves section line corner recovery which has established state plane coordinates on each PLSS corner. This work was performed as part of a ongoing corner restoration project and coordinates were determined from nearby high-order GPS points. Based upon this data a local surveyor in 1996 computes the location for a clients boundary which requires the SE 1/16 sec. corner of the section, and then proceeds to monument the location from a nearby highway control monument, traversing to the appropriate 1/16 position.

This is an abuse because the surveyor did not verify the source or accuracy of the controlling corner coordinates, the relationship of the GPS coordinates to the highway control, the accuracy of the highway control, or even the actual existence of each 1/4 corner, other center 1/4 monuments or any controlling 1/16's monuments. In addition, only experience can verify whether the 1988 GPS work was in fact accurate enough to support determination of lines in the 1000 foot range to a reasonable degree of accuracy.

Example 2:

Under the particular state law surveyors are required to file monument records for PLSS corners which they use in the course of any survey (which have not been substantially described before). On this form is a space for state plane coordinates. Thus I find such a record for a monument I need in the course of my survey, but which has subsequently been destroyed. This record states that the surveyor found an original stone and it has state plane coordinates of: $x=2,173,456.7$ $y=500,451.1$

Would you use that to restore the corner? Now if you knew it was from GPS survey done in 1991 what would you like to know to make you feel better about using it? How would you feel if it was the only corner tied in the survey and you have no idea what datum

or what control was used? (in this case you don't).

Going backwards a second, if it didn't say he even original corner evidence, but you just have a corner card or state plane coordinate in a list that says it is "The corner of secs. 17, 18, 19 and 20". How would you feel about using it?

Returning to the monument record mentioned above, and say you dig up some more data from that and find an highway route survey which tied in the monument, which was wiped out under construction. And you can measure into other monuments of that survey and validate the coordinate system, determine it's basis, scale and orientation, or you know they used certain control and in NAD83 (the first one and not the second or third one), etc. etc.?

Principal III: Often you end up not using the coordinate record itself so much as the survey that created it. The coordinate may serve only to carry a relative measurement in the same way you might use a local survey plat with assumed bearings and distances on it, and must validate it as evidence.

Summary

Once a corner is determined as LOST, then it should only be restored by the Manual procedures for lost corners. These procedures may not literally follow the "footsteps" of the original survey however they have been prescribed and recognized by the courts as a matter of **equity**, and not merely as a technical procedure.

Where there is any additional information, including a coordinate record, that after a full and thorough evaluation is of sufficient strength that you feel it can be used to replace a corner monument in it's original position, then the corner has been elevated to the status of an obliterated corner.

Use of coordinates without any knowledge or reference as to how they were established would be acceptable only under the most extreme circumstances. Such a case can best be made where there is substantial statistical verification of the reliability of the coordinate record and verification that is consistently provides more reliable corner locations than any other form of record where evidence remains and verification that the coordinates represent evidence of the original survey monument position.

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THE GOLDEN AGE OF SURVEYING

by Milton Denny, PLS

The 1950's were a grand time in the history of surveying. The development of equipment had progressed to a point where the surveyor could produce a quality survey with a minimum effort. In many ways this was the Golden Age. The dedication to service, attention to detail, and willingness to do an accurate survey regardless of cost resulted in laying the groundwork for many modern re-surveys. Today, if you follow in the footsteps of some of these surveyors, you will be surprised at the accuracy of their work.

I was one of the lucky ones to have started a survey career before the 1960's boom, when six weeks experience qualified you as a party chief. Let's roll back time to these simpler days and explore the world of surveying in the 1950's, when you learned the trade of surveying from the ground up, and it took months to become a good rod man. Many spent years as an instrument operator before becoming a party chief, and many never made the transition from party chief to registered surveyor. We are going to take a look at three distinct areas of surveying during the 1950's: equipment, field crew procedures, and the quality of the work and its lasting impact on our profession.

EQUIPMENT

Surveying had survived the compass and chain era and progressed after World War II to the surveying transit and steel tape, more commonly called a chain. There were only three big names in survey equipment: Gurley, K&E, and Dietzgen, and brand loyalty was almost unnatural. Field people were loyal to the instrument brand with which they learned surveying. Snide remarks about instruments were common, such as "I never saw a Gurley that would double center" or "A K&E will never double angle properly." Such comments were true only in the eyes of the beholder. Remember, most surveyors only had one transit in their career. It was purchased new and was treated like a member of the family. It was scheduled for cleaning and adjustments on a semiannual basis and field adjusted between formal visits to the repair shop.

Transits were available in different types and quality: the surveyor's transit with A-shaped standards; the more costly engineer's transit with U-shaped standards; and specialty transits such as the mining transit. Transits were graded for accuracy on the graduation of their horizontal circle, the least desirable being a one-minute circle. Most surveyors wanted a 30-second transit, and if you were really uptown, you could get one of those new 20-second guns. (Yes, the transit was always lovingly referred to as "the gun.")

The real art to making the grade as the instrument person was the ability to read the gun more accurately than the manufacture's specifications, such as estimating the one minute gun to 30-seconds and the 30-second gun to 15 seconds. This was accomplished with a magnifying glass that the instrument person wore suspended around the neck on a piece of cord. This glass was worn as a badge

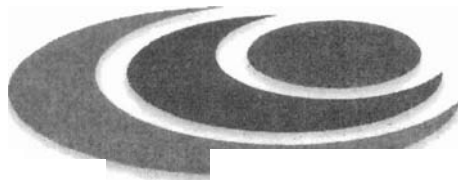
of honor and signified that you had arrived and were no longer a lowly rod man.

Reading the transit was an art form. You had to carefully hold the magnifying glass parallel with the horizontal circle, study the graduations on the circle, and proudly proclaim the proper reading. The doubling of the angle would be the mathematical proof that you truly had mastered the art of reading the circle. The standard tripod was straight legged, cheaper than an extension leg tripod, and weighed 16 to 20 pounds. It took years of practice to set up the straight leg transit in all the situations encountered in surveying. The ultimate test of a good instrument person was to make sure that the plate attached to the transit head always remained as parallel as possible to the transit and to make adjustments as seldom as possible. A party chief seeing a poorly set-up transit would pull it up, set it next to the point and say, "Set it up again." A plumb bob was used to get the transit over the point. It took years of experience to set up over the point on a windy day.

Measuring was done with a 100-foot steel tape which had a lead babbitt at each foot stamped with the distance from the end of the tape. Most survey crews received a new tape about once a year. Near the end of the year most tapes had been broken and repaired a number of times. Sometimes the lead had worn off from being pulled over the ground, making the numbers very hard to read and increasing the chance for error. The chain was affected by temperature as well. Most field surveyors adjusted about 1/100 foot for each 15 degrees of temperature change from a benchmark of 68 degrees. For a traverse, this adjustment was made in the office and on stake out work, the correction was made in the field. Many old plats have a statement about what temperature the distances are adjusted. It was common to see a surveyor with a field thermometer. Most crews had wooden range poles for sighting; leveling rods for vertical surveys (for the most part a small percentage of the work); and other items such as arrows or marking pins (chaining pins); plumb bobs and sheaths; and a machete or brush hook for clearing line. Most crews also had some sort of sack, similar to a cloth newspaper delivery bicycle bag, to carry flagging, stakes, and a hammer. Although reels for steel tapes, retractable plumb bobs, and tension handles for chaining were available from survey supply houses, they were considered unnecessary. The field vehicle was a station wagon or a pickup truck with a homemade wooden box for the equipment.

Office equipment was simple: drafting table, filing cabinets, and equipment to make blueprints. Sometimes this was a window box put out into the sun to expose the print paper to light - this item was called a Solar Printing Frame. Developing was done with a wet process, sometimes in the bathtub. Remember, these were blueprints, white lines on blue paper. Sorry, no prints on a cloudy day. The drawings were always done in ink with a drafting set consisting of beam compasses and ruling pens. The original drawing was on vellum or linen drafting material, and many companies had pre-printed standard sheets with title blocks.

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FIELD CREW PROCEDURES

Most field crews consisted of four people: a party chief, an instrument man, and two rod men. Some crews may have had a fifth person for flagging traffic and driving stakes. Learning to be a good rod man was very complex. Your main tool was a plumb bob, attached to a special string, long enough to allow you to plumb above your head at the length of your extended arms. The main duty of a rod man was measuring.

Even the rod man classification had a class structure. The lowest job was rear rod man. As rear rod man, your duty consisted of holding your plumb bob at the end of the tape, plumbed over the survey point or chaining pin no matter how hard the front chainman pulled. To get the tape level, you may have been holding it over your head. When you were perfectly over the point, you would shout out, one of about 20 different signals, the most common being "Stick, ho, mark."

If you think this sounds easy, get a plumb bob and hold it over your head while holding a rope on which someone is pulling as hard as they can. The most important job of the rear rod man was to read the correct distance off the tape when the distance was less than a full 100 feet. The correct procedure was to look at the foot you were holding, and then look at the foot ahead and the foot behind before calling out the distance to the party chief. The front rod man set the pace for the crew. It was important to move ahead as quickly as was practical and yet still do a correct job of measuring.

If the rod men were the arms and legs of the crew, then the instrument was the heart. As a party chief once told me, "I don't care how hot or cold it gets, you will never see me look through the instrument. It is your job to stand behind the instrument come hell or high water." The care and running of the instrument was the responsibility of the instrument person, including jumping in front of a truck to save it, if need be. No one was allowed to look through or practice with the instrument without his or her permission.

One of the most difficult things to do on a survey crew was to work around the instrument when it was set up and ready for use. Near where the legs were pushed into the ground were one-foot radius circles, where no one was allowed to step. This was a problem because most distances originated from the point over which the instruments were set up, and the plumb bob [hung] from a hook on the bottom. While the instrument person would be giving the head rod man alignment on the direction to measure, the rear rod man would have to climb under the transit, holding the end of the tape on the plumb bob string while the head rod man pulled as hard as he could on the head of the tape. The trick was to do this while staying one foot away from the tripod legs on the ground and not touching any part of the transit. The instrument person was always supposed to anticipate which way the crew would be measuring from under the transit. If the instrument was set up so that tripod leg was on the line, the party chief would pick up the instrument and say, "Set it up right!"

Volumes could be written about the party chief in the '50's. Many of the better party chiefs were also registered surveyors. The best party chiefs ran their crews much like an army drill sergeant. Most of the old-time party chiefs I knew spent their while lives in the field, wanting to complete just one more survey. Because of this, they could not be counted on to attend kids' baseball games, school plays, or any other family activity. Most of the drafting was done at night and on weekends. Since the collection of fees was never high on the list of things to do, many died having never been paid for many surveys. Most would have surveyed for free because that was their calling in life. It's easy to see why the children of these surveyors never wanted to follow in their footsteps.

Running and training the crew and making sure each member performed his duties properly were part of the party chief's job. He had to make sure the instrument person was not taking a short backsight and the rod men were plumbing properly and measuring correctly. But the second part of the party chief's job was by far the most important: keeping proper field notes of found evidence and making the correct decision based on the evidence for the location of the property corners.

Keeping field notes is an art form lost in today's culture of computers and high technology. Surveyors of my generation can take a good set of field notes from that era and retrace the surveys as if it had been done yesterday. (Fifty years from now, I doubt you'd be able to do that with a set of today's computer data.) The party chief of that era had the ever-present field book. Most of the notes were kept with a hard pencil, and it was an unforgivable sin to erase in the field book. An incorrect entry was lined through and the new entry was placed above it. Some of the old field notes are a work of art.

LASTING IMPACT

Why do I call the 1950's the Golden Age of Surveying? First of all, between 1920 and 1960 the 100-foot steel tape replaced the link survey chain. The link chain was a poor measurement tool and left many discrepancies in land measurements. The surveyors with their transits and steel tapes documented and redistributed these discrepancies. With the great building boom following World War II, surveyors were called upon to lay out the many new subdivisions and re-monument the old subdivisions that make up the core of many of our modern cities. New road right-of-ways were accurately surveyed, leaving behind a network of surveying that still binds many metropolitan areas together.

This era allowed for a little extra time in the field for working out difficult survey problems. Today we somehow think the answers to that difficult survey is found in the computer. It never was and never will be – the answer has always been in the field evidence. Lastly, these great men monumented their work so we could follow in their footsteps. I am sure glad I experienced these times firsthand. I wish you could have been there with me.

Reprinted from The Empire State Surveyor, May 2004, the Wisconsin Professional Surveyor, March 2002 and others.

The Three P's of Successfully Presenting Before Planning Boards

By James A. DeSena

As a surveyor, you've had or will have the opportunity to present before planning boards. It's a unique responsibility. If you've already stood before a planning board, you know there are certain things that work and certain things that don't work. These principles will give you additional ways to ensure that your presentation is as effective as possible. The three P's of presenting are Prepare, Practice, and Present, all leading to the best possible presentation that helps you achieve your goal. Put the most time into preparation. It is much better to be over-prepared than under-prepared. Put the next greatest amount of time into practicing, so you can handle the unexpected. Then when you present, you'll confidently focus your attention where it belongs, on the board.

PREPARE

The three questions you must answer as you prepare are:

Who is our audience? What do you have to say? Why should they listen?

Prepare not only technical information; learn about the concerns of people on the board. What do they vote for or against? Why? How can you demonstrate that your project will benefit the community?

Audiences want to be engaged, educated, and entertained. You're not there to entertain, but you certainly want to keep them engaged.

1) Grab their attention with your opening. Use models, stories and demonstrations. Use humor carefully and tactfully if you use it at all.

2) Touch them emotionally-mention something relevant about the history of the town, for example, if appropriate and not patronizing.

3) Give them solutions; don't create problems. Make their jobs easier.

Organize your presentation into an opening, middle and end. Quickly overview this for them by describing your purpose in appearing before them, how you would like to proceed, and the beneficial outcome(s) you envision. Be clear about the central points you want to make. Make them in ways that the members can understand.

PRACTICE

I recommend working from a one-page outline. You don't want to sound as if you are reading, but you want to know the key points you want to make so you can concentrate your efforts on the board. And you don't want to forget something.

Practice with several colleagues. Do at least three dry runs if you can. Have them ask the toughest questions you can expect from the board. While you may hope the board doesn't ask them, you must be prepared with good responses if they do. If the board thinks you don't know the answers or are trying to dance around them, that's worse than saying you don't know but will find out.

Time your presentation. Have a plan "B"; what happens if our time is cut short? What will you do? It's usually not a good idea to try to cover everything you had planned. What are the highest priority points you must make? It always pays to err on the side

of brevity. People prefer shorter than longer. No one recalls the orator who spoke first at Gettysburg for over an hour (Edward Everett, the nation's foremost "rhetorician"). Lincoln spoke 285 words that are quoted to this day: "Four score and seven years ago,...". The effects of his words were dramatic because he planned each one he used.

PRESENT

Demonstrate understanding of their issues (have empathy with their concerns vs reacting in frustration when they don't agree with you). If someone says something that you're disappointed to hear, restate what you've heard. This conveys that you value the person's question or opinion. It also gives you time to think of a better response.

Be professional in every way. There's no doubt about it that people have certain preconceived notions about how professionals look and act. In a study, people who were asked to give their pet to a veterinarian who was dressed in street clothes thought the person wasn't qualified, but when different people gave their pet to the same person dressed in a doctor's coat, they felt their pet was in competent hands. It was all about perception. The key is to represent the best that surveying has to offer when you go before a planning board.

Here are some things that surveyors have told me have worked for them in presenting before planning boards.

Make eye contact with each board member. You don't want anyone to feel left out.

Have each board member feel as if you are speaking directly to him or her.

Use colors (green, blue) on your maps. People respond positively to these colors.

Have the client speak if he or she is prepared. One client built a scale model of his project. While it looked rudimentary, he used it for an engaging discussion that showed how much he believed in what he was saying.

To sum up, thorough preparation and practice lead to more successful presentation.

Jim DeSena is the author of "The 10 Immutable Laws of Power Selling – The Key to Winning Sales, Wowing Customers and Driving Your Profits Through the Roof," McGraw-Hill, a Forbes Book Club Selection.

DestinationCRM.com recommends it as "Required Reading—a page turner filled with case studies, examples, methods, stories and more." For insights on the book, free articles and reports, visit SalesLeaders.com. Over the last 15 years Jim DeSena has spoken before 1500 audiences, including NJ Society of Professional Land Surveyors and the Pennsylvania Society of Land Surveyors, on the subjects of effective presentation, leadership, sale, communication and customer service. He recently relocated to Florida. He can be reached at 1-800-4321-WIN and speaker@salesleaders.com

Reprinted from the Florida Surveyor May 2004

Why Fence Rails are 11 Feet Long

By William Adler

In the middle of the eighteenth century, near the end of the French and Indian War, brothers John and Samuel Pringle, members of the Virginia Militia, were encamped at Fort Pitt, where the Allegheny and the Monongahela rivers join to form the Ohio. (“y were Virginia soldiers stationed in western Pennsylvania? The Mason-Dixon Line had yet to be surveyed, and the areas that is now Pittsburgh was believed, before the surveyors proved otherwise, to lie within Virginia’s boundaries.)

The Pringles were not “happy campers,” and in 1761, they deserted, fleeing south into the largely unexplored, uninhabited upper Monongahela River basin. IN 1764, they ended up at the mouth of Turkey Run of the Buckhannon River, three miles north of what is now the county seat of Upshur County, Buckhannon. For three years they took shelter there in the hollow of a huge sycamore tree, becoming the first “settlers” in what is now central West Virginia. I won’t go further into their personal story; the inquisitive reader can find it in several books devoted to the early western Virginia history.

Many years after the Pringles left their primitive home and reentered civilian life (never prosecuted for desertion), someone now unknown explored the hollow sycamore and reported that the cavity at its base was wide enough to turn a fence rail inside without striking the walls. All well and good, I thought, but how long is a fence rail? The answer I found is a captivating statistic, with some surprising ramifications.

As Mr. Barlow has written, split rail fences go back to America’s earliest colonial times. They set off the boundaries of the land ownership, contained domesticated animals and prevented the invasion of wild ones, and protected cropland. Their essentiality to an orderly community brought about laws and specifications for construction. The regulations Mr. Barlow found were limited to fence height and imperiousness. They did not speak to fence rail length.

There were, however, rules pertaining to rail length in some jurisdictions, including New England. A fence rail was to be exactly 11 feet long, and even where the law did not require a specified length, 11-foot-long rails became the standard. Interestingly, the man who examined the Pringle brothers’ tree home used the length of fence rails known to him to estimate the circumference of the sycamore, which he put at “about 30 feet.” That is close enough to the true circumference of 34.54 feet, if the tree’s diameter was indeed 11 feet.

The fascinating reason why fence rails were 11 feet long has been pretty much forgotten and was difficult for me to track down. Why was the “odd” figure of 11 feet specified in the law? Would not the decimal number of 10 feet have been more likely, or a good old English dozen feet?

The answer is twofold. First, 11 feet is one-sixth the length of a surveyor’s chain, and no other practical rail length divides evenly

into 66. The second and far more important reason is this; Early America had few surveyors and likely fewer surveying instruments. This would have been especially true in the hinterlands. The land was bought and sold and sooner or later divided into smaller parcels. No, doubt, many times property dimensions were determined by pacing, which may account in part for the early use of the “X acreage, more or less,” found in almost all deeds. But both for fair real estate assessment and taxation, and to minimize property boundary lawsuits, civil authorities, for lack of a surveyor, needed a different and more precise way than pacing to measure off land. A split rail fence of the zigzag kind, they found, with specified dimensions and exacting rules for its laying up, could be used to determine a piece of land’s acreage with a high degree of accuracy. Here’s how.

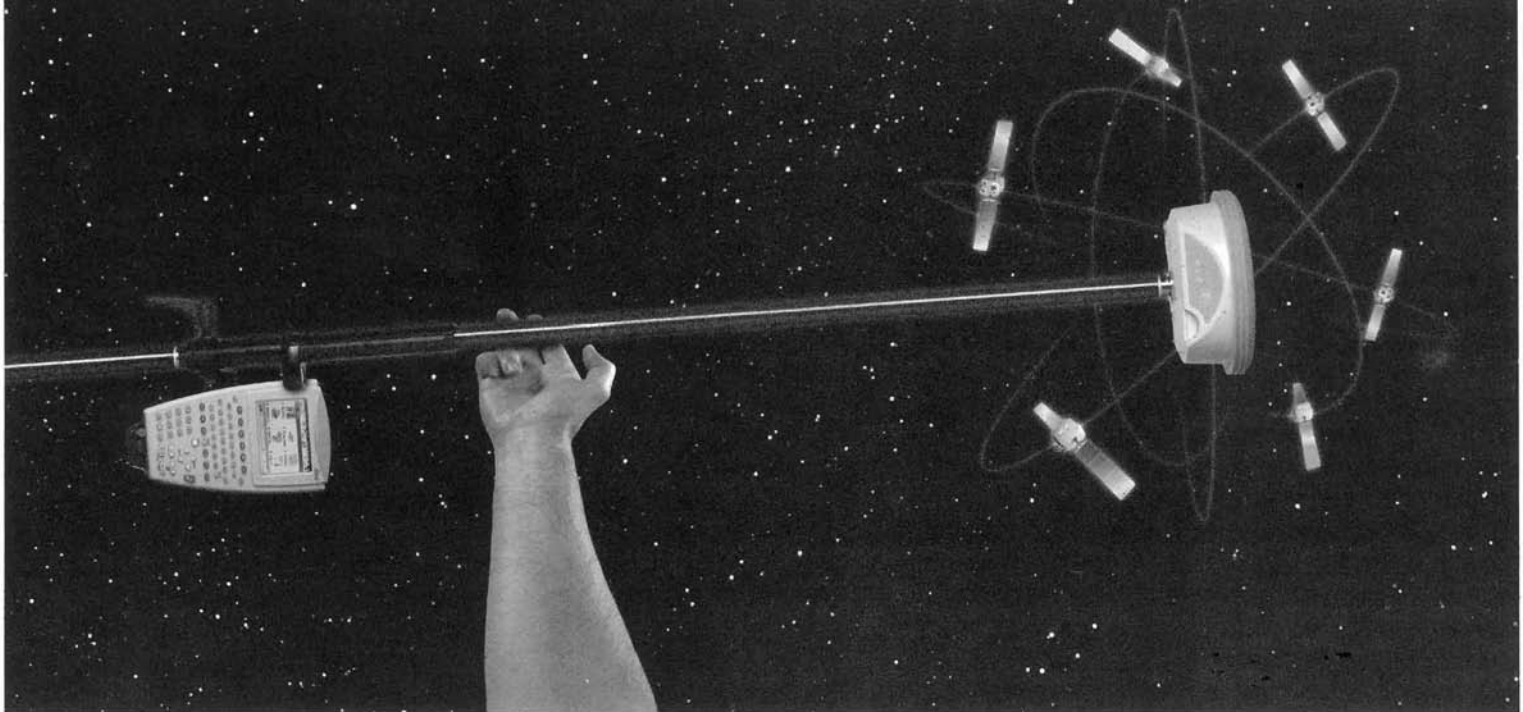
Eleven-foot rails were to be laid up in sections, with preceding and succeeding segments exactly perpendicular to each other and overlapping six inches at the joints, leaving a clear span of ten feet per section. One could, then, visualize an isosceles right angle triangle, with two fenced sides “a” and “b”, each 10 feet in length. The length of the open, unfenced side of the triangle, “c” the triangle’s hypotenuse that would run the property’s perimeter – could readily be determined by the Pythagorean formula of $a^2 + b^2 = C^2$. One hundred plus 100 is 200; the square root of 200 is 14.14. For ease of calculation, the 14 hundredths was dropped, creating a very small error of less than one percent, but one in favor of the buyer, if the matter at hand was a property sale.

Thus, at a time when surveyors were scarcer than hen’s teeth, the dimensions of fenced land, assuming a reasonable rectangular shape and a flat, rolling or hilly surface, could be determined by anyone with a knowledge of simple arithmetic. He would count the triangles making up the length of the plot and those adding up to the width, then multiply each of the numbers by 14. The obtained sums, multiplied together, would determine the acreage in square feet. Dividing that figure by 43,560 would produce the land’s size in acres. For example, a two-acre plot could be set out 21 triangles long by 21 triangles wide and be better than 99 percent on the mark.

On my property in Lewis County, as part of one boundary, I have 14 sections of very old-at least 80 years-solid chestnut rail zigzag fence in excellent condition. Every rail measures 11 feet. I have checked old rails at other locations all are 11 feet. Rails being manufactured today for post and rail fences are usually 11 feet long. Their beveled ends, inserted in holes in the vertical posts, are six inches long, producing 10-foot-spans. Interestingly, based on my interviews with some of them, today’s fencing fabricators, in cutting their rails in 11 foot lengths, do not know they are following a centuries-old tradition.

Reprinted from *Coordinate* (New Jersey), Summer 2002.
Also seen in “Bearings” (Maine), Spring 04 and *Missouri* i September 2004

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Surveyor Errors, Admissions and Corrections

By: R.L. "Rick" Hudson – L.S., Ehermopolis, Wyoming

SOMETHING IS WRONG

We are all somewhat familiar with errors and omissions, the insurance that reportedly protects us against claims arising from our professional oversights. The often heard comment regarding such coverage, "I should probably have it but I can't afford it", is used by most of us to dismiss the subjects of errors, the polite word for blunders, alias mistakes.

Based upon personal experience and with the intent of discussing the methods available to us for correcting such mistakes, I invite you to join me on another literary jaunt into the reality of earning a living as a professional land surveyor in Wyoming.

NOT IF – BUT WHEN

The inevitability of creating and publishing some sort of mistake in the performance of a land survey rests upon the premise; not if, but when. Sooner or later we all succumb to fallibility by producing anything from a transposed bearing in a description to an erroneous corner monument in the ground. Admittedly, most mistakes are discovered and corrected prior to certification of the survey. That, gentlemen and ladies, affirms our ability to assure quality control within our profession.

Proofreading, recitation and comparison with computation sheets are applicable to descriptions and plats. Positional re-observation and measurements to adjacent monuments are proven methods for verifying correct layout of points and corners.

In those cases where the document is reviewed and approved, such as a subdivision plat, there is false security in the presumption that "they will catch and red line any mistakes". Personal experience has proven most mistakes, particularly wrong numeric data, were not detected until after the plat had been filed, all the lots were sold, and my wife had made vacations reservations in Acapulco.

IF IT'S BROKEN – FIX IT

Of the three phases; creation, admission, and correction of a specific mistake; the one most anguished is often the admission to ourselves. Some of us have been observed ranting, raving or kicking at the dog during this phase. I believe such reluctance to admission is founded upon our self reliant attitude, a positive trait, and our obsession with productivity. Causing a mistake is inevitable; accepting responsibility for the mistake is obligatory and humbling; correcting the mistake is indispensable.

Within the past few years an unprofessional practice has taken root and, while not widespread, has the characteristics of a noxious weed. I offer the following typical example, not founded upon any specific instance: Surveyor Beta recovers a reestablished corner monument set by surveyor Alpha, finds no recorded documentation pertaining to such reestablishment, questions the positional integrity or legitimacy of the monument and makes inquiry to surveyor

Alpha. Surveyor Alpha responds either by: 1) suggesting surveyor Beta ignore or remove the monument, without offering adequate (or any) explanation, or; 2) PLS B returns to the site and finds the monument has been removed, receiving no further communications from his peer.

Professional courtesy and ethical considerations notwithstanding, such practice carries the implication of fraud, unless surveyor Alpha provides a refund and explanation to his client, and corrects any subsequent records which were based on the self-admitted erroneous location.

THE SOONER – THE BETTER

Once the mistake has been discovered timely correction is essential, for several reasons. Firstly, state statutes mandate time limits between discovery and resolution of certain situations within our profession. Particulars appear in W.S. 1-3-107, et seq.

Secondly, intervening conveyances will involve additional parties, and original parties can become difficult or impossible to contact. I once had to send Corrective Warranty Deeds to the Ryukyu Islands. For obvious reasons, fewer affected parties equate to less time, effort and expense in correcting erroneous survey work.

Thirdly, the longer we procrastinate, the more reluctant we become towards completion of any undesirable task. Once again, acceptance is a key ingredient to a timely solution. Sometimes a little humor can lighten the burden – better to laugh at yourself for causing a mistake, than to be ridiculed by others for being stubbornly stupid.

CARE AND FEEDING OF RECORDED DOCUMENTS

The ability to file various survey documents in the public record allows our work to be directly accessed by other professionals and the general public. This is mutually beneficial since it enhances the credibility of our work, by disclosure and publication of facts and figures, and allows such data to be provided in a structured (read user-friendly) format, without need of personal contact.

With the benefits of such recording comes the responsibility to insure quality control, specifically the tasks of correcting mistakes without our own work, and disclosing mistakes found in previously recorded documents bearing the certification of other registrants.

The alleged unethical consideration, paraphrased as "reviewing another surveyor's work without disclosure of such review to them", is easily overwhelmed by the requirement to protect the "health, safety and welfare of the public". Corrections are in everyone's best interest, regardless of who discovers them. As a practical matter; upon filing within the public land records, the description, record of survey map, subdivision plat, corner record report or other document bearing your certification, can and will be

...continued Page 20

...continued from Page 19

scrutinized by all manner of persons. I prefer the person who delivers the bad news be another local land surveyor rather than a corporate attorney from back east.

Stories are retold, without doubt based on actual cases, wherein an "original" corner monument mysteriously sprouts from the ground overnight. Likewise in the days of ink on linen plats, numbers have been known to metamorphose after filing, although this phenomenon has never been observed in real time. As we have seen with secret corners and private files, these practices are relegated to yesteryear.

NOT ALL MISTAKES ARE CREATED EQUAL

Since mistakes come in an assortment of types and sizes, it is logical that corrections be appropriately configured to the specific situation. A simple typographical error, particularly where the intent is not compromised, may be disregarded in some instances. I base this on the concept that sometimes the remedy is worse than the ailment. The act of correcting an insignificant error by recording yet another document in the public record will be regarded as overkill by all except the true perfectionist. For example; a bearing of S 45 degrees 00 minutes E appears as S 45 degrees 00 minutes e, or a distance of 123.45 feet appears as 123,45 feet. While admittedly incorrect, the intent of the call is still intact.

Nearly all other typing errors or editing errors must be corrected; including transposed, omitted or repeated data such as bearings, distances, areas, elevations, coordinates or any other value representing a physical measurement.

Correcting an erroneous corner monument position can be as painless or as painful as we choose to make it. Since corners are often set using radial methods, or by side shots from control points, the opportunities for wrong placement of monuments are always lurking nearby. Again, based on personal experience, they increase exponentially with wind speed, snow density, darkness and client assistance. Moving the monument and re-filing the documentation as soon as possible seem to work best – the longer we wait, the more self-inflicted grief we experience.

DULY SWORN ON OATH ACCORDING TO LAW

Wyoming law provides an effective tool for us to correct mistakes, the affidavit. While no particular format is mandated, specific content is set forth in the statute (W.S. 34-11-101). An effective "Affidavit To Correct Errors", or similarly titled document, contains all the pertinent information to set the record straight. Adequate land location and ownership identification, recitation of the record document filing information, the specific erroneous and corrected items, and acknowledgment of the instrument are essential elements of such an affidavit. Specifically, as stated in item (2) of the above mentioned statute, "The affidavits shall include a description of the land, title to which may be affected by facts stated in the affidavit, and shall state the name of the person appearing by the record to be the owner of the land at the time of recording of the

affidavit...."

Similarly; in those situations where a State of Wyoming Corner Record (W.S. 33-29-140, et seq.) has been filed, a "Corrected...Record" version must be subsequently filed to set the record straight. A statement such as "reset the monument in its correct location" leaves far too much to speculation. A thorough explanation, again including reference to the original document, will allow us to sleep better upon return from the county clerk's office.

NO NEWS IS NOT GOOD NEWS

Upon discovery of a mistake, a reasonable length of time for correction is necessary. As previously stated, sooner works better than later – taking into account logistical considerations. While there are few, if any, life and death situations resulting from land surveying mistakes, there are instances that require immediate attention. Mutual cooperation is expected, certainly between fellow registrants.

When informing of a mistake, provide enough information so that the other surveyor is aware of your need to have the situation rectified. The classic example – your controlling corner monument is holding up my survey, rephrased for civility of course, may be appropriate. On the other hand many other corrections, being far less urgent, should be expected to take longer.

When notified of a mistake it is best to remain calm and be cooperative as possible under the circumstances. Personal attention to the matter, including notification that the correction has been completed, benefits all parties. I use a form titled "Error Notification" for this purpose.

Failure to respond, or to respond defiantly, is often the first step down the road leading to a formal complaint.

IN CLOSING...

Mistakes, politely called errors, are as much a part of land surveying as are lost corners and dead batteries; to be avoided if possible but to be dealt with when, not if, they are discovered. We have proportionate measurements for the corners, charger for the batteries and a positive attitude and procedure for correcting errors.

Since most of them are discovered prior to certification, their correction is usually a private matter, involving only the registrant and staff. Those that escape detection until within the public record must be corrected using more formal and ethically correct procedures. Not surprisingly some lay dormant for decades, and then erupt as though related to a Yellowstone geyser. In each case, the sooner the mistake is corrected after discovery, the less serious the consequences resulting from it.

Since perfection is humanly impossible; each of us, as land surveyors, must possess and utilize the appropriate tools for coping with our errors, admissions and corrections.

As seen in Lines & Points, (Wyoming) January 2005

Historical Notes From The Ames Instrument Company

Very little is known about how the surveyor worked in the field. The following article is from "The Penny Magazine" (Society for the Diffusion of Useful Knowledge), published in England on August 1, 1840. It was written by an English surveyor after his trip to the New World. While this survey was in lower Canada, conditions must have been similar in the United States. It offers interesting insight into how the field work was performed in times gone by.

"Having spent a second day in making some further exploration and getting our camp a little into order, on the third day I prepared to run our first line of the township that had been previously surveyed, which was the front line of our survey: and employing a two-rod chain (four-rod ones do not answer for the rough woods). I found that in chaining 960 chains (six miles) we varied from one old measurement only four yards, or eight-elevenths of a rod. This was very satisfactory: for as it was desirable that the corners or angles of the lots I was about to survey should correspond with the corners of the lots in the old survey on the opposite side of the division line, I now found there would be no difficulty on this head."

"I next chained one side of my own block, staking, as I went along the points from which the cross-lines were to be taken, then the cross, or end-line, if I may so call one side of a square: and have returned to the old township line, I then ran the other side-line, meeting the end of the last line where I left it, uniting the two lines without either of them varying from the correct length above one-third part of a rod, which I considered good work with a plain seven-inch compass."

"But the method of chaining in the woods remains to be explained: the surveyor (in the instance alluded to it was myself) carries the compass slung under his left arm, and covered with a brass cover or case, except when in use, the sights projecting inwards, one in front, and the other in rear of his person, in order to prevent accidents happening to them where there is a difficulty in creeping through the thick under wood. The compass stand has not three legs, as is usual with mathematical instrument of this sort in open countries, but consists of a single stout staff, well shod with iron pointed with steel, which is stuck firmly in the ground when the surveyor has a sight to take, the head of which is supplied with the ordinary ball and socket on which such instruments traverse.

"Having planted his compass at the commencement of the line he intends to run, and having arranged the sights to the proposed course or particular degree, when the under wood is not thick, it frequently happens that a tolerably clear way may be seen among the trees to a distance of ten or twenty chains, until some stout tree appears to stand upon the exact line that has to be run, and interrupts the view. This tree the surveyor particularly notices, for he calls it a sight-tree; and having slung his compass under his arm, pulled up his compass staff, and called out "chain" (as a signal for the chain-men to commence measuring), he sets off ahead of the chain-men, taking the axe-man along with him, who here and there cuts down small saplings that seem in the way of the chain-men, which serves also to mark the line; and having reached the sight-tree, on which he has kept his eye on the whole

way, he goes to the front side of it, and there resets his compass, during which the axe-man is engaged in marking the tree in a particular manner (three, four, or five notches both in the front and rear); while the surrounding trees, particularly the young ones, are scored with a similar number of notches on the side of each looking inwards, or toward the sight-tree. The trees thus marked are called witnesses, and the object in marking them in his manner is, that in case of the sight-tree being cut or blown down hereafter, its place may be nearly ascertained by the position of the witnesses.

"When the chain-men have measured up to the tree in question, the distance, as well as the sort of tree, is noted in the surveyor's field-book. By this time a new object has been taken, and forward goes the surveyor and the axe-man again. He never, however, heads the chain-men so far as to be out of hearing of anything either party may have to communicate; for in order to prevent mistakes of ten chains, he carries a tally-strap round his waist, with sliding rings or pieces of horn upon it; so that when the leading chain man has got to the end of ten chains, and consequently used his whole number (10) of pins or arrows, he calls out to the hind chain-man "tally," the reply to which from the hind chain-man "tally one," or "tally fifteen," or any other number, as the case may be; upon hearing which, the surveyor counts the tallies he has passed from one side of his belt to the other, to ascertain if the chain-man is correct in his number of tallies, he, well as the surveyor, carrying a strap round his waist with the number of tallies upon it. If there be no error in counting the number, no remark is made; but if the tallies do not correspond, the matter has to be examined into. It sometimes happens that the underwood is so thick, that it is impossible to see four rods ahead, in which case the chain-men have to assist the axe-man in opening a track sufficiently wide for the surveyor to get a sight through; this, however, makes the work progress very slowly.

"In the survey alluded to, we found three or four cedar swamps, marshy pieces of ground where those trees grow in such close contact, that it is next to impossible to squeeze through among them. Besides, the trees being so close to each other, the ground is generally so boggy that a person will sink knee-deep; and what renders these places still more dreary and dismal the branches of the trees are so intermingled with each other, that the brightest sun that ever shone cannot penetrate the dark foliage one-third of the distance from the top to the ground; so that when fairly within a tolerable-sized cedar-swamp, though at noon on a cloudless summer day, you find yourself in a pitchy darkness. It is impossible, therefore, to run a line with any degree of accuracy through such places until the axe-man, perhaps up to his knees in mud, has exercised his calling, which renders the surveying of a cedar-swamp a slow and disagreeable business; and, when the work is performed, such tracts are absolutely worthless, as no settler, while there is another acre of land to be had, would think of attempting the cultivation of the cedar-swamp."

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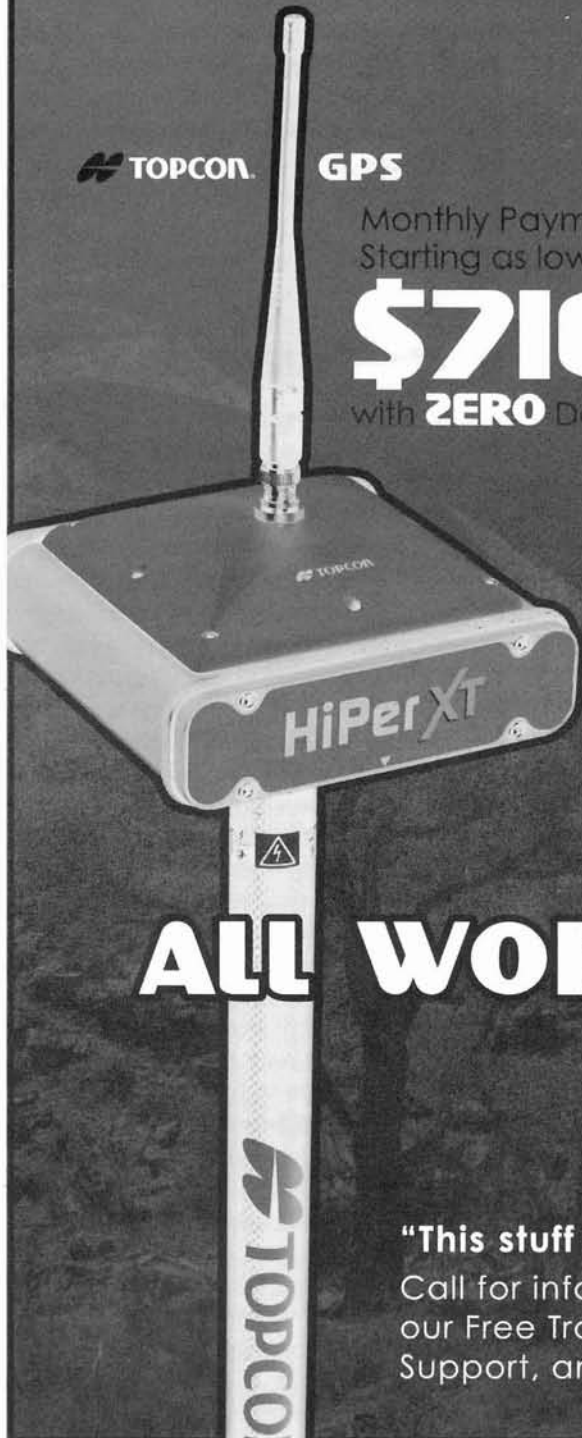
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HOW DID WE SURVIVE?

Looking back; it's hard to believe that we have lived as long as we have.

My mom used to cut chicken, chop eggs and spread mayo on the same cutting board with the same knife and no bleach, but we didn't seem to get food poisoning.

My mom used to defrost hamburger on the counter AND I used to eat it raw sometimes too, but I can't remember getting E-coli.

As children we would ride in cars with no seat belts or air bags. Riding in the back of a pickup truck on a warm day was always a special treat.

Our baby cribs, toys and rooms were painted with bright colored lead based paint. We often chewed on the crib, ingesting the paint. We had no childproof lids on medicine bottles, doors, or cabinets, and when we rode our bikes we had no helmets.

We drank water from the garden hose and not from a bottle. We would leave home in the morning and play all day, as long as we were back when the streetlights came on. No one was able to reach us all day. We played dodge ball and sometimes the ball would really hurt. We played with toy guns, cowboys and Indians, army, cops and robbers, and used our fingers to simulate guns when the toy ones or my BB gun was not available.

We ate cupcakes, bread and butter, and drank sugar soda, but we were never overweight, we were always outside playing. Little League had try-outs and not everyone made the team. Those who didn't had to learn to deal with disappointment. Some students weren't as smart as others or didn't work hard so they failed a grade and were held back to repeat the same grade. That generation produced some of the greatest risk-takers and problem solvers.

We had the freedom, failure, success and responsibility, and learned how to deal with it all. Almost all of us would have rather gone swimming in the lake instead of a pristine pool (talk about boring), the term cell phone would have conjured up a phone in a jail cell, and a pager was the school PA system. We all took gym, not PE... and risked permanent injury with a pair of high top Ked's (only worn in gym) instead of having cross-training athletic shoes with air cushion soles and built in light reflectors. I can't recall any injuries but they must have happened because they tell us how much safer we are now. Flunking gym was not an option... even for stupid kids! I guess PE must be much harder than gym. Every year, someone taught the whole school a lesson by running in the halls with leather soles on linoleum tile and hitting the wet spot. How much better off would we be today if we only knew we could have sued the school system.

Speaking of school, we all said prayers and the pledge and staying in detention after school caught all sorts of negative attention for out the next two weeks. We must have had horrible damaged psyches. I can't understand it. Schools didn't offer 14 year olds an abortion or condoms (we wouldn't have known what either

was anyway) but they did give us a couple of baby aspirin and cough syrup if we started getting the sniffles. What an archaic health system we had then. Remember school nurses? Ours wore a hat and everything. I thought that I was supposed to accomplish something before I was allowed to be proud of myself. I just can't recall how bored we were without computers, Play Station, Nintendo, X-box or 270 digital cable stations.

I must be repressing that memory as I try to rationalize through the denial of the dangers that could have befallen us as we trekked off each day about a mile down the road to some guy's vacant 20, built forts out of branches and pieces of plywood, made trails, and fought over who got to be the Lone Ranger. What was that property owner thinking, letting us play on that lot? He should have been locked up for not putting up a fence around the property, complete with a self-closing gate and an infrared intruder alarm. Oh yeah... and where was the Benadryl and sterilization kit when I got that bee sting? I could have been killed! We played king of the hill on piles of gravel left on vacant construction sites and when we got hurt, Mom pulled out the 48-cent bottle of Mercurochrome and then we got our butt spanked. Now it's a trip to the emergency room, followed by a 10-day dose of a \$49 bottle of antibiotics and then Mom calls the attorney to sue the contractor for leaving a horrible vicious pile of gravel where it was such a threat.

We didn't act up at the neighbor's house either because if we did, we got our butt spanked (physical abuse) here too... and then we got butt spanked again when we got home. Mom invited the door to door salesman inside for coffee, kids choked down the dust from the gravel driveway while playing with Tonka trucks (remember why Tonka trucks were made tough ... it wasn't so that they could take the rough Berber in the family room), and Dad drove a car with leaded gas.

Our music had to be left inside when we went out to play and I am sure that I nearly exhausted my imagination a couple of times when we went on two-week vacations. I should probably sue the folks now for the danger they put us in when we all slept in campgrounds in the family tent. Summers were spent behind the push lawn mower and I didn't even know that mowers came with motors until I was 13 and we got one without an automatic blade-stop or an auto-drive. How sick were my parents? Of course my parents weren't the only psychos. I recall Donny Reynolds from next door coming over and doing his tricks on the front stoop just before he fell off. Little did his Mom know that she could have owned our house? Instead she picked him up and swatted him for being such a goof. It was a neighborhood run amuck.

To top it off, not a single person I knew had ever been told that they were from a dysfunctional family. How could we possibly have known that we needed to get into group therapy and anger management classes? We were obviously so duped by so many societal ills, that we didn't even notice that the entire country wasn't taking Prozac! How did we survive? Better than we do now!!!

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HELP!

by Ronald E. Koons, RoSaKo Safety

Those of you who were at this year's convention know that Sandee and I recently received a contract from the NSPS Foundation to produce a Safety Training Program for Surveyors. This program will consist of a video portion approximately one hour long and a brief student workbook to accompany the video. This endeavor has been the results of over 4 ½ years effort starting when Gary Kent was ACSM President. We are very pleased to have been chosen by the Foundation to produce this valuable program for all surveyors. It will be distributed throughout the United States and I am certain into some of the Canadian Provinces. We hope that surveyors really get on board with this monumental effort to help with safety in this profession.

The video portion of the program will have three separate segments. The first portion will be a general section that covers Woods, Field, and Water Safety for Surveyors. Many of you have the opportunity over the years to attend one of our presentations on this topic. This section will cover the basic safety items that all surveyors will need to know before going out in to the field. It will also be a great tool for many crews who may never have had the opportunity to get training in these important areas. Our second section will cover the basics of Permit Required Confined Spaces. It will assist all crews and office personnel in understanding the exact definition of a Confined Space and what basic steps must be taken to protect all workers who enter or even open confined spaces. Our third section will cover traffic safety for surveying field crews. Using the Manual on Uniform Traffic Control Devices, Part VI as our guideline, we will cover as much traffic safety as time constraints permit. We plan on including scenes and information for everything from low volume two-lane county roads to multi-lane interstate highways.

Here is where the "Help" from our title comes in to play. As of this time we are anticipating that all of the video portion will be shot in Indiana. We certainly have the potential to get most of the scenes we will need in the vast difference in terrain from the northern counties to the Ohio River. At some point in time I will be approaching many of you for assistance in providing crews and expertise in the production. We will be utilizing equipment from many of our sponsors to have the ability to show "state of the art" technology. We will need experienced field crews to use as "actors". In addition to all of the outdoor scenes that correspond with normal surveying activities we will also be shooting some scenes inside office buildings to cover basic office safety items.

The other help we will need is in your personal experiences in field safety. If you or any of your crew members have had unusual incidents that caused injury...or could have, let me know about them. I am looking for anything. From stories about how that mean bull chased a crew up a tree to stations getting run over by errant motorists, I would like to hear from you. This will help with some of the pure safety items that aren't covered under OSHA, the MUTCD, or other regulations. We all know that safety in the field starts with good, basic common sense and unfortu-

nately most government regulations don't seem to have that as a parameter. My email address is rosakosafety@prodigy.net.

Sandee and I thank all of you in advance for what I know will be a lot of help in producing this safety training program. We were fortunate in our last endeavor of this type to win four national awards for the production. I hope we can say that a couple of years down the road about this program!

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March 7-8, 2006

2006 Indiana GIS Conference, Crowne Plaza Hotel & Conference Center, Indianapolis, IN - For more information contact Indiana Geographic Information Council, (317) 234-2924

April 5-7, 2006

Purdue University Surveying School, three day short school covering surveying fundamentals, land surveying, and advanced topics in geomatics. For further information go to their website. http://www.ecn.purdue.edu/Geomatics/SurveySchool/SurveySchool_Main.html or contact: Land Surveying and Geomatics Engineering Program, Purdue University, 550 Stadium Mall Dr., W. Lafayette, IN 47907 (765) 494-0786 Fax (765) 496-1105 email: steven@purdue.edu

April 8, 2006

ISPLS Board of Directors meeting, Headquarters, Indianapolis 9:00 a.m.

April 14, 2006

ISPLS Spring Seminar, Rule 12 Update and Review (6 Mandatory Approved), Speaker: Perry Cloyd, PLS, Location: Holiday Inn Conference Center, Columbus, Indiana

April 14, 2006

State Board of Registration for Land Surveyors meeting, Government Center South, Indianapolis, Room W072

April 21-26, 2006

ACSM Spring Conference, Caribe Royale Resort, Orlando, FL, www.acsm.net

April 28, 2006

ISPLS Spring Seminar, Rule 12 Update and Review (6 Mandatory Approved), Speaker: Perry Cloyd, PLS, Location: Holiday Inn, Anderson, Indiana

May 1-5, 2006

ASPRS 2006 Annual Conference, Reno Hilton Hotel, Reno, Nevada. www.ASPRS.org/reno2006

May 9-11, 2006

GeoSpatial World 2006, New Orleans, LA. Sponsored by Intergraph Mapping and Geospatial Solutions for Intergraph customers and individuals. www.geospatialworld.com

May 12, 2006

State Board of Registration for Land Surveyors meeting, Government Center South, Indianapolis, Room W072,

May 20, 2006

ISPLS Board of Directors meeting, headquarters, Indianapolis 9:00 a.m.

August 7-11, 2006

26th ESRI User Conference and 4th Survey and GIS Summit, San Diego, CA www.esri.com

September 26-29, 2006

URISA (Urban and Regional Information Systems Association) Annual Conference and Exposition. Vancouver, Canada. www.urisa.org

January 17-19, 2007

ISPLS Annual Convention, Indianapolis Adam's Mark Hotel Airport, Indianapolis, Indiana

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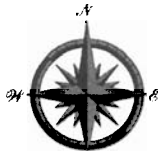


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