

August 2016

SIDE SHOTS

Professional Land Surveyors of Colorado

Volume 47, Issue 3



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2016**

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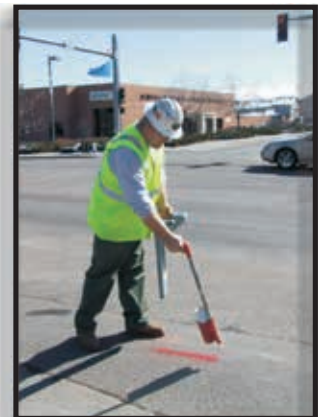
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SIDE SHOTS

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*Side Shots is the official publication of the Professional Land Surveyors of Colorado, Inc.
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Dear Fellow Members of PLSC:

Welcome to the middle of summertime in Colorado! Our record heat in numerous areas of the state should remind us all about the need to appropriately take care of ourselves and our staff working outside — stay hydrated and take breaks when appropriate. No one desires to have someone they know or work beside become a victim of heat exhaustion or worse.

This letter brings some sad news of the passing of a well-known Colorado surveyor, James “JJ” Rihanek, PLS (with Aspen Surveying). JJ was a longstanding member of the PLSC and spent over a dozen years in various positions with the CCPS chapter including director, vice president and president. In addition, JJ was on the state PLSC Board of Directors as a director. Please see the memorial to JJ in this issue. He will be missed in the Colorado surveying community.

Please join me in welcoming Paul DeGraff, PLS to the PLSC Board of Directors. Paul will be a director through 2018 and we look forward to his input. As a reminder, this is an election year for the PLSC officers and directors so please let the election committee chairperson, Leif Joy, know of your interest. Elections will be held at the end of the year but we all know how quickly time passes!

The PLSC will be having a BOD meeting on August 19, 2016 in Grand Junction in connection with the Chapter Summit meeting. At the last Chapter Summit meeting (at the RMSS conference in March), it was decided to have a summit meeting on the western slope in the hopes of participation by members in that area of the state and to continue the progress made from past meetings.

The RMSS conference planning has begun and will be held February 15-17, 2017 at the Arvada Center, in Arvada, Colorado. There is a call for abstracts out for anyone desiring to present at the conference. Please provide any suggestions for topics, speakers, etc. to the Education Chairperson, Kayce Keane. We are always looking for ways to improve the conference and your input is greatly appreciated.

The past few months also included the defeat (again) of the Senate Bill to eliminate the County Surveyor position. The email campaign by the County Surveyors, PLSC membership and interested parties played a key role in the defeat of the bill. Many thanks to Paul Bacus and the legislative committee members for their efforts in the coordination of a united response to the bill. The legislative committee is promoting legislation to better define the functions of the County Surveyor in Colorado.

continued on page 5

DEDICATED TO THE IMPROVEMENT OF LAND SURVEYING EDUCATION AND PRACTICE.

FROM THE EDITOR



Are you reading this on or prior to August 10th, 2016? If so, please proceed to page seven for instructions on how to participate in a survey that is vitally important to the educational development efforts of the PLSC.

Colorado Mesa University is at the stage of polling surveyors, potential students and business owners on the need for graduates of a 2 or 4-year surveying degree program. Since Colorado has no program at all right now, they need to know how interested we are in seeing this become a reality at CMU. Please type in the URL and take the survey, and send a link to others you know who could contribute their opinions.

I am pleased to present you with another issue with a great deal of interesting content. Our cover story by Brian Dennis is about the annual GPS Day event, which took place on May 21st in Centennial. I was pleased to be one of the PLSC participants again this year, to watch young people become introduced to the basics of surveying and GIS. Brian did an extraordinary job of organizing the event, with assistance from Todd Beers, Steve Parker, Laine Landau, Pam Fromhertz and other volunteers.

An update on the Engineers Without Borders program at the University of Colorado is included, by

a new contributor, Bryan Melonis. He describes how collaboration and planning with local residents is just as important as the engineering and construction of infrastructure improvements in Nepal.

Control Points No. 33 by Warren Andrews is about some of the infrequently used trigonometric functions. Earl Henderson's Rule of the Month article is about the always important monument records and the requirements for filing them. There is a notice of the passing of our friend and former PLSC board member JJ Rihaneck, PLS. There is a Legislative Committee Report from Paul Bacus, a notice of a Fall Forum of the International Right of Way Association, Mile High Chapter, and a report from Mike Bouchard about the Las Vegas meeting in April of the Western Federation of Professional Surveyors, including the news from other member states. And we conclude with news from our chapters.

Our next issue in November will feature an advanced look at the course offerings to be available at the next Rocky Mountain Surveyor's Summit, along with the latest news from the PLSC. Any news and/or interesting articles on topics of interest to our readers are always welcome.

JB Guyton, Editor, *Side Shots*

From the President from page 4

There is continued movement in the development of a surveying program in the State of Colorado. I am encouraged by the progress and look forward to a formal program announcement in the future.

The GPS Committee held GPS Day on May 21, 2016. Unfortunately, attendance was light for the event. The committee is reviewing what steps can be taken to increase attendance and engage the boy scouts and girl scouts to participate in the activities. The possibility of earning a surveying merit badge is being discussed. Many thanks to Brian Dennis, Eric Carson the NGS and local vendors for their development and participation of this important outreach program.

GIS in the Rockies is just around the corner, from September 21-22, 2016 at the Cable Center in Denver. Please plan ahead for this informational event that includes a PLSC track.

Please enjoy the various articles included in this edition of *SideShots*, and I hope all members have a safe and profitable summer.

Sincerely,
Todd Beers, PLS



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Colorado Mesa University needs your opinion by August 10th

Colorado Mesa University and its Western Colorado Community College division are in research stages to outline a professional land surveyor program, according to Tim Foster, president of CMU.

Currently, research is being done to determine the interest in a two-year public land surveyor AAS degree and either a four-year surveyor degree or embedding upper division courses in the CMU-CU Civil Engineering program, which is being offered next fall for the first time. Timing is appropriate because in 2020, state law will require that surveyors seeking licenses have academic courses in a surveyor program that lead to a degree.

Jeanne Adkins, acting vice president for community college affairs for WCCC, said the institution has investigated a number of programs suggested by the Professional Land Surveyors of Colorado Board and members of the Western Colorado Land Surveyors Chapter. "We are exploring programs that have strong two-year foundations that can lead students directly into technical positions for experience or to a four-year degree, to determine the most effective options — and delivery methods — we are hoping Colorado's surveyors and construction industry will complete the survey via the link in this article," she said.

The survey can be accessed on-line and completed in that format. It will be tallied by the CMU institutional research team and serve as a foundation for final decision-making on the initial program direction, Foster added.

Surveyors, contractors, engineering firms and others who are in related industries are asked not just to fill out the survey, but to pass the link on to others in this community who might be interested in the program.

Survey participants are asked to complete it as either employers of potential graduates or as potential students in a two-year and/or four-year degree program.

The college has received positive feedback on its initial inquiries and completing the survey is the next step, Adkins added. "We hope to have a broad distribution of the survey across Colorado to truly be able to gauge interest -- both in hiring potential graduates and the numbers of potential students."

CMU Land Surveyor Needs Survey					
If you were developing curriculum to prepare individuals for entry into surveying and mapping, on which subject areas would you focus? Please rate the following with 1 being low priority and 5 being high priority.					
	1 - Low Priority	2	3	4	5 - High Priority
Create maps from source data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Create maps from surveying notes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Create maps from aerial photography	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Create maps from satellite data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Create maps to show topographical information	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Create maps to show political boundaries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Internships	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Surveying Mathematical Calculations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Boundary Law/Legal Research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Survey Ethics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Property Descriptions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Statistics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Survey Adjustments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Public Land Survey Systems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Geodesy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
GIS	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Instrumentation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Technical Writing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AutoCAD	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Follow this link to complete the survey by Sunday, Aug. 10th

<https://intranet.coloradomesa.edu/survey/landsurveyor/landsurveyor.htm>

PLSC GPS Day 2016

By Brian Dennis, PLS, PLS

We had our annual GPS Day event on May 21 at the Compass Tools, Inc. building in Centennial, Co. With the pre-planning help from David Siddle of Compass Tools and the use of their fantastic facility, we had another great event! Beautiful weather was with us that day with clear blue skies and 80 degrees, the best weather day of the year at that point. We are extremely grateful to those who volunteered and to all of the participants that joined us for the day. It would have been easy, with the fabulous weather, to do something else outdoors for the day and we thank those that chose to join us in our efforts to promote land surveying.

In all, we had about 30 folks attend the event. Good numbers considering we were competing with the good weather, end of school events and the beginning of summer vacations. We met youth and adults from the Boy Scouts of America, college students from Red Rocks, Boulder and DU, college professors from Boulder and DU, GIS professionals, PLSC members and their children from 4-18 years old. This was a very diverse group of attendees.

Compass Tools was a significant contributor to us this year. David Siddle with Compass went above and beyond to ensure we had the support for a great event. They provided the first floor of their building which allowed us to hold classroom activities for the Orienteering Course by Brian Coleman, a Denver Area

Council Volunteer for BSA. Compass also provided several UAV's for viewing. Unfortunately, we were too close to the airport to have any flying demonstrations.

As always, I want to take a moment to recognize and thank all of the volunteers who helped us with GPS Day: Ken Perry (Hixon Manufacturing), Chuck Hutchins & Mike McCoy (Vectors, Inc.), David Siddle & Son (Compass Tools), Pam Fromhertz & her mentee (NGS), Brian Dennis (Galloway & Company & PLSC Southern Chapter), Eric Carson (CWC Consulting & PLSC Central Chapter), Laine Landau (LRA-Inc & PLSC Northern Chapter), Steve Parker & Son/Daughter (Farnsworth Group & PLSC Southern Chapter President), Todd Beers (Merrick & Company & PLSC President), Becky Roland (Phoenix AMC & PLSC Exc. Director), Brian Coleman (MagneticNorth), JB Guyton, Heather Robinson and Bill Bowen (Flatirons Surveying, Inc. & PLSC Central Chapter).

There were numerous volunteers that helped from the various PLSC Chapters, vendors and Boy Scout volunteers. It is always a full effort from all of the folks that volunteer to have a successful event and for the kids and adults to receive this opportunity to peer into land surveying and mapping.

We provided numerous survey activities for the day. Steve Parker held an orienteering course demonstrating how to use a map and compass and discussed its applications in land surveying and mapping. This allowed a discussion on bearings and lines. In addition, Steve taught how to read contours on a map and to identify prominent map features as landmarks and how the old surveys used this method to triangulate their position. Laine Landau led the GPS navigation course. The Compass Tools facility had several control monuments surrounding the property. The participants would take a hand held unit with the monuments position pre-loaded and begin "staking out" the features. Once a feature was found, they had to store the position and identify the monument found to prove they completed the course. Once they located all of the features, they returned to the point of beginning for verification.

Todd Beers led the "History of Land Surveying & PLSS Section Breakdown" course. This was a hands-on course for the folks and included poster boards of the townships and section breakdown, and an explanation of how and why we have this land system in place. It also included a "not to scale" mock section on the ground created with rope and nails, where the participants





learned how to set the center of section corner. This is always a popular activity for the attendees to learn about land surveying and U.S. history. Ken Perry held a leveling activity. This was also very popular and fun for the attendees. Ken provided a digital level, auto-level and hand level to demonstrate and compare different levels of precision and their applications. This allowed the attendees to actively participate taking measurements of various items and vertical features to learn about leveling.

Chuck Hutchins and Mike McCoy held a distance measuring comparison activity with a RTK GPS unit, robotic total station and nylon clad tape. Several PK nails were set in the parking lot at intervals under 200 feet so that distances could be measured with each piece of equipment, to illustrate the differences. Participants were also shown the dangers of RTK GPS. Using the

nails set at approximately 200' they were located and confirmed at the defined distance and then located with GPS and with a couple button pushes later the distances started to change. This was accomplished by changing to state plane coordinates, UTM or by creating a floating scale factor. JB Guyton, Heather Robinson and Bill Bowen held a technology of land surveying activity. JB provided a RTK GPS unit and robotic total station to invoke discussions on the technologies used in land surveying. During discussions, folks were allowed to operate the equipment and shown how to data collect, stake outs or simple tracking functions and their applications to land surveying. These conversations generally expanded into the many things that surveyors are involved in. JB also provided ALTA/ACSM Land Title Survey examples for the folks to look at. Most had not seen a survey drawing beyond an ILC. Pam Fromhertz and her mentee with the National Geodetic Survey discussed with the attendees an introduction to NGS and brought a GRAV-D machine. This created a lot of interest from all. Pam brought a "treasure chest" of old NGS monuments that everyone could dig through and see a part of history and what NGS monuments look like. There was always a group of folks at this discussion area and everyone was full of great and interesting questions. Great learning experience for all that stopped at this portion of the event.

We received a lot of feedback from the attendees about how much fun they had and information they received about GPS and land surveying that they did not know, or even know to ask. Each year we learn that more and more people are discovering our event via word of mouth and are being recommended by others to attend. Our purpose for the event has always been to introduce the youth and young adults to land surveying and mapping.

We are gearing up for next year's event and the planning process has already begun! If you want to volunteer, want more information or want to attend to enjoy the event, contact Becky Roland at broland@plsc.net and your questions and requests will make it to the group for a response.

We look forward to seeing you next year! Read upcoming issues of *Side Shots* for information on location, date and details. ■

Two Worlds, One Mission

By Bryan Melonis, Program Manager, EWB CU-Nepal

As the sun sets over the hills of Eastern Nepal, shop owners turn off the lights and lock the doors to their shops. Students kick up a bit of dirt as they walk laughing and talking toward home. Slowly the streets grow quiet and the smell of curry fills the air. As twilight sets in, the cool air blankets the hills with a peacefulness that is almost welcoming. Periodically the howl of a stray dog or the groan of a motorcycle pierces the darkness, but the once lively bazar fades like a distant memory. Inside each home, the smell of steaming rice, vegetables, and lentil soup fills the rooms. In one room, kids play in front of a TV spouting the static-laden voice of a Hindi broadcaster. In the kitchen women are hard at work, chopping vegetables, and steaming rice.

This is a community that faces extreme poverty. Many work in the nearby tea fields, owned by India, where they are able to make a mere \$2 p/day. Few people in this community will ever travel to Kathmandu, much less leave Nepal. Yet despite the poverty, Ilam is a community dedicated to becoming a leader in protecting and promoting sustainability. The city has outlawed plastic bags and constructed new waste treatment facilities. Some people in the village are beginning to use biogas as a fuel source. The progress is tangible and moves at an impressive rate.



Winter 2014 travel team members pose for a picture by Patpate Dhara. Patpate Dhara was supposed to be a simple spring project that went wildly off track due minority interests in the community. Here the spring is seen being rebuilt after an extensive demolition process. Photo Credit: Ganga Siwa, Community Member

As the sun is setting on Ilam, nearly 8000 miles away in Boulder, Colorado, the morning light bathes the red roofs of the University of Colorado in a pinkish light. It's a Sunday morning and the campus feels eerily still. As Boulder slowly wakes up, a few individuals slowly make their way to the engineering center, still groggy from rolling out of bed. Inside, students and mentors gather around tables and pass bagels, cream cheese, and most importantly, coffee around. Some engage in light conversation, but most are silent, perhaps questioning the logic in getting up at such an early hour. As the meeting gets started, the motive becomes immediately apparent. Students and professionals alike discuss, debate, and evaluate a range of engineering solutions to basic problems surrounding water quality and quantity. On the table are solutions ranging from pipelines traversing mountains to hauling drilling equipment up steep roads in pursuit of water. For all involved, this meeting is far more than just a discussion about water projects, it's a learning experience.

Everybody involved shares a common passion for engineering in developing communities and it's these mentor-student relationships that ultimately make everything go. Sophomore Robert Tyrell-Ead, a frequent attendee, observed "The mentor meetings are great. It is amazing to see just how many professionals support our EWB group. It's always wonderful to hear all the input they might have on our different projects, and all the different ideas each and every one of them have." Junior Madison Baker added "[our mentors] are passionate individuals that have found a way to help the next generation of do-gooders. They are very patient and I applaud them for answering the same questions year after year as leadership shuffles in and out."

Engineering in developing communities is not an easy undertaking no matter how much experience one has. Developing sustainable solutions to even the smallest problems requires balancing economic, cultural, and engineering considerations. Fourteen years ago, Dr. Bernard Amadei sought to provide students with hands on engineering experience in this challenging yet rewarding environment. That goal led him to create Engineers Without Borders (EWB), a development organization that gives students hands on engineering experience while making an impact in developing communities. Since its conception, EWB has grown into a national organization with 16,800 members working in 39 countries. At the University of Colorado Boulder, there are four teams working in Peru, Rwanda, Paraguay, and Nepal.



Locals bathe and clean clothes at the recently completed Karka Dhara spring site. Despite a rocky start, due to the earthquake, Karka Dhara ended up being a huge success. Photo Credit: Bryan Melonis, EWB Student

The Nepal team was created in 2007 and partnered with the Namsaling Community Development Center (NCDC) in Ilam, Nepal where they have been working ever since. In that time, the team has completed projects ranging from telemedicine to reed bed water purification. Most recently, the team completed a series of Spring Source Protection projects at sites around Ilam. Spring source protection seeks to improve not only the quantity, but also the quality of water available to users.

Projects have not always gone smoothly for the team. In 2014, after months of planning and preparing for a spring source protection project, the team arrived in Nepal to find the community no longer supported the plan that was previously established. The following year, the team again faced disappointment when a seemingly straightforward spring project went wildly off track and over budget due to a few minority interests that didn't agree with the team's plan. But for every disappointment, there has also been a learning lesson to be had. Baker noted "the biggest challenge for the Nepal team is communication with the communities we want to partner with both before and during project implementation. It can be challenging to express our need to follow a set plan and a set timeline as well as fully understand the communities' motives for partnering with us in the first place."

Today, the team works more closely than ever with NCDC to ensure that engineering, economic, and cultural needs are being met. Frequent surveys of community members have provided an active source of information about the biggest challenges facing Ilam. It can be easy to go into a community with a pre-conceived notion of what success looks like. But the idea that a westerner spending a few weeks in Nepal can fully comprehend the day to day challenges of a local living

in Ilam is shortsighted. "We witness only a tiny snapshot of community life in Nepal during our trips and it can be easy to conjure up solutions without consulting the community about what might actually be best for them," noted sophomore Jacob Melonis.

Last summer, the team faced a tremendous challenge when the University of Colorado suspended all travel to Nepal due to the earthquake. Plans to implement a spring source protection project called Karka Dhara during the summer had to be shelved, much to the dismay of the community and the team. Despite the ban, students worked with the Rocky Mountain Professionals EWB team to implement the project at the end of the summer. Karka Dhara turned out to be a huge success after a string of failed projects. By applying lessons learned from the past, the team was better prepared to deliver a successful project based on community needs. Of note, was the way the team designed Karka Dhara. Rather than listening to community requests and generating designs after returning to Boulder, team members solicited designs from the community and worked with community leaders to settle on the ideal plan. The result was that when it came time to implement, everybody was onboard. There was no major last minute redesign or emergency meetings to discuss design failures.

Despite achieving success, it's important to remember that Nepal is an ever changing landscape, politically, socially, and even geographically. Nowhere was that more evident than in the aftermath of the 2015 earthquake. In the wake of the devastating disaster that levelled villages and killed thousands, a massive political upheaval ensued as the country moved to ratify a new constitution. Social upheaval in the south led to strikes that often became violent. Political pressure from India resulted in a food and fuel blockade that sent prices soaring.

In response, the Nepal team sought to transition towards working in the communities most affected by the earthquake. During this summer's trip, the travel team visited several new communities where they met with community members to discuss possible projects. The team discovered a wide array of responses to the earthquake. "Some were hopeful, some were without direction, and some were already in the process of reaching across cultural barriers to improve upon their home" noted travel team member Daniel Ho. He added that even today "the scars stretching down mountain faces and the gutted homes standing on dusty clay walls haunt the country." One of the towns visited, Kalinchowk, was at the epicenter of the May 12, 2015, 7.8 magnitude earthquake. This small mountain town of homes built from stacked stone was levelled by the quake. The men work in India earning low wages, while the women labor on the farm and care for the children. Few people have shoes in this harsh environment. Despite the



Travel team member Priscilla Dao uses a total station to survey a plot of land where a tank to serve the Godak school will be built. Photo Credit: Bryan Melonis, EWB Student

conditions, Daniel noted “they remain the most united and progressive in their efforts to bring their community out of poverty. When we left, the women had trained themselves to sew clothes, which allowed them to earn extra cash when their subsistence crops do not provide.” While in the community, the team also handed out quilts that had been made by volunteers in Boulder.

Transitioning to a new community will be a lengthy process and the team intends to continue working in Ilam for at least another year as the regulatory approvals from EWB are obtained. Currently, the team is focused on a project at a primary school in the town of Godak. A lack of water at the site has led to hygiene and sanitation problems that are most notable when using the bathrooms. Currently, the school is also expanding to a new campus and is looking to ensure they have a solid water supply at both their current site and the new site. The town has a central water source that can easily be connected to both locations, but the quality of the source is questionable. Coliforms and high nitrate levels are common amongst all springs in the area. “Our involvement in Godak is important in ensuring the long term health of everyone in the community, especially the young, old, and immune compromised” noted Daniel. The team hopes to simultaneously provide filtration as well as storage to meet all the water needs at the school. By providing water, hygiene and sanitation will follow.

Working in a community goes far beyond just constructing a project. Long term success requires collaboration and planning for years after completion to ensure the project remains successful. The travel team recently conducted a series of lessons with the student leaders that will spearhead the maintenance of the project over the long term. With faculty support, the eco club at the school will use the project as a catalyst for learning about water filtration and sanitation. “We have engaged the community by being present in the schools. Through the children taking what they have learned back to their homes, we believe we have raised awareness about clean drinking water” Daniel observed.

Working in a developing community is inherently challenging, especially for students who are still learning the basics of engineering. Yet despite the daunting challenge, this young group of engineers gladly takes it on. Many students are attracted to EWB because of the challenge and the experience, but they all end up staying because of the community. Noted sophomore Robert Tyrell-Ead: “everyone knows something that you don’t. Learning from all the people around you is one of the better parts of this group.” EWB is a group that remains relevant as students grow and learn throughout college. Junior Jordan Erdie observed “EWB supplements my education by letting me apply my classes to a real situation across four years of college. With each semester of new classes, I gain a new perspective on how to look at our projects in EWB.”

Often engineering curriculums stress the challenges facing the developed world. And while the developed world may feel closer to home for many students, its challenges pale in comparison to the difficulties developing countries face. Summer 2016 travel team member Noah Kaiser observed “I have gained immense respect for those who work tirelessly to make other peoples’ lives better. I can’t stress enough how much I think everyone needs some sort of experience akin to this, there is always more to learn about and more to see and feel in this world.” Many team alumni have gone on to pursue careers in International Development as a result of their time with EWB. Numerous other graduates attribute the jobs they landed out of college to the experiences and connections they made through EWB.

At the end of the day, engineering is a holistic discipline that relies on collaboration. By tying together communities from around the world, EWB prepares students to be global citizens and leaders, prepared to ensure upward mobility for billions. Innovation today becomes economic growth tomorrow. ■

If you are interested in learning more about our work, or getting involved as a mentor or supporter, please email ewbcu.nepal@gmail.com.

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Control Points – Number 33

The Other Trigonometric Functions

By Warren Andrews, PLS

The article in the June, 2016 issue of *The American Surveyor* by Dr. Dick Elgin, entitled, "Surveyor's Calculation Methods Used BC" mentions several of the little known and rarely used trigonometric functions. The only one that I've ever used is the versed sine of an angle which is in Hosmer's solution for a solar observation, a hard to find table.

Dr. Elgin mentions four other trig functions but I found four more. One place they are defined on line is Wolfram's Math World and also defined in Wikipedia's versine page.

The versed sine θ [versine] (line C-D in the illustration) is $1 - \cos\theta$; that's pretty straight forward, and Dr. Elgin shows how it was used in correcting slope measurements to horizontal before calculators.

The complementary versed sine θ [cover sin θ] (line G-H) is $1 - \sin\theta$. This pairs with the versin θ .

The third function is the versed cosine of θ [vercos θ] which is $1 + \cos\theta$.

The fourth function again is a pair to the third and is complementary versed cosine θ [covercos θ] which is $1 + \sin\theta$.

The fifth function again involves a pairing and is given as the external secant θ [exsec θ] (line D-E) which is $\sec\theta - 1$.

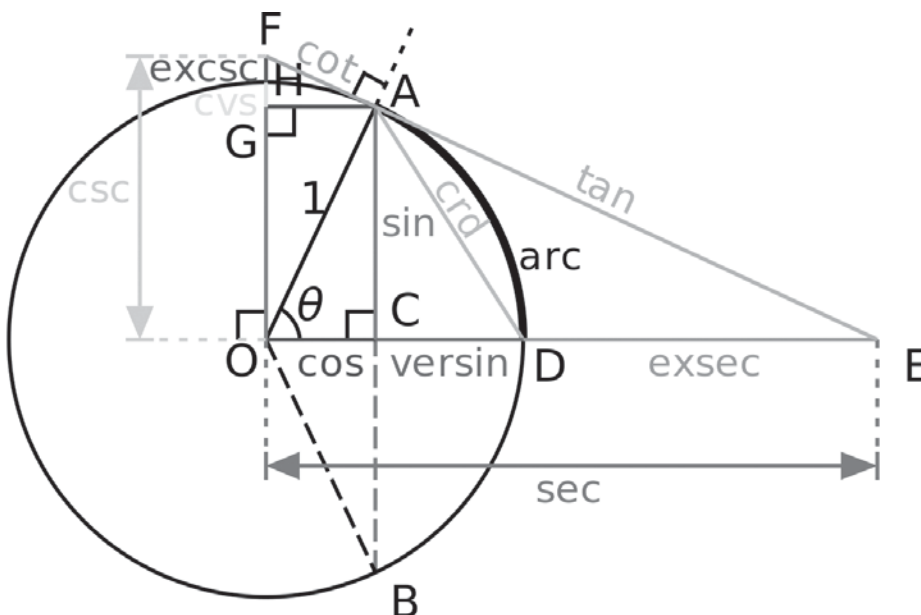
The sixth function, pair to the fifth, is the external cosecant θ [excosec θ] (line H-F) which is $\csc\theta - 1$. There should be another pair to round out the functions, namely: $\sec\theta + 1$ and $\csc\theta + 1$ but no book seems to list them and I don't know how you might graphically show them.

The last two functions are the half functions or
haversine $\theta = \frac{1}{2} \text{vercos}\theta$ or $\frac{1 - \cos\theta}{2}$

And haversine $\theta = \frac{1}{2} \text{vercos}\theta$ or $\frac{1 + \cos\theta}{2}$

(There might be $\frac{1 - \sin\theta}{2}$ and a $\frac{1 + \sin\theta}{2}$)

If any reader is brave enough to dive into the books for the hyperbolic trig functions, good luck, you're a better mathematician than I am. To me they are as much a swamp or impenetrable jungle as the calculus and differential equations are. ■



The trigonometric functions can be constructed geometrically in terms of a unit circle centered at O. Source: By Original: Steven G. Johnson at English WikipediaDerivative.

Rule of the Month

38-53-104 Monument Records

By Earl Henderson, PLS

38-53-104(1)(a) If a professional land surveyor conducts a survey that uses any monument representing a public land survey monument location, quarter section corner, sixteenth section corner, government land office or bureau of land management (government) lot corner as defined by the nomenclature of the United States public land survey system, of any United States geological survey or United States coast and geodetic survey (also known as the national ocean service/national geodetic survey) monument as a control corner, the professional land surveyor shall submit a monument record describing such monument with the board if the monument and its accessories are not substantially described in an existing monument record previously submitted pursuant to this section or its predecessors. (emphasis added)

(b) If a professional land surveyor establishes, restores, or rehabilitates any public land survey monument corner location or section corner, quarter section corner, or sixteenth section corner as defined by the nomenclature of the United States public land survey system, the professional land surveyor shall submit a monument record. (emphasis added)

I sometimes wonder if anyone has read 38-53-104 recently. But I can be assured that some have because it's disappointing how often I've been asked to write this article. Apparently there are a lot of monuments out there for which monument records should be on file but for which there is either no record or records that are no longer valid or up to date. And although the monument record system was designed to protect the public, the people who benefit most from it are the PLSs, right? That's us. So why are we not helping ourselves? I'll never understand people, that's for sure. But to be fair, many probably don't understand me either.

Haven't we all found ourselves pissed off slightly upset because after researching every possible source prior to our exuberant jaunt into the field, we happen upon a PLSS monument in place that doesn't match the monument record we have in hand. The accessories are no longer there. The monument has been upgraded in the recent past. And the PLS # does not match the most recent monument record on file. We may even have in hand the LSP that the PLS recorded when the monument was upgraded. Or worse yet, no monument record exists



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SIDE SHOTS • AUGUST 2016 15

for this particular monument, yet we find a nice shiny monument in place set 1-2 years ago. If you've never had one of these experiences, consider yourself lucky. But if you have, then it has likely happened more than just once, and the first thing that should enter your mind when it happens is, "Have I kept up with depositing my share of monument records?" Because if you have not, then IMHO you have no grounds for your anger or frustration because you are contributing to the problem.

I'll be the next to admit that it's likely I've missed depositing a monument record somewhere that I should have. But it's certainly not my norm. I try to do my due diligence in this matter. We're all very busy and often this check list item gets put on the back burner. The problem is though that the back burner may never get cleaned off. I suggest not putting it there in the first place. Make depositing monument records just as vital a part of every survey as reviewing for the Big 12 items in 38-51-106. And if it's considered a part of the check list prior to delivering and depositing a LSP, then it also remains a part of the budget rather than creating a buildup of out-of-budget work needing done at a later time. And let's face it, that out-of-budget work never gets done. Not in this economy.

Enough ranting. It's time to get down to the nitty gritty. Notice I italicized "uses" and "as a control corner" above for emphasis. I did this to highlight that the corners don't have to be a part of the boundary of the subject property on which you're working. If you use corner monuments outside the boundary of your subject property you shall submit a monument record on those also.

Based on the list included in the statute of which monuments require a current monument record on file, it appears to me that there are far fewer types of monuments that don't require a record than there are those that do. That's a long list. To start with, quarter and sixteenth monuments are specifically included. And most of us believe that any PLSS monument representing a 64th corner or "smaller" doesn't require a monument record. But prior to the quarter and sixteenth this is called out, "a public land survey monument location". Obviously that means township and section corners but if that's all it was intended to mean then why didn't the law just read "township and section corners" the same way they called out quarter and sixteenth corners? I confess I'm not certain. But how do you want to find out? As part of a complaint filed against your license? 38-53-108 allows us to submit monument records on any monument if we want to so why not just do it? It likely takes more time and effort to try to determine if a monument record is required, or find some excuse not to submit a monument record, than it does to just do it.

38-53-104(1)(c) requires that at least two accessories or reference points be established. I suggest more if your intention is to be helpful. Because if one of the two you

set is lost when the corner is lost, then it's highly unlikely that corner will be able to be re-monumented in the same location using the one remaining accessory, if it's even still there.

38-53-104(2) requires that the monument record be submitted "within six months after the date on which the monument was used as control or was established, restored, or rehabilitated." This is important to remember for two reasons. First, the six month limit requirement starts when you were at the monument, not after you deposited your survey. And second, remember that your survey plat isn't required to be deposited for 12 months so you may be required to submit your monument records before you're ready to finalize and deposit your plat. So this "back burner" item may actually be the front burner item if you're not careful.

After the PLSS corners in the list comes a long list of government corners for which a monument record is required to be submitted. I think we all can agree that mining claim corners fall within at least one, if not all, of these categories. So don't forget to submit a monument record on the mining claim corners that you either use or set.

The monument record system is a vital part of the perpetuation of surveyed lines. And it's a vital part of the research for almost any project for budgeting and determination of the history of a parcel or line. The field work often starts with the monument records and the project often ends with them. It's easy to either forget or delay the completion of monument records. And it's also far more likely that once you complete a monument record on a particular monument that you'll never use that monument again yourself than it is that you will use it. But if we rationalize not depositing these records for any reasons, then the system will continue to degrade and eventually it will be far more common to encounter monuments with no current records than those with current records.

I see this much like I see the right to vote in elections. If you choose not to vote, then I don't feel you have any right to complain or criticize. If you choose not to deposit monument records (and let's be clear here, if you fail to deposit monument records for any reason when you are required to, you are making a choice) then you don't have any right to complain about others not doing it or about not being able to easily find a particular monument, or any other aspect of the monument record system. It's true that we get what we deserve. But we also get what we work for. If we put in the minimal amount of work legally required for the monument record system we'll have a much easier and more profitable profession.

It's a choice. ■



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June 23, 2016

Mr. John B. Guyton, Editor
Side Shots
3825 Iris Ave.
Boulder, Colorado 80301

Dear Mr. Guyton:

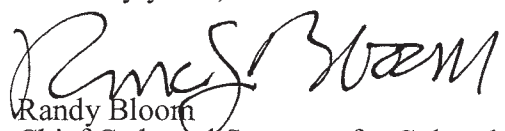
This letter is to inform you of official BLM cadastral surveys in Colorado that have been accepted and officially filed from December 9, 2015, through May 9, 2016, and are now available in the Public Room, Bureau of Land Management, Colorado State Office, 2850 Youngfield Street, Lakewood, Colorado 80215. The surveys will also be available at <http://www.glorerecords.blm.gov>.

The accepted surveys are listed below by township, range, meridian, group number, type, approval date and number of plats.

<u>Township</u>	<u>Range</u>	<u>Meridian</u>	<u>Group No.</u>	<u>Type</u>	<u>Approved</u>	<u>Plats</u>
T. 27 S.	R. 55 W.	Sixth	1626	Plat & Notes	12/09/15	1
T. 13 S.	R. 69 W.	Sixth	1600	Plat & Notes	01/07/16	1
T. 51 N.	R. 8 E.	NMPM	1500	Notes Only	01/19/16	0
T. 34 N.	R. 4 W.	NMPM	1637	Plat & Notes	02/11/16	1
T. 34 N.	R. 5 W.	NMPM	1637	Plat & Notes	02/11/16	2
T. 36 N.	R. 11 E.	NMPM	1363	Plat & Notes	03/09/16	1
T. 36 N.	R. 12 E.	NMPM	1363	Plat Only	03/09/16	2

As other surveys are completed, I will advise you of their acceptance. You may circulate this letter among the membership of the Professional Land Surveyors of Colorado.

Sincerely yours,


Randy Bloom
Chief Cadastral Surveyor for Colorado

In Memoriam – JJ Rihanek, PLS

James J. Rihanek is survived by his wife Marynette Rihanek. JJ was an avid dog lover. He and his wife enjoyed breeding, raising, and showing Pembroke Welsh Corgis. They traveled to many dog shows throughout the west showcasing the Corgi breed he loved so much. In addition to his dogs, JJ owned driving horses and was heavily involved with the Colorado Driving Society where he relished the chance to hitch his horses to a carriage and work them in various competitions. Many folks in the Parker, CO area would be sure to run into him strolling downtown or frequenting the farmers market where he would be devising new ways to improve his tomato plants. JJ was a very competent land surveyor and never missed an opportunity to volunteer to aid in the promotion of his profession. He was a sitting member of the PLSC board and was president of the CCPS for two terms which re-wrote its bylaws to extend the presidential term from one to two years because JJ was such an energetic and passionate president. JJ was a very kind man who happened to be a great surveyor. He will be missed by many.



— David Kuxhausen

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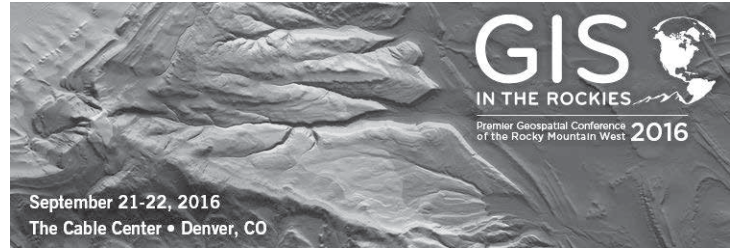
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GIS in the Rockies

GIS in the Rockies, the premier geospatial conference of the Rocky Mountain Region, will be held at the Cable Center at University of Denver, September 21-22, 2016. PLSC has been a Sponsoring Organization of GIS in the Rockies since the early 90's.



The Keynote Speakers will be Matt Sheehan, Principle and GIS Developer with Web Map Solutions (specializing in location technology development while working in support of GIS and other location-based services) as well as Brian Timoney, Founder of the Timoney Group (providing expertise in the geospatial industry). This year's program is still developing but there will be a Survey Track with presentations by local Survey and GIS experts.

The gap between Surveying and GIS is shrinking and the two have become complementary. GIS in the Rockies provides a collaborative environment for professionals and enthusiasts from both worlds to discover and promote technological and procedural advances, endorse thought leadership and real-world lessons evolving connection between these technologies and those who use them, and share innovative ideas and instruction to empower us all. Join us as we advance together!

– Peggy Streicher, PLS

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Legislative Committee Report

By Paul Bacus, PLS

SCR 16-005 is dead. This is the second year in a row that we have had to defend the position of County Surveyor. As anyone that is remotely familiar with tactics will tell you, it is better to act than react. Now, it is our turn.

We have spent the past year preparing changes to statute that address the sections of statute that get misinterpreted and make a difficult, underpaid job worse. We need to push these changes, right now. This is an election year which means that a large part of these people are applying for a job and they are applying to you. I believe in democracy, I actually think that the system tends to overlook the influence of the voice of the people and I believe the future belongs to those who are involved in the present.

Call your representative and senator's office, tell them that we are starting legislation to fix our system and we need their support. Tell them that we matter and we

need their support and if they can't support us we need to know why.

We have inherited a rather large problem, over half of the positions are vacant, the pay is more like a token rather than income, oh and a bunch of the counties don't like us. In the design of our system the responsibility to keep track of monuments falls to the County Surveyor, no one else is qualified to do the job. The need to involve a surveyor before a problem starts is often neglected because we are rarely involved in the decision process. Someone/we need to change this.

Any problem that is presented to a society the society will find a solution. The difference between a professional and everybody else, the professional steps up and addresses the problem.

Part of the problem or part of the solution? ■

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Western Federation of Professional Surveyors

Board of Directors Meeting

April 15, 2016 • Golden Nugget in Las Vegas

By Micheal Bouchard, PLS

The Western Federation of Professional Surveyors (WFPS) held a Board of Directors meeting on April 15, 2016 at the Golden Nugget in Las Vegas, Nevada. Delegates representing all 13 western states were in attendance.

WFPS areas of focus:

Developing and Maintaining Programs to Promote the Profession

WFPS is committed to promoting the land surveying profession. To that end, WFPS is currently developing the following programs:

Youth Outreach – Land Surveying as a Career

- ✓ WFPS has budgeted funds to develop an after school/community program. The program will include 10 hours of curriculum that can be used by state associations and their chapters to promote land surveying as a career. The initial outline of the program is complete. **If you are interested in serving on the committee that is developing this program, please contact the WFPS Executive Office at (707) 578-1130 or admin@wfps.org.**
- ✓ Continuance of the Teaching with Spatial Technology (TwIST) program which provides teachers with resources to promote land surveying within their classroom. All state associations are welcome to participate in this annual event. The 2016 TwIST program will be held the third week in June. **All state associations are welcome to sponsor teachers to this training.**

Public Awareness – Elevator Pitch Contest

- ✓ A 60 second pitch to spark an interest and create an understanding of the land surveying profession. Your pitch should answer the questions “What is a Land Surveyor” and “How Does Land Surveying Impact Your Community”
- ✓ **Be creative and submit your pitch (written or video) to admin@wfps.org by September 15, 2016. The winner will receive a \$100 Visa card.**

Providing Resources to Benefit State Associations

WFPS is dedicated to providing resources to state associations. Following are a few of the resources currently being developed:

1. Speakers Bureau

This new resource developed by WFPS will provide state associations the ability to search for a speaker by name, geographic location, or by topic. The database will include a photo of the speaker, a bio, price range, and testimonials. The search engine is available on the WFPS website – WFPS.org State associations are encouraged to submit recommendations for the speakers bureau.

2. Quarterly Book Reviews

Looking for content for your magazine or newsletter? WFPS will be providing a quarterly book review that state associations can publish. The first book review will be emailed to state association editors/executive directors in May.

Serving as a Regional Voice

WFPS serves as a regional voice for the surveying profession. WFPS has a long history of assisting state associations by providing support on legislative issues. This includes letters of support and resolutions for topics such as continuing education, four-year degree, and definition of surveying.

At the April Board of Directors meeting, WFPS took the following action to assist state associations with specific needs and to represent a regional voice for the profession:

- ✓ Colorado Delegates have indicated that proposed legislation is putting the position of County Surveyor in jeopardy. WFPS will work with PLSC and other associations to defend the title of County Surveyor in Colorado and elsewhere.
- ✓ Past Chair Richard Heieren was appointed to represent WFPS on NCEES Future of Surveying Forum which discusses the future of the land surveying profession.

- ✓ WFPS reviewed the position adopted by NSPS regarding UAVs. WFPS voted to support the position and will develop a resolution along with resources for the state associations.

NALS-WFPS Western Regional Conference

The NALS-WFPS Western Regional Conference held April 16-19th at the Golden Nugget in Las Vegas, NV was a great success! Thank you to those state associations who helped to promote the conference which had attendees from 22 different states.

NEW! WFPS Website

WFPS has launched a new website. Visit us today! WFPS.org

STATE HIGHLIGHTS:

Alaska:

Legislature: There is pending legislation that would allow private sector second party surveyors the ability to review work submitted to the State of Alaska. This is in hopes of expediting the review process.

Arizona:

Another group of surveyors are moving to form another professional organization: United Surveyors of Arizona, the current and existing organization is Arizona Professional Land Surveyors (APLS).

The state is considering the deregulations of certain professions: Surveying may be one of them, (We will watch: deregulations might mean no such thing as no Licensed Professionals! YIKES!)

Hawaii:

Going through a sunset review at this time.

Nevada:

Education: An agreement to offer a minor in surveying at UNLV is almost complete. The Great Basin College program has expanded and they are looking to possibly hire an additional professor which will allow them to become ABET accredited.

Legislature: The 79th (2017) Session of the Nevada Legislature begins in February 2017. The NALS legislative committee is looking at changes to statutes related to the Nevada State Plane Coordinate System NRS 327.

Oregon:

Legislature: At the last board meeting the motion passed for PLSO to support requiring Hydrographers working in Oregon to work under the supervision of a PLS.

Utah:

Legislature: The UCLS is requesting a room during the 2017 legislative session in order to have some

one on one time with the legislators in the state. Our goal is to foster a working relationship with them in order to help in future legislation. Sounds like a great idea.

Washington:

Legislature: Proposal of a revised/new definition of land surveying is on hold again due to the State law requiring an economic impact statement.

Survey Issues of concern:

- The WA Public Land Survey Office's (PLSO) edicts that only an amended Record of Survey can be used to make a small scrivener correction (versus an affidavit) and the mandate for black ink versus blue ink.
- "Call Before You Dig" law continues to be a problem for surveyors.

For more information concerning Conferences, other upcoming events, leadership, membership, etc., please refer to the WFPS website and/or the individual State Organization web site.

NEXT MEETING

October 1, 2016

Wild Horse Pass Hotel & Casino

5040 Wild Horse Pass Blvd., Chandler, AZ 85226

Submitted by Micheal Bouchard, PLS
Colorado Delegate

About WFPS

The Western Federation of Professional Surveyors (WFPS) was formed in 1979. The Board of Directors includes two delegates from each of the 13 western states. WFPS serves as a regional voice for Land Surveyors and meets quarterly to discuss practice issues affecting western state surveyors. For more information about WFPS and the state associations, visit WFPS.org

WFPS Executive Office

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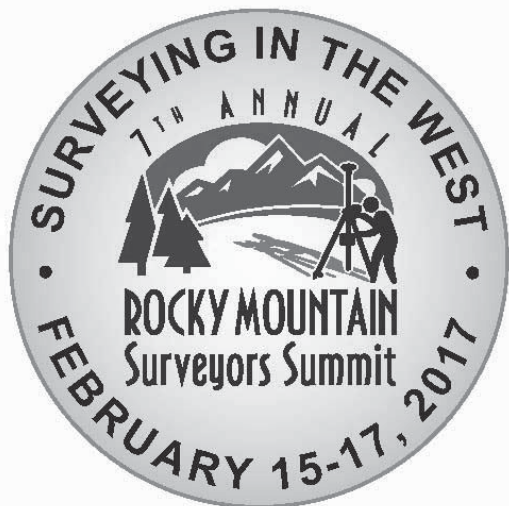
PLSC Board of Directors Meeting Minutes

April 26, 2106

Merrick & Co. and via conference call

1. Call to Order: 4:35PM
2. Recognition of PLSC Board Members and Officers:
 - a. **Present:** Todd Beers (P-Central), Alan Blair (Secretary-Treasurer - Central), and Becky Roland (Exec. Dir.).
 - b. Board: Paul Bacus (Northern), Patrick Green (Western), Leif Joy (NW1/4), Steve Parker (Southern), James Rihaneck (Central) and Thomas Sylvester (Western).
 - c. Exofficio: Parker Newby-Southwest
 - d. Nonvoting: Mike Bouchard, Roger Nelson (Past President), J.B. Guyton
County Surveyors Representative: Patrick Green – Also Board Member.
 - e. **Absent:** Kayce Keane (VP - Northern), Teresa Smithson (Central), Eric Carson (Central)
3. Determination of Quorum - confirmed
4. Welcome of Guests: Kim Wyatt, new with Phoenix AMC
5. Additions, deletions and modifications to agenda - none
6. Approval of Minutes from Previous meeting
 - a. 3b estimated net surplus was \$1200.
 - b. **MOTION:** To approve the January 2016 Minutes as amended (Bacus/Rihaneck)
 - c. Approved unanimously
7. 2016 Budget Review
 - a. Review and modifications
 - a.i. Roland to add member numbers for current and previous year
 - a.ii. Roland to list free LS/PS numbers – new LS/PS are automatically given a free membership year with PLSC
 - a.iii. Roland to provide Board with Bacus' book printing and mailing costs for Voting Members
 - a.iv. Roland to breakout TwIST and PLSC Chapter Scholarship detail (\$1200 each for TwIST) for scholarship budget
 - a.v. Roland to add honorarium for Jan Van Sickle (\$600) and Lynn Patton (\$300) and send their payments
 - a.vi. Roland to separate Refresher Course expenses (speaker, venue, supplies, copies) on a separate spreadsheet
 - a.vii. Membership dues to NSPS and Chapters should be sent automatically on April 1 and July 1 (check NSPS MOU)
 - b. **MOTION:** To approve disbursement to the participating Chapters for Summit. (Bacus/Rihaneck)
 - c. Approved unanimously
 - d. Scholarship Funds, Checking & Savings Accounts
 - d.i. Roland to check on fees for Personal Benefits Investment banking.
 - d.ii. Board discussed possible use of scholarship funds – assist with start-up programs at local community colleges. Would need to know what the needed amount is for assistance.
 - d.iii. We still do not have information on donor intent for scholarship funds. Bouchard will look through his files for the information when the Foundation was established. This should be kept with the financial statements. Guyton has some paperwork. Need to get this information scanned. Need to develop a resolution to define the use of the Stollard house sale funds. Goal is to have scholarship funds defined by purpose by the end of May (Beers).
 - e. Board discussed moving operational funds to Personal Benefits Investment Funds. Roland and Blair will work with Sharla Roundtree, for recommendation on funds by end of May.
 - f. **MOTION:** To move \$100,000 to investments. (Blair/Bacus)
 - g. Approved unanimously
8. Scholarship application from Adam Baker.
 - a. The Board discussed whether one individual can apply to the Chapter and PLSC. Board consensus is that this is ok.
 - b. Scholarship Committee volunteers: Roger Nelson, Teresa Smithson (Roland to contact), Laine Landau, and JJ Rihaneck is willing to chair
 - c. Scholarship Committee will be charged with reviewing the current application and recommending an amount to fund for this year, and then reviewing the overall process for future application/rules. This can be an email vote to move forward quickly.

- d. Todd suggested making a decision today on the current application.
 - e. **MOTION:** To approve a scholarship of \$500 to Adam Baker. (Blair/Landau)
 - f. Approved unanimously
9. Membership Renewals
- a. Need Chapter boundaries – Roland will send full roster to Chapter Presidents on Friday after completing calls from staff for additional follow-up from Chapters. Beers encouraged Chapters to call lapsed members and find out why they are not renewing.
 - b. Out of State members – The Board requested staff to send a postcard noting nearest Chapter inviting them to Chapter meetings and reminding them to renew.
 - c. Member packet is to include
 - c.i. Membership cards (wallet cards)
 - c.ii. Certificate of membership (letter size)
 - c.iii. Book on statutes
 - c.iv. Receipt
 - c.v. NSPS information
 - c.vi. Sticker (need to order)
- d. Career workflow page – refer to NSPS page
10. PLSC Logo
- a. Results of voting from conference
 - b. Add very first logo
 - c. Roland to send the top four logos to the membership as a Survey Monkey to the membership to vote with the 1st logo as well.
 - d. Landau noted the increased cost and reproduction issue with current logo and its detail/multi-colors. This can be resolved with different versions of the same.
11. Colorado Mesa University Surveying program update
- a. Patrick Green and Tom Sylvester will be meeting next week with two professors in charge of developing program start up tasks/needs. They are also adding an engineering school. Patrick will report back after the program. Material from Metro State program could be made available to CMU, and Patrick will pass this along to the CMU professors. PLSC and its members have equipment to donate, as well. CMU will need



7th Annual Rocky Mountain Surveyors Summit

Surveying in the West

February 15-17, 2017

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Call for Abstracts

The 2017 Rocky Mountain Surveyors Summit Planning Committee is looking for topics that will add to Attendees' knowledge. Presentation times are either 2 or 4 hours. If you have a presentation that you would like to share, please send your presentation title and abstract to broland@plsc.net. **The deadline for submitting an abstract is August 15, 2016.** For more information on submission and up to date information on the Summit, go to www.plsc.net.

- assistance with drafting software.
- b. Tom Sylvester noted that Central High School did get their survey program approved for next year and could use equipment. Tom will follow up and see what they need.
12. Colorado County Surveyor position
 - a. Sent to Committee – Warren Ward and Paul Bacus testified. Vote ended in tie for a vote on Friday. This will likely be sent to the Senate for vote. PLSC needs 12 votes. We need as many people as possible to contact all legislators (Senate now). Paul will send a bullet list of talking points.
 13. Continuing Education Requirement for Colorado Land Surveyors
 - a. Discussion with Joyce Young and Christy Thomas at Northern Chapter Meeting
 - b. Todd Beers will take the lead on this and gather Studies and information on the auditing and developing project conference.
 14. Colorado Revised Statute 30-10-903
 15. **MOTION:** To entertain a vote to amend the Statute as presented by Legislative Committee (Bacus/Joy);
 16. Approved unanimously
 17. **MOTION:** To accept the amended language as presented. (Bacus/Joy);
 18. Approved unanimously
 - a. This will now be given to Peg Ackerman to move forward.
 19. Chapter financial activity for 2015 is needed from each chapter treasurer for taxes.
 20. Chapter Summit in Grand Junction Scheduled for August 19, 2016- 6:00 Dinner, 7:00 pm – 9:00 pm meeting at Hampden Inn - \$155/room for those who would like to stay (WCLS will pick up meeting room cost/PLSC will pay for dinner). Patrick Green will send reservation information to Becky to send to the Board.
 21. 2017 Surveyor's Summit
 - a. Alternate venue (Police Protection Authority (PPA) Center)
 - a.i. comparable costs – good alternate/backup
 22. GPS Day May 21, 2016-Eric Carson at Compass Tools
 - a. Roland to send email reminder
 23. Jefferson County Certificate language email sent by Jamee Chambers. - resolved
 24. Reports:
 - a. President, Todd Beers – No additional report
 - b. Vice President, Kayce Keane – not in attendance
 - c. Secretary-Treasurer, Alan Blair – No additional report
 - d. Executive Director, Becky Roland - No additional report
 - e. NSPS Governor – JB Guyton – No additional report
 - f. WFPS Delegates Mike Bouchard and Roger Nelson – TrigStar teacher had to withdraw application, there are still two days left to submit an application, next meeting in October in Phoenix
 - g. Front Range Surveying and Mapping Program, JB Guyton, Chair – No additional report
 - h. Standing Committees
 - h.i. Legislative Committee – Paul Bacus, Chair – No additional report
 - h.ii. Survey Monumentation and Standards, - Inactive
 - h.iii. Membership Committee, Steve Parker, Chair – No additional report
 - h.iv. Ethics and Fair Practices, Patrick Green, - No additional report
 - h.v. Chair Education Committee, Kayce Keane, Chair – No additional report
 - h.vi. Website Committee, Steve Parker Chair, Brian Dennis, Becky Roland – No additional report
 - h.vii. Liaison Committee, (QBS Colorado) - Inactive Special Committees - GPS – Eric Carson – No additional report
 - h.viii. Trig Star – Tom Sylvester, Chair – Jan is hosting a ceremony tonight with participating schools
 - h.ix. GIS-In-The-Rockies – Steve Parker
 - h.ix.1. GIS in the Rockies – asking organizations to offer free memberships to students that show up at the event – PLSC to have student applications at booth for free membership, currently have 4 abstracts – deadline is next Tuesday
 - i. NOAA/NGS Report
 - i.i. Calibration Baseline: data from 2 years ago is online, published in last Side Shots planning to get equipment for remaining 9 CBLs
 - i.ii.1. could possibly do Grand Junction last two weeks in August
 - i.iii. webinar/seminar end of May in LaCrosse WI – Pam Fromhertz will attend and

- send a report on this and present at next meeting
- i.iv. Beers to send Paul DeGraff's info to Pam
- i.v. Pam continues to work on height elevation plan with Teresa Smithson
- j. Chapters
 - j.i. Central
 - j.i.1. meeting this Thursday
 - j.2. Northern
 - j.ii.1. April 6 meeting went well
 - j.ii.2. Need to add DORA PDF to PLSC website
 - j.ii.3. Reviewed May meeting topic
 - j.iii. NW ¼ - No additional report
 - j.iv. Western
 - j.iv.1. Spring Seminar on the 27th
 - j.iv.2. Tom Sylvester will send information on the Spring Seminar to Becky Roland to post on the website.

- j.v. SW – No additional report
- j.vi. Chapter Summit in Grand Junction
 - j.vi.1. Start early for Board Meeting
 - j.vi.2. Tom Sylvester will check with Patrick Green and the hotel on availability to have the Board Meeting before the Summit (4:30-6).

25. Adjourn (Bacus/Joy) 6:24PM

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Federal Land Asset Inventory Reform (FLAIR) Act: Improving Real Property Stewardship

Since 2003, the Government Accountability Office (GAO) has repeatedly designated ‘Managing Federal Real Property’ as an area of “high risk” of waste, fraud and abuse. This activity is again on the list released by GAO on February 11, 2015 (GAO-15-290). One of the reasons cited by GAO is the fact that the government does not have a current, accurate inventory of the land it owns, most recently noting “effective real property management and reform are undermined by unreliable real property data.” The General Services Administration (GSA) collects data from at least 30 federal agencies, but GAO has found its system, the Federal Real Property Profile (FRPP), “unreliable and of limited usefulness” and “not current or reliable.” This point was underscored once again by the House Appropriations Committee in the FY 15 Financial Services appropriations bill report.



It is estimated that the government wastes \$2 billion a year on some 77,000 unneeded buildings. The GSA inventory includes buildings only, and not land. The last official report on unneeded federal land (1997) indicated that the Bureau of Land Management alone is holding more than 3.4 million acres that had been identified for disposal through the agency’s land use planning process.

On the other hand, the government inefficiently maintains a plethora of land inventories that are inaccurate, out-of-date, single purpose, and non-interoperable. The inefficient and wasteful nature of the government’s current way of doing business was demonstrated by then-Interior Secretary Gale Norton’s 2005 testimony before the House Interior Appropriations Subcommittee:

“The Department currently uses 26 different financial management systems and over 100 different property systems. Employees must enter procurement transactions multiple times in different systems so that the data are captured in real property inventories, financial systems, and acquisition systems. This fractured approach is both costly and burdensome to manage.”

The Department of Defense has reported to MAPPS that it maintains more than 300 property management systems. This inefficiency should not be the case when a single, uniform, reliable, regularly maintained database is currently available through state-of-the-art geographic information systems (GIS) technology. Small business will also benefit from helping with such GIS technology and integration efforts, as well as helping state and local governments with their ongoing efforts to inventory non-Federal property.

In the 114th Congress, Representatives Ron Kind (D-WI) and Rob Bishop (R-UT) are planning to re-introduce the Federal Land Asset Inventory Reform (FLAIR) Act (H.R. 916 in the 113th Congress). This bill was reported favorably out of the House Natural Resources Committee in July 2014 by a unanimous, bipartisan vote. In the Senate, a companion bill is needed for reintroduction.

This bill creates a single, federal multipurpose cadastre (a uniform Federal computer database), in accordance with standards recommended by the National Academy of Sciences. It also calls for an “inventory of inventories,” so that duplicate, wasteful activities can be identified and eliminated. The FLAIR Act will provide all agencies owning federal real property an improved accounting of their land assets. Such an inventory will assist in improved federal land management, resource conservation, environmental protection and utilization of real property, as well as identify property the federal government no longer needs to own.

ACTION REQUESTED:

MAPPS and NSPS respectfully urge Representatives to cosponsor the FLAIR Act in the 114th Congress. To cosponsor, please contact Natalie Mamerow in Representative Kind’s office at 5-5506. MAPPS and NSPS respectfully urge Senators to sponsor companion legislation in the 114th Congress. For more information, contact John Byrd, MAPPS and NSPS Government Affairs Manager, at jbyrd@jmpa.us or (703) 787-6665.

CHAPTER NEWS

CCPS

Greetings everyone. Here we are again; summer is finally here and unfortunately will be gone before we know it. The CCPS has been very busy planning the 2016 annual conference with the PLSC. We are actively pursuing new and exciting speakers and hopefully we will be able to secure some fresh, new, high energy speakers!

I'd like to start by saying thank you to Chuck Hutchins from Vectors Inc. and to those of you who were able to attend the June general meeting at the Table Mountain Inn located in Golden, CO. Chuck gave a very informative and in depth presentation about new and emerging technology and how we as surveyors can stay on the cutting edge as well as get the most out of our technology.

In addition, the CCPS will be holding our second annual Surveyors Social at Dave and Busters towards the end of July. This event will be a social atmosphere where all of us can converse with our peers and discuss the goings on within our profession over some free dinner and drinks provided by the CCPS. I hope those of you who are interested can find some time to join us for some good conversation and comradery. Be on the lookout for

the email invitation!

I hope all of you are off to a great summer and are getting out to enjoy some of the many outdoor activities our great state has to offer.

David J. Kuxhausen, PLS
CCPS President

NC-PLSC

The Northern Chapter is on summer hiatus, but you should start to see emails regarding upcoming elections. We need a President, President Elect and 2 directors. Please let Laine (Laine.Landau@gmail.com) or Kevin (kevinebowman@gmail.com) know if you are interested in serving. The President and President Elect should be licensed in Colorado, but the other positions are open to any of our members and are a great way to be involved without too large a time commitment.

We are also looking for suggestions for presentations for the 2016-2017 program. We already have John VonNieda lined up to show us how the City manipulates the Clerk & Recorder data along with Kelly Mule with SKLD Information Services to demonstrate their research options. We have had some interest in Carlson applications for surveyors and GIS practical applications for surveyors and need to line things up. I'd like to suggest that we volunteer with the Boy Scouts or Girl Scouts to offer a local survey class. This year I'd like to make a concerted effort to generate some interest in TWIST and Trig Star in the local schools. Please reach out to me if you have a connection to a Northern Colorado principal or math teacher.

Even though it is the middle of summer we are working on lining up speakers for the Surveyors Summit, 2017! The lineup is looking good, but we always need specialty topics to fill in, and would appreciate volunteers. Please see the PLSC website for the call for abstracts and consider sharing your special knowledge.

Laine Landau, PLS
President, NC-PLSC



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February 15-17, 2017
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SC-PLS

The April Board Meeting was held at Farnsworth Group in Colorado Springs. Our guest speaker was Brian Anderson with Assurance Risk Managers, Inc. in Aurora, Colorado who led a presentation about writing business contracts and how to protect ourselves in the financial aspects of surveying. The question and answer session could have gone on for hours, and we ended the discussion with some excellent materials to use in future contracts. Esmond Goei and Chuck Hoyt from Aspect Solar Inc. (www.aspectssolar.com) located in Lafayette, Colorado demonstrated their new state of the art line of solar powered battery chargers for use in the surveying industry, hunting, camping or other needs. Many items

CHAPTER NEWS

from their company were raffled off to our attendees. In the end we all enjoyed a mouthwatering spread of entrees and desserts from Bird Dog BBQ; what a way to end the night! Our June board meeting was presented by myself. Our new company, Aerial Optik, LLC in Littleton, Colorado is finally legal with an FAA section 333 approved and 2 new pilots on board. The workflow demonstrated the AIBOTIX V2 Drone "Flight Plan" software, photogrammetry process and deliverables. Many of the pros and cons were mentioned about anyone wanting to start a drone department within their company. It was a little windy but we performed a small demo of the drone capabilities in the parking lot without the payload. Everyone enjoyed Chipotle burritos and snacks afterwards. For more details and to get involved with southern chapter events, check us out at: www.scpls.net

Don R. Hulse, PLS
SCPLS President

SWC-PLSC

The SW Chapter will be having a Chapter meeting on July 19 at the Durango Rec Center at 6:00 PM. Our speaker will be Todd Johnston with CDOT. Todd is the Survey Coordinator with Region 5 Survey/ROW Unit and will be speaking about surveying within the CDOT right of way.

Parker S. Newby, PLS
President – SW Chapter PLSC

WCLS

Our regularly scheduled meeting of May 18th was held at the City of Grand Junction with a large attendance. The main topic of conversation after dinner concerned Colorado Mesa University and their new engineering department with the possible inclusion of a surveying program. The exact size and scope of the proposed survey program has not been finalized. This is all being made possible by the efforts of Tom Sylvester and Patrick Green. We also discussed the upcoming Chapter Summit to be held here in Grand Junction on Friday, August 19th. Final arrangements have been completed for this event. See upcoming PLSC announcements regarding this meeting. Also in the discussion was the upcoming WCLS Summer Seminar to be held on Thursday, August 18th. The seminar has been spearheaded by Rick Mason, and his hard work has paid off with the expectation of a great seminar day. News of this seminar will be posted soon.

Peter T. Krick, PLS
President, WCLS

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