

HOOSIER SURVEYOR

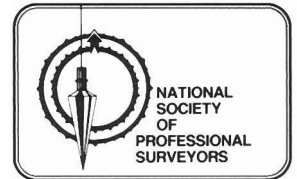


QUARTERLY PUBLICATION OF THE
INDIANA SOCIETY OF
PROFESSIONAL LAND SURVEYORS, INC.

VOLUME 33
NUMBER 2
FALL 2006



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(see pages 13-16 for program)

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HOOSIER SURVEYOR

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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.

The Hoosier Surveyor is published quarterly by the Indiana Society of Professional Land Surveyors, to inform land surveyors and related professions, government officials, educational institutions, libraries, contractors, suppliers and associated businesses and industries about land surveying affairs.

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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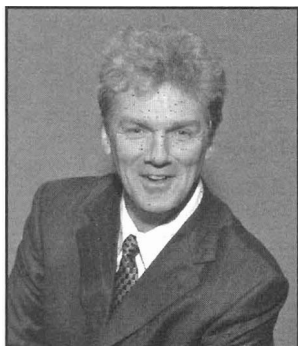


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l to r, first row:Frank Ballintyn,Sellersburg; Perry Cloyd, Columbus; Harold Hart, Charlestown; Don Bengel, Valparaiso; Richard Hudson, Valparaiso; Ron Wharry, Frankfort; Jim Tibbett, Linton; Second row, l to r: Todd Bauer, New Haven; Steve Murray,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

PRESIDENT'S THOUGHTS

by Frank F. Ballintyn, PLS, Sellersburg, Indiana



Guess what??? This is my last letter to all of you during this term as president! I hope that all of you exercised your right as a member, by voting on the recently mailed out ballots. Thank you in advance.

There are a few items that I would like to bring to your attention, provided you haven't gleaned them from the BOD minutes: The last Certificate presentation for the

newly licensed Land Surveyors will be held on Nov. 16th at the Supreme Court House Chambers in Indianapolis, room #317. We would like the societies to take the presentations over, since the State has dropped it for financial reasons, the next day, Nov. 17th, a Friday are the interviews of Purdue students for their respective scholarship, the 18th is the Purdue vs. IU football game. Go Boilers!!! Sounds like a full week. Membership — we have to purge our roster every year of past members that have not paid their dues, there is a list given to the membership committee — Mark Gardner (Chair) to contact these past members to make them current. Please assist this committee with this big task. We also have the opportunity for quite a few members to become Life members (20 years of membership). This number is rapidly approaching 100! This is a major achievement. Please encourage fellow surveyors to become members, especially those who use our services, so we can speak with a united strong voice. Getting younger members actively involved is needed to continue our profession. In the past we have promoted the Land Surveyor merit badge with the Boy Scouts. Another member suggested promoting surveying in the 4-H program. This needs to be incorporated in a permanent basis in our society. The "public information and marketing committee" Tony Gregory (Chair) has been asked to work on this and they are. I'm sure they would accept any and all help. Please step up to the plate and assist us. If we all do a little bit it will make it easier for all of us.

The "deceased surveyor registry" a listing of where a retired surveyors notes are located, we need a catchier name for this and if possible place it on a data page on the web site. Is there someone who can create a web design? Please contact the BOD.

The Indiana/Michigan joint state line committee is working on re-establishing the NE corner of Indiana. We could use a few more Indiana surveyors on this committee. Please contact Norm Caldwell (989)-723-6321. Thanks to all of you that have helped with this work and putting the CD together. Great work!

One thing I have noticed during this brief term as your president is how dependent our society is on the volunteers that perform all the tasks required to keep this Society improving. I thank each and every one of you that has been active in advancing our Society!!! From the first-time BOD members who stepped up and also took on an officer position to the local chapter presidents, the committee chairman and members, I thank all of you that took personal and business time to advance OUR Society. There are some who have signed up to assist us but too many personal or

business situations arose this year and they couldn't be active, please don't drop out, assist a vice-chairman or assistant to step up and take your place. After all we are promoting our profession. A fellow surveyor sent me a newspaper clipping that fits in here, and I would like to quote it. This is from someone you all know, Mr. Emerson, a past poet and philosopher:

"Finish each day and be done with it.

You have done what you could.

Some blunders and absurdities no doubt crept in; forget them as soon as you can.

Tomorrow is a new day;

begin it well and serenely

and with too high a spirit to be encumbered with your old nonsense."

The next BOD meeting will be at 9am at the Marriott East in the Patriot Boardroom on December 2nd.

Thank all of you who have stepped up to the plate and delivered this year!!!!!!

Proposed Changes for the 2007 ISPLS Committees

by Ed Sweetland, PLS, ISPLS President Elect,
Greenfield, IN

Wow it is October 23, 2006 already? It seems like yesterday that Frank Ballintyn took his presidential oath and became the 54th president of ISPLS, boy how time flies. During the past ten months as the president elect, I have been working with and learning from Frank the procedures of the ISPLS presidency. I would like at this time to thank Frank for his mentoring during the past ten months and I hope to continue the policies that he has started.

As many of you know the number of ISPLS committees has grown by leaps and bounds during the past few years to its current number of 24. I know that many of you have diligently worked on ISPLS committees during your membership which myself and the board-of-directors are very thankful. I believe that several of our committees are inefficient and it is time to make some adjustments to our committee structure. I propose to eliminate the less productive committees and merge a few committees together so 2007 committees charges will be better executed. Here is my proposed 2007 committee listing for your review. Please provide me with your feedback so I can make any modifications.

Communications Committees:

Hoosier Surveyor, Membership, Past President's Council, Public Information & Marketing

...continued Page 3

Proposed Changes
...continued from Page 2

Professional Development Committees:
Education, LS & Technician Review, Scholarship, Trig Star

Governmental Affairs:
Board of Registration Liaison, Governor Great Lakes Council,
GPS – GIS Monumentation, Legislation

Internal Affairs:
By Laws, Finance & Planning, Nominations

Removed 2006 Committees:
Intersociety Relations (merged with PR committee), Publications
(merged with Education committee), Web Site, Technicians
(merged with LS Review committee), Standards (merged with
Legislation committee), Chapters, Relief Fund, State Agency
Liaison

In closing, I look forward to serving you as the 55th president of
ISPLS and welcome you to contact me at anytime with your
questions or comments.

Thank you,
Ed Sweetland, PLS, Greenfield, IN

Board of Registration News

by Gary Kent, PLS, Noblesville, IN

Based on a request from the Administration (the Governor's office) to all boards, the State Board of Registration for Land Surveyors has started meeting every other month as a cost-saving measure. The next meeting is Thursday, November 16 which will coincide with the certification presentation ceremony.

The consumer protection agency currently has approximately 70 complaints against surveyors at some point in the process. About half relate to continuing education with the balance involving a variety of other complaints, especially sub-standard practice. The agency and the Board's liaison are working diligently to clear this backlog, although ultimately the ability to do so is a function of the time that the Attorney General's office can dedicate to the process. There are currently five registered land surveyors practicing under probationary licenses.

To date, the Board has issued 87 firm numbers for firms/agencies that have requested such for their registrants practicing surveying.

Due to a change in the state statutes that passed last session, there are significant changes to the continuing education process as it is regulated by any board requiring continuing ed. The Land Surveyors Board will be rewriting its rule to reflect the changes in the state statute. The net result will be that the continuing education process will be streamlined for registrants and many providers. Persons with comments and/or suggestions on rule changes should provide those to the Board or to ISPLS for forwarding to the Board.

As always, the Board welcomes registrants and guests to attend its meetings.

ISPLS BOARD OF DIRECTORS

MEETING HIGHLIGHTS

by Dianne Bennett, Executive Director

July 15, 2006

The ISPLS Board of Directors held a meeting on Saturday, July 15, 2006 at Vincennes University. President Ballintyn called the meeting to order at 9:12 a.m.. The minutes and treasurers reports were reviewed and approved.

Adjustments to the Agenda: Kelly Merchant, Advanced Lasers, is proposing a CST program for training survey technicians and would like ISPLS to endorse his program. Bill Clark would like to see a coordinated effort between ISPLS Technician committee and the Advanced Lasers.

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

Officer's Activity Report - There was open discussion about the upcoming openings and appointments to the Board of Registration. A motion was made and passed to inform the governor's office that research should be done on all applicants for sanctions within other states before appointment of a candidate to the BOR.

Communication - Hoosier Surveyor - Articles for the next issue need to be submitted by July 17th.

Intersociety Relations - The committee met on June 7, 2006 to discuss the agenda set forth by the committee chair. Items of discussion were #1 - ISPLS affiliated groups - It was asked if there should be a limit to how many organizations this committee should reach out to. It was decided that a master list would be created which would be submitted to the BOD for review. The committee briefly discussed the goals of the communication link and ISPLS event awareness. Item #2 - Discussion of ISPLS becoming a member of Indiana Underground Plant Protection Service (IUPPS). It was noted that IUPPS identifies ISPLS as an Associate Member on their web site. The committee will investigate the possibility of ISPLS becoming a voting member. Item #3 - Coordination of timetable to meet committee goals. It was noted that at the time of this meeting, the discussion would not be ready for presentation to the BOD in June. The committee will have the following items complete in time for the next meeting in July. 1) Completion of the intersociety contact list for review and approval. 2) Complete a draft on an introduction letter from ISPLS to be submitted to target societies. 3) Engage in a dialogue with IUPPS to determine the current status of ISPLS within that organization and to determine voting status. 4) Solidify a timeframe to execute the goals of the committee within 2006.

Membership - The following membership applications were reviewed and approved: Professional - Douglas Curry and William Kyler; Associate - Richard Gustafson, Luis Gaztabide, Bryant Hotel and Thomas Michalak; Life - Rodney Ludwig, James Gorski, Lee Miller and Brad Rayl.

Past President's Council - The group has prepared a mission and vision statement and would like this committee to be a permanent committee of ISPLS. The committee's vision statement is: Advise and council board of directors and membership on issues of concern of the society. The committee's mission statement is: Provide experienced professionals to support, guide and assist the board of directors, ISPLS committees, ISPLS members and others.

...continued Page 5

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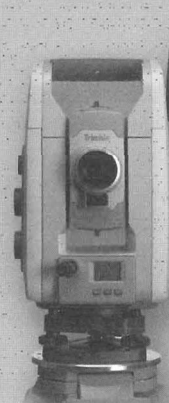
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Minutes

...continued from Page 3

A motion was made and passed to assign this issue to the By Laws committee. The issue will be addressed during the ISPLS business meeting.

Publications - The board reviewed a coloring book from a Florida flight school. The publication committee will review the coloring book to determine if it is feasible for ISPLS to publish their own.

Professional Development - Education - The committee has reviewed and accepted the proposed fall ISPLS seminars. The committee will be meeting again in September. A motion was made and passed to approve the Initial Point seminar on Rule 12 scheduled for August 4, 2006.

The St. Joe Chapter reported that they had to cancel their seminar due to lack of registrants.

Licensing Exam Review - Ivy Tech will be hosting the review on September 9th for LS, SIT and Technicians at no cost to ISPLS. Ivy Tech students have been invited to attend the technician program at no cost.

Scholarship - Discussed was asking all chapters to supply a report listing the current scholarship sponsored by their chapter.

Trig Star - The Trig Star winner, Patrick Flick, has been awarded \$500 cash and his teacher Andrea Powell has also been awarded \$500.

Government Affairs - Board of Registration - Perry Cloyd attended both the June 9th and July 14th meetings as the board liaison. At the June 9th meeting Perry reported that currently sixty cases are being reviewed by BOR for continuing education requirements. At the July 14th meeting Perry reported the BOR is currently reviewing plan stamping and employee direct supervision issues. The BOR also assessed a large penalty and revoked a license of a registrant.

A motion by email was made and passed to send a letter from ISPLS supporting the re-appointment of Randy Miller and Ross Holloway to the Indiana BOR. Michael DeBoy was also recommended.

County Surveyors - Steve Murray reported that nineteen county surveyor's offices have responded to Lorain's letter requesting the tie card information.

NSPS Governor/Great Lakes Council - Don Bengel reported on the meeting in May at the ACSM convention. NSPS is investigating providing insurance to its members. Also discussed was Dianne's involvement with upcoming ACSM conventions.

GPS-GIS Monumentation - The committee met on April 27, 2006. The meeting discussion followed the committee charges: 1) **CORS Stations**: As various entities across the state plan the establishment of CORS stations, the need to have access to common data will increase. The committee would like to develop a form for Meta data to be used for CORS stations. Once that form is developed it can be distributed for use. Perhaps the various equipment manufactures can help distribute this form to their respective clients. Once filled out perhaps they could be posted to a committee web site for access to potential users. 2) **Vertical control and height modernization**: Both IDNR and NGS have bench mark data stored on-line in the form of shape files. While IDNR may be on NGVD'29, NGS is on NAVD

88. INDOT also has bench mark information that may also be available on-line, although not necessarily in the form of shape files. And the datums used by INDOT over the years may vary from NGVD'29 to local datums. One of the things the committee could do with respect to preserving bench mark information, and making it useful for height modernization, would be to establish central location with links to these, and other, bench marks, include links to recovery cards, and encourage individuals to use these recovery cards. 3) **Promote the use of real-time access to CORS data**: This item would be covered in the meta-data form discussed in item No. 1 above. 4) **GIS, GPS and County Recorders**: As a part of an effort to educate folks as to the use of surveys conducted using GPS, and incorporation of those surveys into geographic information systems, the committee would like to work with Professor van Gelder to complete a white paper he started that addressed the use of a state-wide coordinate system using a single zone (UTM). In addition, a representative of the committee will plan on making a presentation to the county auditor with respect to digital submissions. If the presentation is received favorably, the committee would plan on presenting a technical session on "How to's" possibly at the AIC conference. 5) All committee members present agreed to bring any examples of digital submission ordinances they came across to future meetings for discussion. These examples could be posted to the committee web site.

Tom Mahon reported that since the April meeting that he visited the Michigan Department of Transportation with Bill Schmidt. Bill will be charged by INDOT with developing a state-wide CORS network in the near future. The MDOT trip was to get some first hand input from the MDOT surveyors responsible for operating their Leica system.

Legislation - The committee has not been active since the hiring of our lobbyist who will be starting work in August.

Internal Affairs - Bylaws - The committee needs two names of surveyors within each BOD area to serve on the committee within the next ten days.

Finance and Planning - A motion was made and passed to approve the 2006/2007 budget with revisions.

Chapters - St Joe chapter reported that the CE seminar was cancelled due to poor registration. The next meeting is scheduled for July 28th.

Southwest Chapter - The chapter sent a detailed report of all their recent meetings and activities.

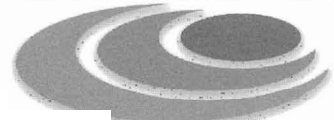
Northwest Chapter - They haven't met since spring. The chapter's next meeting is scheduled for June at Gary AA baseball game. The chapter's golf outing is scheduled for July 28th in Merrillville. The golf outing proceeds will sponsor four \$1000 scholarships.

Hoosier Hills Chapter - Their last meeting was held June 12th with a guest speaker covering the issue of cave surveying within southern Indiana.

Nominations - The committee is currently soliciting nominations for president elect (2007) for approval at the BOD's September meeting.

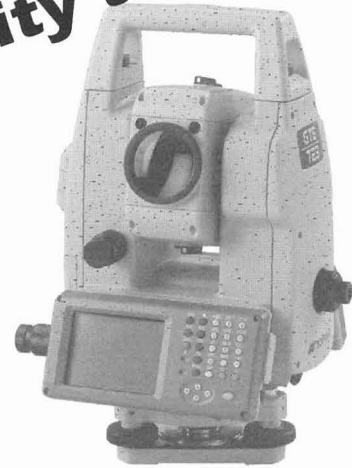
Old Business - There was discussion on the Ethics committee being reinstated. This will be turned over to the past president's committee.

Next BOD meeting will be September 23rd at West Lafayette.



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Lt. Governor Announces Statewide Map Now Available to All Hoosiers

For Immediate Release: June 27, 2006

Today Lt. Governor Becky Skillman and the state's partners at the Indiana Geographic Information Council announced that a detailed computer map has been delivered to every Indiana county and is now available on-line for all to see. In this monumental mapping project, the entire state was mapped in the spring of 2005 with very high quality aerial digital photography, called "orthophotography." The maps have been delivered to the state and counties, and are publicly viewable at www.indianamap.org.

"It is safe to say that few have ever seen Indiana the way it appears on these maps," said Lt. Governor Skillman, who serves as chair of the Indiana Counter-Terrorism and Security Council. "The mapping technology will be invaluable to governments and businesses across the state for everything from economic development and environmental planning to emergency response and demographic studies. The information that can be layered onto the maps is limitless, and so is the potential to use this tool."

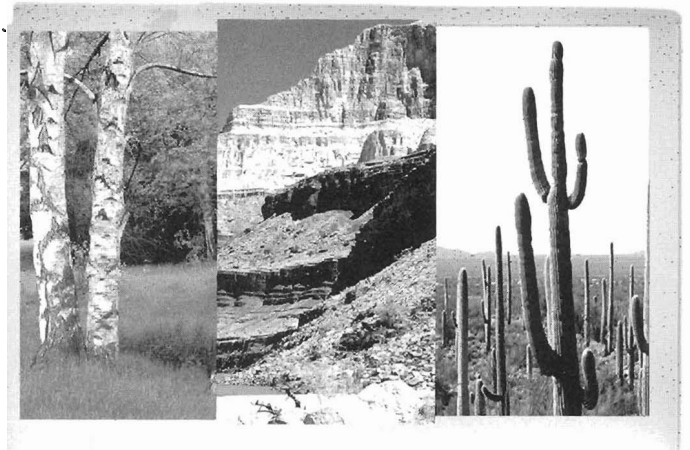
The mapping project is used as an essential part of advanced governmental computer systems called geographic information systems (GIS). Dozens of layers of mapped information go on top of the orthophotography to improve government services and manage resources efficiently. Communities across the state use GIS for everything from locating a house during an emergency-911 call to save lives, to saving millions of dollars managing the Emerald Ash Borer beetles for forest protection. With these new maps, GIS is being used to help new businesses find locations in Indiana.

"In the short time that these orthophotos have been available, we are already reaping the benefits," said Jill Saligoe-Simmel, Ph.D., Director of the Indiana Geographic Information Council. "Communities are using them for everything from better flood protection, to drug enforcement, to attracting new business, and much, much more. The uses are nearly endless, and the more they are used the more valuable they become. There are several local and state partners that have helped make this project happen. Indiana University and the Indiana Geological Survey have been especially helpful making these maps available online."

The seamless photography will greatly enhance communication and consistent information for decision-making. All levels of government will have the highest quality base maps possible-with no restrictions. The public, private sector, and non-governmental organizations will have open access to one map for Indiana. And during large disasters when federal relief comes in, the out-of-state responder will be looking at the same maps that are available to the local volunteer fire fighter.

"We are very pleased to have access to this new technology," said Indiana Department of Homeland Security Executive Director Eric Dietz. "This mapping technology will make Indiana's response capabilities more efficient and effective. Having a single source for information concerning location of events and key equipment will improve our ability to direct help to the right capability to the right location at the right time."

The orthophotography project is part of a public-private-university initiative call the "Indiana Map." The Indiana Geographic Information Council is a managing partner of the project. The Indiana Geographic Information Council (IGIC) is a non-profit membership organization of GIS users, professionals and educators. Administered by an elected board of directors, IGIC is recognized as the statewide coordinating body for Indiana geographic information.



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The Indiana/Michigan Line

by Mike Davis, Indianapolis, IN

Nearly 180 years after U.S. Deputy Surveyor Eleazer P. Kendrick placed mile post monuments on the Indiana-Michigan border, surveyors from both states are busily searching for the historic mile posts.

Their investigations have taken them across hilly grasslands and into woodlands, marshes, swamps, streams and lakes — much as Kendrick experienced in October 1827 when he moved east from the Lake Michigan shoreline to set 104 mile posts in about 22 days, completing his task at the northeast corner of Indiana.

Driving the current project is a growing demand from surveyors who are encountering problems in properly defining the state line for the developers and landowners who are their clients.

Surveyors have shown a great interest in recovering and preserving the mile posts, to avoid surrendering control of the effort to state legislatures and their committees or federal authorities who aren't as knowledgeable of local records.

"As long as local surveyors can recover existing evidence of the original mile posts, we can preserve them," said Norman Caldwell, of Owosso, Mich., recording secretary of the Indiana-Michigan State Line Committee.

The problem of properly defining the state line's location developed soon after Kendrick completed his survey, when rectangular Public Land Survey Systems of Michigan and Indiana were extended to a "closure" on the Kendrick line.

As the original subdividing surveyors came to wooded areas where there were blazed trees or other marking of the Kendrick survey, they would report they had intersected the state line, and set a closing corner. In the open prairie lands, the line would not have been as clearly visible.

The subdividing U.S. deputy surveyors were not required to retrace the Kendrick line to confirm the state line's position. As a result, over the ensuing years, more and more closing corners were used as terminations of the rectangular survey lines coming in from both states, producing errors of unknown but normally small dimension.

Kendrick's survey showed little of the "wiggles and wobbles" to be found in magnetic compass lines elsewhere. He did wander from the parallel of latitude that is mapped as North 41 degrees, 47 minutes, 43 seconds, but appears to be better than other east-west compass lines of the time period.

The original survey was authorized by Congress on March 2, 1827, "to ascertain and designate the Northern Boundary of the state of Indiana."

October probably proved to be the best time for the survey, Caldwell said. "Early in the spring, it would have been too wet. Later in the fall, there would have been snow."

It wouldn't have been an easy job, though. They were working in a wilderness, filled with rivers and large lakes — and mosquitoes, disease and snakes.

"In the 1820s, civilization had not reached that area," Caldwell said. "Farmers hadn't cleared the land, and their hogs hadn't cleared the area of rattlesnakes."

Nevertheless, the crew's work — especially that of the chainmen — is consistent and impressive. Caldwell said the overall length of the

line of record is 104.619 miles, and measured by GPS it is 104.276 miles, a difference of 1,811 feet. That calculates to a shortage of about 17.5 feet per mile, anticipating that the shoreline of Lake Michigan is still in the relatively same location.

A committee report in 2005 includes the comment, "Damn, Kendrick's chainmen were GOOD!"

The Kendrick 1827 survey map and field notes provided the framework for the committee, which first met in October 2004. It elected Jack Owens, a retired surveyor from Flint, Mich., as general chairman, "in recognition of his research capabilities and project interest." John McNamara, of South Bend, Ind., was selected to represent Indiana surveyors, and Wayne Mostrom, of Centreville, Mich., was picked as Michigan County Surveyor representative. In true "committee organization" form, Caldwell, who was observed taking notes, was "immediately and unanimously railroaded into being secretary," he reported.

There are currently 29 professional surveyors representing Indiana and Michigan on the committee mailing list.

By September 2005, the committee had decided to focus on recovering and preserving 13 specific mile posts, at locations ranging from Mile 2 to 105 miles. (Mile post 105 was set by Kendrick when he overran the extension of the Ohio-Indiana line.) These select mile markers were moved to the top of the research list because they were in woodlands, marshes or swamps where soils and evidence were most likely to have remained undisturbed or not plowed out by farmers or in terrain reshaped by bulldozers.

"Some segments — 'way on the west end — are probably about the same now as they were (for Kendrick's survey)," Caldwell said. "After crossing the freeway, there are six or seven miles of very rough country that's swampy and wet. It's probably quite close to what they had to deal with."

Some of the best evidence, he said, was provided by county surveyors in the mid- to late-1800s. "We are fortunate to have had county surveyors who kept good records that continue to be in existence," Caldwell said.

To date, the committee feels it has located five proven mile posts, with the northeast corner of Indiana showing significant potential for recovery.

Monuments from an 1871 section subdivision survey by George Mark, Hillsdale, (Mich.) county surveyor, are currently being recovered and are expected to verify the location of the northeast corner of Indiana at Mile 104-plus.

The best-preserved monument recovered to date is at mile 52, where Tom Stephenson, of Cassopolis, Mich., has recovered an original mile post while verifying a closing corner position in January 2004. The wood post had a pointed bottom tip and was recovered in knee-deep water in a swamp. Stephenson told committee members he preserved the position with a three-quarter-inch pipe that was six feet long.

Several other mile posts in the "maybe" category haven't been verified, and several stone markers appear to be perpetuations installed by local surveyors when the original posts were badly deteriorated. Committee members and local surveyors are still searching for records.

County surveyors in Indiana and Michigan have included closing corners and adjoining monuments in their ongoing state-wide remonumentation efforts.

The committee anticipates that the recovery of additional survey monuments, along and adjacent to the line, will assist in closely defining the search area for an original mile post. As these search areas are determined, professional surveyors representing the two states will take part in a recovery effort.

Nothing comes easy, though. October's meeting was to include a small group search for the monument at Indiana's northeast corner, but it was delayed because access to the area is through a soybean field. "As soon as the harvest is finished, we will get the northeast corner researched and explored in greater detail," Caldwell said.

The group also expects to receive microfilm records relating to a geodetic control station in the area.



ELEAZER PORTER KENDRICK

"As people turn in new points, (the published 2005 committee report) becomes a living document," Caldwell said. There is currently a great deal of local effort, and the committee expects there will be a steady flow of what's recorded, searched for, found and authenticated for the next several years.

"It's a tremendous undertaking," Caldwell said.

At some point in time, when there's no more evidence of existent or obliterated mile posts to be added, the committee expects to turn over all that's been recovered, monumented and documented to an appropriate agency.

As has been noted, local professional surveyors can only recover and monument "original" existent or obliterated evidence. Miles posts that are "lost" can only be replaced by joint action of the Indiana and Michigan legislatures — or, as an alternative, by the U.S. Supreme Court.

In the meantime, as local surveyors encounter problems and

ask for help in getting a situation resolved, the committee is offering guidance, especially to those who are not familiar with junior and senior issues. (The Kendrick line, having been the first line established, is a senior line. Closing corners established by the subsequent rectangular surveys of Indiana and Michigan are "junior lines" and must be subservient to the senior positions.)

Committee members are also enjoying the ongoing detective work.

"This is what our profession is all about . . . finding, locating, preserving and authenticating monuments," Caldwell said. "Surveyors love finding original markers in their daily activities."

See also: McNamara, John, "The Indiana Michigan Boundary", *The Hoosier Surveyor*, p. 19-21, Vol. 29, No. 4, Spring 2003

The Mountain Maid Mine

by Lola Cazier

In 1880, a United States Deputy Surveyor named Henry G. Howe was assigned the survey of the First North Extension of the Mountain Maid Mining Claim. The claim was situated in Sections 2 and 11, Township 20 S., R. 22 E., Gila and Salt River Meridian. It was partially within Tombstone Townsite in the Tombstone Mining District of Pima County, Arizona Territory.

There were four claimants of the mine - Robert J. Winders and three brothers whose names were James, Virgil and Wyatt Earp. No patent for the claim could be issued until it was surveyed and approved. Survey crew members were required to sign an oath to faithfully execute their duties. The "Chain Carriers" pledged "we will level the chain upon uneven ground, and plumb the tally pins, whether by sticking or dropping the same; that we will report the true distance to all notable objects, and the true length of all lines that we assist in measuring." The "Flagman" for the survey merely had to swear to perform his duties "according to instructions given me." This was signed by Wyatt Earp.

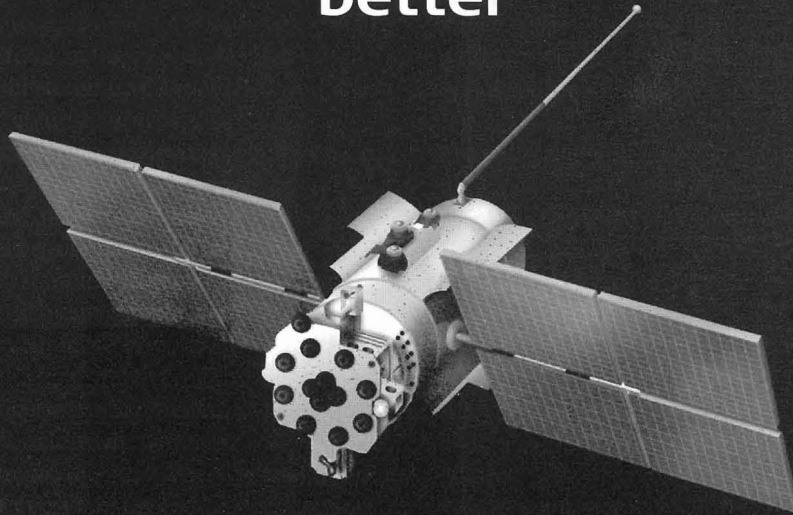
Once the survey was complete, by law an affidavit had to be sworn to and filed prior to the granting of the patent. It had to state that more than five hundred dollars worth of work and/or improvements had been completed on the mining claim. The law was also clear about the fact that the two persons signing the affidavit had to be individuals who had no interest in the mine.

In this instance, the affidavit was sworn to and signed on the 16th of November, 1880. One of the signatures is that of J. H. Holliday, also known as "Doc."

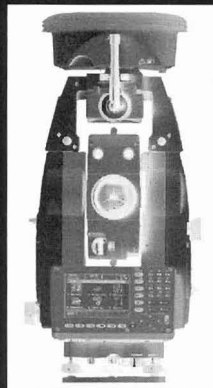
The survey took place eight months before the infamous gunfight at the Tombstone livery stable known as the O.K. Corral. The patent of the First North Extension of the Mountain Maid Mine was approved on January 3, 1881. The best remembered names connected with this survey are those of two not-so-admirable people - one a gambler and sometime sheriff and district marshal, and the other a tubercular former dentist turned gunfighter. Their names are among the legends of the Southwest.

The records of this survey are still on file at the BLM Arizona State Office. Almost no one remembers U.S. Deputy Surveyor Henry G. Howe, who completed his work honorably and with skill. There is no record concerning whether or not the mine "paid out." *Reprinted from "Backsights", Surveyors Historical Society, Spring 2005, Vol. 24 No. 1.*

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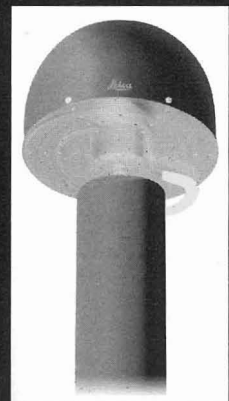
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PROGRAM SCHEDULE 2007 ISPLS CONVENTION

Adam's Mark Hotel, Indianapolis (January 17-19, 2007)

Wednesday, January 17, 2007

Using Excel and PowerPoint - Justin Bond (3 CEH Elective)

This seminar will cover the following Excel topics: Entering and editing data; modifying a worksheet; using functions; formatting worksheets; creating charts; workbooks; advanced formatting; list management; working with advanced formulas. The MS PowerPoint topics to be discussed are: Building new presentation; enhancing presentations, building custom presentations, and Microsoft Office integration with PowerPoint.

Accuracy In Motion, Vertical Testing of ATV Mounted GPS

Data Collection - Bruce Strack, PLS & Craig Williams, PLS (3 CEH Elective)

The goal of this seminar is to compare the elevations established during data collection while continuously moving on an ATV to the elevations established by numerous other methods including the stationary collection of GPS data mounted on a survey rod and the conventional data collected with a total station. The accuracies are also investigated in relation to the speed of the ATV. The steps involved in this method and the interesting results are discussed in length with charts comparing the different methods and processing styles. The reliability of topographical data concerning both horizontal and vertical accuracies is also discussed.

The Indiana Map - Jill Saligoe-Simmel, Ph.D. (3 CEH Elective)

Attendees will be familiar with the availability of the 2005 statewide orthophotography data base and 2005 statewide elevation data base available as part of the Indiana Map. Attendees will learn what data are available, how to access the data, and how the data are used.

Traffic Safety and More - Ronald Koons (3 CEH Elective)

There are more cars on our highways every day. Surveyors have been listed as one of the top ten professions to be the victims of workplace traffic fatalities. These facts make safety on the roadways increasingly more important. Very few surveyors are aware of the *specific* guidelines outlined in the Manual on Uniform Traffic Control Devices, (MUTCD) Part 6, as they apply to surveying field crews. In addition, OSHA has a sign, signal, and barricade regulation that applies to surveyors. This session will introduce the topic and give guidelines on what signage and protection is required for field crew employees. We will start this session by giving an update on both recent Surveyor citations by OSHA and any new OSHA regulations that would affect the surveying profession.

Those attending will obtain an understanding of the proper procedures to protect their employees on or around a roadway and be updated on recent OSHA activity and other important safety items for surveyors.

Thursday, January 18, 2007

Railroad Surveying 101- Charles Tucker (6 CEH Elective)

This course has shown that typical participants benefiting the most from this course are those with limited exposure to the railway industry, or railroaders with highly specialized positions. For example, a surveyor-engineer well versed in highway/street design but with some exposure to railway boundaries would gain valuable knowledge about track, railroad cadastre, railroad terminology, theory and railway operations typically unfamiliar to those outside the industry.

The course begins with the "dirty dozen", a list of the 12 most common blunders, poor assumptions and bad guesses that railroad professionals see on an everyday basis coming to them from non-railroad professionals and agencies that kill or delay projects that involve crossing or bordering a railroad. Upon completing this seminar, the surveyor should be much more aware of the issues and requirements to be addressed prior to tackling a railroad related project. The surveyor should now be more confident that railroad related work can be managed under his area of expertise.

Higher Order of Surveying in Indiana- James Reilly (6 CEH Elective)

This is a PowerPoint presentation that covers GPS surveying in Indiana. Emphasis will be on static and Real Time Kinematic (RTK) surveying. The basics of mission planning will be discussed. This will cover standards and specifications for horizontal control, orders of accuracy, and the proper project planning and network design. Two different networks will be designed, one showing both trivial and non-trivial lines and the other with non-trivial lines only. Existing geodetic control is necessary to begin any GPS project. We will show how to find existing control tied to the Indiana High Accuracy Reference Network (HARN), referred as NAD 83 (1997). We will also show how to tie a GPS survey to the National Continuous Operating Reference System (CORS). We will also discuss the "Online Positioning User Service", a service provided by the US National Geodetic Survey.

The basics of RTK will be discussed. The majority of GPS receivers sold today are used exclusively for RTK, and communications between base station and rovers is becoming quite sophisticated. Proper field procedures are critical to guarantee accurate results.

Orthometric heights are needed for all engineering projects. NAVD 88 GPS derived orthometric heights, as defined by the U.S. National Geodetic Survey, can be established to +/- 2 cm accuracy, using the latest Geoid Model, but requires a tremendous amount of surveying. The requirements will be discussed, along with the characteristics of Geoid Models.

GPS modernization is coming. We will discuss changes to be made to the satellite signals, and how this will affect you as a surveyor.

Writing and Interpreting Legal Descriptions - Anthony Gregory, PLS (6 CEH Mandatory)

The objectives of this workshop will be to review the fundamental principles associated with writing and interpreting legal descriptions. Applying theory of location to the writing of or interpretation of legal descriptions will be discussed.

...continued Page 14

Friday, January 19, 2007

ALTA/ACSM Land Title Surveys- Gary Kent (6 CEU Elective)

This seminar has the overall objective of helping persons within the surveying profession and the title, legal and real estate communities more fully understand and, therefore, better deal with ALTA/ACSM Land Title Surveys.

Emphasis is placed on understanding the history and purpose of Land Title Surveys, uncertainties in survey measurements, certification issues, optional items of Table A, and Positional Tolerance.

Aside from the technical aspects and the changes in the 2005 standards, time is also spent discussing contracts, reports and other technical issues that the audience may bring up. Questions are encouraged and there is ample time for questions and answers.

State Plane Coordinates and Improving Your Field Procedures

James Reilly (6 CEH Elective)

This seminar begins with the background and development of the original system, the State Plane Coordinate System of 1927. The Clarke 1866 ellipsoid will be defined, and the units of length used in the system. Map projection fundamentals will be discussed, and the three conformal projections in use will be described..

"Improving Your Field Procedures" is a revised version of Jim Reilly's 1990 seminar. There are two broad categories: Land Surveying Field Procedures and Instrument Adjustment and maintenance.

Under Land Surveying Field Procedures, the sub-categories are 1. Angular Measurements, 2. Distance Measurements, 3. Trigonometric Leveling, 4. GPS and its use in land surveying and field control.

Under Instrument Adjustment and Maintenance, we will tell the audience just about everything they need to know to keep their conventional instruments field-ready.

It is now on Power-Point, and the objective is to tell surveyors the basic information on accuracy and precision and proper field procedures. We have considered this seminar introductory, but field crew personnel tell us they wish their boss had been present.

Science of Surveying Measurements - Joseph Paiva PhD, PS, PE (6 CEH Elective)

Among other things, surveyors are measurement specialists. But many times they have difficulty bridging the accuracy specifications published by instrumentation manufacturers to the requirements of the project they are doing (or the client's specifications). This course begins with the basics and ends with easy-to-use techniques to apply statistics and measurements science to everyday and special surveying tasks. You will learn tips that the practicing surveyor can use before, during and after the survey to improve the quality of your surveys and develop confidence that the data being reported is not only precise but accurate. Terms used in manufacturer's literature will be explained; simple tests for checking the adjustment of instruments will be taught; and underlying reasons to explain the "why" of many practices that will be suggested will be given. Topics include: types of errors; sources of errors; the standard normal curve; standard deviation; confidence levels; systematic error modeling; random error modeling; traverse adjustment discussion; instrument and accessories evaluation; manufacturer's specifications; factoring in crew variability; evaluation of survey accuracy; evaluating the performance characteristics of your surveying system; means and weighted means.

Technician Program - Thursday, Jan. 18, 2007

ALTA for Field Personnel - Gary Kent, PLS (0 CEH)

This seminar has the overall objective of helping technicians within the surveying profession more fully understand and, therefore, better deal with ALTA/ACSM Land title Surveys.

Section Corner Perpetuation- Curt Candler and Cindy Candler(0CEH)

This workshop has the overall objective of educating surveying technicians on the field basics of section corner perpetuation. With the increase in funds available for corner perpetuation, many counties are embarking on corner perpetuation programs. Both the County Surveyors, and private surveyors that may be contacted to do this work, need to understand the Public Land System, the sources of information and the appropriate procedures for conducting corner perpetuation.

Technician Program - Friday, Jan. 19, 2007

Construction Surveying & Layout - A Discussion of Mistakes and Errors - Wes Crawford (0 CEH)

This seminar will give a brief history of construction surveying and layout; identifying and eliminating mistakes and reducing errors in the field; obtaining accuracy and precision; working with tolerances for layout; communicating construction layout on the jobsite; standard measurement practices needed for distance, angle, and elevation measurement; caring and calibration of surveying equipment on the jobsite; planning for layout; establishing and utilizing primary, secondary and working control; layout methods and techniques on the construction jobsite, checking layout, working and laying out alone, quick checks, rules of thumb, There will be discussion and question and answer session. This session will concentrate on the little things that make a difference in everyday field activities. Each attendee will receive a copy of Wesley G. Crawford's highly acclaimed book, "Construction Surveying and Layout" by attending. It will provide you with a continuing reference to the topics discussed.

SPOUSE/GUEST PROGRAM

Welcome to the 55th ISPLS Convention. For your convenience we have arranged to have a Hospitality Room for your enjoyment. Here you will find coffee and assorted soft drinks and a place to catch up with old friends and make new ones.

The hospitality room at the Adam's Mark Hotel will be available both Thursday from 7:00 a.m. to 5:00 p.m. and Friday from 7:00 a.m. to 3:00 p.m. You will meet in the hospitality room both mornings prior to your depart from the hotel. A continental breakfast will be available in the hospitality room each morning.

An itinerary of fun, interesting and educational activities is planned for this year's ISPLS Spouse/Guest program.

The formal program will start on Thursday by departing the hotel at 9:30 a.m. and departing on Friday at 8:00 a.m.

The itinerary for your group follows:

Thursday January 18, 2007 Children's Museum
10:00 - 11:15 a.m. Children's Museum

11:30 - 12:45 p.m. Lunch

1:00 - 2:30 p.m. Children's Museum

2:30 p.m. Bus returns to Adam's Mark

Friday January 19, 2007 Conner Prairie (Two Programs)

9:00 - 10:00 a.m. "Ruth Allison Quilt" and

10:15 - 11:15 a.m. "What is That"

11:30 - 12:30 p.m. Lunch: "A Taste of the Past"

1:00 p.m. Bus returns to Adam's Mark

Convention Registration Form

Wednesday, January 17, 2007

- 9:00- 12:00 p.m. Board of Directors Meeting International Board Room
- 12:00 - 7:00 p.m. ***REGISTRATION*** ATRIUM***
- 1:00 - 4:00 p.m. Using Excel and PowerPoint
Justin Bond (3 CEH Elective)
- 1:00 - 4:00 p.m. Accuracy in Motion, Vertical Testing of ATV Mounted GPS Data Collection
Bruce Strack & Craig Williams (3 CEH Elective)
- 1:00 - 4:00 p.m. The Indiana Map
Jill Saligoe-Simmel (3 CEH Elective)
- 1:00 - 4:00 p.m. Traffic Safety and More
Ronald Koons (3 CEH Elective)
- 1:00 - 6:00 p.m. **Exhibit Hall Opens (Golden Ballroom 4-7)**
- 4:00 - 6:00 p.m. Exhibitors Reception
- 7:00 - 10:00 p.m. Las Vegas Style Casino Party

Thursday, January 18, 2007

All seminars will be pre-registered. Classroom space may be limited. Please indicate first choice (✓) and alternate (A). NOTE: Seminars must be attended in full to receive CEH credit. Registration in a seminar that is a Part 1 of 2 automatically registers you in Part 2.

- 7:00 a.m. - 5:00 p.m. ***REGISTRATION*** ATRIUM***
- 8:00 - 11:00 a.m. Writing and Interpreting Legal Descriptions
Anthony Gregory (6 CEH Mandatory)
(Part 1 of 2)
- 8:15 - 11:15 a.m. Higher Order of Surveying in Indiana
James Reilly (6 CEH Elective)
(Part 1 of 2)
- 8:30 - 11:30 a.m. Railroad Surveying 101
Charles Tucker (6 CEH Elective)
(Part 1 of 2)
- 11:00 - 12:45 p.m. Lunch (Staggered start and finish)
- 12:15 - 3:15 p.m. Witing and Interpreting Legal Descriptions
Anthony Gregory (Part 2 of 2)
- 12:30 - 3:30 p.m. Higher Order of Surveying in Indiana
James Reilly (Part 2 of 2)
- 12:45 - 3:45 p.m. Railroad Surveying 101
Charles Tucker (part 2 of 2)
- 4:00 - 5:00 p.m. **ISPLS Business Meeting**
- 6:00 p.m. Social and Banquet (Fortune Square)

Friday, January 19, 2007

All seminars will be pre-registered. Classroom space may be limited. Please indicate first choice (✓) and alternate (A). NOTE: Seminars must be attended in full to receive CEH credit. Registration in a seminar that is a Part 1 of 2 automatically registers you in Part 2.

- 7:00 - 12:00 p.m. ***REGISTRATION*** ATRIUM***
- 7:00 - 8:15 a.m. Past Presidents Breakfast (International Board Rm)
- 7:00 a.m. **Exhibit Hall Opens (Golden Ballroom 4-7)**
- 8:00 - 11:00 a.m. State Plane C coordinates & Improving Field Procedures
James Reilly (6 CEH Elective) (Part 1 of 2)
- 8:15 - 11:15 a.m. Science of Surveying Measurements
Joseph Paiva (6 CEH Elective) (Part 1 of 2)
- 8:30 - 11:30 a.m. ALTA Standards
Gary Kent (6 CEH Elective) (Part 1 of 2)
- 11:00 - 12:30 p.m. Lunch (Staggered start and finish)
- 12:30 - 3:30 p.m. State Plane Coordinates & Improving Field Procedures
James Reilly (Part 2 of 2)
- 12:30 - 3:30 p.m. Science of Surveying Measurements
Joseph Paiva (Part 2 of 2)
- 12:30 - 3:30 p.m. ALTA Standards
Gary Kent (Part 2 of 2)
- 2:00 p.m. **Exhibit Hall Closes**

TECHNICIAN PROGRAM

“Participants signed up for the technician program are not eligible to attend the other convention sessions. If you wish to attend the other sessions you must pay the full or 1 day convention fee. The technician program fee includes meetings, handouts and luncheons only.”

Thursday, January 18, 2007

- 8:15 - 11:15 a.m. ALTA for Field Personnel
Gary Kent (0 CEH)
- 11:15 - 12:30 p.m. Lunch Golden Preconvene
- 12:30 - 3:30 p.m. Section Corner Perpetuation
Curt Candler & Cindy Candler (0 CEH)

Friday, January 19, 2007

- 8:00 - 11:00 a.m. Construction Surveying & Layout - A Discussion of Mistakes & Errors (Part 1 of 2)
Wes Crawford (0 CEH)
- 11:00 - 12:30 p.m. Lunch Golden Preconvene
- 12:30 - 3:30 p.m. Construction Surveying & Layout - A Discussion of Mistakes & Errors (Part 2 of 2)
Wes Crawford (0 CEH)

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Convention Rates (below) have been arranged. **Please indicate you are attending the 2007 ISPLS Convention when making reservation.** To receive the convention rate all reservations must be received by **12/31/06** in order to guarantee room and availability.

Single:	\$95.00
Double:	\$95.00
Triple:	\$95.00
Quad:	\$95.00

Registration received after 12/31/06 (including walk-in's) will include a **\$50.00 late fee**, and will be accepted based on available space, and will not be guaranteed handouts or meals. Refund requests before 1/07/07, a 50% processing fee will be made. After 1/07/07, no refund will be made.

No further Registration will be accepted after 1/02/07.

After 1/02/07 registration will be at the door with availability of seating.

The **full registration** fee for the convention includes all handouts, refreshment breaks, two luncheons and the banquet. The registration fee for **spouses** includes a like number of meals. The **student** (full time) registration fee includes meetings and luncheons only. **One-day** registrant's fee include handouts and luncheons for the day registered.

The **technician program** fee includes technician meetings, technician handouts and luncheons only. Participants signed up for the technician program are not eligible to attend the other convention sessions. If you wish to attend the other sessions you must pay the full or 1 day convention fee.

As a reminder indicate your first choice with an (✓) and an Alternate (A). It would also be appreciated if you would indicate by a (✓) if you plan on attending the Las Vegas Style Party and/or the Banquet on Thursday night.

The Better Half of the Tecumseh Chapter of ISPLS will once again be having their silent Auction for the Margaret Cunningham Scholarship Fund.

All sessions have been approved for Continuing Education Credits.

Registration Form

Mail to: ISPLS
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Name: _____

Name to be printed on badge: _____

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Firm Name: _____

Address: _____

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Zip Code: _____ Phone: _____

Spouse Name: _____

SINGLE REGISTRANT, TECHNICIAN & SPOUSE FORM
For additional registrants please make copies of this form or contact ISPLS for additional forms.

	Fee
<input type="checkbox"/> Member	\$310.00
<input type="checkbox"/> Non-Member	\$600.00
<input type="checkbox"/> Spouse	\$135.00
<input type="checkbox"/> Student (Full Time)	\$ 30.00
<input type="checkbox"/> 1 Day (Member)	\$220.00
<input type="checkbox"/> 1 Day (Non-Member)	\$450.00
<input type="checkbox"/> 1 Day Technician Program	\$ 75.00
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The Need for Dual Stamped Maps

By: R. Lee Hixson, PLS (CA, NV, OR, UT, ID, WY)

Have you ever worked on a project where the field work was handled by one surveyor, and all the office work was handled by another surveyor? Of course you have. It happens all the time. From small firms to large firms this is a typical scenario, and yet the maps that get recorded in California allow for only one surveyor to stamp and sign them, despite the fact that multiple surveyors have exercised responsible control over the work.

Why do we do this?

I suppose that this practice has historical roots, dating back to past centuries where most licensed surveyors worked either for themselves, or with small firms, and literally performed all the work for the project from start to finish. They got the contract, did the research, ran the field crew, did the calculations, analyzed all the data and either did the drafting themselves, or closely supervised it. Thus, it only made sense that they would take full responsibility for the entire product and, when the map arrived at the Recorder's Office, it would only bear one stamp and signature.

But this is clearly not the case anymore. I have been surveying in California since the late 1970s and the trend has obviously been in the direction of multiple responsibilities for the mapping that is being done. There are variations, of course, but isn't it very common that you work for a firm where the field work is separated from the office work? Of course it is. As project surveyors or project managers we try our best to visit the site to be familiar with the field conditions, inspect some of the land net monuments in the area, watch the crew for a while, and carefully examine their field notes, but the reality is that 99% of our billable time is spent in the office.

The result is that we are forced into a position of trusting that the field work is being done to our satisfaction. If we have worked with the same firm for many years, and if the field survey staff hasn't had too much turnover, then we have a greater chance for developing a higher level of confidence in the field work being done...that the crew members are being diligent and professional, and closely following our guidance in each phase of the project.

But no matter what the circumstances of the firm-the longevity of the working relationships between the field and office personnel-the truth is that, to a great degree, we do not follow the legislated maxim of being "in full responsible charge" of the work being done. While we may be taking full responsibility for the field work, if we are not actually out there doing the work ourselves we are merely trusting that it is being done the way we would do it ourselves.

I have worked for small firms where the office LS was heavily involved in the field work. He or she would be the only one to study the previously recorded maps in the area and do the pre-calculations for use by the crew in locating the land net monuments. They would also prepare the crew package and give a detailed briefing on what was to be done that day, perhaps being in phone contact with the party chief during the day and getting personally debriefed when the work was completed...even downloading and checking over the field data.

But I have also worked for larger firms where there was a greater disconnect between the office and the field. It is not

uncommon for one cadd tech to do the precalculations and another tech take care of the transfer of data from office to field, and field back to office. It is also possible for yet a different staff member, who is skilled at least squares adjustment, to adjust and balance the data before handing it over to the project surveyor. Many specialized staff members might play key roles in the office.

Not that such a division of authority is a bad thing. Of course not. Many firms are performing high quality, professional surveying with numerous staff being involved at the various stages of the mapping process.

The point is, to one degree or another, most firms have a division of labor where there are multiple people involved in a particular project. Any of the common types of survey projects can be divided up into phases, allowing for different people with different specialties to participate in the eventual final product. And the biggest differentiation is between the field and the office. There is some degree of divided authority between the different office tasks, but it is between the office and field work where we see the largest "gap" in the chain of responsibility.

But that gap need not be a problem if everyone involved is doing their work professionally and the good communication and proper quality control is being implemented. There are firms where some of the party chiefs are licensed surveyors. Here we have, not just a physical separation between the office and field, but a situation where there is a licensed person on each end of the work.

Let's take it one step further. How many of you have been involved in (or heard about) cases where one firm subcontracted the field work to a second firm? A licensed person in Firm A does the research and the pre-cals, and then has a licensed person in Firm B oversee their own crew in performing all the field work. Firm A takes the field data, processes it and eventually completes a boundary resolution, Firm B is then given the coordinates for the monuments that need to be set, and they proceed to set them.

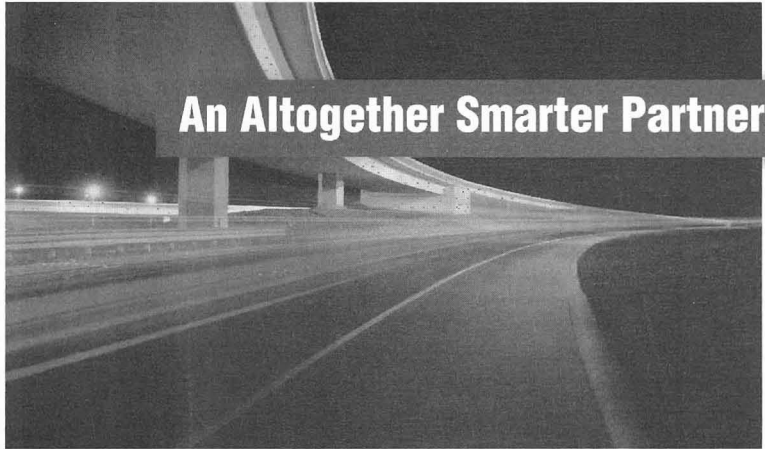
Is there anything inherently wrong with such a division of the labor? As long as the two firms have licensed surveyors taking responsibility for their separate phases of the work, of course not. So then why not allow them to both stamp and sign the map?

In the first case, where one firm has an office LS as well as a party chief who is an LS, it may be more discretionary as to whether one of both of them stamp the map. But in the second case doesn't it seem practical and even desirable that both of the surveyors should have their stamps appear on the final mapping product?

Let's face the reality of modern surveying. With the tremendous changes that have taken place in the past 15 years in the technology of field data collection, there has been an ever-increasing tendency for the surveying profession to further specialize. For a long time we (and our state laws) have sidestepped the issue of multiple sub-licenses within the profession. For unexplained reasons we have not gone the way of engineering and subdivided the licensing process to recognize specialties (civil, structural, geologic, etc.) despite the realization that, as our profession

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Land Surveying in Colonial America: 1600

by John Watson, RPLS, Midland, Texas

Beginning with the First Virginia colony there was an apparent need for those industrious souls with the knowledge of mathematics, geometry, law and trigonometry. These men are known as land surveyors. The vast wilderness of America that lay before the early settlers would have to be cleared and subdivided in order for Francis Bacon's idea "Of Plantations" and the concept of British Mercantilism to take root. This task required men such as Captain John Smith, Augustine Herrman, Captain John Sherman and John Love who were among the early colonial surveyors. Land surveying is an "art" which is involved in every aspect of land speculation, establishment of boundaries, community planning, and the laying out of farms and plantations and thus surveyors exercised considerable political power. I believe John Love describes the basic need for surveying in his statement:

"What would be more ridiculous than for me to go about to Praise an Art that all Mankind know they cannot live Peaceably without? It is near hand as ancient (no doubt on't) as the World: for how could Men set down to Plant without knowing some Distinction and Bounds of their Land? But (Necessity being the Mother of Invention) we find the Egyptians, by reason of the Nyles over flowing, which either washt away all their Bound Marks, or cover'd them over with Mud, brought the Measuring of Land first into an Art, and Honoured much the Professors of it. Ther great Usefulness, as well as the pleasant and delightful Studie, and wholsom Exercise of which, tempted to many to apply themselves thereto, that at length Egypt (as in Bermuda now) every Rustick could measure his own land."

The early surveyors grasped the modern technology of the time and through many trials and the use of various instruments made tremendous accomplishments both for society and themselves. These men paved the way for a new nation.

Among the first to arrive in this new world of America was John Smith who arrived in 1608 at the First Virginia Colony. Although not a surveyor, he had training in mathematics and engineering and was considered a cartographer. Before the need to survey land there was a need for a general map that represented the overall bounds of the new colony; thus the need for cartographers who could accomplish this task. These cartographers were the first surveyors of the colonies. On instructions from the London Council Smith immediately found it necessary to explore the James River and the outreaches of the colony. He was instructed to prepare a map of the entire region and send it back to England. During one of his expositions, as legend has it, he was captured by Panankee Indians where he dazzled them with his ivory spherical compass sundial. After his release from Powhatan he made many journeys across Chesapeake Bay and up several rivers. Smith's map has been described as "the most authoritative survey of the country yet furnished and had no real predecessor". Smith's map remained the standard map for the region for more than half a century. Smith was also responsible for another important map of the period. In 1614 he explored and mapped the coast of New England from Cape Cod to Pembrocks Bay and he was the first to use the name "New England" for the region. According to Silvio Bedini this map became the standard chart of

the northern coast of English America and was instrumental in attracting the Pilgrims to that region and leading them to "Plymouth" which first appeared on Smith's chart.

Another famous cartographer was Augustine Herrman. He was a surveyor, who was described as one of the most lusty and colorful personalities of 17th century Colonial America. According to Bedini, Herrman's full career combined surveying, mapping, engineering, industry, privateering, fur trading, land speculation, slave trading, public administration, diplomacy, law and farming. Beginning in 1659 Herrman realized a need for a map of the Maryland region and in 1660 he delivered a rough sketch of the map to Lord Baltimore who was so pleased by the map he granted several large land grants to Herrman. Ultimately Herrman would own lands between 20,000 to 25,000 acres. Herrman surveyed these lands and patented them as well as many others. Herrman's map took over a decade to complete. The map was titled Virginia and Maryland as it is Planted and Inhabited This present Year 1670 Surveyed and Exactly Drawne by the Only Labor & Endeavour of Augustine Herrman Bohemiensis and was considered important and had immense geographical importance. According to Bedini, Herrman's map was one of the major cartographic achievements of the 17th century and it was copied and adapted by mapmakers for more than a century. Herrman received an additional land grant of 13,000 acres from Lord Baltimore upon the maps completion.

Following the Third Virginia Charter and Dale's Laws, the Virginia Company had a problem of attracting prospective settlers. Thus the company had to make concessions and had to figure a way to make it profitable. The company developed the headright system and that coupled with the development of tobacco as a cash crop created renewed interest in the colonies. Here the colonial surveyor first achieved his importance.

The headright system consisted of an award of 100 acres to all who purchased a share in the Virginia Company venture and 50 additional acres for every person brought to the new colony. Thus most surveys were based on multiples of 50 acres. The land was virtually free and the major costs were for the survey and the patent. At first surveyors were public officials and their place in administrative hierarchy was between that of a lawyer and the clerk of a county court. Their position was by official appointment and the fees and practices were carefully regulated. As stated before, these surveyors were involved in every aspect associated with the development of land in the colonies.

The pioneering surveyor was unlike the typical English gentleman that had settled in the colonies. They embodied the sophistication of the Enlightenment and the ruggedness of the frontier explorer. According to Bedini:

"The colonial surveyor had to have an iron constitution, boundless energy, and an abundance of health. Generally he was a man of rough and ready ways, who was capable of living without the company of other people for months at a time. He responded to the challenge of the wilds, and was intrigued by the mystery of unknown lands that stretched endlessly in all directions."

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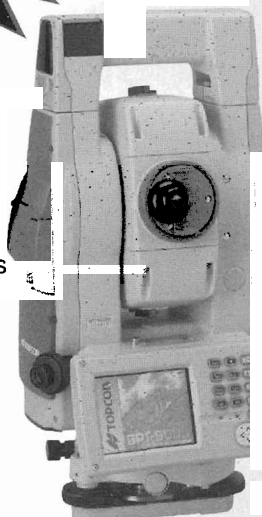
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These men would endure bears, wolves, rattlesnakes and fleas. They would endure total isolation from home and their families all for the betterment of society. Through the use of letters and field books these men wrote down their trials and the incredible stories of not only the land but of survival. Once the field work was complete these men would return to their offices for countless hours of calculations and drafting in order to prepare the final survey plats and maps and the metes and bounds descriptions.

Most of the early grants in Virginia were laid out near natural water courses because the water course served as a natural boundary and because the water course was the life blood of the colony. The surveyors would run lines from an obvious point on the water course then inland for one-half the distance of the acreage of the grant. This would serve as the baseline. The other lines would be run perpendicular to this baseline. The surveyors would mark or "blaze" trees along the route. Natural landmarks made the best monuments. One early problem the surveyors encountered was with their techniques. The instruments and techniques of the time were quite sophisticated, but were designed for surveying in lands that had been cleared for centuries such as those in England. The use of Theodolites and Transits required lines of sight which were virtually impossible in the untouched forested wilderness of the new world. American surveyors had to rely on the circumferenter, commonly called the plane surveying compass, the plane table and the Gunter's chain. These instruments made it possible to follow a line without the sight of a natural monument.

With the ever growing population and economy of the new world there became a need for more and more competent surveyors; men of knowledge of American surveying and not just that of Europe. John Love saw a need for specialized training and understanding of the unique environment of each colony throughout America. After surveying for many years in the colonies he published a book in 1688 which was written specifically for surveying in America and is called *GEODAESIA: OR THE ART OF SURVEYING AND Measuring of Land, Made EASIE*. The book describes in detail the geometry required for surveying, the various instruments available and how to use them, and the different applications of geometry for practical surveying. The book describes how to specifically layout any plot of land, how to layout new lands, and how to survey a Manor, County or Country, as well as how to prepare the proper survey documents such as plats and metes and bounds descriptions. The book describes trigonometry and how to use heights and distances to make maps of rivers and harbors. Lastly the book contains tables of Latitudes, Sines and Tangents and Logarithms, all of which are most important for calculating the various measurements. This book was widely used by Colonial American surveyors and affected considerable impact on the art.

Surveyors would become increasingly important as the colonies merged into a nation. Our nation would be defined by both its government and its geography. The early surveyors of 1600 through 1660 forged the early boundaries of the colonies, planta-

tions, farms and towns out of a wilderness, they developed techniques of land planning and recordation and they had a profound effect on the politics of the various colonies. Men like Augustine Herrman ran successful businesses, contributed to politics, raised a family and still managed an incredible career as a surveyor. Men like Captain John Sherman, who was the first surveyor of Watertown, Massachusetts, and his family, most of whom were surveyors. Men like John Love who took colonial surveying to the next level with his book. The stories of these early colonial land surveyors and their immense contributions to our nation are often untold, yet these men carved our nation. They are the forefathers of other surveyors who are also our celebrated national heroes; men like George Washington and Thomas Jefferson. Surveying, although often unsung, was one of the oldest and most important professions of the colonies and is still today.

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From *The Texas Surveyor*/May 2006

With arms extended....

With arms extended and a rapturous look in his upturned face, the visiting minister began his offertory prayer: "Dear Lord, without you we are but dust..."

He would have continued but at that precise moment, a little girl who was actually listening carefully for a change, leaned over to her mother and asked quite loudly in her shrill little girl voice, "Mommy, WHAT is butt dust?"

The church service was pretty much over at that point.....

evolves there is a compelling need to do just that. Some day we may wake up and change our laws to provide for a "General Licensed Surveyor" designation, along with sub-licenses for boundary analysis, water boundaries, photogrammetry, construction staking and public land survey work.

But while we wait for this eventual subspecialization to be recognized, can't we at least acknowledge the reality that, very often, the office and field work is supervised by two different people? Why can't we change the Subdivision Map Act and Land Surveyor's Act to allow for two people to stamp a topography map or any of our maps that get recorded? The Surveyor's Statement could be altered slightly to reflect the different responsibilities. For a Record of Survey these could be the two versions of the Surveyor's Statement:

This map correctly represents a field survey made by me or under my direction in conformance with the requirements of the Professional Land Surveyor's Act at the request of _____ in _____, 20__.

This map correctly represents the boundary resolution portion of a survey made by me or under my direction in conformance with the requirements of the Professional Land Surveyors' Act at the request of _____ in _____, 20__.

Each licensed surveyor would stamp the appropriate statement. Similar alterations could be made to the statements shown on Parcel Maps, Tract Maps and topographic survey maps. The Land Surveyor's Act could contain a new paragraph that would explain the allowed division of authority; the Subdivision Map Act could also be revised toward the same end.

There are two main benefits to such a change: 1) that State Law would finally reflect the way that work is actually being performed every day around the state, and that, 2) each surveyor involved with a project would be able to take credit-and responsibility-for that portion of the work that they were in charge of. There is nothing intrinsically wrong with moving in this direction and it only seems right that our laws bear a closer resemblance to how the profession actually operates.

I have been told that, in Germany, the party chief, the drafter and the office surveyor in charge all stamp and sign the map. Doesn't it make sense? Shouldn't we allow for, if nothing else, the possibility that more than one person was in responsible charge of a survey? Why should we continue to pretend that only one licensed person was involved with a project, if in fact there were two?

From the California Surveyor, Summer 2006

You Might Be A Surveyor if ~

by Curt Sumner, PLS, ACSM Executive Director

I Suggest That "You Might Be Married To A Surveyor If":

- * You've cooked a hot meal that goes Cold before it is eaten!
- * Your family's primary vehicle is a Suburban !
- * Family outings may include looking for Survey Monuments!
- * You've held the "zero end" of a measuring tape In Public!
- * You have received field boots as a Christmas Gift!
- * You've paid a credit card bill for surveying equipment when you need a New Washer and Dryer!
- * You know what business your husband is in, But Have No Idea What He Does!
- * Your husband can use complicated equipment and computer, but Gets Lost While Driving Around
- * You've driven through a snowstorm to get to a meeting You Care Nothing About!
- * You have spent all day learning arts & crafts that you will Never Use Again!
- * Your husband's friends are More Eccentric than he is!
- * You've waited all afternoon in a hotel lobby, After checkout!
- * You have sat through Endless Awards Ceremonies and Boring After-Dinner Speeches!

There may be a couple of things among these with which you can relate - but, I'll bet you can also relate to being married to a surveyor if:

- * Your husband is the Most Caring Person you know.
- * Your husband cares more about Getting It Right AND Not being perceived To Have Cheated Anyone Than About How Much Money He Makes!
- * Your husband Respects His Peers, Even When He Thinks They Are Wrong!
- * Your husband cares about What Happens To His Profession, Even After He is Gone!
- * Your husband feels a Responsibility For The Lives Of His Employees!
- * Yes, if you are married to someone with Integrity, you are likely married to a surveyor!

The Surveyor's Essential Hand-held GPS

By Jon B. Purnell, PLS

Brandon drawled "We ought to be traversin' to these corners, Jawn." My students and I were conducting a search for some 25 monuments that define the boundaries of the 72 acre Peninsula College campus. Back in the classroom, we had translated, rotated and scaled an unrecorded survey of our campus' boundaries to fit our state plane traverse control. Now, after having loaded the transformed coordinates into our Magellan SporTrak GPS receivers, we were conducting a search for the monuments. But Brandon, one of my second-year students, had his doubts. Only about 20 acres of the campus is developed; the rest is largely wooded with a mixed-species second-growth forest. Brandon knew that navigation grade GPS had its limitations, especially in the woods, but we didn't have enough time to run a mile or more of traverse line. My plan was to search for and recover the monuments that very morning-traverses would be run by subsequent classes in succeeding years. I had had pretty good luck using hand-held navigation grade GPS as an aid for corner searches and for reconnaissance in the past, and I wanted to demonstrate their utility to my students. Loaded with decently accurate search coordinates, and combined with a metal detector and a shovel, a GPS unit can be a powerful corner search tool. By nine o'clock Brandon was convinced. By lunch time, we had recovered 18 of the 25 campus monuments, most of which were in the woods and most of these had never before been visited by any of us.

Maybe you have considered buying yourself a hand-held GPS unit, but which make and model should you buy and how much should you spend? First, you should decide how you plan to use a hand-held. While nearly all hand-held receivers will perform admirably for virtually all recreational uses (provided, of course you know how to run the thing), some are better suited for surveyors' use than others. You need to find a receiver that does what you need it to do-not an easy thing to determine when you consider that many salespeople know little to nothing about the equipment they are selling (and even less about surveying). Manufacturers' web pages are pretty uninformative-no help here either. And what about cost? More expensive receivers are not necessarily more accurate than cheaper models, they just have richer feature sets and fancier graphics-but does the extra expense buy extra functionality or just braggin' rights?

For surveying use, it is convenient if your GPS unit can understand your preferred coordinate system. That way, you can input points into the unit directly, thus eliminating the need to translate them into lat-lon coordinates beforehand. For instance, if you use state plane coordinates, so should your GPS receiver. Find out if the receiver you want to buy can handle a two-parallel Lambert conic map projection in its User Grid. While most GPS receivers allow you to set up a custom coordinate system (a "user grid") not all can handle the two parallel conic map projection required for the Washington Coordinate System. I would eliminate from consideration any GPS unit that does not have this capability. For some real fun, ask the salesperson, "Will this unit let me set up a user grid using a two-parallel Lambert conic map projection?" I get some pretty weird looks sometimes. Ask the salesperson to install a set of batteries in the unit so you can fire it up and find out for yourself if it has the features you need.

Another handy feature to have in a hand-held GPS unit is coordinate projection (not to be confused with map projection!) Using this feature, you can develop search positions in the field by inputting

bearing - distance data. Picture this: You have a survey map or plat with you in the field, but no coordinates. You successfully locate a section corner in the field that is also shown on the map, and using the GPS unit, you save its coordinates-this is your Point of Beginning. Then, using the coordinate projection feature, you could enter map bearings (properly rotated to the true meridian) and distances to develop search positions for other corners appearing on the map. (With the right GPS, you've got GOGO! You can traverse!) Next, you can use the receiver's GoTo function to guide you to the corner of your choice.

A few years ago, many GPS units were set up to display distance units in miles or kilometers only, and then only to the nearest 1/100th mile or 1/100th kilometer. In other words, distances could be displayed or input with a precision of 1/100th mile (about 50 feet) or 10 meters. Fortunately, manufacturers have improved their current offerings such that distances are less than 1/10 mile are converted to and displayed in feet-much more intuitive. Be sure that the unit you are considering has this capability as well. This is especially important if you plan to use the coordinate projection feature a lot-without this capability, you'll have to round any distance you input to the nearest 1/100th mile! The receivers I am most familiar with (Magellan's MAP 330 and SporTrak color) allow distance input in feet to 1/100th foot precision and bearings to the nearest 1/100th degree-very cool and very good for developing the best possible projected points for use as search positions in the field.

Most Magellan units have another feature that I find very useful: These GPS receivers can display points' coordinates in two different reference frames at the same time. For instance, you can set up the unit's primary coordinate system and datum for the State Plane, NAD'83 and its secondary coordinate system and datum for Latitude-Longitude, NAD'27, if you need to. Virtually any combination of two coordinate systems and associated datums can be specified and displayed. I find this feature handy when doing reconnaissance for relative static GPS jobs. Trimble Geomatics Office and other GPS mission planning software wants to know a point's lat-lon, but I like to have my receiver's primary system set up for State Plane coordinates. With the secondary system set up properly, I can record a point's lat-lon without having to reset the primary display.

Your GPS unit should also be able to communicate with your office PC so you can transfer coordinates back and forth and for long term storage, if desired. Some hand-helds also allow you to upload and display topographic and planimetric map data. Often, you can even search for a location by its street address. These features, while gee-whiz cool, are not absolutely necessary for all users. The digital terrain models upon which the electronic topographic maps are based is crude and should not be relied upon for cross country navigation and route finding. Take a map with! Still, it is pretty neat to have an electronic map in your pocket...

In future articles, I'll examine the use of the various features I have described in more detail: how to set up your GPS receiver to read State Plane coordinates, using the coordinate projection function and more. In the meantime, if you have questions or comments about purchasing or using hand-held GPS in a land surveying setting, contact me via e-mail at jonp@pcadmin.ctc.edu

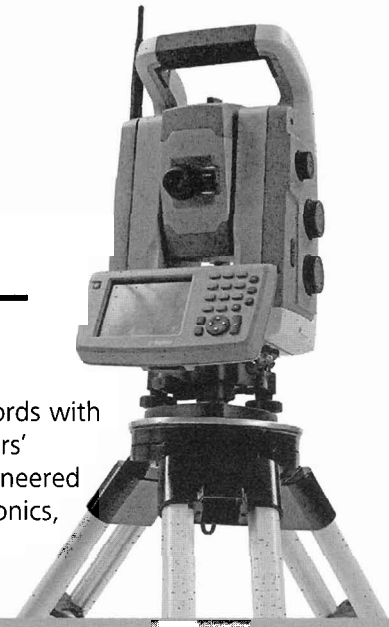
From: Evergreen State Surveyor (Washington), Spring 2006



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Is a Vest a Vest?

By Ronald E. Koons, RoSaKo Safety

For years there were few choices in safety vests. If you went into any store and asked for a safety vest you most likely received an orange mesh garment that went over your jacket or shirt. At first they were button or zipper, then maybe snap, and in the past few years Velcro. Just like surveying equipment, the choices in vests have skyrocketed over the past 10 years. ANSI (American National Standards Institute) initiated a Class system of vests that seemed to explain to all just what type of vest needed to be worn by any given trade. However, just like many other standards, the ANSI 107-1999 standard for reflective clothing actually created more problems that it solved. The 3-class system had surveyors listed in two classes depending on what you were doing at the time. After the standard passed committee and was accepted as an ANSI standard, someone discovered that only large and extra large vests could meet the Class III standard requirement of background materials and reflective striping. It took from 1999 until 2004 before this was settled by totally scrapping the 1999 Class system and initiating a new class system. There are still Classes 1-3, but a new class E was added and the descriptions have totally changed for the first 3 classes. The following paragraphs are how ANSI describes each of the 4 classes.

CLASS 1

Performance Class 1 provides the minimum amount of required material to differentiate the wearer from the work environment. For Performance Class 1, where retroreflective materials is used in conjunction with specified background materials, the bands of retroreflective materials incorporated into the garment shall not be less than 25mm wide.

CLASS 2

Performance Class 2 provides superior visibility for wearers by the additional coverage of the torso, and is more conspicuous than Performance Class 1. For Performance Class 2, the retroreflective or combined-performance materials incorporated into the garment shall not be less than 35mm wide.

CLASS 3

While the type of garment and the size of wearer dictate the size of clothing, it is the intention of this standard for Performance Class 3 to offer greater visibility to the wearer in both complex backgrounds and through a full range of body movements. Additionally, visibility is enhanced beyond Performance Class 2 by the enhancement of background and reflective materials to the arms and/or legs. Regardless of the area of materials used, a sleeveless garment or vest alone shall not be considered Performance Class 3. The retroreflective or combined-performance materials incorporated into the garment shall not be less than 50mm wide for Performance Class 3.

CLASS E

Performance Class 3 trousers shall have a minimum of 0.30 square meters of background material and 0.07 square meters of retroreflective material. Retroreflective material for trousers

shall encircle each leg. Retroreflective material shall not be placed less than 50 mm above the bottom of the trouser leg. When such Performance Class E trousers are worn with Performance Class 2 or 3 garment, the overall classification for the ensemble shall be classified as a Performance Class 3 ensemble. Performance Class E garments are not intended to be worn without a Performance Class 2 or 3 garment. Performance Class E garments shall have a minimum of 0.30 square meters of background material and 0.07 of retroreflective materials placed 50 mm or more above the bottom edge of the leg.

To complicate matters even more, OSHA didn't adopt the ANSI 107 standard. So from OSHA's standpoint you don't *have* to go by the ANSI standards except in one round about way. OSHA defers to the MUTCD (Manual on Uniform Traffic Control Devices) for traffic safety signs and procedures. One section of the MUTCD gives a requirement for those who are flagging on a worksite as follows:

Standard:

For daytime and nighttime activity, flaggers shall wear safety apparel meeting the requirements of ISEA "American National Standard for High-Visibility Apparel" (see [Section 1A.11](#)) and labeled as meeting the ANSI 107-1999 standard performance for Class 2 risk exposure. The apparel background (outer) material shall be either fluorescent orange-red or fluorescent yellow-green as defined in the standard. The retroreflective material color shall be either orange, yellow, white, silver, yellow-green, or a fluorescent version of these colors, and shall be visible at a minimum distance of 300 m (1,000 ft). The retroreflective safety apparel shall be designed to clearly identify the wearer as a person.

The only place that OSHA actually mentions safety vests is in the excavation section and it deals with anyone working exposed to vehicular traffic during excavation activities. The description of what needs to be worn is very vague and doesn't use any of the accepted standards by reference.

So what does all of this mean? You need to protect your workers in the most practical way for the exposure they have at any given time. Even though OSHA may not have adopted the ANSI standards, they can always say that they were available for you to use for the protection of your workers. In other words OSHA may say that even though they don't have it in their regulations you had better do something to protect your employees and the ANSI standards are a good starting point. Remember, you are responsible for the safety and health of your employees at all times. You have a duty to protect them to the best of your ability. Get to know the types of vests that are available and make sure your workers use them. The cheapest vest isn't always the most economical. Get a good vest that lasts and has good visibility for the duties your employees will be performing.

CALENDAR

January 17-19, 2007

55th ISPLS Annual Convention, Indianapolis Adam's Mark Hotel (Airport), Indianapolis, Indiana, Hosted by Central Indiana Chapter ISPLS (Note of Location)

January 25-27, 2007

46th Annual Geomatics Engineering Conference, Fresno, CA Location: Piccadilly Inn University, For more information call: (559) 278-6244 or go to: www.csufresno.edu/geomatics

March 9-12, 2007

The American Congress on Surveying and Mapping (ACSM), together with the Illinois Professional Land Surveyor Association (IPLSA) and the Missouri Society of Professional Surveyors (MSPS) invite YOU to attend their 2007 Annual Conference and Technology Exhibition.

Location: America's Center, St. Louis, Missouri
Conferece Hotel: Millennium

March 13-14, 2007

2007 Indiana GIS Conference, Crown Plaza Hotel and Conference Center, 301 S. Illinois Street, Indianapolis.

September 13-15, 2007

The Surveyors Historical Society's 2007 Rendezvous will be held at George Washington Birthplace, Virginia, as a joint venture with the National Park Service.

Contact: Roger Woodfill, SHS Administrator, e-mail: shs9@earthlink.net

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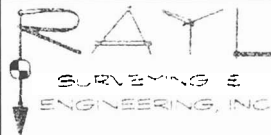
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