

August 2008

# SIDE SHOTS

Professional Land Surveyors of Colorado

Volume 39, Issue 3



## Fall Technical Conference

University of Denver  
November 13-15, 2008

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Dear Fellow Members,

In my previous letter, I pointed out the necessity of spreading the word about the benefits of PLSC membership to non-members, to increase support for our professional organization during these difficult economic times.

I am pleased to report that some real progress is being made. Either my pleas for delinquent members to pay their annual dues, or a large mailing of reminder notices, or both, had some effect. The overdue payments, combined with severe cost cutting in travel, publications and Peg Ackerman's lobbying expenses, helped to bring the PLSC's financial statements back into the black. While it gives the board some breathing room, it is not yet a cause for celebration. There are still many members who have not yet paid. If you are among them, turn to the renewal form in this issue and please consider renewing immediately. Our dues are among the very lowest for a state surveying organization in the entire nation — it's a great value.

One of the key benefits of a PLSC membership, aside from this publication you are reading, is the annual Fall Technical Session that will take place in November at the University of Denver. Education is an important part of our mission, and this is a valuable continuing education opportunity for you (or your employees) in a centralized location. We are assembling another top-notch group of speakers and instructors on a variety of topics that are relevant to your careers right now. A successful technical session will also allow the board to consider some kind of financial assistance to other various educational programs for surveyors, thereby furthering our investment in education for those entering our profession. Education truly benefits everyone.

In the meantime, the state and national economy continues to suffer some ominous changes that will impact us all. I hope this downturn will be mercifully brief, but no one knows. My thoughts on this are contained in an article about the "Surveying Slump" in this issue. I would welcome any feedback from anyone on this important issue.

On a brighter note, we have a commitment from Charlie Adams at the State Board of Licensure to provide regular updates, something that has been absent from *Side Shots* for the past several issues. Welcome, Charlie! We are also wrapping up the call for nominations for various PLSC officers; nominees from the western slope and other areas far from the Front Range are especially welcome (special thanks to Les Doehling, John Noonan, Larry Connolly and others who have dealt with the inconvenient distances). We have continuing developments to report from the Legislative Committee, minutes from the June 13th meeting of the PLSC Board, a concise summary of the April WFPS meeting, a fresh batch of photos from your colleagues in their formative years as surveyors, and the latest news from the state chapters.

The continuing support, encouragement, and contributions of articles and news from so many of you, is continuing evidence that the PLSC really matters. That makes me very proud. Any of those 1,793 licensed surveyors in Colorado who are not a part of this organization are really missing out, as well as the non-PLS surveying practitioners — keep spreading the word whenever you can. I wish you all much success for the remainder of the summer.

Sincerely, John B. Guyton, PLS



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# SIDE SHOTS

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*Side Shots is the official publication of the Professional Land Surveyors of Colorado, Inc. and is published quarterly for the betterment of the surveying profession.*

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**Deadlines for editorials, articles, pictures and advertising are January 1, April 1, July 1 and October 1. All material received after the current deadline will appear in the next issue of Side Shots.**

*We would like to invite anyone who is interested to advertise in our newsletter - Side Shots. Do you have something you want to sell, trade or buy? Why not use Side Shots for your next ad. We can also reproduce business cards for advertising. All material must be sent to Gene Kooper, 8151 W. Evans Ave., Lakewood, CO 80227; ekooper@uswest.net; 303-989-5424 before the editorial deadline (January 1, April 1, July 1 and October 1).*

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The Professional Land Surveyors of Colorado, Inc. (PLSC) recently entered into a Partnership Agreement with Metropolitan State College of Denver.

The agreement will benefit everyone in the real estate and surveying communities who depend on quality surveying work to help their businesses thrive.

As part of the agreement, funding will be provided to Metro on behalf of the school's Surveying and Mapping Program. The funding will help the program to achieve the highest academic standards and ensure quality surveying work in Colorado for years to come.

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## *Education is the Future!*

# Call for Nominations

As Chairman of the Nominations and Elections Committee of the P.L.S.C., I am requesting nominations for the following positions:

- President
- Vice-President
- Secretary-Treasurer
- Director (4 positions)

Nominations by mail shall be sent to the Nominations and Elections Committee, c/o Animas Surveying & Mapping, P.O. Box 497, Durango, CO 81302 or by email to [larry@animassurveying.com](mailto:larry@animassurveying.com)

Nominations shall include the name of the nominee, the position nominated for, and the nominee's contact information. The nominee shall notify the Nominations and Elections Committee that they are accepting the nomination.

**THE DEADLINE FOR NOMINATIONS  
IS SEPTEMBER 1, 2008.**

## This month on [www.plsc.net](http://www.plsc.net)

To view these articles, download this month's issue of *Side Shots*, and click directly on these links on page 4.

- Minutes of the PLSC Board of Directors meeting, held on June 13, 2008 at the home of Gene Kooper, Executive Director, in Lakewood, Colorado.
- Press release about formation of the Coalition of Geospatial Organizations, submitted by Curtis Sumner, Executive Director, ACSM

### On The Cover:

Photos from last year's Fall Technical Conference held at the University of Denver.

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# It's All in the Meridian

By Gaby M. Neunzert, PLS

One of the more noticeable visual effects of a United States and Canada political map are some of the "straight line" boundaries of the western states or provinces. Usually boundaries follow natural features such as rivers, shore lines or watersheds, but, for example, Colorado and Wyoming are bound by east-west and north-south lines artificially drawn on a white paper and physically anchored in a featureless landscape. Both states would show up as rectangles on a Mercator map, even though on the ground the north-south boundaries as meridians converge on the North Pole and the east-west lines are parallel, small circle routes. Most of these states or provinces were created on paper during the 1840 to 1870 time period, with their boundaries physically surveyed on the ground some time later. Drawing these boundaries on a map, especially on a Mercator projection, is very easy, i.e., draw a rectangle; surveying the same boundaries on the ground before GPS and portable time, was considerably more difficult. With a transit and without calculations, establishing true north for the meridian involved mechanically splitting sightings of Polaris or a circumpolar star at eastern and western elongation. But since flashlights had not been invented, a lantern with a candle had to be used to illuminate the cross hairs and make field notes. At lower latitudes sighting Polaris was easy since the star was only 35° to 40° above the horizon and prolonging a straight line towards it produced good results; weather and remote location aside, running the border between Alaska and Canada could not have been easy with the pole star further and further overhead.

Compared to physically running a meridian, establishing a predetermined longitude to any degree of accuracy was almost impossible. Since the determination of longitude involves time, a portable chronometer, sufficiently rugged to survive the "wild west" and good ephemeris tables were needed. An error of one second in time produced an error of very roughly 1200 ft on the ground. Sighting stars with a 1m transit and poorly illuminated spider web cross hairs, probably yielded location accuracies of several minutes of arc or very roughly a mile. Getting a meridian initially located even near its intended position and later locating that same meridian further north or south to continue the line, speaks very highly of the original surveyors and their skills. Thus considering for example the 72nd meridian as shown in the illustration, which runs from the U.S.-Mexican border, through the Four Corners area to the southern border of Wyoming and is, including a slight dogleg on Colorado's western boundary, about 743 miles long.

In addition to controlling Canada's provincial boundaries, meridians also are used to define the Principal Points of the Dominion Land Survey; conceptually similar to the US Land Survey System. Starting with the First Meridian (97°27'28.41" W) and then the Second

through Seventh Meridian (102°, 106°, 110°, 114°, 118° and 122° W), Principal Points are located at about 24 mile intervals north or south, at the intersection of the respective Meridian and an east-west small circle route called "Base Line." Many Canadian Sections, just like in the U.S. about 1 mile x 1 mile, are surrounded on the outside by a "road allowance" either 1.5 chains or 1 chain wide. A word of caution: in a Township, Canadian Sections are numbered differently than American Sections!

Given the nature of cartographers, surveyors and maybe even politicians, laying out a meridian at random values, unless dictated by topography, is not "neat". As shown on the map (*see illustration map, page 6*), seven boundary meridians (25°, 27°, 32°, 34°, 37°, 39° and 40°) were laid out as integer values west of Washington, DC and yet another four (100°, 103°, 120°, and 141°) were reckoned from Greenwich. Washington, or more specifically the old Naval Observatory, was the official reference for the prime U.S. meridian from September 28, 1850 until August 22, 1912 for astronomical observations only, i.e. mapping on land, etc. During all this time Greenwich was used for navigation and it possibly would be of some interest to see how a harbor map of this time period referenced land by one meridian and water by another meridian. As chair of the International Geographic (or Meridian) Conference in 1884, the U.S. led the affirmative drive to make Greenwich the internationally accepted 0° or prime meridian through the Royal Greenwich Observatory on the outskirts of London. Without additional research, it appears that by Congressional action the Washington meridian was rescinded in 1912, but the Greenwich meridian has been adopted since 1884 by consensual usage only – just like the metric system – since April 5, 1893.

The 141st meridian as the boundary between Alaska and Canada is worth dwelling on a little longer. Alaska, or "Steward's folly", was purchased from Russia in 1867 for \$7,200,000 in gold. Included in the purchase was an 1825 boundary treaty between Russia and Great Britain for the 141st meridian boundary, which the U.S. accepted without anybody ever seeing any physical evidence. It was not until 1913 that the survey was finally completed and intervisible monuments were set and a 20 ft wide right-of-way (also called vista) was clear cut for most of its 647 mile length. Monument #1 is on the shore, near the hamlet of Gordon and Demarcation Point on the Beaufort Sea, the last monument, #181, was set on the south bank of the White River at elevation 3549 ft. From there the meridian line steadily climbs and probably is unmarked by monuments, mostly above the timber line and over glaciers, for about 98 miles to the southern terminus. According to modern maps, this point is on a glacier at roughly 12,800 ft ele-

*continued on page 6*

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vation and it is located about 2.6 miles to the NW of Mt. Saint Elias, the "official" southern end referred to by Van Zandt. At a salary of only a few dollars a day, some very thorough surveyors probably reflected on (or maybe cursed) "Steward's folly" considering that there were no human settlements within hundreds of miles, no snow-mobiles, no helicopters and maybe not even dog sleds to move supplies and equipment. Yet a straight line from "nowhere to nowhere," crossing two mountain ranges and at least three major rivers, had to be surveyed and clear cut. Now, fast forward to the present: Taking the border crossing as a reference point for indexing Google Earth®, the "clear cut" made roughly 100 years ago shows up on the satellite photography for most of its many miles. Google would however place the 141° meridian several seconds of arc to the east ! Even though referenced for the last 183 years, the 141° meridian is now a hot topic of discussion between the US (State Department) and their equivalent Canadian

lawyers. All this because of actual and perceived vast deposits of oil and gas in the Arctic Wildlife preserve and out into the Beaufort Sea towards the North Pole, for yet another about 1,221 nautical or about 1405 statute miles. Stay tuned!

**Major References:**

Bedini, Silvio, 2002, Jefferson & Science; University of North Carolina Press, Chapel Hill, NC. Editorial note: Bedini makes references in many other of his publications.

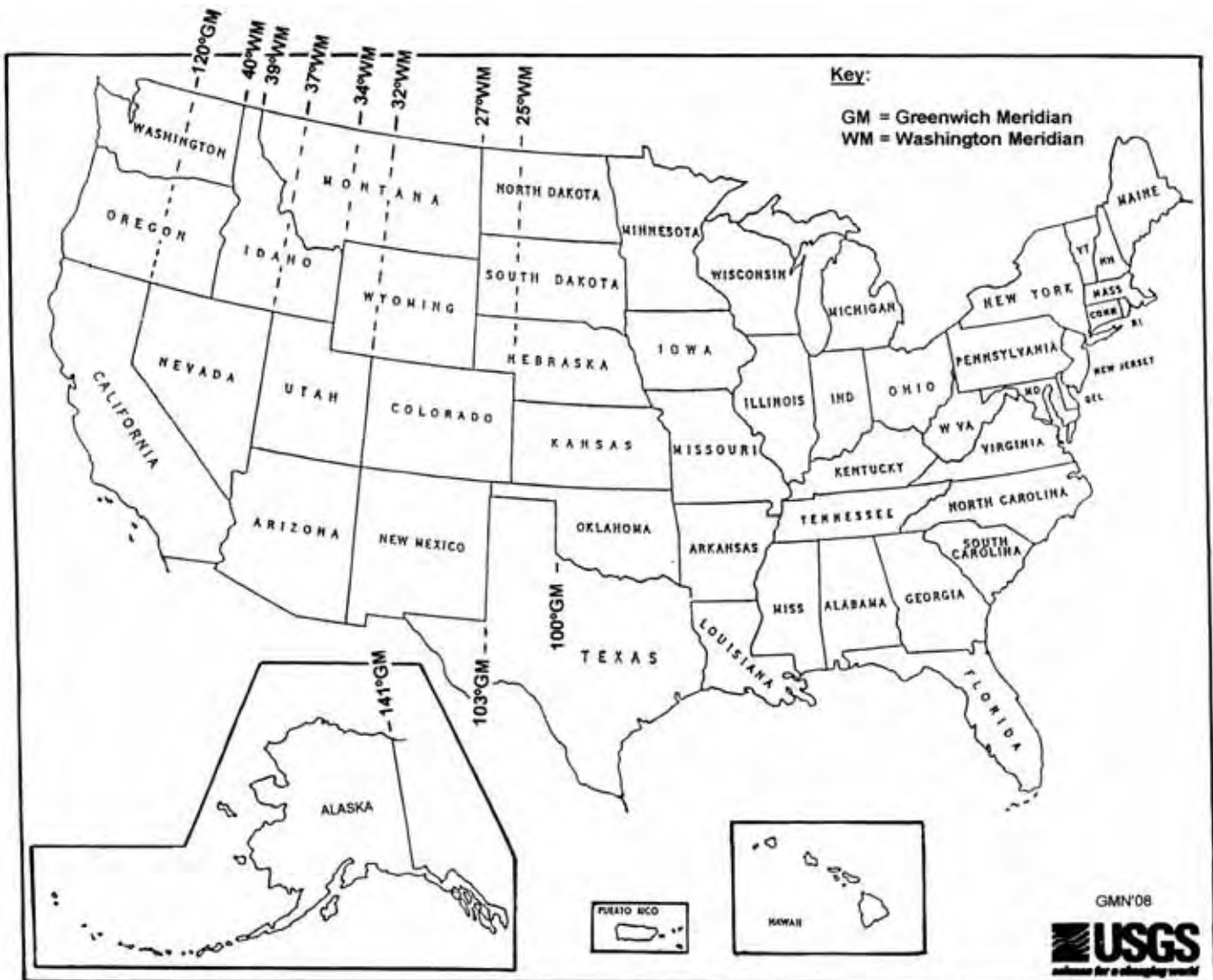
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**Illustration Map**



# Surveying Slump?

By John B. Guyton, PLS

July 1, 2008 - It's finally time to acknowledge the "elephant in the room" that few of us have been willing to talk about: The surveying business in Colorado is down. Since the PLSC does not compile revenue statistics, much of the evidence is anecdotal: Rumors of long-time survey companies that are struggling, other firms seeing record numbers of unsolicited resumes, and larger than usual numbers of surveyors showing up at pre-bid conferences. And yet there are stories of "pockets" of great activity, including the energy-boom regions of the western slope. What's the typical Colorado surveyor to make of this conundrum? Is it time to panic, or hold on for an upturn?

The need for surveying services will never go away. Whenever changes are planned to a parcel of property, including redevelopment or a conveyance, one of us is required. Some economic activities involving property are relatively unaffected, such as Federal, State and local government projects. Some private developments that have been in the works for years will continue to completion despite any short run downturn in the economy. But the dominating drag on the overall surveying business right now has been the sharp reversal in residential and commercial development in some parts of

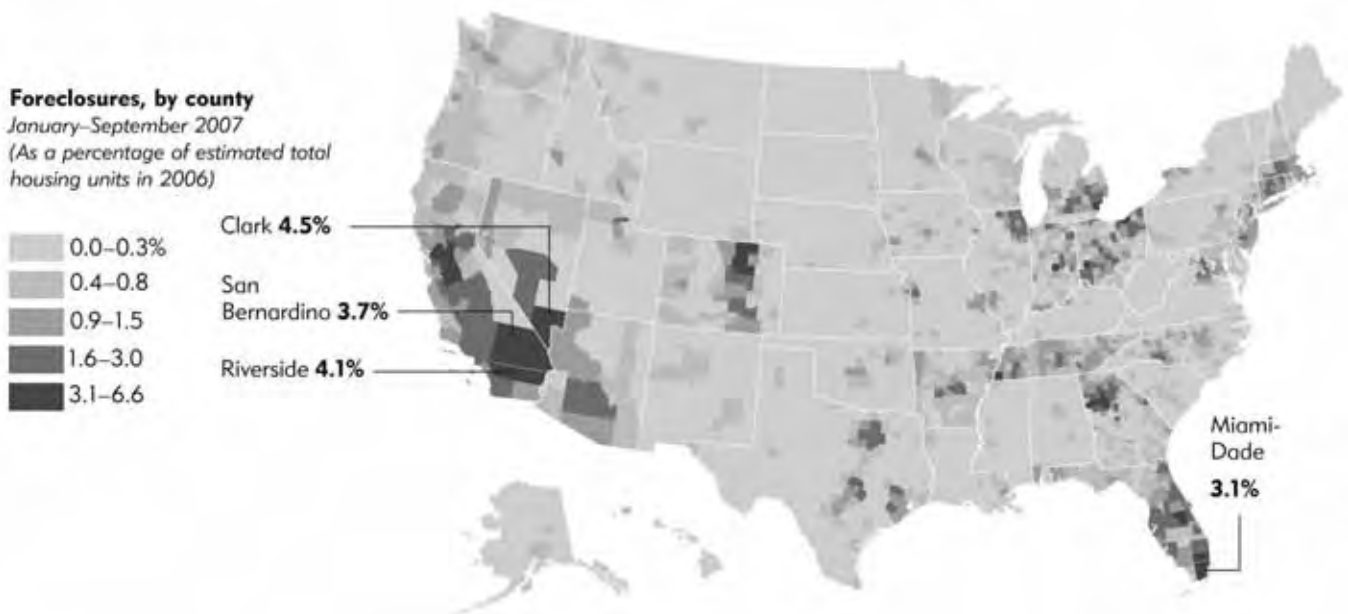
the state.

The U.S. Department of Commerce reported that permits for single family housing in Colorado rose 20.4 percent in 2004, but has been declining ever since: -1.5 percent in 2005, -24.4 percent in 2006 and -30.6 percent in 2007. *Commercial Broker Quarterly*, the publication of the Denver Metro Commercial Association of Realtors®, reported a record \$427 billion worth of commercial real estate traded hands in 2007, but most of that volume occurred in the months prior to August, when the credit crunch began to impact commercial real estate. They are forecasting that investment levels in 2008 may be as much as 40 percent below last year, attributing the decline mostly to investors and lenders' "wait-and-see attitude" and lack of investor confidence.

The lack of consumer confidence is certainly affecting the housing market. In late June, the Conference Board reported that consumer confidence hit a 16-year low. The Colorado unemployment rate was 4.4 percent in April of this year, up from 3.6 percent a year ago. High energy and food prices are reducing people's discretionary income, forcing a reduction in spending on other goods and services. Record foreclosure rates and

*continued on page 8*

Figure 1: Last year, Colorado's Front Range counties were among the worst in the nation for foreclosure rates, as shown below.



Courtesy of The Atlantic, January/February 2008. Sources: RealtyTrac; U.S. Census Bureau; Miami-Dade County; Zip Realty. Graphic by Ryan Morris."



from page 7

tightening consumer lending standards will affect people's ability to buy, in some cases, for many years.

On the other hand, there are fundamentals that leave plenty of room for optimism that this downturn, at least for Colorado, may be a short one. Population is expected to grow another 2.1 percent in 2008, with the state population expected to exceed 5 million for the first time. Our state still ranks 8th in the nation for per capita income. Retail spending has not dropped by as much as many experts predicted. Richard Wobbekind at the University of Colorado's Leeds School of Business has forecast an addition of 43,300 jobs statewide, a growth rate of 1.9 percent compared to a national rate of 1.1 percent. He reports the sector showing the greatest growth is "natural resources and mining," and the professional and business services that are serving that sector. There are other signs of strong regional projects in the pipeline, such as the development of ConocoPhillips massive new training facility in Louisville, and the spread of RTD's FasTracks network around metro Denver, with the associated economic development for both that will surely follow.

Besides the economy and supply/demand considerations, there are other well known factors that can affect the level of business activity for the surveying profession. With an average age of 57 or so, licensed surveyors will soon be approaching retirement age in record numbers, tightening supply and increasing demand for services for those who remain. And yet, that may be tempered by the impacts of clients using "google maps"

technology to do preliminary topography, GIS mapping and the direct use of GPS equipment by contractors. The increasing costs of doing business, including items like fuel, licenses for software like AutoCAD, insurance and medical costs, in a market that cannot absorb fee increases, may further the decline in available surveying professionals.

In times like these, it becomes more important than ever for Colorado's survey professionals to participate in the PLSC, including those who are not yet members. It affords an opportunity to network with colleagues, maintain online job boards, offer workshops to update and sharpen skills to adapt to changing market conditions, and to stay up to date on current legislative and other news that directly affects our bottom lines.

Ultimately, the future is unpredictable, other than the likelihood that it's going to be a bumpy ride. But there are plenty of reasons to be optimistic. During the course of my professional career, I have witnessed three of these sharp downturns in real estate activity. But we rebounded every time for a simple, fundamental reason: People will always want to live in Colorado, more so than in most other states. As long as that desire remains, surveyors have every reason to believe that all of these negative factors will be overcome. Eventually.

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# In Memory of Georgia L. Satterlee of Castle Rock, 1958-2008

By Ann Oden Director, CCPS

There aren't many women in the surveying profession and therefore we tend to stick out in a crowd. This "crowd" was a monthly gathering of surveyors, the CCPS, a local chapter of the Professional Land Surveyors of Colorado which was held several years ago. Everyone in attendance had been asked to stand and introduce ourselves, and after that meeting Georgia walked up to me and personally introduced herself. She was new to Colorado and very interested in getting involved with the professional organization. I found we had a lot in common...Idaho, surveying, the love of the outdoors and our dogs. Over the course of the following year, my elderly Mother was slowly fading away and this became a topic of discussion between us. We often spoke on the phone. Georgia was a great comfort to me then and eventually when my Mother passed, she took the time to check in on me. She had a wonderful passion for helping others and I came to know her as a very caring soul. For this, I will be forever grateful.

The beginning and ending dates which now mark Georgia's life are connected by a dash. That dash represents the time she spent on this earth and how she lived, loved and cared about others. For those who knew and loved her, we all know exactly what that dash represents. I feel blessed to have known such an individual and look forward to a time when again our paths will cross. I will certainly miss that big beautiful smile of yours, Georgia.



## Do You Recognize Your Peers When They Were Younger?



Email your answers to  
Tom Adams at  
[tom@plsc.net](mailto:tom@plsc.net)

Answers will appear  
in the next issue  
of *Side Shots*.



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# Report of the State Board of Licensure for Architects, Professional Engineers, and Professional Land Surveyors

by Charlie Adams, Program Director



I understand it has been a while since this report has appeared in Side Shots and I'm enthusiastic about making it a regular update again. A lot has transpired since the last report, so I'd like to take this opportunity to tell you about a few recent items that may be of interest to you. Some of the changes include new officers on the Survey Quorum. Bryan Clark, PLS, from Lakewood, is the Chairman; Cheri Gerou, AIA, and architect member of the Board from Evergreen is Vice-Chair; and Larry Connolly, PLS, from Durango is the Secretary for the Quorum.

## Monitor Panel Up and Running – Again

The Board, through its Survey Quorum, has delegated to the Monitor Panel the review of land surveying work performed by licensees under probation with the board. Since the PE/PLS Board merged with the Architects Board to form the current State Board of Licensure for Architects, Professional Engineers, and Professional Land Surveyors, the Monitor Panel has not been active. Instead, the PLS members of the Board, through regular Board and Survey Quorum meetings, have been evaluating the work of licensees required to submit work products. Now, once again, the Monitor Panel is directly charged with this review to determine if the monitoree is meeting the generally accepted standards of surveying practice and the requirements of the Land Surveying Practice Act. At the Board's direction, the Monitor Panel shall evaluate and advise the Board as to the compliance with surveying standards and statutes of those required to submit surveying work for review. The Board has already appointed six professional land surveyors to the Monitor Panel and

divided the panel members into two groups: Panel A and Panel B. Two members have been designated as co-chairs to lead each of the two groups. The Survey Quorum and the Board are looking forward to getting the Monitor Panel up and running again in order to effectively and efficiently monitor licensees fulfilling probationary periods with the Board. For more information on the Board, the Survey Quorum, and the Monitor Panel, you can always visit the State Board website at [www.dora.state.co.us/aes](http://www.dora.state.co.us/aes).

## Continuing Education for Architects

A point of interest for professional land surveyors in Colorado may be the legislation that recently went into law regarding continuing education for architects in Colorado. As you know, Colorado law does not currently require continuing education for professional land surveyors or professional engineers. However, the Colorado Chapter of the American Institute of Architects was successful in their bid to require licensed architects in Colorado to now complete continuing education requirements prior to every two-year renewal period. The Board will enter into rulemaking in the coming months and will have rules in place to outline the specifics by January 1, 2009. The Board has also established a committee to assist in the drafting of rules. This committee consists of two architect members of the Board, one PLS member of the Board, one public member of the Board and also representatives from the American Council of Engineering Companies and representatives from your own Professional Land Surveyors of Colorado. The Board realizes the importance of including multiple stakeholders with interest in the concept of continuing education and is optimistic that the

process will end with an effective set of rules to increase protection for the consumers of Colorado. Please check the State Board website for progress updates and minutes from the committee meetings.

## Meet the Board's Staff

We have had some turnover with the Board staff in recent months, but now there is a great team in place. Although instructions for contacting Board staff are posted to the State Board website at <http://www.dora.state.co.us/aes/contact.htm>, I would like to take this opportunity to introduce my staff to you. Carmena Minor is the Board Enforcement Analyst and her contact information is [Carmena.minor@dora.state.co.us](mailto:Carmena.minor@dora.state.co.us) or 303-894-7792. Carmena deals with all enforcement related issues to include complaint analysis and processing. Also, the Board has two administrative assistants, Lynn Ramirez (applications referred for Board review) and Charlene Wisher (Board meeting facilitation and general inquiries). Lynn can be reached at [lynn.ramirez@dora.state.co.us](mailto:lynn.ramirez@dora.state.co.us) or 303-894-2319 and Charlene can be reached at [Charlene.wisher@dora.state.co.us](mailto:Charlene.wisher@dora.state.co.us) or 303-894-7775.

With a handful of challenges and opportunities on the horizon, it continues to be a busy time for the Board. Again, I would like to thank PLSC for giving me this opportunity to communicate with your profession. I look forward to working with PLSC in order to ensure the best public protection for the great people of Colorado.

Announcement – The PLSC proudly presents:

# PLSC Fall Technical Session

November 13, 14 & 15, 2008

Driscoll Center South  
University of Denver  
2050 E. Evans Avenue, Denver

Circle your calendars! Make plans to attend and join the distinguished faculty and your fellow PLSC members for the 2008 Fall Technical Session. Enhance your knowledge, skills and career with the latest training at this once-a-year opportunity.

Watch for your official Fall Technical Session brochure in the mail, or check [www.plsc.net](http://www.plsc.net) for updates and registration information.

The following is a preliminary schedule of course descriptions and times;

## Thursday, November 13th

- David Doyle, NGS Chief Geodetic Surveyor –
  - 1/2 day Latest developments in the NAD83 NSRS 2007 readjustment,
  - 1/2 day on the NGS 10-year plan.
- Dennis Mouland – “To Accept or Not Accept,” and the new BLM manual.
- Gaby Neunzert – One of his 24 workshop topics, to be decided

*PLSC Annual Membership Meeting during and following Lunch*

## Friday, November 14th

- John Stahl – “First Surveyor Doctrine”
- GPS Real Time Network Forum
  - 1/2 day GPS, RTN basics along with CORS and OPUS
  - 1/2 day various talks specific to RTN and round table discussions..
  - Potential speakers include William Henning, NGS RTN Program Manager, Bill Stone, NGS NM Geodetic Advisor, Pam Fromhertz, NGS CO Geodetic Advisor
- Peter Curtis, ESRI Broomfield and Donny Sosa, ESRI Redlands, “Intro to GIS” including computer lab (only 20 seats available!), and “GIS for the Surveying Business.”
- Gaby Neunzert – One of his 24 workshop topics, to be decided

*PLSC Award Ceremony during and following Lunch*

## Saturday, November 15th

- Gaby Neunzert – Technician Session
- Dave Pehr, Esq. – “Adverse Possession” or other topic to be decided
- John Stahl – “The Surveyor in the Role of Mediator”



# Control Points

By Warren Andrews, PLS

Unfortunately, in the previous article on Gunter's Chain, the editor changed the word *metre* to *meter*. A *meter* is the English word meaning a dial gauge, usually measuring water, gas, or electricity; a *metre* is the unit of length in the *Système d'Internationale (SI)* or international system of weights and measures. (Two point five four (2.54) centimeters exactly equals one inch; the conversion factor between the American and the SI system).

This article is intended to mention another mathematical concept that is a real sleeper and that is the concept of zero. Have you ever thought how difficult it would be if you didn't have a zero in your calculations? Well there is one system of numbers still rarely used today that does not have a zero and that is Roman numerals. If you think our decimal system is difficult try calculating using Roman numbers; you essentially have to know the answer before you can do the problem, either counting forward or backward.

There is one remnant in a system we still use for measuring time that causes trouble, for example, in when did the millennium end or begin. There is no zero in the Christian calendar. But where did this all start from? There is a fascinating little paperback book entitled *Zero, The Biography of a Dangerous Idea* by Charles Seife. In Chapter Zero Seife states, "Zero is powerful because it is infinity's twin." "The biggest questions in science and religion are about nothingness and eternity, the void and the infinite, zero and infinity. The clashes over zero were the battles that shook the foundations of philosophy, of science, of mathematics, and of religion." Did you know that the Christian Church banned the use of zero for many centuries saying it was the work of the Devil?

The Greek philosopher – mathematician Pythagoras couldn't conceive of zero because he said it was nothing, or in philosophy it was the same as chaos or non-existence and that was intolerable. He used the counting numbers (and

*cardinal* numbers of 1,2,3, etc.) but he couldn't cope with the *ordinal* numbers, 0,1,2,3, etc. Zeno's Paradox of Achilles racing the tortoise but never passing it could not be solved without the concept of zero that the Greeks and Romans did not have.

Zero as a place marker comes from the Babylonian so they could distinguish between, say, 61, 601, 6001, etc. In our positional notation system, which comes from that, zero is absolutely indispensable. But zero as a number comes from India, uncontaminated with Greek philosophy, through the Arabic mathematicians. In our present base 10 numbering system you have 1,2,3,4,5,6,7,8 and 9 but you have to have another number to

start with and that is zero so the system really goes 0,1,2,3, etc. If you notice even the keyboard on your computer is badly confused because it has zero after the 9, not before the 1 where it should be. Try counting with a stopwatch without using zero; it doesn't work. Or try calculating coordinates on an x,y,z axis without a zero point; you can't do it. Even Descartes and his colleagues realized this when he invented the Cartesian Coordinate System (so vital to surveyors).

Newton and Leibniz used zero and infinity in developing the calculus; it's a powerful tool. In fact we could not have modern science at all as we know it without that not-so-simple little zero.

## C.A.C.S

### COLORADO ASSOCIATION OF COUNTY SURVEYORS

March 28, 2008

Dear Mr. Guyton:

As you may be aware, our organization represents the County Surveyors within Colorado.

At our meeting of March 1, 2008, we discussed the recent action of the PLSC Legislative Committee regarding proposed changes to 38-51-107.

Our understanding is that the Committee proposes to eliminate the "20 year rule" as stated in Section (2). Additionally we understand that it is proposed that a survey plat be filed if offsets to property corners/lines are established in the field.

After thorough discussion and vote by board members, we chose to appeal directly to the PLSC Board.

We ask that you abandon any proposed changes to the "20 year rule". We feel it is reasonable as it stands, and would present undue hardship on "small shop" land surveyors. Also, we feel that such a change would cause an increase in the volume of deposited survey plats such that County administrations would resist, or at worst, disregard the timely depositing of survey plats. We are also concerned that a hardship would exist for owners of simple lots within a subdivision. In conclusion, CACS is not convinced that this change clearly benefits the public good.

As to requiring survey plats when offsets are established, we agree with, and support, this proposed revision to the Statute.

Please advise the CACS as to your course of action.

Thank you for your time and consideration.

Jason Emery,  
President C.A.C.S.  
Boulder County Surveyor

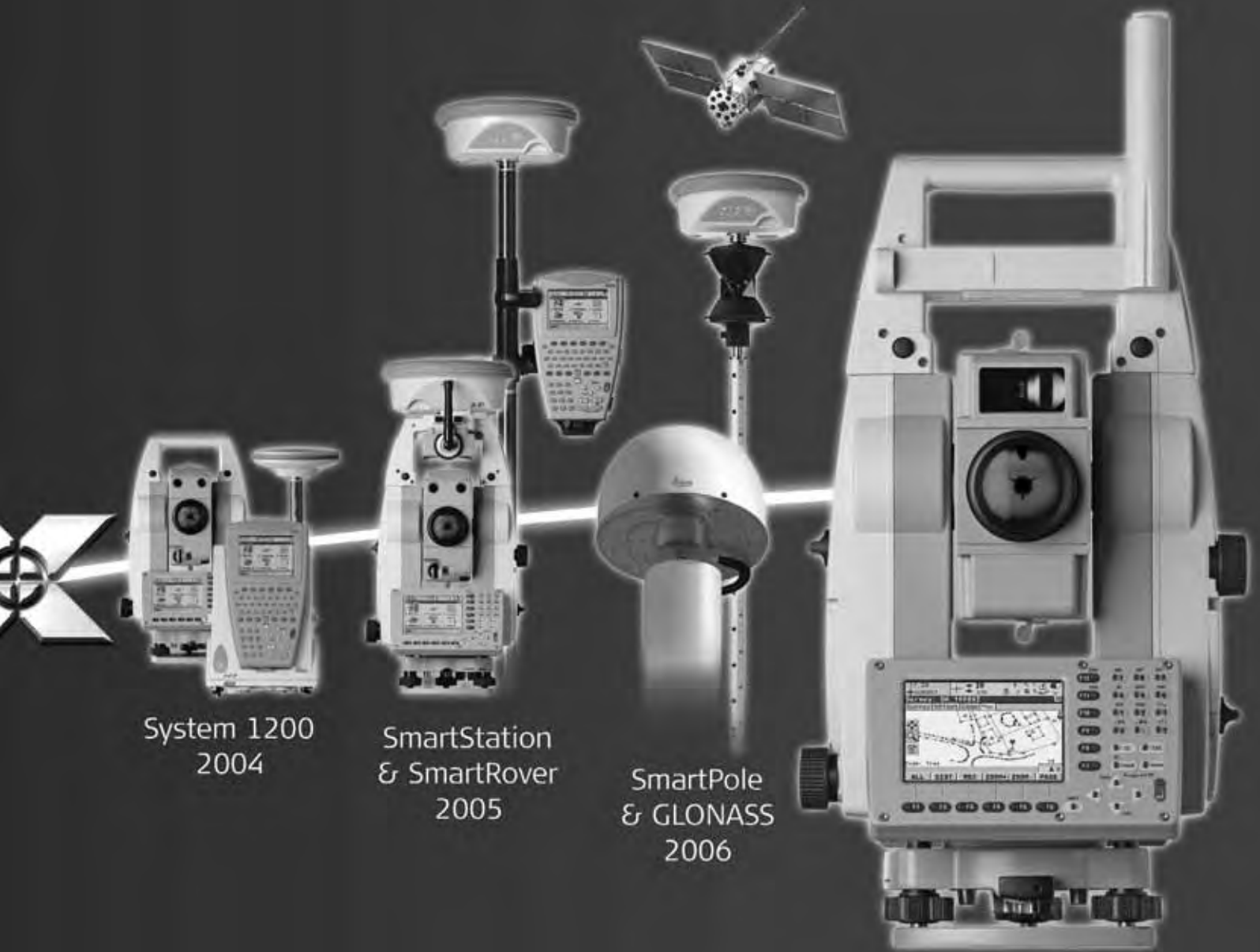
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Whether you have received a mailed invoice or not, PLEASE fill out the membership renewal form and mail to Diana Askew, Secretary/Treasurer TODAY.



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# PROFESSIONAL LAND SURVEYORS OF COLORADO, INC.

## Purpose

The purpose of this organization shall be to improve the profession of Land Surveying in Colorado. (Article II, Articles of Incorporation)

## Membership

**Voting Member** --- Any person who is a registered land surveyor in the State of Colorado, and whose registration is in full effect, shall upon payment of \$75 annual dues, be a voting member of P.L.S.C., Inc. and as such shall have full voting and office holding privileges. (Article VIII a., Articles of Incorporation)

**Associate Member** --- Any person who is interested in land surveying shall, upon payment of \$55 annual dues, be an associate member of P.L.S.C., Inc., but shall have no voting or office holding privileges. (Article VIII b., Articles of Incorporation)

**Student Member** --- Any undergraduate student who is interested in land surveying shall, upon payment of \$15 annual dues, be a student member of P.L.S.C., Inc., but shall have no voting or office holding privileges. (Article VIII c., Articles of Incorporation)

**Retired Professional Land Surveyor** --- A Colorado licensed Professional Land Surveyor who no longer practices land surveying (including field work, office work and consulting). He/she however may continue to maintain his/her license in effect and shall not be precluded from acting as an expert witness or court appointed commissioner. This is a non-voting classification. The annual dues shall be \$30.00. (Article VIII e., Articles of Incorporation)

**Sustaining Member** --- Any person or firm engaged in a business related to land surveying or interested in the land surveying profession shall, upon contribution of \$200 annually, be a sustaining member of P.L.S.C., Inc., but shall have no voting or office holding privileges. (Article VIII d., Articles of Incorporation)

**Dues** --- Dues shall be due and payable as of January 1<sup>st</sup> for the coming year and shall be delinquent if not paid by April 1st following. Membership rights cease when dues become delinquent. (XVII. Bylaws)

## Standing Committees

PLSC has both standing and special committees. If you would like to be involved with any committees, please contact the executive director at "ekooper@uswest.net" or contact the committee chair as found on the PLSC Website at www.plsc.net Following is a list of the standing committees. See the website for special committees

Nominations and Elections	Legislative
Publications	Liaison
Survey Monumentation and Standards	Membership
Ethics and Fair Practices	Education and Seminars

## Meetings

Directors' meetings shall be held at least quarterly and, if possible, in conjunction with the annual general membership meetings and chapter workshops.

## CCPS

I do not know about you, but I am receiving several resumes from individuals everyday looking for surveying jobs. Many resumes have nothing to do with surveying, but the ones that do, I direct towards the PLSC job board located at [www.plsc.net/jobs/jobs.htm](http://www.plsc.net/jobs/jobs.htm). If you have a job opening, please list it under Colorado Positions Offered. If you need a job, the job board allows you to post your resume under Colorado Positions Wanted.

The 2008 CCPS BOD, in memory of Bill McComber and Art Hipp, has volunteered to clean up the Colorado Veterans Memorial on November 9, 2008. If you would like to volunteer, please contact any of the CCPS Officers or Directors or email [PLSC-CCPS@hotmail.com](mailto:PLSC-CCPS@hotmail.com). More information on the monument can be found at [www.coloradoveteransmonument.org](http://www.coloradoveteransmonument.org).

The CCPS Fall scholarship campaign is now over. We are now accepting scholarship applications

for spring 2009, which are due no later than December 1, 2008. Applications can be found at [www.plsc.net/chapters/chapters.htm](http://www.plsc.net/chapters/chapters.htm)

The complete 1877 Hayden Atlas is available in a reduced-size 12"x18" format. The prints are color-fast as they are printed on a color laser printer, printed on heavy-weight bond paper, and then coiled together to create a book. Please contact any of the CCPS Officers or Directors or email [PLSC-CCPS@hotmail.com](mailto:PLSC-CCPS@hotmail.com) to place an order, or attend the next CCPS General Meeting. Cost: \$70.00

Information on upcoming Board of Directors Meetings can be found on the Central Chapter Forum page at [www.plsc.net](http://www.plsc.net). Board of Directors meetings are held on the first Thursday of every month.

The August 28th CCPS general membership meeting will be held at 7:00 P.M. at our Northwest location: Table Mountain Inn, 1310 Washington Avenue, Golden, Colorado. Free dinner begins at 6:30 P.M. Cash bar

opens at 6:00 P.M. Guest speaker: Jason Emery, on the 40th Parallel Monument located on Baseline Road in Boulder.

The October 23rd CCPS general membership meeting will be held at 7:00 P.M. at our Southeast location: Doubletree Hotel Denver Southeast, 13696 East Iliff Place, Aurora, Colorado. Free dinner begins at 6:30 P.M. Cash bar opens at 6:00 P.M.

General membership meetings are held on the fourth Thursday of January, March, May, August and October. The Meeting location rotates between the Northwest location (Table Mountain Inn in Golden Colorado) and the Southeast location (Doubletree Hotel Denver Southeast).

Respectfully submitted,  
Bill Buntrock, PLS  
President, CCPS

*continued on page 22*

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or call Extended Campus at 303-721-1313.

## CHAPTER NEWS

from page 21

### CSRN

The Colorado Spatial Reference Network is embarking on an ambitious partnership effort with GNSS Real Time Reference Network equipment manufacturers, owners and administrators to: 1) Share Data; 2) Share Sites; 3) Share Subscriptions. As networks continue to grow and overlap one another opportunities to consolidate infrastructure and technologies are being investigated and considered.

To kick-off this effort a Colorado Networks meeting was hosted by Nolte on June 13. The meeting was well attended by network owners such as Mesa County, Leica, Trimble and TopCon. Local stakeholders and equipment vendors such as Hixon Mfg. & Supply and Rocky Mountain Lasers / Total Positioning Solutions were also in attendance. The meeting resulted in a favorable position to move forward and explore developing a partnership plan inclusive of all Colorado networks. Individual meetings with network owners will be held in late July to identify potential pitfalls, contractual obligations, user needs and expectations.

The CSRN partnered with Vectors Inc. and O'Neill's Positioning Services as co-host of a Field to Finish Workshop presented by Comm-Tech on June 5. Inclement weather did not prevent the field portion from successfully taking place. The data was later downloaded into AutoDesk Civil 3-D for analysis and visualization.

The next CSRN Open Board Meeting will be hosted by Woolpert on August 27.

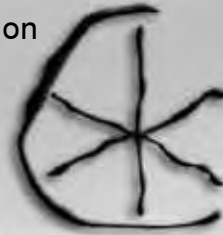
With a diverse group of private, government and local companies the CSRN is currently membership dues free. If you are interested in becoming a member please contact us through our website at [www.CSRN.us](http://www.CSRN.us).

Dan Smith  
CSRN V.P.

continued on page 24

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## SWC/PLSC

I would like to thank all of you who attended our seminar in June. We had about 85 people attend this year. I hope that all of you learned some new thoughts and ideas that will make you better surveyors and better professionals. Vector's Inc and Olympus Aerial Surveys were also in attendance and provided some great door prizes.

I would also like to thank all of our speakers: Gene Kooper, Walter Robillard, Randy Bloom, Roger Nelson, Charlie Tucker and Gary Gable. I was not able to attend all of the classes, but I did hear great things from people in each class.

David Freienmuth did most of the legwork to put on this event and deserves a special thank you as well. Dave has been a key factor in putting on this event for the past several years and all of us in the SWC/PLSC appreciate his efforts.

Our last chapter meeting was held in Bayfield and the next meeting on August 14, 2008 will be at Christina's in Durango. After we take care of chapter business Dave Freienmuth will lead a discussion on continuing education. Bob Greene with Vector's Inc may also be by to speak on scanning and digital imaging.

I hope everyone is having a prosperous year despite the high gas prices.

Thomas E. Au, PLS  
President, SWC/PLSC

## NC/PLSC

The Northern Chapter has meetings the first Wednesday of the month except for the months of June, July and August. The meetings are held at various locations, for more information contact me at (970) 613-1447.

It was a tough spring this year for many of our members. Work was slow for some of them and King Surveyors in Windsor suffered some minor damage from a tornado.

I received a call in May from Gene Kooper shortly after the tornado touched down in Weld County. He wanted to let me know that the

PLSC was ready to help any surveyors who were injured or who lost equipment during the storm.

Ron Perkins will be taking over as Northern Chapter President in September.

Steve Varriano  
President NC-PLSC

## NW 1/4 CLS

During our July 10th meeting in Hayden, we discussed the possible CORS Base Station and how the financial impact of the declining economy will probably make it impossible to pull off this year. We also discussed the electronic creation of a Land Survey Plat index, what the possible costs were, and if Skidge could get the County Commissioners or the Clerk and Recorders office to move the project into the future if we can get the database current. We are meeting again September 17th at the Creekside in Hayden and all nominations are welcome for future officers, which will be formally elected on that date.

Brian T. Kelley  
NW 1/4 Chapter

## SCPLS

The Southern Chapter of Professional Land Surveyors will be having their annual Paul Grout Golf Tournament at Hollydot Golf Course in Colorado City on Saturday, August 9th. Come on down for a great time golfing with your fellow surveyors. Enjoy dinner after golfing as well as a chance to win prizes. Details will be available on

the chapter page at [www.plsc.net/chapters/scpls.htm](http://www.plsc.net/chapters/scpls.htm).

The Chapter will also be having its annual Fall Workshop September 5 and 6 in Colorado Springs. We will have several interesting speakers on a variety of topics. See our chapter page for more details.

Mark Johannes, PLS  
Southern Chapter PLSC

## WCLS

Western Colorado Land Surveyors met on July 9, 2008. At the top of our agenda was a question regarding beneficial grants to the local professional community. We enjoyed a presentation from Mr. Charlie Gains on behalf of the Mesa State College Construction Management Program in Grand Junction, Colorado. Mr. Gains expressed a need for support to foster a well-funded program to instruct students that want to advance their skills in the growing field of construction management. Based on that presentation and a loftier goal of generating interest for a Land Surveying Program, the Chapter has agreed to provide \$5000 toward the grant. The funds will provide for the purchase of survey equipment and will serve as an incentive for the building trades to add to the grant.

We hope that all the Chapters have the opportunity and resources to provide assistance to advance the profession through similar community and educational outreach programs.

Rick Mason  
President, WCLS

## Stoughton retires

Just as this issue of *Side Shots* was going to the publisher, word was received that Dr. Herbert Stoughton retired as the sole professor in the Metro State survey program. It is too soon to tell what this means for the future of the program, but with the appointment of a new PLSC transition task force and support from Metro State College, we are hopeful that a replacement for Dr. Stoughton will be appointed and that the program will continue without interruption to educate the next generation of professional Colorado surveyors.



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# Legislative Update

By Roger Nelson, PLS

As many of you know over the course of the last year PLSC has broadened the lines of communication with its membership. Specifically the legislative committee has instituted regional representation to communicate current issues and for surveyors to voice their concerns back through the regional representative to the legislative committee. This has allowed all members voices to be heard and considered before acting on issues.

If you are not receiving desired updates through the email distribution and would like to be included on the distribution list contact Roger Nelson (roger.nelson@merrick.com) and he will add you to the list.

For those of you who have not been recently updated about topics being addressed by our legislative committee I will summarize what has been covered and items being considered for the future. First are items that have been covered by the legislative committee and are awaiting PLSC Board of Director approval:

(Strike through text = repeal)  
(ALL CAPS = Proposed language)

**Colorado Revised Statute:  
38-51-107. Required plats.**

(1) Every professional land surveyor who accepts a monument while performing a monumented land survey shall prepare and deposit a plat if such monument is not of record either in the clerk and recorder's office of the county in which the monument lies or in the public office designated by the county commissioners pursuant to section 38-50-101 (2) or if such monument is set pursuant to section 38-51-104 AND/OR 38-51-105.

~~(2) No plat shall be required to be prepared or deposited if the monuments accepted or set are within a platted subdivision that was filed in the clerk and recorder's office within the previous twenty years.~~

(3) Plats required pursuant to this section shall comply with section 38-50-101.

Explanation: This change will require a land survey plat to be filed for any monument that is set regardless of whether it lies in a subdivision or not. It will provide a history of how monuments were established (i.e., proportionate measure, holding record angle and distance) and allow future surveyors to determine if acceptable practices and procedures were employed to establish the monument.

**State Board Rules:**

**6.5.4 – Monuments Shall Conform to Statutes.** The professional land surveyor will assure that the monuments established or re-established **PURSUANT TO SECTION 38-51-104 (1) (A), C.R.S SHALL conform both in location and physical character with the TO THE FOLLOWING specifications: EACH MONUMENT SHALL BE A METALLIC PIPE OR ROD CONSTRUCTED OF MATERIAL CAPABLE OF BEING DETECTED BY COMMONLY USED MAGNETIC LOCATORS AND HAVE A MINIMUM OUTSIDE DIAMETER OF 5/8 INCH AND A MINIMUM LENGTH OF 18 INCHES WHEN EXISTING CONDITIONS PERMIT.**

**MONUMENTS SET PURSUANT TO SECTION 38-51-104 (2) SHALL**

**BE CAPABLE OF BEING DETECTED BY COMMONLY USED MAGNETIC LOCATORS.**

**MONUMENTS ESTABLISHED OR RE-ESTABLISHED SHALL ALSO COMPLY WITH THE SPECIFICATIONS** called for in Section 38-51-104, C.R.S. Each found monument verified in location shall be restored or rehabilitated as necessary so as to leave it readily identifiable and reasonably durable. Physical standards for Public Land Survey System monuments can be found in Rule 6.4.

Explanation: A 5/8" minimum diameter monument will be more durable and will be less likely to be disturbed. Since #4 rebar are readily available at home centers, one may not be able to determine if a found uncapped #4 rebar was set by a surveyor or a homeowner.

**6.6 – Minimum Standards for Improvement Location Certificates**

**6.6.1 – Field Procedures.** Professional notes shall be taken on all Improvement Location Certificates ("ILCs") and kept as part of the surveyor's permanent record. A diligent search for existing control shall be made by field crews and the highest order of control available shall be used. The professional land surveyor must use such control as is necessary to accurately locate all lines, structures, and ~~topographic~~ PLANIMETRIC features shown on the ILC.

**6.6.2. – Drafting.** A sketch or diagram of the parcel shall be used in support of the certificate required by Section 38-51-108, C.R.S.

*continued on page 27*

from page 26

(1994) and the following standards shall be used.

**(a)** Deed lines with the boundary dimensions from the deed description or plat shall be shown.

**(b)** Major improvements (permanent structures) shall be shown GRAPHICALLY with dimensions OF ONLY THE IMPROVEMENT(S) ITSELF and descriptions (e.g. residences, garages, in-ground pools).

~~**(c)** Major improvement locations shall be shown with dimensions to the nearest property lines, with a minimum of two dimensions shown, and shall be sufficient to locate structures.~~

**(d)** Minor improvement locations shall be shown graphically (e.g. out buildings with foundations, concrete walks, drives).

**(e)** Plat and apparent easements shall be shown.

**(f)** The posted address shall be shown; if not posted, so state.

**(g)** The legal description shall be shown, and the source shall be stated.

**(h)** A north arrow and statement of scale shall be shown.

**(i)** Apparent encroachments shall be noted and shown in an obvious manner. When the level of certainty of ~~dimensions to~~ LOCATION OF possible encroachments OF MAJOR IMPROVEMENTS are not precise enough for a positive determination, a boundary survey shall be recommended.

**(j)** State specifically or graphically show evidence used to determine the apparent deed lines.

**(k)** State source of where record easement information was obtained and graphically show on the improvement location certificate sketch. If information was obtained from a title company, state which title company and the commitment number.

**6.6.3 – Research, Documentation and Information.** The surveyor shall perform adequate research, maintain adequate documentation in his/her records, and provide the field crews with adequate information to determine the property dimensions in the field.

**Explanation: The State Board of Licensure survey quorum has offered an opinion that the highest order of control available is the control required to re-establish corners should one be required to do so at a future date.**

Change of the word topographic to planimetric lends clarity of requirement. Deletion of (c) will reflect that an improvement is on the property or not on the property satisfying lending institutions requirements. In conjunction with the change of (i) from “dimensions to” to LOCATION OF will allow surveyor’s approximate property lines to be shown without supplying dimensions to those approximate property line locations. If major improvements are close to an uncertain boundary, a boundary survey shall be recommended.

\*These revisions were formulated prior to the State Boards opinion being made.

Additionally PLSC is monitoring the Architects continuing competency activity. Gene Kooper will represent PLSC on a panel charged with developing the Architects continuing competency specifications.

As I understand the difference between continuing education and continuing competency, continuing competence requires one to self evaluate and determine areas of weakness and then enroll in education efforts to strengthen those areas. In order to prove progress an exam is required. Continuing education simply requires one to participate in education classes. It has been made clear by our current State Board of Licensure for Architects, Professional Engineers and Professional Land Surveyors that they will not support continuing education alone. As a profession we need to make a critical decision to either endorse the road that the architects are traveling or to remain static.

The remaining item that is being discussed in the legislative committee is affidavits of correction and the relating statutes. Should an addition be made specifying who has authority to complete an affidavit of correction and how should these documents be recorded to assure they are recognized by the public.

As with all deliberative bodies new items of business will be introduced and some items will be dropped. In order to stay abreast of what is current be sure your PLSC membership is current and that you know your chapter legislative committee representative.

## Western Federation of Professional Surveyors

[www.wfps.org](http://www.wfps.org)

### Summary Report for the PLSC Board Meeting

By Dave DiFulvio, Colorado Delegate

The WFPS Board of Directors meeting was held on April 19, 2008 in Albuquerque, NM. A complete report will be prepared and published in the next issue of Side Shots. This summary report provides highlights of the meeting:

Delegates from all 13 WFPS states attended, including Alaska and Hawaii. Guests included Curt Sumner representing ACSM and Keri Greiner representing the New Mexico Society. Common issues seem to be centered on the 4 year degree requirement for survey licensure, the ability of existing 4 year degree programs to survive and thrive, the "maturing and replacement" of aging surveyors, right of entry for surveyors, and various changes to the definition of surveying among various states.

A brief list of items of discussion is as follows:

- Alaska – has seen a 10% drop in licensure.
- Arizona – lackluster membership involvement,

exploring joint conf. with ACSM & GITA in '10.

- California – prepared a report for a Senator on property boundaries affected by earth movement.
- Hawaii – continued problems with "pin finders", 150 students participated in Trig Star.
- Idaho – in 2010, 4 yr. degree will be required for licensure – being reviewed with LS's declining.
- Montana – membership continues to grow, 2009 joint conf. with ACSM, UCLS & WFPS.
- Nevada – 4 yr. degree program growing pains – fully implemented in 2010.
- New Mexico – 2009 Conference March 13, 14 in Albuquerque.
- Oregon – sponsoring HS teachers to attend Teaching with Spatial Technology (TwiST).
- Utah – hosting the 2009 joint conference with ACSM, MARLS & WFPS in Salt Lake City.
- Washington – adopted an Antitrust policy & emphasized the importance to other societies.
- Wyoming – membership stable and healthy, looking forward to 2009 joint conf. in SLC.
- Curt Sumner – ACSM currently reviews engr. & surv. programs for ABET and ASCE wants to take it over.
- WFPS developing an application process for student requests for funding requests to participate in the NSPS Student Competition each year.
- WFPS is compiling state's definition of surveying for use as a resource.
- WFPS voted to support RR Abandonment language adopted by NSPS.

#### PLSC, Inc. Committees

Following is a list of PLSC Committees. Many of these committees need additional members to be fully effective, so if you are willing and/or able to participate, please contact the Committee Chair.

**Nominations and Elections Committee** - Larry Connolly  
**Legislative Committee** - Roger Nelson  
**Publications Committee** - JB Guyton  
**Liaison Committee** - Gary Gable  
**Survey Monumentation and Standards Committee** -  
**Membership Committee** - Tom Adams  
**Ethics and Fair Practices Committee** - Larry Connolly  
**Awards Committee** - Larry Connolly  
**Fall Technical Session 2007** - Mike Greer  
**GIS in the Rockies** - Dan Smith / Mike Greer  
**Metro State College of Denver** - Randy Bloom  
**GPS User Group, (G2)** - Pamela Fromhertz/Dan Smith  
**Real Time Reference Networks** - Russell Clark  
**PLSC "Leadership Academy" program** - Randy Bloom

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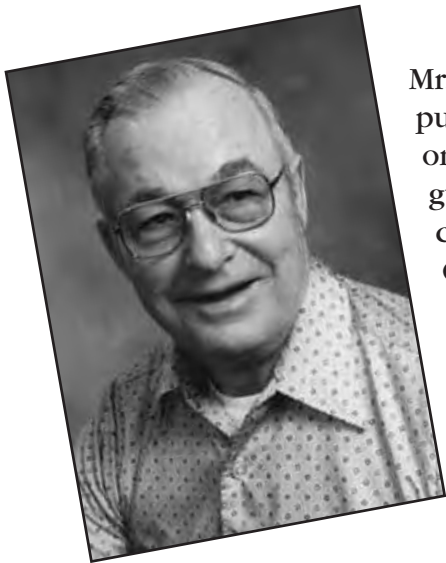
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