

HOOSIER SURVEYOR

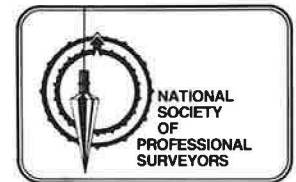


QUARTERLY PUBLICATION OF THE
INDIANA SOCIETY OF
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VOLUME 22
NUMBER 4
SPRING 1996



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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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PRESIDENT'S THOUGHTS

by Richard L. Hudson, Valparaiso, IN

Many events have taken place over the last 3 months since my last penning of the "President's Thoughts". First thing I have to say is regarding my last comment in the winter "Thoughts". Dianne, "I still need to get the next one to you on time." I will try.



On February 22nd and 23rd I represented our Society as a guest of the Illinois Professional Land Surveyor's Association at their annual convention in Springfield, Illinois. I attended

sessions presented by Dr. Ben Buckner entitled "Surveying Measurement and Instrument Error" and "Analysis of Truth and Surveying", by Walt Robillard entitled "Ethics and Legal Responsibilities" and by John Keen entitled "Old Fence and Property Lines" and "ALTA/ACSM Land Title Survey Standards - The Cadillac of Surveys." That's right, three nationally known speakers in the field of surveying at one convention. I also attended the Illinois Annual Banquet at which time the winners of their society scholarships were announced and recognized by the membership and guests. It was a great time for the students. At this time I would like to interrupt and say that ISPLS is planning to start this procedure at our 1997 convention in South Bend.

On behalf of myself and ISPLS, I would like to thank Past President E.R. Gray III, President-Elect Perry Cloyd and Vice-President Chris Marbach for attending the Ohio, Kentucky and Michigan convention, believe it or not, there is only so much of me to go around and these three kept me from spreading myself too thin and still keep employed.

On April 18th, the ISPLS Board of Directors met at "The Trails" in West Lafayette, followed by the Purdue University Land Surveying Recognition Banquet, which was then followed by a membership meeting of the Indiana Surveyor's Historical Society. At the ISPLS Board Meeting, the Directors voted to spend up to \$7500 to acquire, for future display, certain pieces of surveying equipment which were being auctioned off by Purdue University on Saturday, April 20th. I would like to thank Purdue student Brad Ott for coordinating our efforts at the auction and to announce that several pieces of equipment were purchased and for less than the amount which was allocated by the Board. I would also like to congratulate the fifteen students who will be graduating in May, August and December and say "Good Luck" in your future endeavors.

Next, I would like to thank the ISPLS Education Com-

mittee for what I felt was an excellent, well attended Spring workshop which was held in Columbus, Indiana on April 19th. The seminar entitled "Deeds and Deed Descriptions - The Basis for Retracement" was presented by Andrew C. Kellie, PLS of Murray State University, Kentucky. I understand that many who attended were unhappy the examples used and discussed were from Kentucky and not Indiana. In my opinion, there is still much to be learned from discussing other states' cases, and Kentucky does adjoin Indiana. I would agree that another seminar citing Indiana examples would be helpful. Do I hear any Indiana volunteers?

Lastly, I attended the ASPRS/ACSM Convention which was held in Baltimore, Maryland, April 22-25, and represented ISPLS as an Affiliate President (that's what my name banner said). Between the special forums, meetings and exhibit hall, it made it difficult for me to be on vacation. Don't worry, I did visit my family (yes, I'm from Baltimore) and I did manage to attend six high school, minor league and major league baseball games (yes, I'm a baseball junkie). E.R. Gray was hard at work representing ISPLS as "NSPS Governor". I can tell you it was not a vacation for E.R., and he deserves our thanks.

As you can see I and ISPLS have been busy over the last three months. I can also tell you that our committees have been busy. I hope to have more to say about them in the future issues of the Hoosier Surveyor, but if you can't wait to find out contact the Committee chairs or, better yet, attend a Board Meeting.

Professionally yours,

Richard L. Hudson, P.L.S.

MONEY MANAGEMENT FIRM HIRED

After an extensive search and much due diligence, the Board of Directors voted January 20, 1996 to hire Indianapolis money management firm Wallington Asset Management, Inc. to handle ISPLS assets. As a service to the organization, Wallington Asset Management is available to offer independent investment counsel to members with financial questions/concerns either professional or personal. Please direct your questions to our consultant, Chris Marten at 317-575-8670. Call and see if the return on your Pension 401(k), individual funds, etc. is what it should be!

ISPLS BOARD OF DIRECTORS MEETING HIGHLIGHTS

by Dianne Bennett, Executive Director

January 17, 1996

The ISPLS Board of Directors held a meeting on Wednesday, January 17, 1996 at the Holiday Inn Airport, Indianapolis. President Gray called the meeting to order at 1:38 p.m. Guest present was David Pilz. The minutes and treasurers report were reviewed and approved.

By-Laws - Written revisions to the model by-laws from Ron Hansell were submitted and discussed. Motion made and passed to return revisions and minutes from 10-27-95 meeting to Ron Hansell for incorporation into new by-laws.

Convention Coordination - Doug Herendeen reported on the 96 and 97 conventions.

Education - The October 13th seminar co-sponsored by Hoosier Hills Chapter ISPLS was discussed.

AES Group Seminar on GPS was reviewed and discussed.

Doug Herendeen on behalf of Education Committee, submitted a revision of revenue split. Motion was made and passed to adopt revenue split recommendations.

Ethics - Submittals have been made to the Ethics Committee.

Finance - ISPLS board of Directors have interviewed two money managers to handle ISPLS assets. Motion was made and passed to retain Wallington Asset Management. Motion was made and passed to have the Finance Committee to have Wallington advise how to proceed with our assets.

Government Affairs - Gary Kent, chairman, submitted a letter outlining activities assigned at the board meeting 10/27/95. Mo-

tion was made and passed to table item #1, "City of Indianapolis - Surveyors certifying sanitary plans" until the next board meeting. Motion was made and passed to follow recommendation of Item #2, "Right of Entry". Motion was made and passed to support recommendations of Item #3, "Lengthen Lien Rights". Item #4, "Indexing of Surveys", a motion was made and passed that E.R. Gray contact the Association of Indiana Counties Education Committee on behalf of ISPLS and report results of meeting to board.

Headquarters - The fax machine at headquarters needs to be replaced. A motion was made and passed to have Headquarters committee to make decision on new fax machine.

Library - A catalog of all reference material in library is in the Convention booklet.

Membership - The following membership applications were reviewed and approved: Student - Eric Banschbach, Curtis Candler, Mark Wagner, Jason Sanford, Kelly Marley, Harold Adkins, Warren Akers, Raymond Spicer, James Scherzinger, Jennifer Wilson, Coralina Mitchell, Eric Deckard, Chad Hubert, Eric Meeks, Cory Earhart, Chad Clark, Beau Watkins, Steven Gillespie, Joseph Derda, Dan Bernath, Matthew Cooper, Jason Hughes, Thomas Mahon; Junior - William Dials (Reinstate), Thomas Gentry, Benjamin Kuhn, Allen Jacobsen, Terry Livingston, John Sohn, Jeffery Stenger; Member - Jerry Garrison (Reinstate), Norman Hiselman (Reinstate), David Wolf (Reinstate), Buford Payne,

...continued Page 5

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WELCOME NEW ISPLS MEMBERS

as of January 17th, 1996

Harold Adkins - Hazelton, IN - Student
Warren Akers - Vincennes, IN - Student
Eric Banschbach - Valparaiso, IN - Student
Dan Bernath - Washington, IN - Student
Susan Bodkin - Branch, IN - Junior
Curtis Candler - Vincennes, IN - Student
Chad Clark - Angola, IN - Student
Matthew Cooper - French Lick, IN - Student
Eric Deckard - Bloomington, IN - Student
Joseph Derda - New Carlisle, IN - Student
William Dials - Valparaiso, IN - Junior
Cory Earhart, Sandborn, IN - Student
Mark Esposito - Lawrenceburg, IN - Member
Jerry Garrison - Greenville, OH - Member Reinstate
Thomas Gentry - Indianapolis, IN - Junior
Steven Gillespie - Vincennes, IN - Student
Norman Hiselman - Indianapolis, IN - Member Reinstate
Chad Hubert - Tell City, IN - Student
Jason Hughes - French Lick, IN - Student
Allen Jacobsen - Lafayette, IN - Junior
Benjamin Kuhn - Seymour, IN - Junior
Terry Livingston - Paoli, IN - Junior
Thomas Mahon - W. Lafayette, IN - Student
Kelly Marley - Vincennes, IN - Student
Coralina Mitchell - Claremont, IL - Student
Eric Meeks - Elizabethtown, IN - Student
Ronald E. Miller - W. Lafayette, IN - Associate
Buford Payne - Cincinnati, OH - Member
Jason Sanford - Vincennes, IN - Student
James Scherzinger - Tell City, IN - Student
John Sohn - Greenfield, IN - Junior
Raymond Spicer - Vincennes, IN - Student
Jeffery Stenger - Sunman, IN - Junior
Mark Wagner - Jasper, IN - Student
Beau Watkins - Lake village, IN - Student
Jennifer Wilson - Decker, IN - Student
David Wolf - Garrett, IN - Member Reinstate

as of February 24, 1996

Jim R. Oakley - Paoli, IN - Student
Jay K. Rhodes - Plainfield, IN - Junior
Randolph Sexton - Kendallville, IN - Member Reinstate
Dennis H. Snowman - Sumner, IL - Junior

as of April 13, 1996

Zaenkert Surveying Essentials - Okeana, OH - Sustaining
Timothy B. Kiste - Indianapolis, IN - Junior
Jayson D. Thorne - W. Lafayette, IN - Student

FBN/CBN (formerly HARN) STATUS UPDATE

The GIS/LIS committee would like to update the membership on progress towards the fulfillment of the society goal to have an updated Federal Base Network/Cooperative Base Network established for the benefit of all users of geographic data in Indiana. The contract between the NGS and the State Geodetic Advisor's Office is currently being reviewed and field work is expected to begin in the spring of, 1997. The GIS/LIS committee has been working with Dr. van Gelder, the State Geodetic Advisor, to solicit support from County Surveyors to sponsor one or more points for their counties. Any aid or encouragement you can give to your local County Surveyors would potentially be very helpful. This might be simply explaining the benefits a modern geodetic network can provide in this day of GPS and geographic information systems, not to mention future applications. After all, when much of the current network was adjusted in the 1920's and 30's who could have foreseen the uses it would support in the 1990's? County Surveyors may also need help or advice in filling out NGS forms, running third-order leveling to NGS specifications or single frequency GPS ties before the network observations begin.

At this time the GIS/LIS committee would also like to ask for the support of ISPLS members in helping bring the new network to completion. Cash donations would be gratefully accepted, of course, but there are many ways to contribute. It is estimated that each CBN point may cost up to \$3000.00, but any work volunteers do will reduce this cost. Potentially, the entire cost of a point could be offset by volunteer labor and equipment. Help is needed in several areas; reconnaissance of existing points, donation of the use of dual frequency GPS receivers for the actual network observations, and donation of the use of a vehicle and instrument operator (who will be given training in the use of GPS) for network observations. If you or your firm would like to contribute, please call or write to:

Dr. Boudewijn H.W. van Gelder
Office of State Geodetic Advisor
1284 Civil Engineering Building
Purdue University
West Lafayette, IN 47907-1284

No definite commitment is needed at this time, rather we are trying to compile a list of potential volunteers who will be contacted when the field work schedule is more definite. If you or your firm would like to make a financial contribution, it can be sent to the same address. (Please make check payable to: **Office of State Geodetic Advisor**.) Contributions will be recognized in a future edition of the Hoosier Surveyor. If you would like more information please contact Perry Cloyd at (812) 526-6209 or Tom Mahon at HERPICC 1-800-428-7639.

ISPLS MINUTES

...continued from Page 3

Mark Esposito; Associate - Ronald Miller.

Nominations & Elections - Chris Marbach, Bill Clark and Dan Woo have been elected to the Board of Directors.

Professional Practice - Sample contracts have been included in the convention packet. Professional Practice committee with Membership committee are looking at association programs. A motion was made and passed to sign up with UWI's long distance phone carrier.

Scholarship - Purdue Endowment agreement has been mailed. Indiana State Board of Registration - There may be a change in registration fees.

Indiana Surveyor's Historical Society - E.R. Gray reported that dues are needed. Also, E.R. Gray is on the National Board. NSPS Governor - E.R. Gray attended national meeting.

Old Business - ISPLS Mission Statement(s) were submitted by Dr. Gerald L. Speth for board review. A motion was made and passed to adopt statement #2. (for Mission Statement see Hoosier Surveyor Vol. 22-3)

New Business - A Purdue Student Chapter letter from Brad Ott concerning sponsoring student(s) for the National Convention was discussed by the board. A motion was made and passed to donate \$350 for sponsoring a student at the national convention. **February 24, 1996**

The ISPLS Board of Directors met on Saturday, at ISPLS headquarters. President Hudson called the meeting to order at 10:10 a.m. Guests present were Ron Murry and Bob Gross. The minutes and treasurer's report were reviewed and approved.

Officer's Activity Reports - E.R. Gray, Perry Cloyd, Chis Marbach and Rich Hudson gave reports on the conventions they attended for the adjoining states.

By-Laws - Model By-Laws prepared by Ron Hansell was discussed and minor changes made.

Chapters - Chapter reports were received.

Convention Coordinating - The 1997 Convention will be held at the Century Center downtown South Bend.

Doug Herendeen updated the board on the income and expenses for the 1996 convention.

Education - A workshop is planned for Friday, April 19th on "Deeds and Deed Descriptions" by Andrew C. Kellie. The workshop will be limited to 50 people.

Finance - A motion was made and passed to move investments to Wallinton Asset Management.

Government Affairs - Board of Directors reviewed the letter from Gary Kent over the City of Indianapolis issue. (Indianapolis Storm Water Drainage Regulations) Gary is to continue work on this issue.

Joint Society Government Affairs Committee's Dues - Board reviewed due's statement. A motion was made and passed to pay the ISPLS portion.

Headquarters - Has received a new fax machine.

Library - Plans are to meet in March to do an inventory of the books.

Membership - The following membership applications were reviewed and approved: Member - Randy Sexton (Reinstate);

Junior - Dennis Snowman, Jay Rhodes; Student - Jim Oakley.

Scholarship - Vincennes Endowment quarterly report was reviewed. Also, a set of standard questions will be prepared to ask scholarship candidates during interviews.

Collegiate/IUPUI Survey Course Study - A motion was made and approved to change the committee's name to University Cooperation.

County Surveyors - There is a bill in the legislature to bring private drains (field tiles) under the jurisdiction of the drainage boards.

Indiana State Board of Registration - Dianne has received the list of land surveyors from the board.

Julie Werner, board of registration secretary, is leaving at the end of this month.

Indiana Surveyor's Historical Society - Perry Cloyd will follow up on the 1800 map information.

NSPS Governor - Will be attending meeting the 3rd week in April in Baltimore.

GIS/LIS - Needs a representative from each chapter to make sure other counties respond to the questionnaire. Also, who has used GPS and what monuments are being used.

Old Business - Doug Herendeen submitted a proposal, at last board meeting, on splitting the fees with local chapters putting on workshops and the State putting on the convention.

New Business - Letter from Roger Woodfill reviewed.

Indiana Land Improvement Contractors Association are having a meeting March 7th to discuss certification of residential and commercial septic systems installers.

Indiana and Michigan have not defined where the state line is supposed to be. It has never been agreed upon by legislation or legal documents. Chris Marbach will follow up.

The possibilities of ISPLS going on line was discussed and more information is needed.

ISPLS MEMBER HONORED

Consulting Engineers of Indiana honors a CEI member who, as a principal of a member firm has made an outstanding contribution to the consulting engineering profession.

This year's Consulting Engineer of the Year Award was presented to **Jacob E. Hall, P.E., P.L.S.**

Since 1969, Jacob Hall has been on CEI's Board of Directors and an officer of United Consulting Engineers and Architects. He is in charge of their Administration and Human Resources. Prior to joining the firm, he was Executive Director of the Mass Transportation Authority of Marion County, Executive Director for the Metropolitan Thoroughfare Authority of Marion County, Engineer for the Indiana Department of Transportation and associated with various consulting engineering firms.

He has over twenty years of experience in detailed design of extensive projects including interstate highways, federal primary and secondary highways, municipal expressways and thoroughfares and county highways and rural roads.

Jake served as president of ISPLS in 1984.

Congratulations Jake!

PROFESSIONAL RESPONSIBILITY

by R. Stephen Hansell, P.E., P.L.S., Attorney at Law
Indianapolis, Indiana

There are three (3) primary sources for guidance in trying to keep one's slate clean with respect to claims that one has "malpracticed", or committed a breach of professional responsibility. There are additional sources to these three (such as mentors, intradisciplinary peer review, and deadly force), but it seems to me that they sort of fit in with the three primary sources. The three sources are:

The Registration Act for Land Surveyors and Rules and Regulations of the Board:

The ISPLS Standards of Practice; and
Professional Errors and Omissions Insurance

The Registration Act sets forth the basic standards which define the qualifications to practice, education, experience, and character requirements for admission, requirements for supervision and professional conduct, and the penalties for practicing without registration. The Rules of the Board (Rules and Regulations) more precisely define rights and responsibilities of registrants. One of the responsibilities is to report any conduct which the registrant has cause to believe is in violation of the Registration Act and Rules. In other words, there can be no "Conspiracy of Silence" if one is aware of another's error or omission. The standard is not "beyond a reasonable doubt" or "by a preponderance of the evidence", but reasonable cause to know or a reasonable belief--something above idle gossip. Yet, idle gossip may be sufficient to put a registrant on notice that something may be amiss. Consider that you may have stumbled across what you deem to be an inadequate survey by a fellow surveyor. If you fail to do anything about it and someone later is harmed by the offending document's inadequacies or inaccuracies, you have breached a positive obligation to the general public imposed by the Registration Act and Rules. Whether it could be legally actionable at trial depends upon the facts, the timing, the applicable Statute of Limitations or Period of Repose, etc., but it certainly can be punished by the Board of Registration.

The ISPLS Standards of Practice were published in a three (3) ring binder in 1965, and has been issued as a tri-folded brochure more recently. For those of you who recently received your ISPLS 1996 Membership Roster, consider reading more than your entry to make sure your name was spelled right. Read the By-Laws at pp. 103 to 117, including the qualifications and privileges for various grades of membership, and the Section 5. Expulsion terms. Also read the ISPLS Mission Statement. One could generally stay out of serious trouble by keeping the brief and concise Mission and Goals of the Society in mind, and taking them to heart.

As to Professional Liability Insurance, it is not only a hammer and umbrella but it also can be a very helpful learning tool. Liability Carriers such as Continental Casualty, CNA, DPIC, The Netherlands Group, Cincinnati Group, American States, USF & G, and F & D, offer substantial resources and experience in what to look for, risky areas of business and business practices, model or

suggestions for contractual provisions designed to clarify ambiguities and to avoid dashed hopes or expectations, tips to avoid the unproductive and unpleasant task of having to either abandon an earned fee or to sue a former client for payment, and even programs on stress reduction, file maintenance, and other day-to-day vicissitudes of professional practice and daily living. I am aware that some of my brothers and sisters at the Bar and that some of my Land Surveyor compatriots elect to "go bare"--without any professional liability coverage. I do not criticize that business decision, but I do pray for them when I offer my prayers that my own coverage and that of my clients is adequate for any claims made against me or them. For those who carry liability insurance coverage, read the policy. It is, after all, a contract for which you paid a premium and under which you have specific rights and responsibilities. By merely reading your Policy, you get the drift of what types of projects, misunderstandings, and situations tend to lead to professional responsibility problems. Any time you are away from your office talking to your agent or to your attorney about a dispute or claim is unlikely to make you any money--though it may save you some. The terms of an Errors and Omissions Policy can be reviewed by one who does not carry coverage at present, and you don't need to misrepresent that you are considering applying for coverage to get a sample Policy of Insurance. The review of such a Policy would be good whether you elect coverage or prefer to "go bare" and try to be the master of your own destiny. The Contract of Insurance defines what constitutes a claim and the "occurrence" of a claim, and what triggers your reporting responsibilities. If you don't follow the terms of the Contract, you have breached the Contract and the other party--the Carrier--is excused from performance of their duties under the Contract. *Ergo*, you lose twice.

Still, it is my intention to emphasize the positive aspect of Professional Liability Insurance. It is fairly obvious that we should meet our contractual obligations, as well as our professional and moral obligations, but my experience has been that most people don't read their home insurance, title insurance, car insurance, general liability insurance, flood insurance, or cable-TV converter rental policy CONTRACTS, while they microscopically review a standard AIA contract or work order. Even if the Contract calls for indemnification which may void or impair one's professional liability insurance coverage as a "guarantee" of performance higher than the professional standards imposed in one's geographic and professional areas of practice, most people don't send a copy of the indemnification clause to their insurance agent or claims adjuster for an underwriting opinion about the effect voluntarily agreeing to such a term might have on their liability coverage. If one establishes a good working relationship with their insurer, it works as a Health Maintenance Organization (HMO) is supposed to work--they keep you healthy, rather than repair the damage after it occurs, on the theory that "an ounce of prevention

...continued Page 10

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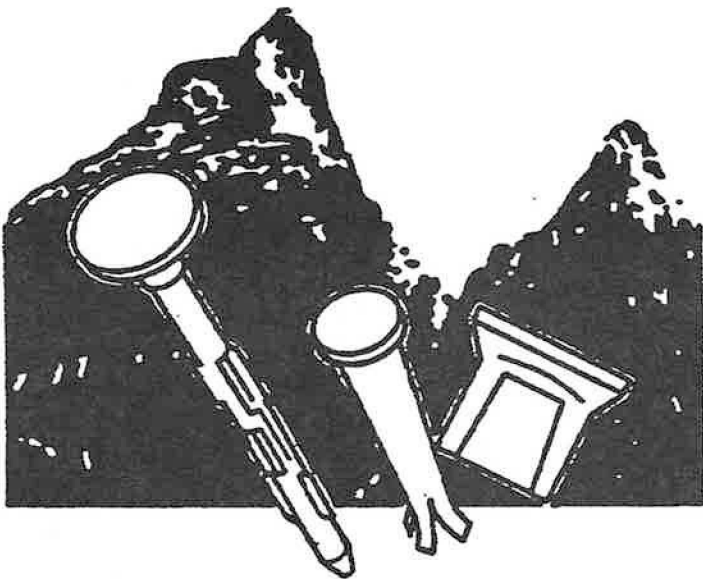
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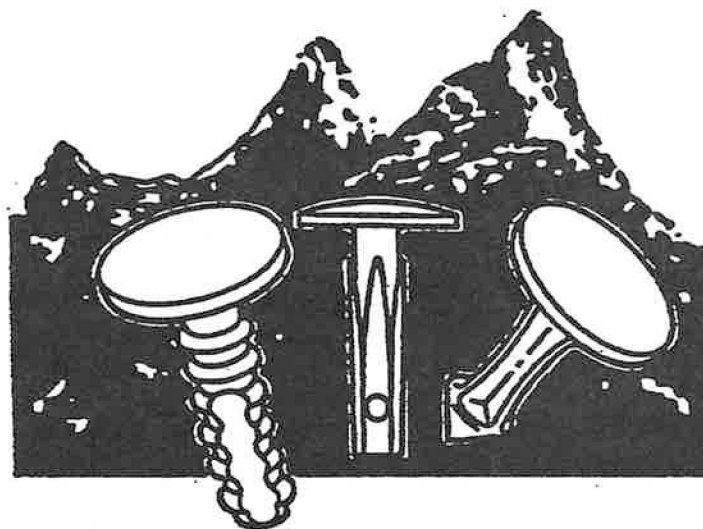
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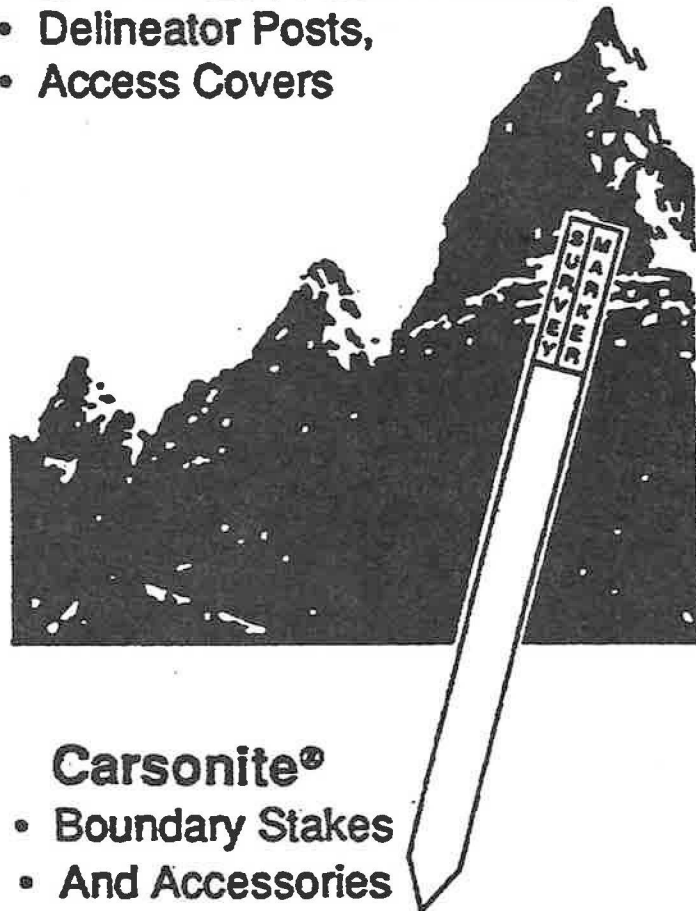
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WESLEY DAY RECEIVES AWARD

(See front cover)

On Friday, November 3, 1995, the Indiana State Board of Registration for Land Surveyors teamed up with the Indiana State Board of Registration for Professional Engineers to sponsor their semi-annual public ceremony in the Auditorium of the Indiana Government Center South in downtown Indianapolis for the purpose of presenting certificates to newly licensed land surveyors and engineers. During the ceremony, Wesley Day (Whiteland) was presented an award for his valuable service as a member of the State Board of Registration for Land Surveyors of which he was a member from January 1994 to November 1995. Pictured on the cover are current members of the Surveyors Board: from left to right, front row, Thomas Boofter (New Albany), Ross Holloway (Mooresville), Ruthann Sumpter (Marion), and Wes Day; and second row: John McNamara (South Bend), Kenneth Curtis (West Lafayette), and Patrick Cunningham (Battle Ground). Prior to service on the Board, and since, Wes Day has acted as a liaison to the Board from ISPLS. His contributions to the land surveying profession in Indiana, and especially in the development of the state survey standards, and the writing of the "Indiana Jurisdictional L.S. Exam", have been outstanding. The award plaque reads:

WESLEY DAY

For his leadership, wise counsel, dedication to the Land Surveyor profession, sincere service to the public and warm friendship during his distinguished service as a member of the Indiana State Board of Registration for Land Surveyors

STATE BOARD OF REGISTRATION FOR LAND SURVEYORS MEETING

The State Board of Registration for Land Surveyors met on March 12, 1996 at the Indiana Government Center South, Room E034, Indianapolis.

- Approved: *one request for a company identification number.
- Affirmed: *one negotiated entry for Rule 12 violations.
- Extended: *probation period of one Land Surveyor to June 1996.
- Conducted: *disciplinary hearing for Land Surveyor found to have violated parts of Rule 12. Board issued letter of reprimand and required payment of hearing costs.
- Discussed: *possible issuance of final orders in matters regarding four petitioners.
*possible granting or denying petition in three other matters.
- Reviewed: *monthly probationary reports from one Land Surveyor
*applications for Land Surveyor or Land Surveyor-in-training examinations.

A new Board secretary, Diana Sanchez, has replaced Julie Werner, who resigned to take a position with Schneider Engineering Corporation.

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C. Albert White

Mr. White's first book, *A History of the Rectangular Survey System*, published by the BLM in 1983, is considered the definitive work on the U.S. Public Land Survey Systems. He is arguably the most distinguished authority on the history of nineteenth and twentieth century public lands surveying.

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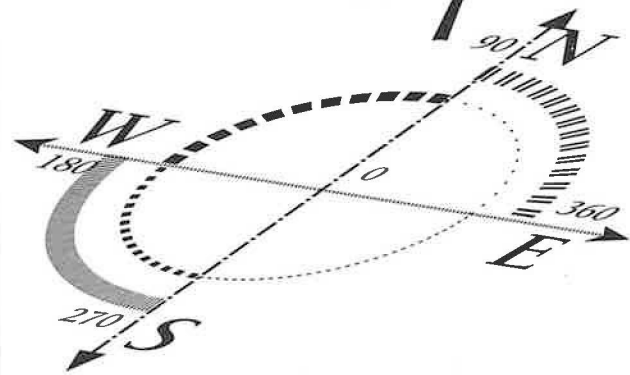
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PROFESSIONAL RESPONSIBILITY

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is worth a pound of cure".

Mentors, peer review, responsible supervisors, alternative dispute resolution, and the Courts also play a role in keeping us on the straight and narrow path to successful practice and avoiding the pitfalls in and along the path. The primary tools of Registration, ISPLS Standards, and Liability Insurance still seem to me to be the basic means to improve one's practice and to maintain exemplary Professional Responsibility. But that's just my opinion.

PROPER USE OF THE STATE PLANE COORDINATE SYSTEM

by Ben Buckner, Ph.D., Johnson City, Tennessee

Introduction

After teaching seminars on the state plane coordinate system (SPCS) in several states recently, I have observed some confusion among many surveyors and their technicians concerning the system. Many seem to have started using the system fairly recently, through the global positioning system (GPS) and through performing radial surveying using total stations, and lack background on some of the historical and theoretical aspects of SPC.

The SPCS is not something new, created at the same time as the North American Datum Readjustment of 1983 (NAD83); nor is it something unique to GPS, as some surveyors seem to think. SPC can be determined by many methods, including GPS, but also by ties to existing NGS or other horizontal control stations using traditional ground surveying methods of traverse, triangulation, trilateration, and radial surveying. SPC and GPS are not synonymous. One can understand SPC and know nothing about GPS, as has been the case for over 60 years.

The SPCS is a mathematical system relating geodetic positions (latitudes and longitudes) on the ellipsoid to plane coordinates on a projection surface such as a cone or cylinder. Such a procedure is the best way known for transferring positions from a spherical earth to a plane. The earth is not flat. Mathematical map projections must be used if we want to survey more than a few hundred feet on a plane system without encountering sizeable errors due to the earth's curvature and its effects on distances and meridian convergence. In the "old days", when we were using 1-minute transits and steel tapes, we could go a few miles without worrying about the curved earth reality. Now, with more accurate equipment and computational methods, and the fact that we are surveying over much wider areas and attempting to create meaningful land information systems, the old ways of thinking must be discarded.

When performing surveys properly using the SPCS, the resulting plane coordinates (X and Y or Easting and Northing) are not on the ground, but on imaginary cones or cylinders rolled into planes across many zones. This is one of the most crucial facts to realize, lest the system be misused. Once this is understood, it becomes clear why ground distances cannot be used directly in SPC calculations, and why distances and areas computed from SPC must be adjusted back to the ground for measurement and description purposes. With increasing use of the systems, it is essential that all users be properly trained as to the most basic aspects of SPC.

The SPCS is an extremely useful tool for indirect measurement, preservation of land survey evidence, establishment of basic control for construction projects and mines, engineering planning and design, and a framework for land information systems. Its usefulness will be greatly hampered unless it is used properly. This

article is intended to encourage and briefly explain the proper application of the basic "factors" of the system, lest we create a confusing hodge-podge of coordinate data comparable to the mess we now stumble over daily in trying to evaluate monument evidence for property boundaries.

Background of the SPCS

The SPCS has been in existence since 1933, when zones were created for each state by the Coast and Geodetic Survey. Each state has one or more zones, depending on the size and shape of the state. The purpose of the system is to allow the surveyor to use plane cartesian coordinates (departures and latitudes, etc.) on the curved earth. The ability to use plane coordinate calculations on a spherical shaped earth is provided by what are called "map projections" whereby the ellipsoidal distances are transferred (projected) to surfaces which can be rolled out ("developed") into planes. There are two surfaces used -- one is a cone, and the other is a cylinder. Thus, there are actually two systems, mathematically speaking, not one.

Using cones or cylinders as projection surfaces, rather than a plane, the "scale factors" can be controlled to change in only one direction (either east-west or north-south). In reality, there are as many systems as there are zones, since most of the zone constants vary for every zone. Except for these simple numerical differences, however, the procedures for employing the systems are the same in each of the two projection systems. Once a surveyor understands the conical system (called Lambert Conformal), he or she can make the calculations or use the system in any Lambert zone, in any state. Only a few constants and numbers in tables change. The equations do not. Likewise, once the cylindrical system (Transverse Mercator) is learned, a surveyor can use it anywhere the system exists, employing the proper zone constants in the equations.

The mathematics related to the conversion of a geodetic position (latitude and longitude) to a plane coordinate (X, Y or E, N) is rather complex, as it involves both geometric geodesy and mathematical cartography. However, like a lot of other things in surveying, a complete understanding of the mathematics is not required to use the system properly or understand it conceptually. The NGS provides projection tables, simplified equations, and computer software to make conversions. The surveyor seldom has to make a conversion anyway since the plane coordinates are given on data sheets for each control station in the national network.

The surveyor, as a user of the system, generally only needs to be concerned with three variables. These are (1) the elevation factor, (2) the scale factor, and (3) the convergence angle. To use the system properly these variables cannot be ignored.

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The Elevation Factor

The *elevation factor* (formerly called "sea level factor") is used to project a horizontal ground distance to the ellipsoid used for geodetic calculations. It is simply the ratio of the distance on the ellipsoid to the horizontal ground distance. From similar triangles, this is the same as the ratio of the earth's radius to the radius plus the mean elevation of the survey line above the ellipsoid (ellipsoid height). The earth's radius can be taken as $r = 20,906,000$ feet or $6,372,150$ meters for this calculations since exactness is unimportant when using a number this size in the ratio. Prior to the NAD83 readjustment the elevation (actually, more properly called "orthometric height") was considered to be the same as the ellipsoid height and it was sufficient to just take the bench mark elevation and plug it into the equation r divided by $r + h$. This is because the geoid was made to coincide with the ellipsoid (Clarke Spheroid of 1866) in the old (NAD 27) geodetic reference system. However, with the new GRS80 ellipsoid used in NAD83, the height of the ellipsoid above the geoid must be considered, since this new ellipsoid doesn't fit the geoid so well in North America. Elevations (orthometric heights) are referred to the geoid. The height above the ellipsoid is the term used in the equation for the elevation factor. Thus, $h = H + N$ where h = ellipsoid height, H = orthometric height (bench mark elevation) and N = geoid height. The geoid height is approximately -100 feet throughout most of the states east of the Mississippi River. An accurate value for it is given on control data sheets. It can be determined anywhere simply by keying the approximate latitude and longitude into the NGS computer model called GEOID93. How accurate it must be is one of several questions the surveyor must ask. The answer is found within the theory of significant figures and round-off errors, something which any professional surveyor should thoroughly understand and be able to analyze in each situation.

For fairly flat terrain and/or relatively short lines, an average elevation factor can be used for a survey project. Frequently, the extent of the survey and/or the precision requirements dictate calculating a separate elevation factor for each line in a survey. There is no simple rule of thumb on this. Again, the decision is one of measurement analysis related to precision and significant figures which affect the calculated ellipsoid distances, something the surveyor must analyze for each project.

The Scale Factor

A simplified definition of the *scale factor* is the ratio of the grid distance to the ellipsoid distance. The grid distance is the length of the survey line on that imaginary cone or cylinder after it is rolled into a plane. The cone or cylinder is made to intersect the earth slightly, at different locations, creating and embracing each zone of the system. This causes the scale factor to be exactly "1" at the lines of intersection of the cone or cylinder with the ellipsoid (called "standard lines"), less than "1" between these lines, and greater than "1" beyond the standard lines.

The equation for scale factor is not as simple as the one for the

elevation factor. The NGS furnishes either projection tables, where the factor is easily interpolated or computed, or "approximate" equations which are satisfactory for most surveying. Accurate calculations can, of course, be made using the detailed equations based on the ellipsoid and the projection constants for a zone, but if maximum accuracy is desired for the scale factors, the NGS software called SPC83 is suggested. Various other have also programmed the equations, including this writer (on HP42S).

As with the elevation factor, the average scale factor can be used if the survey is of relatively small extent and/or accuracy requirements are not high. In the Lambert system, the scale factors remain constant along any east-west line, so the north-south extent of the survey is all that needs to be investigated in this regard. For the Transverse Mercator system, it is the other way around. Again, the choice between determining an accurate scale factor at the midpoint of each line and using an average for the entire survey, relates to simple significant figures theory, with consideration for the accuracies needed.

Grid Factor and Grid Distance

The *grid factor* is not another separate factor, but simply the product of the elevation factor times the scale factor for the line (or averages for the survey if appropriate). It is sometimes called the "combination factor" or "grid combination factor". It is merely an algebraic shortcut or convenience since we are not really interested in the ellipsoid distance anyway. Our goal is to go from ground distance to grid distance and it makes no difference whether this is done by considering the factor separately or in a combined sense. The final result in either case is the grid distance (projection distance). This is the distance that will be used for the measured line, in order to compute departure and latitude components on the state plane coordinate system.

Within these few sentences may lie the most important part of this article. One or both of the two variables determining grid factors is frequently confused, ignored, corrupted, or overlooked when attempting to reference surveys to the SPCS. Very simply, the distances used to calculate the departures and latitudes for state plane coordinates must be imaginary distances on the grid projection surface -- not on the ground, not on the ellipsoid, and not too greatly compromised by using average factor over large areas or long traverses.

Convergence Angle

All "true" north lines converge and meet at the poles of the earth. At latitude 45 degrees, the convergence is almost exactly 1" per 100 feet of east-west distance. This amounts to nearly a minute of arc for an east-west line 1 mile long, throughout most of the United States. Thus, when using modern angle measuring instruments yielding angles within a few seconds of arc, we cannot even do an astronomic observation for azimuth any more and claim this as the reference meridian for a square mile tract, unless accuracy only to the nearest minute is being claimed and bearings shown likewise on plats. "True" north is not only an obsolete word, but also an obsolete concept in modern surveying where plane (either rectangular or polar) coordinates are being used. Grid

north, preferably that of the SPC must be used, to take out the convergence of the meridians.

If the surveyor can tie into control stations having azimuth marks with published grid azimuths, or always sight some other SPC station from the starting and closing monuments, grid azimuth is known throughout the survey. But, in the absence of such monumentation, usually an astronomic observation must be made for azimuth. Once astronomic azimuth is determined, it must be corrected for the Laplace correction. This is a small correction and may be negligible in many places. It can be gotten from an NGS computer model called DEFLEC93, merely by entering the approximate latitude and longitude of the point into the program. Geodetic Azimuth = Astronomic Azimuth + Laplace Correction. Then, the SPC Grid Azimuth = Geodetic Azimuth - Convergence Angle. The *convergence angle* is called the "gamma" angle nowadays. In the old SPC27 systems, it was called either the "theta" angle or the "delta-alpha" angle. It is very easy to calculate. In the Lambert system it is the longitude of the central meridian of the zone minus the longitude of the point, multiplied by a convergence constant for the zone (actually the sine of the latitude of the central parallel of the zone). In the Transverse Mercator system, the difference in longitude is multiplied by the sine of the latitude of the station. That's all there is to it. For points east of the central meridian, grid azimuths are less than geodetic azimuths. The opposite is true when west of the central meridian. This provides a way of checking to be sure the correct sign has been determined for the convergence angle.

Once a grid azimuth is determined in one of the above ways, angles are measured and adjusted, just as in any plane survey, and when combined with the starting azimuth, grid azimuths result for all lines.

[As a side point to the above, it should be pointed out that SPC grid azimuth can be determined for any survey without ever having a SPC control monument to tie into. This is possible using astronomic observations, Laplace correction, and computation of convergence angle. This has been the case for over 60 years.]

Summary and Conclusion

Remember, the earth is not flat! We cannot pretend that it is. Only the mathematics of map projections can be employed to make it flat over limited zone areas. This requires scale factors. There are no exceptions to this requirement. The earth is round everywhere! God made it that way. We cannot do much about it, except deal with it. The NGS chose to use the ellipsoid fitted to the geoid as a geodetic reference surface, which is at zero ellipsoid height. This necessitates accounting for our height above the ellipsoid. If distances are not transferred from ground elevation to the ellipsoid and then to a surface that can be rolled out into a plane, we do not have our departure and latitude components reduced to the grid. Thus any coordinates computed from such departures and latitudes cannot be SPC coordinates. We must get off the ground and onto the grid!

Using SPC, ground distances simply do not match grid distances. Nor, will grid areas be the same as SPC areas. My only

concern over this is a big "so what?". As long as we understand that we can simply get ground distance by dividing an inversed grid distance by the grid factor, and ground area by dividing the SPC area by the square of the average grid factor for the tract of land, there is no problem. We have much bigger problems to deal with every day than to fret over these minor inconveniences.

Every surveyor using this system must accept the facts regarding our round earth and work with the system as it is developed. Attempts at changing it can only cause future problems. If ties to SPC are made and coordinates are calculated where ground distances are used instead of grid distance (or one of the two factors is either neglected or averaged too freely), where reference surfaces are modified, where accurate SPC values are altered by dividing them by average grid factors for so-called "local" survey purposes, or where other such corruptions of the system are made, its values as explained in the first paragraph of this article are essentially lost. Furthermore, mistakes and misuse are bound to occur with arbitrary and individualized modifications, and in time, we will have a mess. Especially when coordinates are used and published which approximate the true SPC, confusion is created. I strongly feel it is better to train all surveying personnel as to the proper use of the system, than to compromise its integrity. Doesn't this make sense regarding any procedures, surveying or otherwise? Should ignorance of anything control its use and application?

We "plane" surveyors might wish that the earth is flat, but it simply is not. The geodesists and mathematical cartographers have created a wonderful system for surveyors to use, so as to employ plane surveying calculations instead of geodetic calculations on the spheroidal earth. It is ingenious in its conception and nature. We should use it correctly or not use it at all.

[For a viewpoint on the application of SPC to land surveys, and the related legislation, see "We've Missed the Point on State Plane Coordinates" by Dr. Ben Buckner, *ACSM Bulletin*, January-February 1996.]

Dr. Ben Buckner is owner and principal instructor of Surveyor's Educational Seminars, a private school offering continuing professional development for surveyors. He has written several books, including *Astronomic and Grid Azimuth* and *State Plane Coordinates in Modern Surveying*. He was formerly Surveying Program Coordinator at East Tennessee State University (1985-1995) and held a similar position at the Ohio State University (1973-1985). He is currently President of the Northeast Chapter of TAPS. He can be reached for comment at 1904 Alpine Road, Johnson City, TN 37604; Phone/FAX 423-929-3215.

Editors Note: In addition to the excellent books by Ben Buckner, the ISPLS's Manual #2 The Indiana State Plane Coordinate System, (196p.) by Ken Curtis (1974) was updated in August 1994 by Steven Johnson, et al., and retitled Indiana Coordinate Systems (100 p.) to reflect the new Indiana law (1988) establishing the new Indiana Coordinate System of 1983 which replaced the Indiana Coordinate System of 1927. The updated Manual #2 is available to ISPLS members for \$15.00 (\$20.00 to non-members) plus \$2.50 postage.

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ASSOCIATION MEMBERSHIP - WHO NEEDS IT?

by Robert Foster, P.E., P.L.S.

From time to time we read a letter to the editor of a professional society newsletter indicating an intent to resign on the grounds that "This association isn't doing anything and hasn't done anything for me." The writer may add the complaints that surveying is treated as a second class profession by other professionals, that the public doesn't know what we do, there is no recognition of what we contribute to society, we have no clout in government, and how come the association doesn't do something? I quit!

Those are all the usual complaints leading up to a righteous justification for resigning from - or for not joining - the association. We hear the same lamentations around the office, on the job, and at social events. For some reason, no group of people has the argument honed to such a sharp edge as the surveying community. But the argument is based on poor reasoning and a rank misunderstanding of the purpose of professional society participation.

People should not join the principal association representing their profession for what they can personally gain from membership. For one thing, it's unnecessary: For the most part, non-members can get the same benefits offered by the society as members. One might pay a little more for the publications, the entrance fees to the conventions may be somewhat higher, and the seminars may cost more, but all those things are available to non-members as well as members. The extra cost of benefits may only approach the level of annual dues if the non-member partakes of a significant laundry list of the benefits.

There are other benefits enjoyed by non-members that cost nothing. To the extent that the professional association is able to effect legislation and regulation through its government affairs program and its liaison with regulating authorities (licensing boards, for instance), the non-member is advantaged as much as the member, cost-free. If an association's public relations program has any impact at all, it serves as a tide that rises all boats - for members and non-members alike.

So why join? The answer ought to be obvious. If the association has no members or represents a minor segment of the profession, there is such a limitation on resources that none of the associations objectives are ever accomplished. The principle applies especially in surveying since it is a relatively small community compared to lawyers, doctors, and engineers. The sad fact of the matter is that the whole community of surveyors is small and the number of people in the community who recognize the importance of professional society participation is a small portion of the whole. First result: ineffective programs. Second result: justification for non-participation.

At a recent board of direction meeting of the National Society of Professional Surveyors (NSPS), an issue being discussed was participation in the International Federation of Surveyors (FIG). One board member voiced his objection on the grounds that he couldn't see any benefit to NSPS from FIG membership. This myopic view was not shared by other board members, one of whom suggested that the

argument was the same as that of the Alaskan surveyor who can see no point in participation in NSPS. To carry the logic further, it is the same argument propounded by the Alaskan (or Massachusetts) surveyor who can see no value in participation in the state surveyor association, since it never does anything for him or her. And there's the nub of the problem.

The first purpose of membership in any association should be to bring strength of numbers to the association so that it can do what a professional society is supposed to do: improve professional practice for the betterment of the public first and the profession second. A strong association develops strong programs; good public relations flows naturally from these activities. A weak association suffers from weak programs, causing widespread disaffection among the profession and indifference from the public.

The difference between a strong and a weak association is simply numbers. A majority of the professional community willing to pay a significant membership fee defines a strong association. A membership composed of a minority of the community will necessarily constitute a weak association.

The irony in all this is that surveyors are, by training and experience, a rational people. The collection of good data and evidence leads to logical planning and rational decision making. How, then, can surveyors be so out of focus when it comes to professional participation? The reality is that if most of us wait until the professional association (whether at the state, national, or international level) becomes effective, it will never become effective. When most of us decide to join, our numbers will make it possible for the association to be what it is supposed to be.

Who needs association membership? Every professional needs it because the association needs every professional. And by the way, membership is as important for the member who avoids conventions like the plague, doesn't read the journals, and never attends a workshop as it is for active members.

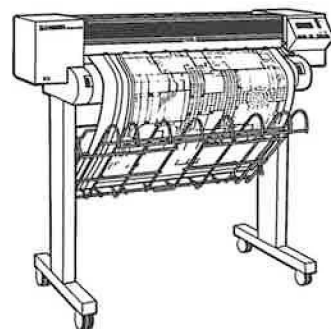
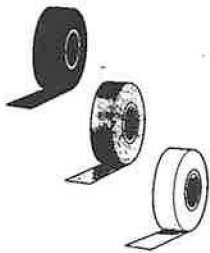
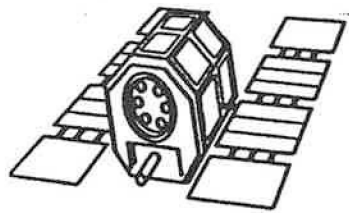
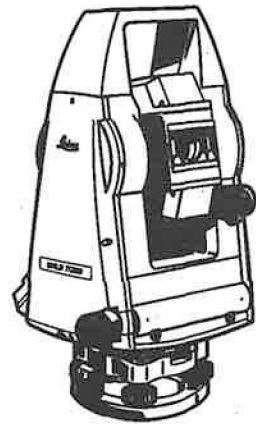
Any surveyor concerned about his or her status as a professional, having any shred of pride of professionalism, will quietly pay the annual dues for membership in both the state and national association. The naysayers will continue to write declamatory letters to the editor, refuse to join, complain about lack of recognition and second-class citizenship among the professions - and fail to see the connection.

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MID-CONTINENT HIGHWAY (I-69)

Highway Update
by Garry J. Petersen

The Mid-Continent Highway Coalition held its annual winter meeting January 29, 1996 in Memphis, Tennessee. Coalition members were updated on the economic impact the highway would have on the lower Rio Grande Valley by Michael Blum, an Economic Development Specialist from McAllen, Texas. J. Jorge Verduzco, Executive Vice President with the International Bank of Commerce, Laredo, Texas, presented an overview showing significant impact the highway's completion would have on his community.

Randy DeLay, with the governmental affairs firm of Patton, Bogg & Blow, outlined for the Coalition the substantial progress made in Congress toward completing the highway. Carolina L. Mederos, a transportation policy specialist with Patton, Bogg & Blow, reiterated the progress that the Coalition had made and outlined for the members the steps which must be taken for continued success in Congress.

Jim Newland, the Executive Director of the Mid-Continent Highway Coalition, shared with the members the significant changes occurring in Indiana and their positive impact on the highway project. Mr. Newland began by explaining that the Evansville, Indiana Chamber of Commerce, along with the Bloomington, Indiana Chamber of Commerce, have come together to form a new group called The Indiana Voices for I-69. This new group will be taking on the responsibility of promoting the development of the Mid-Continent Highway in Indiana. This group replaces the Southwest Indiana Highway Coalition. John Schwartz has been named the new Executive Director of The Indiana Voices for I-69.

mist with the Hudson Institute who first identified the significant national economic impacts the highway would have on America.

Indiana Congressman John Hostettler has also added his voice of support to the decision by Toyota to locate in Indiana. Hostettler, Vice Chairman of the Bi-Partisan I-69 Congressional Caucus, believes that I-69 will pay for itself and that the decision by Toyota to locate its facility in Evansville, increases the urgency for completion of the highway. Hostettler said that as a result of Toyota's announcement, at least one international supplier has already announced plans to locate a components plant in Kentucky. Randy Rohlfer, Mid-Continent Highway Director, Evansville, Indiana, believes that much of the support for federal funding of highway development seems to be driven by a project's economic return. "Based on the decision Toyota has made the economic return of building I-69 will be greatly increased," Rohlfer said.

Senator Dan Coats of Indiana has said that improved roads in the area of the new plant, particularly the decision to develop the extension of the I-69 corridor, will be one of the most important infrastructure changes brought about by the new Toyota plant. "As a member of the I-69 Mid-Continent Highway Coalition and I-69 Congressional Caucus," Coats said, "I have long supported the development of a multi-lane, limited access highway between Indianapolis and Evansville. The highway would provide much needed economic opportunities and endless economic growth for all points along I-69. In addition, the eventual results in completing the I-69 corridor could be increased trade with Canada and Mexico, a swell of tourism, expanded agricultural and industrial competitiveness, and additional job opportunities throughout southern Indiana."

...Toyota Motor Company has selected the I-69, I-64, US 41 Industrial Corridor as the site for its new North American T100 pick-up truck plant

Next Jim Newland reported about the announcement made by Indiana Governor Evan Bayh that the Toyota Motor Company has selected the I-69, I-64, US 41 Industrial Corridor as the site for its new North American T100 pick-up truck plant. The site is ten miles north of I-64, a major east/west thoroughfare, and approximately fourteen miles west of the proposed I-64 and I-69 connection. The plant is expected to employ a minimum of 1,300 workers in its initial start-up operation, but employment is expected to reach 1,700 employees as the plant moves to full production. The plant, which will cost up to \$1 billion to build, is expected to produce 100,000 to Toyota's T100 pickup trucks annually for the North American market. Dr. David Reed believes that Toyota's decision will have a significant impact on the cost benefit analysis as it relates to building the highway. Dr. Reed was the Senior Econo-

Too often, a highway project like the I-69 extension is examined only from the perspective of how many tax dollars are spent on concrete and asphalt. "I look at this project as an investment, an investment in the lives of Hoosiers who live along its proposed path." Governor Bayh said. "It will foster continued economic growth and in human terms that means jobs, good paying jobs, like Toyota, on which hardworking Hoosiers can support their families and build a better future for themselves and their families."

These significant developments coupled with the Coalition's congressional success, have led many transportation experts to believe that, the I-69 project could begin in Indiana later on this year with Governor Bayh announcing the decision to release the design and engineering contracts for the first segment of the road's development between Indianapolis and Evansville. This announcement is expected later on this spring and will begin the construction process. Yet to be determined is how the various states along the corridor will pay for their portion of the highway's construction costs. This and other issues will be the focus of the Coalition's congressional efforts throughout the rest of 1996 and 1997.

...reprinted from *Mid-Continent Highway*, February 1996, Volume 13

RIGHTS AND OBLIGATIONS REGARDING BOUNDARY LINE TREES

by Corwyn Arlt

For practical or aesthetic purposes, trees are often located on or near the boundary line between adjoining properties. Many disagreements between neighbors concerning such trees have been resolved in courts, resulting in general agreement on certain principles.

Which neighbor owns a tree is determined by where its trunk is located. The ownership of a tree standing wholly on the land of one owner, although its roots or branches extend into or over the land of another, is vested in the person on whose land the tree stands [*Wideman v. Faivre*, 100 Kan. 102, 163 P. 619 (1917)]. If a tree trunk stands entirely on one neighbor's property, but the tree's roots extend into the adjoining neighbor's land, the tree is not owned in common [*Jurgens v. Weise*, 151 Neb. 549, 38 N.W. 2d 261 (1949)]. A tree on the boundary line, regardless of whether or not it is marked as a boundary, is the common property of the adjoining owners [*Meixner v. Buecksler*, 216 Minn. 586, 12 N.W. 2d 754 (1944)].

There is a division of authority with regard to whether a tree planted wholly on the property of one owner of land which subsequently grows into the common boundary of an adjoining owner becomes the common property of both owners. One view holds that such a tree automatically becomes their common property [*Harndon v. Stultz*, 124 Iowa 440, 100 N.W. 329 (1904)]. The other view requires that each owner must treat the tree as their common property pursuant to an agreement or course of conduct [*Rhodig v. Keck*, 161 Colo. 337, 421 P. 2d 729 (1966)].

A tree's owner is not liable for damage caused by twigs, leaves, or seeds falling on a neighbor's house [*Schwalbach v. Forest Lawn Memorial Park*, Ky. App., 687 S.W. 2d 551 (1985)]; or for injuries to a neighbor who slipped and fell on the same type of debris on their own property, since failure of a landowner to prevent blowing or dropping of leaves, branches and sap from a healthy tree onto a neighbor's property is not unreasonable and cannot be the basis of a finding of negligence or private nuisance [*Ponte v. DaSilva*, 388 Mass. 1008, 446 N.E. 2d 77 (1983)]. There is also no liability for damage caused by an encroaching healthy tree when the adjoining landowners could have used self-help to protect themselves from damage, since liability cannot be based upon nothing more than letting nature take its course [*Hasapopoulos v. Murphy*, Mo. App., 689 S.W. 2d 118 (1985)].

Self help is taking an action in person or by a representative with legal consequences, whether the action is legal or not. An encroachment is the unauthorized intrusion of a building or other improvement onto another person's land.

Generally, self-help is the only remedy available to a neighbor in such cases of encroachment. Branches can be cut and roots dug out up to the property line, but that is the extent to which a neighbor may carry his objection [*Harndon v. Stultz*, 124 Iowa 440, 100 N.W. 2d (1904)].

With respect to trees which are alleged to be a nuisance to the property of another landowner, the law is: that non-noxious plants,

roots that interfere only with other plant life, and overhanging branches which merely cast shade or drop leaves, flowers or fruit are not nuisances. Overhanging branches constitute a nuisance only when they actually cause, or there is imminent danger of their causing, sensible harm to property other than plant life [*Abbinett v. Fox*, 103 N.M. 80, 703 P. 2d 177 (1985)]. Minnesota Statute 561.01 defines nuisance as "anything which is injurious to health, or indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property."

Matters of trees being an encroachment or a nuisance lead to the rights of landowners in trimming trees that are owned by themselves, their neighbors, or jointly between.

A landowner who is the sole owner of a tree may trim or cut down the tree as he wishes, since no other party has any rights to the tree. For example, the purchaser of a house shaded by the overhanging branches of a tree on the adjoining lot has no right to protect and preserve such tree, or to prevent the owner of the adjoining lot from destroying it. [*Flusche v. Uselton*, Tex. Civ. App., 201 S.W. 2d 58 (1947)].

In reference to trees owned by a neighbor, the right to trim or cut those trees are as follows. A landowner who sustains injury by the branches or roots of an adjoining landowner's tree intruding into his domain, may, without notice if he has not encourage the maintenance of such conditions, and with notice if he has, cut off the offending branches or roots at the property line [*Mead v. Vincent*, 199 Okl. 508, 187 P. 2d 994 (1947)]. A related case stated that an adjoining landowner may always cut off such encroachment back to the property line, even when there was no actual injury suffered. [*Whitsell v. Haulton*, 2 Haw. App. 365, 632 P.2d 1077 (1981)]. However, the person cutting back the offending growth may not go on to the neighbor's property to do so without permission. [*Pierce v. Casady*, 11 Kan. App. 2d 23, 711 P. 2d 766 (1985)]. Treble damages may be awarded to the owner of vegetation which is removed beyond the extent of its encroachment upon adjoining land, if it is shown that the wrongful act is willful and malicious [*Fick v. Nilson*, 98 Cal. App. 2d 683, 220 P. 2d 752 (1950)]. But, in some instances, treble damages may be awarded only upon assessment of actual damages [*Meixner v. Buecksler*, 216 Minn. 586, 13 N.W. 2d 754 (1944)]. When cutting up to the property line, the neighbor must not use any of the severed encroachments, such as fruit, and must allow the owner to enter his property to remove them. [*Hickey v. Michigan Cent. R. Co.*, 96 Mich. 498, 55 N.W. 989 (1893)]. Although having the right to cut back growth to the property line, the adjoining owner may not cut it to the extent that the tree is unreasonably injured or destroyed [*Scarborough v. Woodhill*, 7 Cal. App. 39, 93 P. 383 (1907)].

A landowner can not let a neighbor's tree's roots encroach on his land for years, then sue when something of his is damaged. In *Holmberg v. Bergin*, 285 Minn. 250, 172 N.W. 2d 739 (1969), the court refused to grant damages for a fence that was pushed out of

...CONTINUED - BOUNDARY LINE TREES

line by the roots of a neighbor's tree on the grounds that the plaintiff failed to take advantage of earlier opportunities to remove the roots. In the same case, the court ruled that where cutting roots which were causing damage would endanger the life of the tree and weaken its stability, thereby endangering the houses of both parties, an injunction ordering the removal of the tree was the appropriate remedy, since the encroachment constituted a nuisance under Minnesota Statute 561.01. But a landowner is not entitled to an injunction to remove entire trees merely because their branches overhang [*Tanner v. Walbrunn*, 77 Mo. App. 262 (1898)]. In situations where trees lean over the property of an adjoining land owner and are a menace, the neighbor does not have the right to cut the trees down [*Grandona v. Lovdal*, 78 Cal. 611, 21 P. 366 (1889)]. In fact, the owner of such a tree may maintain an action to enjoin the landowner from destroying it [*Wideman v. Faivre*, 100 Kan. 102, 163 P. 619 (1917)].

In cutting trees on the boundary where a tree's owners are considered tenants in common, neither tenant may have the right to destroy it without the other's consent [*Holmberg v. Bergin*, 285 Minn. 250, 172 N.W. 2d 739 (1969)]. Trespass cannot normally be used in such tenant v. tenant cases, but it can be used in the case of a tree where one destroys property owned in common [*Dubois v. Beaver*, 25 N.Y. 123 (1862)].

Whether a tree looks healthy or diseased is a major factor in matters of liability concerning a tree of limb falling onto a neighbor or his property. In most instances, courts have ruled that while a landowner should maintain his trees to prevent injury to his neighbor's property [*Dudley v. Meadowbrook, Inc.*, D.C. Mun. App., 166 A. 2d 743 (1961)], he has no duty to consistently and constantly check trees for non-visible decay. It must be readily observable. Therefore in the case of a tree that appeared to be healthy, but was in fact decayed, there is no liability for negligence in the fall of a limb since it was not known to be defective [*Ivanic v. Olmstead*, 490 N.Y.S. 2d 914, 66 N.Y. 2d 349 (1985)]. But, in at least one case, an owner was held liable for a falling limb even though it appeared to be healthy, despite the fact he could not have reasonably realized its defective condition. This was due to the application of a principle of strict liability set forth in the Louisiana Civil Code [*Loesher v. Parr*, La. App., 324 So. 2d 441 (1975)].

Finally, a tree falling on a neighbor's yard, appreciably restricting his ability to use it, constitutes a nuisance which must be removed by the owner [*Mattos v. Mattos*, 162 Cal. App. 2d 41, 328 P. 2d 269 (1958)].

In conclusion, disagreements between adjoining landowners over trees can be minimized if they know two things - who owns the trees; and their rights in trimming the trees in order to stop encroachments before they become problems.

This article is a research paper that was required for the Inver Hills Surveying Class, "Introduction to law for Surveyors" 1991. I would like to thank the class instructor, Clinton McLagan, and the cooperating students for their assistance.

...Dis-Closures Editor - Minnesota Society of Professional Surveyors - Winter 1992

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IOSHA'S 1995 TOP 25 HIT LIST

by Ron Koons, RoSaKo Enterprises
Safety Consultants, Middletown, Indiana

We all receive volumes of information to digest each year. What we do with that information could very well mean the difference between success and failure. The Indiana Occupational Safety and Health Administration (IOSHA) publishes four separate lists of the yearly top 25 cited regulations. The categories include Industrial Hygiene, General Industry, Construction, and a synopsis of all three. When looking at these lists you must keep in mind that we are dealing with a purely mathematical analysis based on the number of times an individual regulation is cited. You could potentially get cited for any regulation on the books. Using the information from the top 25 lists simply means we should always be in compliance with these items because they have the highest probability of being cited. This month we will look at some of the top 25 cited items in 1995 that may effect ISPLS members

The top Haz-Com citation averaged over \$600.00

"Log 200 form not provided/maintained" is a perennial favorite on the lists. Staying current on the 200 form does not take a lot of time. The average citation amount was \$252.00 per violation.

Hazard Communications and its various regulations appear several times on each list. Some of the Haz-Com items cited are:

- No Written Haz-Com Program
- Employee Training & Information
- Each Container of Chemicals Not Labeled
- Incomplete List of Hazardous Chemicals
- No MSDS for Each Hazardous Chemical

Don't take any chances on Haz-Com. If you have done nothing, get started; if you have just done a little, do a little more! The top Haz-Com citation averaged over \$600.00

No Written Fire and Emergency Plan is another item that shows up each year. A fire, tornado, chemical spill or other disaster could strike any business at any time. Make sure you have proper procedures set up to protect your employees whether they are at the office or on a jobsite.

Electrical Regulations are a multi-cited area, including:

- Exposed Live Electrical Parts
- Permanent Path to Ground
- Markings on Electrical Equipment Missing/Illegible
- Ungrounded Metal Parts of Electrical Equipment
- Grounding Conductor with Reversed Polarity

Unused Conductor Openings Not Closed
Your office as well as jobsites can yield problems in this area. The highest average citation was just under \$1,000.00

Flexible Cord Used as a Substitute for Fixed Wiring is one of the electrical violations I personally see in almost every safety inspection. With the proliferation of electronic items in our businesses we are quite often left short of electrical power in the correct location. The next time you look at new electrical equipment for your office include the cost of any wiring changes as part of your original budget.

No Safety/Health Program is always in the top ten of the construction listing. Since most surveying/engineering firms are on construction sites daily this item could be vital at an average citation of nearly \$800.00

Certified Workplace Hazard Assessment for PPE was a new category on the listings for 1995. The Personal Protective Equipment (PPE) section was totally redone within the past eighteen months. I predicted last year that PPE Hazard Assessments would make a quick jump and what do you know, for once I was right! This appeared on three of the lists with the highest average at just over \$250.00. I will again stick my neck out and predict the frequency of this item will continue to climb with increased dollar amounts.

Permit Required Confined Spaces showed up for the first time this year on the top 25. Exits Not Marked, No Portable Fire Extinguisher Training, Employee Overexposure to Airborne Hazardous Chemicals, OSHA Notice Not Posted, and Portable Fire Extinguishers Not Mounted/Readily Accessible are just a few of the additional item this year.

You will probably be cited for more than one regulation if IOSHA comes for a visit. The dollar amounts can climb quickly on just the top items without even considering the other hundreds of potential citations. Be **pro-active** and start or upgrade your compliance efforts today!

CHAPTER NEWS

The following Chapter officers have been elected:

Central Indiana Chapter
Dan Woo - President
Jeff Myers - Vice President
Dan Kovert - Secretary
Bryan Catlin - Treasurer
Rick Miller - Director

Hoosier Hills Chapter
Perry Cloyd - President
Chuck Coyle - Treasurer
Ken Anderson - Secretary

Initial Point Chapter
Bill Pettitt - President
Mark Gardner - President Elect
Frank Ballintyn - Secretary/Treasurer

Northeast Chapter:
Gale L. Fansler - President
Rodney Renkenberger - Vice President
Kerry Dickmeyer - Secretary/Treasurer

Northwest Chapter
Bill Davies - President
Glen Kracht - President Elect
John Saylor - Secretary/Treasurer
Rich Hudson - Director
Jack Haberlin - Director
Tony Gregory - Director
Emil Beeg, Jr. - Past President

Southwest Chapter
Alvin Paul - President
Rodney Young - Vice President
Duffy Stradtner - Secretary/Treasurer
Stuart Hein - Director

St Joseph Valley Chapter
John McNamara - President
Terry Land - Vice President
Brad Cramer - Treasurer
Bob Richardson - Secretary

Tecumseh Chapter
Robert Gross - President
Dale Grimes - Vice President
Ted Darnall - Secretary/Treasurer

COUNTY SURVEYORS ASSOCIATION OF INDIANA

PRESIDENT'S MESSAGE

by Greg Deeds, Peru, Miami County Surveyor

1996 has begun as a very cold and snowy year. Although the weather has been cold, things are moving for county surveyors.

Meetings are now being held by the Indiana Handbook for Drainage Improvements Projects Work Group. The 11 member work group is meeting with Christopher B. Burke Engineering, Ltd. to develop the handbook. This handbook should help us in permitting and drainage design. Kent Ward (Hamilton County) and I are representatives of the County Surveyors along with Carl Colbert (Tipton County) and Kenneth Culp, Jr. (Jasper County) representing Drainage Boards. We will try to keep you advised of the progress of the committee. The statutory deadline for the completion of the handbook is January 1, 1997.

Also stirring up interest among county surveyors is the new Indiana Federal Base Net/Cooperative Base Net (FBN/CBN) formerly known as HARN. At Road School, on March 27, Tom Mahon from HERPIC will be speaking to us about FBN/CBN. This would be a great time for you to bring your questions.

In conclusion, keep the drainage working, section corner program thriving and your multitude of miscellaneous duties succeeding.

NOTICE for October 1995 North Central Region CD-ROM Users

The National Geodetic Survey has discovered an error on this CD-ROM which results in incorrect State Plane Coordinate (SPC) Northing values for the state of Indiana and parts of Wyoming. All other states are not affected by this error.

If you use SPC data from one of these areas on the 1995 North Central CD, you can request a free copy of DSX version 5.0 on diskette which will correct these values at extraction time. When you receive DSX 5.0, please copy this to your hard drive and use it rather than the version provided on the CD-ROM. If DSX makes a correction to the SPC values at extraction time, the program will generate the message shown below after the extraction is complete.

DSXMESSAGE:

-----NOTE-----
DSX detected incorrect State Plane Coordinate Northing for one of the following zones:

SPC IN E
SPC IN W
SPC WY EC
SPC WY W

DSX corrected the incorrect Northing for the extracted data. Any question, call Craig Larrimore - (301) 713-3257.

To obtain a free copy of DSX 5.0, please contact the NGS Information Center at 301-713-3242, or fax a message to 301-713-4172. We are sorry for any inconvenience this may have caused.

DIRECTORY UPDATES

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CONTINUING PROFESSIONAL DEVELOPMENT COURSES

ISPLS 1996 Conference:

Kentucky Hours Approved:

Boundary Law Update	1 hour
Environmental Law & Surveying	1 hour
Least Squares Adjustments	1 hour
Errors & Omissions Insurance Issues	1 hour
Land Title Surveys From a Different Perspective	1 hour
Celestial Observations for Astronomic Azimuth	3 hours
GIS - A Short Overview for Surveyors	3 hours
Small Business Organization	1 hour
Tax Reduction	1 hour
Construing & Writing Boundary Descriptions	3 hours
Decisions in Boundary Surveying	3 hours
Haz-mat and OSHA Issues	2 hours

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CALENDAR

June 14, 1996

Indiana State Board of Registration for Land Surveyors meeting

June 29, 1996

ISPLS Board of Directors meeting

July 12, 1996

Indiana State Board of Registration for Land Surveyors meeting

July 20, 1996

St. Joseph Valley Chapter meeting

July 27- August 1, 1996

URISA '96 Annual Conference Urban and Regional Information Systems Association, Salt Lake City, UT.

August 10, 1996

ISPLS Board of Directors meeting

August 16, 1996

Indiana State Board of Registration for Land Surveyors meeting

September 13, 1996

Indiana State Board of Registration for Land Surveyors meeting

September 21, 1996

ISPLS Board of Directors meeting

October 4, 1996

ISPLS Fall Seminar, Abe Martin Lodge, Brown County State Park, Topic to be announced.

October 11, 1996

Indiana State Board of Registration for Land Surveyors meeting

October 19, 1996

ISPLS Board of Directors meeting

October 26, 1996

St. Joseph Valley Chapter meeting

November 8, 1996

Initial Point Workshop, "Route Surveying", Speaker - Gary Kent

November 16-22, 1996

ACSM/ASPRS Fall Meeting and GIS/LIS '96, Denver Convention Center, Denver, CO.

November 21-22, 1996

Indiana State Board of Registration for Land Surveyors meeting. New Land Surveyors Certificate Presentation.

December 7, 1996

ISPLS Board of Directors meeting

January 15-17, 1997

ISPLS 45th Annual Conference, South Bend, Indiana

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