

November 2016

SIDE SHOTS

Professional Land Surveyors of Colorado

Volume 47, Issue 4

GAME OF STONES

— Page 12

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SIDE SHOTS

NOVEMBER JOURNAL 2016

VOLUME 47

NUMBER 4

■ President's Letter	4
■ From the Editor	5
■ Rocky Mountain Surveyor's Summit 2017	6
■ 2017 Colorado Land Surveying Refresher Course	9
■ State Board Update	10
■ BLM Cadastral Letter	11
■ Game of Stones	12
■ Scanning Scott's Discovery Hut	14
■ Affidavits of Correction	17
■ GIS in the Rockies Conference Report	19
■ Rule of the Month: The Succession of Responsible Charge	21
■ Control Points No. 43 – A Lost Art	24
■ Colorado Trig-Star Competition	26
■ Treasurer's Report	27
■ PLSC Board of Directors Meeting Minutes	28
■ Chapter Summit 2016 Transcript	29
■ Chapter News	32
■ Sustaining Members	34

*Side Shots is the official publication of the Professional Land Surveyors of Colorado, Inc.
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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 Side Shots.

*Do you have something you want to sell, trade or buy? Why not use Side Shots for your
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Dear Fellow Members of PLSC:

Welcome to autumn in Colorado! Soon our concerns will turn from heat awareness to keeping our eyes on the road and not on the changing colors of our trees - soon to be followed by snow!

Elections for the PLS BOD are upon us! There are several positions that will be available to be filled including the following: President, Vice President, Secretary-Treasurer, and four director positions. Leif Joy, the election committee chairperson, should be your contact if you are interested in running for any position. The PLSC website has the position descriptions and nomination form. I would encourage everyone to consider running for a position - it would be great if our membership could have multiple people from which to choose on the ballot. Also, please do not forget about the annual PLSC awards that are available to members and non-members. Please visit the web site for available awards and an award nomination form.

The PLSC held a BOD meeting on August 19, 2016 in Grand Junction as well as a Chapter Summit meeting. The majority of the BOD meeting was dedicated to the discussion of a two or four year surveying program, attended by representatives of Colorado Mesa University along with Western Colorado Community College, which is under the auspices of CMU. The PLSC is actively participating in the input for the program curriculums – many thanks to Alan Blair and others for their participation in this very important effort. The Chapter Summit meeting was informational with a number of items discussed – please see the minutes from the Chapter Summit meeting in this issue. Several members of the BOD and residents of the western slope were in attendance.

The RMSS conference to be held February 15-17, 2017 at the Arvada Center, in Arvada, Colorado is in the final planning stages with the goal of having registration and membership renewal available by October 15, 2016. Thanks to Kayce Keane for her enthusiastic leadership of the planning committee.

A reminder that the PLS and LSI refresher courses are coming up starting in January 2017 at the Jefferson County Administration Building. Thanks to Mike Greer for his continued support and coordination of the venue, and Randy Bloom for his lineup of speakers for the course. We continue to hear very positive feedback from participants in the course and have attendees numbering from 15 to 35 over the past few years. If you know of anyone who is contemplating testing for a LSI or PLS please suggest this course. The course outline and dates can be found on the PLSC website.

The GIS in the Rockies conference was held September 21-22, 2016 at the Cable Center in Denver. The PLSC had a booth and PLSC members alternated in being

continued on page 5

DEDICATED TO THE IMPROVEMENT OF LAND SURVEYING EDUCATION AND PRACTICE.

FROM THE EDITOR



The following is a very complete issue, which should have something of interest for everyone. There is a two page description of the upcoming 2017 Surveyor's Summit meeting (and note that it is starting on February 15th, a few weeks earlier than usual, so please plan accordingly).

Also, don't overlook the notice of the 2017 roster for the Surveying Refresher Course, and help spread the word of this to anyone needing exam preparation and may not see this in *Side Shots*.

Joyce Young, the Program Director at DORA, has provided us with an update on activities at the State Board. Greg Markle, the Clear Creek County Surveyor, contributed our cover story, *Game of Stones*, about an ambitious retracement and monument restoration project culminating on the summit of the 13,301' James Peak. It was a great and worthy accomplishment and a great honor to follow in the footsteps of the original surveyors.

Todd Beers suggested that we reprint the story of LiDAR scanning Scott's Discovery Hut in Antarctica, featuring two participants from Colorado, performed in an effort to preserve the historic value of these structures from the early 20th century. Ed Bristow provided a very informative article about the problem of correcting past survey errors with an affidavit of correction when the original surveyor is deceased, and

presents some solutions. Peggy Streicher wrote an excellent summary of this year's GIS in the Rockies conference. Earl Henderson wrote a Rule of the Month analysis, this one on the succession of responsible charge in the middle of a survey project.

Warren Andrews has a fine description of the lost art of using plane tables and alidade methods of measuring distances. Jan Sterling reports on this year's winners of the Colorado Trig-Star awards. Alan Blair provides a current treasurer's report, and a note about a change in how the scholarship funds will be managed.

The minutes of the Board of Directors meeting held on August 19th, 2016 are here, along with a complete transcript of the Chapter Summit meeting which was held on the same day. I had the pleasure of attending these in Grand Junction and being the facilitator of the Chapter Summit. I hope that the transcript will help you imagine that you were there, participating in the important issues that were discussed. The interest shown at the board meeting by Colorado Mesa University in a new surveying program is most encouraging.

And we conclude with the Chapter News, always of interest. The next issue will feature more details of the Surveyor's Summit conference, including the course offerings and instructors. I hope to see many of you there.

JB Guyton, Editor

From the President from page 4

present in the booth to answer questions from students and other interested parties. Thanks to the PLSC members who volunteered their time to represent the PLSC in the planning and execution of the conference: Steve Parker, Becky Roland and Peggy Streicher. Speakers for the PLSC tract included Todd Beers, Pam Fromhertz, Warren Geissler, Blaine Horner, Steve Parker, Joey Stone and Craig Amey.

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

Sincerely,
Todd Beers, PLS

On the Cover

Donna Malleck at the Station 30 monument, high along the Clear Creek/Gilpin County line. See *Game of Stones* in this issue.

Rocky Mountain Surveyors Summit

February 15-17, 2017 • Arvada Center

PLSC is pleased to announce Dr. William Morton as our Headliner

William will be presenting Wednesday and Thursday on:

Andrew Ellicott: The Stargazer Who Defined America—This is the story of the survey of the first international boundary between the United States and Spain (1796-1800).

John Williams Gunnison—Surveyor, Explorer, Topographical Engineer – John Williams Gunnison (1812-1853) short but productive life coincides with the great settler migration west of the Mississippi River.



In addition, PLSC welcomes John Stahl, PLS, CFedS, on Wednesday and Thursday

Surveyor's Role in Conflict Resolution – This will be an examination and comparison between the role of the surveyor and the role of the courts.

Remedies to Resolve Property Line Problems – Surveyors are often the first to discover a boundary problem. When the surveyor discloses the problem and walks away, what other remedies are available to the surveyor?

Understanding the Risks: Surveys, Descriptions and Plats – This is an overview of various types of surveys designed to fulfill the intended purpose of the client and various elements for consideration when determining the scope of services to be provided.



NETWORKING

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EXHIBITS



Here are just some of the reasons
you should attend the
2017 Rocky Mountain Surveyors Summit

- National and Local Speakers all in one place
- The latest products and services in the industry, with experts onsite to answer all of your questions
- Networking time with your colleagues and PLSC leadership
- Up to 24 hours of continuing education and 2 CFedS continuing education credits

Cost (same as 2016):			
	1-Day	2-Days	3-Days
PLSC MEMBER:	\$200	\$375	\$550
NON-MEMBER:	\$300	\$475	\$650
STUDENT:	\$ 75	\$125	\$200
EXHIBITORS (PLSC Sustaining Members Only):	\$400		
PLSC Voting Member Dues are only \$150/year and include NSPS membership.			

There are many sponsorship opportunities available, in addition to exhibiting. Contact us for more information (plsc@plsc.net) or go to www.plsc.net for complete Summit information and to sign up online.

An additional \$25.00 will be added to registrations received after February 10, 2017. Catered breakfasts & lunches will be provided on all days. Online registration is available at the PLSC web site (www.plsc.net).

SILENT AUCTION/EXHIBITS:

We will be holding a silent auction during the conference. If your equipment room is cluttered up by equipment you are no longer using, please consider donating an item or two to the PLSC silent auction. In keeping with our traditional practice, our Sustaining Members have been invited to display their latest products and services. Exhibits will be in the Arvada Center entrance hall adjacent to the classrooms. Please visit their displays and show our appreciation for their continued support.

HOTEL:

The Doubletree Hotel at 8773 Yates Dr., Westminster, CO, will once again be our host hotel. There will be a shuttle bus to and from the conference hotel each day. Pick up and drop off times will be announced prior to and at the conference. For reservations, call 303-427-4000 and mention PLSC for discounted rates.

EXCEPTIONAL PRESENTATIONS



Additional Presentations Include:

- Subdivision of Fractional Sections—Bob Dahl, Michael Boeckman and Sean Mullen (this is also a CfedS Continuing Education Program)
- Title Commitments—Don Whitmore
- Surveying in Denver—Jeff Jones, Warren Ruby and Ralph Pettit
- Symposium on Continuing Education Requirement—Panel Discussion open to the public
- Mineral Claims—Gene Kooper
- DORA Presentation—Joyce Young and Christy Thomas
- Subdivisions in Colorado—Dave Pehr and Paul Bacus
- Historic Perspective of a Bonafide Right—Michael Boeckman
- Additional speakers include Dave Doyle and Richard Serby

Abstracts, scheduled times and full details of the Summit are available at www.plsc.net.



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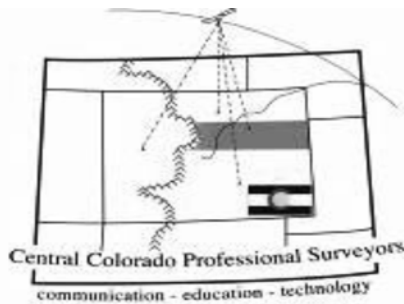
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2017 Colorado Land Surveying Refresher Course

The Professional Land Surveyors of Colorado are offering a comprehensive Land Surveying Refresher Course beginning January 4, 2017. This course offers a review and self-study plan for those taking the National Council of Examiners for Engineering and Surveying (NCEES)

Fundamentals of Surveying (FS) and Principles and Practice of Surveying (PS)

examinations. The course is designed to aid candidates in developing and expanding exam-taking proficiencies. The Wednesday evening classes will be 3 hours in length, starting promptly at 6:00 PM.

Fundamentals of Surveying

<u>Session</u>	<u>Date</u>	<u>Topic</u>
1	Wed., Jan. 4	Overview of NCEES FS and PS Examination Use of calculators and formulas Mock PS and FS Exam
2	Wed., Jan. 11	Fundamental Survey Calculations I
3	Wed., Jan. 18	Fundamental Survey Calculations II
4	Wed., Jan. 25	GIS, State Plane, Geodesy
5	Wed., Feb. 1	Legal Terms and Definitions
6	Wed., Feb. 8	Boundary Law

Principles and Practice of Surveying and Colorado Specific

	Wed., Feb. 15	No class - Rocky Mountain Surveyors Summit
7	Wed., Feb. 22	Public Land Survey System I
8	Wed., Mar 1	Public Land Survey System II
9	Wed., Mar. 8	Colorado Survey Law I
10	Wed., Mar. 15	Colorado Survey Law II
11	Wed., Mar. 22	Principles and Practice Topics
12	Wed. Mar. 29	Mock PS and FS Examinations

Registration, Fee, Location

The fee for the entire course is \$425, or \$75 per 3-hour block taken individually. Registration is open beginning November 1, 2016. See <http://www.plsc.net/> for registration information. Classes will be held in one of the conference rooms at the Jefferson County Courts and Administration Building (Taj Mahal), 100 Jefferson County Parkway, Golden, CO. Use the parking lot and main door on the east side of the building. Signage will lead you to the classroom. For questions, contact Becky Roland, Executive Director, PLSC, 303-551-3266, broland@plsc.net. Visit the NCEES site at <http://ncees.org/exams/> to learn more about the FS and PS examinations.

State Board Update

By Joyce J. Young, Program Director

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

Hello, Surveyors! Thanks for taking the time to pop by and read my offering for this issue of *Side Shots*. We hope that you will find some useful information here and consider providing us your feedback on what you might like to see us address in these pages in the future.

The **2017 Rocky Mountain Surveyors Summit**, being held in February 2017, is on our minds around here and we would like to make our visit valuable to you. We want to ensure we are covering the things that are important and of interest to you. With that, we are accepting input into our presentation topics for our time at the Summit. Please keep in mind that our Board has Architect and Professional Engineer Board Members so if you would like input from them about a topic, add that to your presentation ideas! Please email the Board office at dora_AESboard@state.co.us with suggested topics or things you would like us to spend more (or less time) on.

Licensing Webinar

Early in 2017 we will host a webinar to go over the process to become licensed as a Professional Land Surveyor in Colorado. We will send an eBlast to all Land Surveyor Interns and Professional Land Surveyors with an invitation to attend. Please ensure that your email address is updated with the Board office - to verify your current email address on file with the Board, access your online account at: https://www.colorado.gov/pacific/dora/DPO_Update>Contact

National Council of Examiners of Engineers and Surveyors (NCEES)

Computer Based Testing – As you may be aware, the April 2016 administration of the Principles and Practices of Surveying (PS) was the last PS exam to be administered in the paper-and-pencil format. The PS exam has transitioned to computer-based testing (CBT) in 2016. Registration and scheduling opened in June 20, 2016 for the CBT PS exam, with first testing appointments available in October 2016. The new PS exam will allow for year-round testing at approved Pearson VUE test centers – this includes 4 along the I-25 corridor in Colorado, and 1 in Grand Junction. CBT gives examinees the freedom to pick the exam time, date, and location. The new format will include a digital PS Reference Handbook. Examinees will receive their results 7–10 days after the exam.

PLEASE NOTE that passage of the PS examination does not guarantee licensure in Colorado. For information on the licensing requirements for a Land Surveyor or enrollment as a Land Surveyor Intern in Colorado, visit our webpage at https://www.colorado.gov/pacific/dora/AES_Applications and consider attending our licensing webinar to be held early in 2017.

On August 24–27 2016, NCEES held its Annual Business meeting in Indianapolis, Indiana. Board Member, Brian Robertson, PE and the Board's Program Director, Joyce J. Young, attended on the Colorado Board's behalf. Here are a few highlights that may be of interest to the surveyors:

- NCEES reported on the Surveyors Awards – In 2016 NCEES awarded a \$10,000 prize to ten qualifying programs to assist with each program's continued efforts to promote the importance and value of licensure. The award jury considered criteria such as student outcomes, student involvement, outreach, and recruitment. To read more information about the recipients and the 2017 selection process, visit the NCEES webpage at <http://ncees.org/education/ncees-surveying-education-award/>
- Daniel Turner, PhD, PE, and **PLS** began his term as 2016–17 NCEES president at the conclusion of the annual meeting.
- The membership adopted a *position statement* on remote sensing technologies. The statement says that the use of these technologies, such as light detection and ranging (LiDAR), photogrammetry, and unmanned aircraft systems, as well as other emerging technologies should be under the responsible charge of a licensed professional in order to safeguard the public. It is important to note that some of the practices in the adopted language are not considered the practice of land surveying in Colorado. As this is just an NCEES position statement, this does not impact the qualifications for a Colorado PLS or NCEES designation as a Model Law Surveyor.
- The membership voted on the following examination fee changes:
 - Beginning January 2018, the Fundamentals of Engineering and the Fundamentals of Surveying examinations will be reduced from \$225 to \$175.
 - Beginning January 2018, the examination fee for any disciplines of the Principles of Engineering that are transitioned to Computer Based Testing (CBT) will be set at \$375.

As of October 1, 2016 our records indicate the following number of active Colorado surveyors:

- 1689** Professional Land Surveyors
- 262** Land Surveyor Intern Enrollments - dating back to 1983.

Enrollments expire when a land surveyor becomes a licensed Professional Land Surveyor in Colorado.

For questions about any of the information provided here, please email us at dora_AESboard@state.co.us ■



United States Department of the Interior

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9650

September 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 22, 2008, through September 1, 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>.

Note: The survey for Group No. 1444, approved in 2008, was protested, and following the Interior Board of Land Appeals' affirmation of the BLM's decision to dismiss the protest, is now official.

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. 42 N.	R. 13 W.	NMPM	1444	Plat & Notes	12/22/08	1
T. 40 N.	R. 11 E.	NMPM	1643	Plat & Notes	03/30/16	1
T. 41 N.	R. 11 E.	NMPM	1643	Plat & Notes	03/30/16	1
T. 18 S.	R. 70 W.	Sixth	1199	Plat & Notes	04/18/16	1
T. 4 N.	R. 71 W.	Sixth	1653	Plat Only	05/13/16	2
T. 36 N.	R. 17 W.	NMPM	1635	Plat & Notes	05/23/16	1
T. 27 S.	R. 47 W.	Sixth	1500	Notes Only	05/27/16	0
T. 14 S.	R. 98 W.	Sixth	1645	Plat & Notes	06/30/16	2
T. 15 S.	R. 71 W.	Sixth	1649	Plat & Notes	07/05/16	1
T. 2 N.	R. 86 W.	Sixth	1650	Plat & Notes	07/14/16	1
T. 47 N.	R. 1 W.	NMPM	1619	Plat & Notes	03/07/16	1
T. 8 N.	R. 71 W.	Sixth	1500	Plat Only	07/21/16	1

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

Game of Stones

By Greg Markle, PLS
Clear Creek County Surveyor

When Ed Williams received his tax notice from Gilpin County in January of 1902, the veins on his neck started surfacing like the quartz veins along the ridge that separated Clear Creek County from Gilpin County. He had already received a tax notice for his Belmont Mine from Clear Creek County. In fact many of his mining buddies in the Russell Gulch area were being double taxed.

According to Colorado Statute 30-5-112, the description for the county line between Clear Creek and Gilpin County is simply: 'Commencing at the junction of North and South Clear Creeks, and running thence up the dividing ridge between said streams, to the summit of the Snowy Range...' (More commonly known as the ridge extending between the forks of North and South Clear Creek, and the summit of James Peak).

This rather nebulous description became a problem at the turn of the 20th century when the assessor's offices of the two counties were finding it difficult to determine which mine to tax in which county. Where exactly is the top of this meandering ridge? The county commissioners tasked the establishment of this line to their county surveyors: George Schneider of Gilpin and A.J. Ventress of Clear Creek. The joint survey started in September of 1902 and was completed in December of 1904.

Beginning at the top of James Peak with Station No. 1, a rock in place 3' x 4' x 6', they surveyed their way down the ridge, setting 287 stones or chiseling rocks in place at every turn of the ridge. The set stones are basically twice as large as a mining claim stone. For 22.7 miles

they basically performed an open ended traverse, checking in to solar observations and the occasional section corner. Courses were anywhere from 1100 feet to a little more than 100 feet, resolutely sticking to the angle points of the high ground. Carrying elevations, they dropped 6,347 feet as they worked their way through a variety of terrain and vegetation.

The high ridge runs over Kingston Peak, behind St. Mary's through Peck's Flat, over Mt. Pisgah, above York Gulch, over Bald Mountain, past Russell Gulch, over Pewabic Mountain, through the Young Ranch, behind the Frei Quarries and down the ridge to the Fork of the Creeks where they chiseled a cross on a boulder that is there today, No. 287.

There are a set of concrete steps down to the water placed there by Colorado Department of Transportation surveyors in honor of the common point between Clear Creek, Gilpin and Jefferson Counties.

In May of 2014, Clear Creek's county commissioners contracted their county surveyor to re-establish a portion of this line, from Station 72 by Pecks Flat to Station 187 near Pleasant Valley. This is considered the "most populated" of the county line. There was confusion as to the location of the boundary due to corners lost or buried. It was anticipated that 10 or 12 monuments were missing. The county line also became a problem in recent times thanks to the mining claims that straddle the ridge. Abandoned due to tax liens and later sold at tax sales, the claims were divided along the line. Owners wanting to build close to the ridge and capture



Stone 97



Ben Markle and Donna Malleck on the right flank of James Peak

the stunning views of Mt. Evans needed to know the boundary.

It turned out that 33 of the 115 corners re-surveyed were missing, probably lost as souvenirs. These monuments were replaced and monument records filed. It was decided then to complete the maintenance of the line, doing the lower third of the line in 2015 and the upper third in 2016.

In re-measuring between the monuments, it quickly became evident what a great job Schneider and Ventress did. Using a 600 foot and a 100 foot tape with bearings determined by solar observations, the courses between the monuments were rarely more than a tenth different when checked with modern day equipment. I believe any surveyor who has worked along the line feels that the original surveyors not only took a lot of pride in what they were doing but had a great time doing it. The monuments are beautifully mounded and chiseled and the work accurate. Many times we thought "okay, now they're just showing off."

I wonder how it was like, back in 1902, starting in September on top of James Peak at 13,272 feet. How many in the crew? Did they use horses or mules? How did they determine the high point of the ridge going



Cory Diekman, PLS, Gilpin County Surveyor (L) and author, Greg Markle, PLS (R) on the James Peak summit.

through the gentle terrain of Pecks Flat? We came across a few monuments that fell over and we needed four of us to pick them back up. Were these guys supermen? Were they helped by aliens? Were they influenced at all by the miners whose shafts were all along that ridge because of the apexing quartz veins? Did they get along after three years?

A year after the completion of the line, Ventress was killed in a mining accident in the Argo (Newhouse) Tunnel. George Schneider became the State's mine inspector and later became Professor of Mining at the Colorado School of Mines.

After two more summers Gilpin County Surveyor Corey Diekman and Clear Creek County Surveyor Greg Markle finished the last monuments between Kingston and James Peak. With Donna Malleck and Ben Markle a ceremony and champagne toast was had at the summit. For three years they envisioned that Station No. 1 was a 6 foot tall monolith, given the description, and exquisitely chiseled, given the work done on the other monuments. It was anti-climatic to find the 6 foot stone as horizontal and three feet tall with very small, faint chiseling. Must have been a storm coming in.

In all, 44 monuments were replaced, a dozen more hauled up the hill and put back in the original location, and monument records filed with the State on all 287. Plats of the work along with pictures of the monuments are filed with Clear Creek County and soon to be with Gilpin County. ■



Erick Mena and Randy Hale standing with scanner in front of Scott's Discovery Hut

Scanning Scott's Discovery Hut

By Jamie Young

Discovery Hut was built in 1902 and is located at Hut Point near McMurdo Sound on Ross Island, Antarctica. The hut was designated as a Historic Site of Monument (HSM 18) at the Antarctic Treaty Consultative Meeting and presented by New Zealand and the United Kingdom. Erick Mena and Randy Hale of Merrick & Co. of Greenwood Village, Colorado received the opportunity to visit Discovery Hut and also collect high definition LiDAR of both the outside and inside of the Hut.

Discovery Hut was designed by Professor Gregory who was appointed as leader of the scientific staff to construct the hut. He designed the hut before it was sent to Antarctica. The hut was prefabricated by James Moore of Sydney. It was sent to Antarctica by ship and assembled there. The hut was built on site by Robert Falcon Scott during the Discovery Expedition of 1901-1904. The hut was to be used as quarters and storage for Scott and his crew during their expedition. The discovery crew took all the gear, including the stove prior to departing from the Discovery Expedition but did leave a large amount of stores behind and some of these stores are apparent in the scans.

The hut walls were constructed of wood with a thin layer of felt between the two layers of wood and it became

quickly apparent that the hut would not be warm enough for the discovery crew to stay there, so the crew took up quarters on their ship for the balance of the 1901-1904 expedition. It was used as a storage facility. The location of the door to the hut was positioned to the south, such that it would be covered up with snow when every blizzards occurred. When the British Antarctic Expedition of 1907-1909 arrived they found the door of the hut blown off and the entrance covered in snow so they entered the hut through one of the lee windows and used that as there entry and exit point. The hut was used by Shackleton's crew in the spring (September and October 1908) as a storage location for equipment, food and oil that they would take to try to reach the South Pole. Shackleton's crew made a living area built with provisions left at the hut but decided to sleep in tents because they thought it was warmer. The hut continued to be used as a location to store supplies and the supplies were transported to Shackleton's Cape Royds Hut.

After making it within 100 miles of the South Pole the crew barely made it back. On the night of March 3, 1909 after being gone for 128 days, they arrived back at the hut, Shackleton desperate for help, attempted to burn the nearby Magnetic Hut in hopes that the ship would see him and his crew, but he could not get it to light. He

finally was able to light a flare and the ship came to them in a blizzard. Before leaving the hut they covered the window up with wood in the storm and darkness.

During the British Antarctic Expedition of 1910 to 1913, members of the Terra Nova Expedition from Cape Evans in 1911, found the Discovery Hut full of snow and ice. They removed all the snow and ice and found supplies left over from 1903. The hut was cleaned out and used until 1912 as a staging point for the expedition when heading south to the South Pole.

During the ill-fated Imperial Trans-Antarctic expedition of 1914 to 1917, the hut was again cleared of ice and snow and used to store supplies. This expedition was headed by Aeneas Mackintosh and his confidence was lost during this expedition as a result of several bad events and loss of life. The expedition's entire dog team was lost during the return to Hut Point between January- March 1915 and the men were all frost bitten and exhausted. The ice conditions in McMurdo Sound provided a return but the team was stranded until June 1st, 1915 at the hut. The party relied on fresh seal meat and blubber fuel to survive.

Several of the team were again stranded at Hut Point beginning in September 1915. In March 1916, three members of the crew collapsed and were unable to walk. Three other men were still on their feet but were too weak to carry the other men. One man volunteered to stay with the stranded men, while two others went back. One of the men died and was buried in the ice. The two other men reached Hayward and returned for the other men. By March 16th, the crew reached the hut, the five surviving members slowly recovered their strength with a diet of seal meat. The ice was too thin again to risk a final trip to Cape Evans. On May 8th, two members risked the journey to Cape Evans and were never seen again. The rest of the party made the trip to Cape Evans on July 15th. The use of seal blubber to heat the hut resulted in considerable staining of the interior walls and contents of the hut.

The Discovery Hut largely remained untouched after 1917, until 1956 when United States expeditioners dug it out of snow and ice. It was in remarkable shape and included many artifacts from the previous expeditions. Some of the artifacts were taken as souvenirs at this time and later, it remained as it was in 1917. The hut



*Crew arrives in Airforce plane in Antarctica.
Provided by Erick Mena.*



Calibrated exterior scan of Scott's Discovery Hut performed by Erick Mena and Randy Hale. Provided by Erick Mena



Scan rendering of the exterior of Scott's Discovery Hut. Provided by Erick Mena.



Scan rendering of another part of the inside of the Hut, Note the targets at the end of the hall on the stool and one in the window. Provided by Erick Mena.



Calibrated scan rendering of some artifacts inside Scott's Discovery Hut. Provided by Erick Mena.

experiences considerable bacterial decay even in the freezing temperatures and the seal meat preserved at Discovery Hut is described as quite rancid. There is also concern that the fabric of the hut is being affected by fungal decay.

Discovery Hut was scanned with a Zollar+Frohlich Imager 5010 3D Laser Scanner. This is an eye safe (laser class 1) scanner with a range of 187 meters (613.5 feet). It is resistant against dust and water and can operate at temperatures between -10 to +45 degrees Celsius (14 to 113 Degree Fahrenheit) but that may be conservative. The scan of Discovery Hut was done in temperatures close to or below the lower end of the operating temperature. The 5010 laser scanner collects more than 1 million pixels/second (1.016 million) at maximum measurement rate and has a field-of-view of 320 degrees x 360 degrees.

The beam divergence is < 0.3 mrad (full angle) with a minimum distance of 0.3 meter. Range Noise in Black is 14%, grey 37% and white 80%. The vertical field-of-view is 320 degrees and the horizontal field-of-view is 360 degrees. The vertical resolution is 0.0004 degree and the horizontal resolution of 0.0002 degree. The vertical

and horizontal accuracy is 0.007 degree RMS and the rotation speed of the sensor is 3000 rpm maximum. Obviously, this being a laser it operates in all conditions including bright sun light to pitch darkness.

The targets used for the scanning were Leica black and white targets and can be seen in some of the images used in this article. The targets are used to tie together the scans and calibrate the data. The target locations also provided locations for georeferencing the data to real world coordinates. There was a total of 8 targets being used and the targets were moved around for each scan. It was required to have at least 4 targets in each scan. Also, it was required to have at least 2 targets as the same from scan to scan so the scans can be tied together. The targets are surveyed in using a total station. The total station used for this job was a Leica 1800 total station. The number of scan stations required to scan the outside of Discovery Hut was 4 and the number of scan stations of the inside of the hut was also 4. This would then indicate that there would be a minimum of 16 targets in each set of scans with 8 in each being duplicate to tie the scans together. After getting all the equipment to the hut by ATV and dragging the rest of the way, it took roughly 4 hours to scan both the inside and outside of the hut. The total project started at about 6:00pm in the evening after receiving permission to scan the hut and was completed just after 10:00 pm.

Scott's Discovery Hut is a very important part of the history as it relates to early exploration of Antarctica. The pre-fabrication of hut and installation of the hut showed how unfamiliar the early explorers of Antarctica were with the environment of this part of the world. It proved to be very ineffective for its intended use but it serves as an important part of Antarctica history. It was a distinct opportunity to be able to visit it and be able to provide useful information about the hut by providing a detailed scan of its structure. The scan information is an important observation at a given point in time to help continued preservation of this important landmark. ■

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Affidavits of Correction for Deceased PLS and for “Unrecorded” Documents

Edgar T. Bristow, JD, PLS

The Legislative Committee of Professional Land Surveyors of Colorado, Inc. (PLSC) was instrumental in passage of HB 10-1085. That Bill addressed, among other items, a Surveyor's Affidavit of Correction. The Surveyor's Affidavit provision was codified at C.R.S. § 38-51-111. The idea of the legislation was to provide for minor technical corrections to a survey plat or parcel description via affidavit by the original record surveyor. I have received numerous questions from colleagues concerning two unintended consequences of the legislation as written. While my search did not reveal any official opinions by the Attorney General, nor any reported case decisions concerning these unintended consequences, I offer the following solutions that I have successfully used in the past.

The most asked question is: “What if an error is discovered by another land surveyor, and the professional land surveyor of record is deceased or otherwise unavailable to prepare an affidavit of correction?” One answer I have heard is that if the

error is so easily discernible, why correct it at all, as anyone will understand what the error is. If your practice is anything like mine, you receive calls from clients who state “I am not a surveyor. Can you check this legal for me and make sure it looks ok?” As a trained professional, an error that is obvious to us may not be so to the general public who must rely on a plat or parcel description. For that reason alone, an affidavit should be prepared if possible.

Prior to enactment of C.R.S. § 38-51-111, both attorneys and land surveyors were provided a mechanism for affidavits of correction through C.R.S. § 38-35-109(5). That provision was added to the recording statute (38-51-109) in 2003, and states:

(5) (a) An affidavit, executed under penalty of perjury, stating facts enumerated under paragraph (b) of this subsection (5) and made by a person who has actual knowledge of, and is competent to testify in a court of competent jurisdiction about, the facts in such affidavit may affect the title to real property

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within the state and may be recorded in the office of the county clerk and recorder in the county in which the real property is situated.

(b) When recorded, an affidavit as described in paragraph (a) of this subsection (5), or a certified copy of such affidavit, shall constitute prima facie evidence of one or more of the following facts:

(I) The name, age, identity, residence, or service in the armed forces of any party;

(II) Whether the land embraced in any conveyance or any part of such land or right therein has been in the actual possession of any party or parties within the chain of title;

(III) *If furnished by a registered surveyor, a statement or survey that reconciles conflicts and ambiguities in descriptions of land in recorded instruments;*

(IV) A scrivener's error.

(c) An affidavit filed under this subsection (5) shall state that the affiant has actual knowledge of, and is competent to testify to, the facts in the affidavit and shall include a description of the land, the title that may be affected by facts stated in such affidavit, a reference to an instrument of record containing such description, the name of the person appearing by the record to be the owner of such land at the time of the recording of the affidavit, and an acknowledgment that the affiant is testifying under penalty of perjury. The recorder shall index the affidavit in the name of the record owner.

(Emphasis added.) This provision served its purpose perfectly until HB 10-1085 was enacted. The language of Section 38-35-109(5)(b)(II) was then changed to:

(III) If furnished by a professional land surveyor as defined in section 12-25-202, C.R.S., a surveyor's affidavit of correction in accordance with section 38-51-111 or a land survey plat in accordance with section 38-51-106, that reconciles conflicts and ambiguities in descriptions of land in recorded instruments . . .

It appears that upon enactment of the modification, the only route to correction of errors using this Statute is by someone who is not a land surveyor. Unfortunately, those specifically trained for this task are excluded. Based on this language, the only route for a surveyor who is not the surveyor of record is to resurvey the property, preparing your own land survey plat and/or parcel description reflecting the corrections. Attorneys may still use this provision, but I have seen instances of preparation of such affidavits by attorneys who were not well versed in surveying, and which caused additional unintended problems.

Another of the issues stemming from C.R.S. § 38-51-11 involves the wording "any subdivision plat, land survey plat, or any other survey plat or parcel description **duly recorded in the clerk and recorder's office** of the county in which the subdivision, land, or parcel is situated" (emphasis added). In many counties in Colorado, land survey plats are not recorded in the clerk and recorder's office. The question then becomes: "Does the Statute prevent us from using an affidavit of correction in lieu of a corrective plat when land survey plats are deposited in a county office other than the clerk and recorder's office?"

Boulder County is an excellent example of this situation. Land survey plats are deposited in the county land use department. They receive their own deposit number, which is a numbering scheme different from the clerk and recorder's system. In this instance, the issue arises in the cross-referencing requirement of 38-51-111. In my correspondence with the Boulder County Clerk and Recorder, there is no way to satisfy this cross-referencing requirement for land survey plats, as they are not located in the Clerk and Recorder's office. In this case, and similar ones in other counties, I believe a surveyor must create a corrected plat satisfying the requirements of C.R.S. § 38-51-106, and referencing the previously deposited plat. That plat would then be deposited in the normal manner. ■

GIS in the Rockies, 2016

By Peggy Streicher, PLS

GIS in the Rockies Conference was held in Denver on September 21st and 22nd this year at the Cable Center on the University of Denver campus.

GIS in the Rockies is the Rocky Mountain West's premier geospatial information and technology conference. This year's conference offered many opportunities for industry professionals to learn more about geospatial technology issues and business-centric strategies supporting every market touched by the geospatial industry. There were over 500 attendees representing local, state and federal government, utilities, environmental services, land surveyors, oil and gas industry, students and educators and business marketing professionals.

PLSC is one of the member professional societies involved in planning the conference along with the Local chapters of the American Society for Photogrammetry and Remote Sensing (ASPRS), GIS Colorado (GISCO), and Urban and Regional Information Systems Association (URISA).

Keynote speaker, Matt Sheehan, opened the conference with a talk on "Is This the Dawn of a New Era for GIS?" Thursday's Keynote speaker was Brian Timoney of the Timoney Group, speaking on "Mapping Ourselves into Oblivion".

There were over 80 presentations covering topics on Local and Regional Development, Conservation, Open Source mapping, Drones, Surveying and GPS and Education.

This year's conference included several new program features. National Oceanic and Atmospheric Administration (NOAA), City of Aurora, National Renewable Energy Laboratory (NREL) and the Denver Regional Council on Governments (DRCOG) participated in a hands on interactive Web Gallery.

National Geographic's Giant Map was presented at the conference by Rebecca Theobald. The 14' X 21' map of Colorado offers a chance to explore cities, national parks, rivers and topography. It is designed for elementary students as they learn about scale, grid systems, distance, cardinal directions and the history and geography of the state.

For the first time the Career Development Academy took the place of the more traditional job fair. Thursday afternoon included an Interview Skills and Resume Building Workshop, Mock Interviews and Roundtable Discussions. Many people were in attendance to sharpen their job hunting skills.

The exhibit floor was packed with exhibitors from the GIS, Survey, Mapping and Printing companies. Also several schools and organizations had tables to share information with the conference participants. Compass Tools sponsored a Field demo of Data Collection Tools and followed up with a GNSS Scavenger Hunt. Much fun was had by all while having the opportunity to do some hands on GIS data collection.

The Poster Sessions attracted over 30 poster submissions. There was a professional and a student category.



Steve Parker and Becky Roland of the PLSC.



Tom Lechtenberg, Jeff Ryan, Joey Stone and John Hunter of Denver Water.



Steve Parker and Peggy Streicher represented PLSC on the planning committee for the conference. "Lessons from the Intersection, the GIS Practitioner and the Land Surveyor", was the theme of the PLSC Track.

Todd Beers, PLSC President, started the track with "An Introduction to the Public Land Survey System". Pam Fromhertz, Colorado State Geodetic Advisor, NGS spoke on "Datums - How Important are They?"


Warren Geissler, CAD-1, gave a presentation on "Understanding the Language of GIS and CAD". Blaine Horner shared his experience of surveying the elevation of Denali with a talk on "Confirming the Elevation of the Highest Mountain in North America". Steve Parker, PLSC Track Chair spoke on "Creating Custom Projection Files for Ground Adjusted Coordinate Systems". Joey Stone explained "How Advancements in GNSS Technology Will Influence the Relationship between Surveying and GIS". Craig Amey, in conjunction with completing his Capstone project for the Penn State GIS program presented a discussion on "GIS for Surveyors: A GIS Tool for Researching Internal Surveying Control Information".

After a full day of programs, people got to spend some time networking with old and new friends during a Social Event and Geography Quiz. This year's conference was a huge success. Stay tuned for GIS in the Rockies 2017. ■

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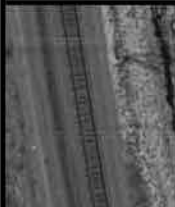
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Rule of the Month

The Succession of Responsible Charge, Board Rule 2.2 et. al.

By Earl Henderson, PLS

The definition of Responsible Charge of Land Surveying found in Board Rule 2.2 is a long and extensive description of what constitutes being in responsible charge. There's even a test in (c) to determine if you meet the criteria. I'm not going to take up pages to type in the rule and this article is not meant to describe what constitutes responsible charge. What I would like to concentrate on is an issue that has come to light on a number of occasions in which a PLS in responsible charge of a project departs the service of the company that is contracted to complete that project and a succeeding PLS must take over the surveying for the project and become the PLS in responsible charge from that time forward. Believe me, it can get even more complicated than that last sentence.

It's very important though to understand that the rules allow for this situation. It's common sense that they will arise. PLS's change jobs. And it never seems to happen when all their projects have just ended. So there needs to be a pathway through which a project can be taken over by a succeeding PLS. And if you read (e) you'll see that this part of the definition anticipates it happening. But make sure you read the whole paragraph. The last portion carries the load. "...and shall take professional and legal responsibility for documents signed and sealed under his/her responsible charge." What that means is simple. If you stamp and sign a document, you will be held fully responsible for being fully in responsible charge for every aspect that went into creating that document. That's common sense too. It's true for every document we stamp and sign.

But here's a twist. What if monuments are set for a survey but suddenly the PLS in responsible charge, and whose license number appears on those monuments, departs the company. What happens then? The succeeding PLS can't be held responsible for the monuments that were set by the departing PLS, but the plat hasn't been stamped, signed or deposited yet.

The coordination for such a situation, where an initial licensee departs a company in the midst of ongoing projects, to monument property corners with the appropriate license number and have the licensee in responsible charge stamp, sign and date the plat can surely get complicated. However, the statutes and rules are clear on a number of issues related to this situation.

1. Board Rule 2.2, Definitions-Responsible Charge of Land Surveying. This rule is very thorough and complete. But this is not to say that the licensee in responsible charge cannot change mid-project. It does; however, state the requirements for being in, or taking over, responsible charge. Take a minute and re-read this rule. It's worth the time.
2. 38-51-102(12) defines a Land Survey Plat as showing the information developed by a monumented land survey where one or more monuments are set.
3. 38-51-107(1) requires that when a monument is set pursuant to 38-51-104 a Land Survey Plat is required to be deposited by the licensee whose license number appears on the monument.
4. 38-50-101 (1)(c) requires that the Land Survey Plat be deposited within 12 months of the monument being set.
5. 38-51-104(1)(b) requires that the durable cap affixed to a monument set bear the license number of the licensee responsible for the establishment of the monument.
6. 38-51-104(6) requires that no monument shall bear the license number of more than one licensee.

It is important to note that the statutes and rules create responsibilities for the licensee in responsible charge to set monuments that bear the license number of that licensee and deposit plats accordingly. The company at which the licensee is employed does not bear the burden of these responsibilities even though the company may bear a responsibility to its licensed employees, client and the project contractually, ethically and otherwise. Therefore, it is likely in the best interest of all parties involved for the licensee and his/her former company to complete such a land survey project cooperatively. The departed licensee can create a Land Survey Plat on their own to document the setting of the monuments, but that's going to require a lot of duplication of effort (i.e. research, drafting, field work, etc.) that had hopefully already occurred at their old company because the survey had already gotten to the point of setting monuments.

A successor licensee may assume responsible charge or control of a project and complete the project as long

as he/she exercises the extent of responsible charge or control required by the statutes and rules. By assuming responsible charge for a project the successor licensee assumes full professional responsibility from that time forward, not for any monuments set or plats deposited prior to becoming the licensee in responsible charge. But that successor licensee should make themselves fully aware of, and comfortable with, the documentation and decisions that have already gone into the project by the departed licensee. So the company needs to be aware that there will also be some duplication of effort in this case too. But it's necessary for the successor licensee to establish themselves as being in responsible charge and to then move forward with the project.

It is also important to note that these requirements are independent of financial burdens on any of the parties involved. The law doesn't really care about the financial burden. The law just wants the survey to get done correctly regardless of the costs.

There appear to be at least four possible scenarios applicable to this issue for when a licensee departs a company during a project.

1. The project has started but not been developed to the point at which monuments have been set or plats deposited. In this scenario a successor licensee at the company can take over responsible charge of the project and become fully responsible for it, set monumentation with their own PLS number, and stamp and sign plats to be deposited.
2. The project has been developed to the point at which monuments have been set bearing the license number of the licensee in responsible charge, but that licensee then departs the company prior to the plat being stamped, signed and deposited.
 - a. The licensee and the company can work cooperatively to complete the Land Survey Plat and have it stamped, signed and deposited by the licensee that no longer works for that company but who remained in responsible charge of that project even though the licensee had departed the company. The departed licensee obviously doesn't need to remain in responsible charge for the duration of the project, but only until the plats indicating their monuments were set are stamped, signed and deposited. During that transition time a successor licensee can be in the process of taking over responsible charge of the project.
 - b. A successor licensee can take over responsible charge of the project. However, the successor licensee cannot remove or alter the monuments previously set by the

initial licensee. Doing so would constitute a Class Two (2) Misdemeanor pursuant to CRS 18-4-508. Therefore the successor licensee would be required to note the monuments of the initial licensee as found and not set. This situation does not remove the obligations of the initial licensee to deposit a Land Survey Plat on this particular project pursuant to 38-51-107(1).

3. The project has been completed, monuments were set bearing the license number of the initial licensee in responsible charge, and the Land Survey Plat was completed, stamped, signed and deposited by the initial licensee in responsible charge all prior to the initial licensee departing the company. In this scenario, the project, or at least the current phase of the project, has been completed. However, if the company continues with further aspects of the project that require additional monumentation, a successor licensee can take over responsible charge and note that the earlier monuments bearing the license number of the initial licensee were found and not set.

This article probably doesn't describe all the possible scenarios for situations in which a licensee departs a company in the midst of monumented land surveys. It is the responsibility of the initial licensee in responsible charge, and/or successor licensee taking over responsible charge, to act according to the statutes and rules, sometimes even in the face of pressure from company directors because they are the ones who care about the financial burden. The result of the requirements set forth in 38-51-104(1)(b) are that the licensee in responsible charge, and whose license number appears on the monument cap, will be held fully responsible for the monuments that were set under their responsible charge and that bear their license number along with all aspects that led to those monuments being set, and for documenting those set monuments on a Land Survey Plat.

In my opinion, if you find yourself and/or your company in the situation described in number 2 above, the best way to resolve it is to act in cooperation with (or as) the departed licensee. It's not always easy. Departures aren't always smooth or congenial. But cooperation, in addition to being professional, is the only attitude that will result in the best possible outcome for the project, the survey, the company, the licensee, and the client. After all, without cooperation, we would all be in our lifeboats all alone, and no one wants that. We're a community.

Be safe out there. ■

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Control Points – Number 34

A Lost Art

By Warren Andrews, PLS

A surveying method which has become a lost art is the plane table and alidade method. New surveyors nowadays most probably have never heard of it. Before total stations and GPS and before EDM capability, there were two methods generally used for measuring distances. One was to physically stretch a band tape or a Gunter's 66-foot chain (or a mine surveyor's 100-foot chain) out on the ground. The other was to use stadia. Stadia for distance measuring involved using the two additional horizontal crosshairs, one above and one below the center horizontal crosshair in a transit. These stadia hairs were set to read, when the sight was horizontal, one foot vertically on a rod exactly 100 feet distant. (If the sight was appreciably up or down, there was a vertical angle correction). Stadia surveying with a transit is also a lost art.

Plane table surveying uses the stadia method for field distances but is also has the capability to make a topographic map in the field on a horizontal drawing board oriented by a compass or other known bearing. A good deal of the original topographic mapping of the U.S. by the Geological Survey was by this method. The old 30 minute and 15 minute quad sheets were made by plane table crews where it wasn't heavily forested. (If you couldn't see through the trees, you couldn't make a very good map).

The special plane table tripod is not your regular tripod. The Johnson Head on top of the tripod and integral

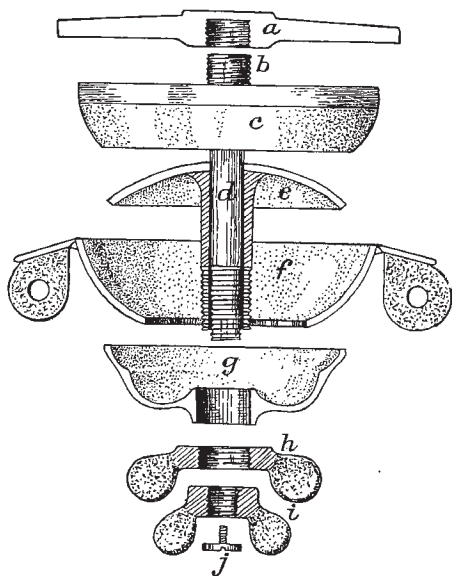


FIG. 14. Partially sectioned view of the Johnson tripod head assembly.

with it is screwed into the bottom of the table and has a partial hemispherical cup to enable leveling of the table (instead of a transit's leveling screws). This is the outer hollow screw and wing nut shown in the illustration Fig. 14 (below). The inner screw and wing nut allows the leveled table to be rotated and then locked into the proper orientation completely independent of the leveling setup.

Freely setting on the table is the alidade which is the optical surveying instrument used. The alidade sits on a wide flat base whose one edge is aligned with the line of sight and which edge is a graduated ruler. Under the alidade and screwed immobile into the four corners of the plane table is the plane table drawing sheet of water resistant paper. Two alidades are illustrated in Figs. 12 and 13 (next page).

The principle of operation is from the known station you are occupying and with the alidade scale at zero at that pencil point on your drawing sheet you pivot the alidade to sight your rodman in the distance holding a vertical rod. (I always preferred a Philadelphia rod instead of a stadia board).

You have previously zeroed the vertical circle on the horizontal alidade to the 30 mark which also fits the 50 mark on the Beaman arc vertical quadrant (used for the vertical correction for elevations). You also have measured the elevation of your plane table above the known elevation of the point you are occupying – for example, 4.0 feet above a 6,156 elevation.

For plotting the distance and direction from you to the rodman is simply using the alignment of the alidade line of sight (coincident with the alidade scale) and pencil point your rodman's distance from the stadia reading – for example, 12.3 feet between the upper stadia crosshair and the lower stadia crosshair = 123 feet on your stadia map.

The new elevation of your rodman is a little more complex. Your stadia reading, for example, is 12.3 feet. Your reading on the Beaman Arc, for example, is 61. From the horizontal of 50 that is 11 divisions. Your center crosshair reading of the vertical rod, for example, is 6.7 feet. Therefore, the difference in elevation is $12.3 \times 11 - 6.7 = +128.6$ feet above your plane table, or for example, your rodman's elevation is 6284.6, which you note at your new plotted point. (If the Beaman Arc reads less than 50 then your line of sight is depressed).

continued next page

An example of a depressed line of sight:

Stadia interval = 14.6 feet

Beauman Arc = $35 - 50 = -15$ divisions

Centerline rod reading = 7.8 feet

Therefore, difference in elevation =
 $[14.6 \times -15] + 7.8 = -226.8$.

If a reader wishes to use a plane table and alidade, I would recommend getting a copy of "Plane Table Mapping," by Julian H. Low, by Harper & Brothers,

Publishers. The three figures are from that book, which is very appropriately acknowledged.

My own experience was mapping the extension of the Stanley Vein at Idaho Springs in mine surveying class under Dr. Ben Parker. For Herb Linn I put together the CSM student plane table sheets for the basic topographic map for when modern Broomfield was started in the mid-1950's. However, I did have to force fit some of the contours between supposedly contiguous sheets. The students were using different elevation bases! ■

Fig. 12. Explorers' (expedition) alidade, showing the principal external parts.

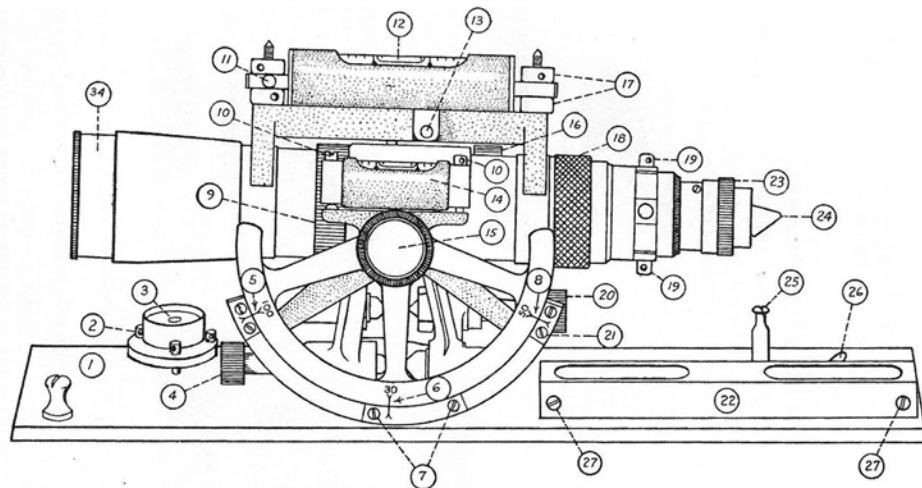
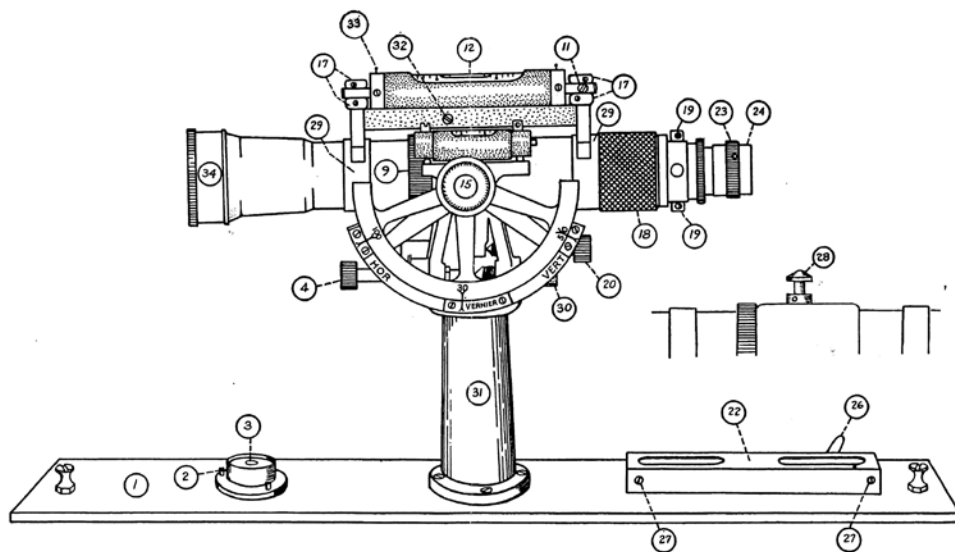


Fig. 13. The topographic (high standard) alidade, showing principal parts.



**Principal external parts
of the alidade as shown in
Figs. 12 and 13.**

- (1) Blade or base. (2) Adjustment screw for universal level. (3) Universal level center mark. (4) Vertical angle and Beauman arc index tangent screw. (5) Horizontal distance arc index. (6) Vertical angle arc index. (7) Vertical angle arc index adjustment plate. (8) Beauman arc index. (9) Knurled telescope holding collar. (10) Control level adjustment screw. (11) Lateral adjustment screw for striding level. (12) Striding level bubble vial. (13) Striding level spring lock. (14) Control level sleeve shield. (15) Telescope axis bearing. (16) Axis clamp (on right side of instrument). (17) Vertical adjustment capstan nuts of striding level. (18) Knurled focusing ring. (19) Capstan adjustment screws for adjusting collimation. (20) Telescope tangent screw (with or without granieter attachment). (21) Beauman arc index adjustment screws. (22) Magnetic needle box or trough. (23) Cross wire or eyepiece focusing ring. (24) Prismatic eyepiece on Fig. 12, inverting eyepiece on Fig. 13. (25) Keeper stud for striding level. Used when instrument is laid in case. (26) Needle lifting lever. (27) Compass box assembly screws. (28) Striding level stud. (29) Ring foot bearing for striding level. (30) Plunger opposing Beauman tangent screw. (31) Pedestal or standard of topographic type alidade. (32) Striding level spring lock releasing screw. (33) Finder sights on striding, not on all instruments. (34) Dust protector cap for objective lens.



National Trig Star Competition

By Jan L. Sterling, PLS



The National Society of Professional Surveyors (NSPS) Trig Star Competition in Colorado was a success again this 2015-2016 school year. Students from eight high schools in Aurora, the Denver Center for International Studies at Montbello, and Grand Junction's Central High School were introduced to mathematics used by land surveyors.



This season the National Trig Star competition was highlighted by having our Colorado representative take the National Trig Star test in June. Avi Swartz, of Cherry Creek High School, in Centennial, CO, won second place out of 38 states participating and received \$1000! His teacher, Dorothy Dady, received \$500 from NSPS.

Trig Star is an annual competition sponsored by the National Society of Professional Surveyors with local co-sponsors in each state. The program goal is to recognize and stimulate the best students of mathematics from the high school districts across the United States. The purpose of the Trig Star program is to promote and honor high school students who have demonstrated superior skills in mathematics. The competition offers an opportunity to acquaint the students with the use and practical applications of mathematics in the surveying and mapping profession.

The Western Colorado Land Surveyors (WCLS) chapter of the Professional Land Surveyors of Colorado, Inc. (PLSC) has been coordinating and administering the NSPS Trig Star Competition in Grand Junction, Colorado for several years. Thomas W. Sylvester, PE & PLS has been instrumental in increasing student participation by working with the teacher, Ms. Julie Christianson, who has been the champion of the program at Central High School. Tom offered to give a \$10 gift or cash award to each participating student and a \$100 gift card to the Trig Star winner. This resulted in a 400% increase in participation in the 2014-2015 school year.

Tom presented the success story to the PLSC Board, and they agreed to be the sponsor of the \$100 gift card and the \$10 cash award to participating students and they plan to make the incentives state wide.

With the PLSC stepping in and helping with the awards, now there is one more reason for professional land surveyors in Colorado to co-sponsor students in their area high schools with the Trig Star Competition.

Grand Junction's Central High School again had a good turnout of participating students with Max Solko being the Trig Star winner, for the third time out of four times taking the test.

The Denver Center for International Studies at Montbello Trig Star winner for 2015-2016 year is Edward Perea, with his teacher Julie Stremel.



The city of Aurora Public Works Department and Land Survey Services celebrated their 32nd year of participation with the NSPS Trig Star Competition and is proud of all the students who have participated through the years. This year's Trig Stars winners, from eight high schools around Aurora are, pictured left to right: Wenhao Xue, Eaglecrest High School; Alexis J. Williams, Hinkley High School; Andrew Starr, Grandview High School; Samantha Shellman, Overland High School; Jasmine Carr, Aurora Central High School; and Adnan Salah, Rangeview High School. Not pictured were winners Avi Swartz, Cherry Creek High School, and Tanner Martin, Gateway High School. ■

Treasurer's Report

Greetings PLSC members:

Here is a quick note regarding a change in investment strategy. The Board of Directors decided to combine several different funds into a single fund that is managed by Personal Benefit Finance (PBF). This was a result of a decision by BOD to resolve that donations that were made in the past were for education purposes, but not necessarily for specific educational purposes. There was some confusion and insufficient documentation for some of the donations and the resolution allowed us to get some financial advantage of combining the funds. The education funds are tracked separately from the PLSC operating funds and are not used to subsidize the Annual Summit. The new fund will still be used only for educational purposes. The fund is actively managed to respond to changes in stock and bond markets. PBF has a fiduciary responsibility to assure they place our interests ahead of their own. We will be monitoring the funds throughout the year.

—Alan Blair, Treasurer

1:48 PM
12/08/15
Accrual Basis

PLSC Profit & Loss January through December 2015

	8/31/16 Actual	2016 Budget	\$ Difference	% Difference
Income				
Scholarship	2,600.00	5,000.00	(2,400.00)	52%
Silent Auction	1,984.00	1,500.00	484.00	132%
Summit Income	121,655.00	88,000.00	33,655.00	138%
Refresher Course Income	12,025.00	8,800.00	3,225.00	137%
Refresher DVD	1,050.00	2,400.00	(1,350.00)	44%
GIS in the Rockies	3,000.00	1,500.00	1,500.00	200%
Membership Dues				
NSPS Dues	8,360.00	8,440.00	(80.00)	99%
Membership Dues				
Voting	22,990.00	23,210.00	(220.00)	99%
Associate	6,000.00	5,550.00	450.00	108%
Sustaining	3,450.00	4,140.00	(690.00)	83%
Student	45.00	60.00	(15.00)	75%
Retired	300.00	240.00	60.00	125%
Membership Dues Subtotal	32,785.00	33,200.00	(415.00)	99%
Total Membership Dues	41,145.00	41,640.00	(495.00)	99%
Miscellaneous	410.00	50.00	360.00	820%
Side Shots Ads	2,847.00	4,000.00	(1,153.00)	71%
Total Income	186,716.00	152,890.00	33,826.00	122%
Expense				
BOD/Chapter Summit Meetings	1,200.17	1,500.00	(299.83)	80%
Side Shots	8,770.85	12,000.00	(3,229.15)	73%
Awards	332.65	1,600.00	(1,267.35)	21%
Scholarship	2,600.00	5,000.00	(2,400.00)	52%
Refresher Course	1,959.22	1,500.00	459.22	131%
Supplies, Bus	19.57	150.00	(130.43)	13%
Storage	400.00	600.00	(200.00)	67%
Merchandise				
Tax prep		2,000.00	(2,000.00)	0%
Web Site	640.00	4,000.00	(3,360.00)	16%
Web Site - Don Lambert	1,000.00	1,000.00	-	100%
Lobbyist	2,500.00	5,000.00	(2,500.00)	50%
Travel, Bus				
BOD Travel	178.22	3,000.00	(2,821.78)	6%
WFPS Travel	934.57	6,000.00	(5,065.43)	16%
NSPS Travel	2,253.69	9,500.00	(7,246.31)	24%
Credit card/Bank Expense	3,360.89	3,669.36	(308.47)	92%
Insurance	600.00	600.00	-	100%
Miscellaneous, Bus	20.00	150.00	(130.00)	13%
Phoenix AMC	11,112.50	28,000.00	(16,887.50)	40%
Postage	155.06	500.00	(344.94)	31%
Dues				
NSPS Dues	8,360.00	8,440.00	(80.00)	99%
Chapter Disbursements	5,500.00	5,500.00	-	100%
RMSS Chapter Distribution				
NCPLSC	3,552.00	3,552.00	-	100%
SCPLSC	3,900.00	3,900.00	-	100%
CCPS	6,750.00	6,750.00	-	100%
RMSS Meeting Expense				
Promotion	450.00	2,500.00	(2,050.00)	18%
Supplies	22.77	750.00	(727.23)	3%
Copies/Printing	3,322.41	1,000.00	2,322.41	332%
Attendee Food/Beverage	28,596.54	25,000.00	3,596.54	114%
Speaker Travel/Expense	5,646.57	8,000.00	(2,353.43)	71%
PLSC Meeting Expense - Other	-	500.00	(500.00)	0%
Total PLSC Meeting Expense	38,038.29	37,750.00	288.29	101%
Total Expense	104,137.68	151,661.36		
Net Income	82,578.32	1,228.64		

PLSC Board of Directors Minutes

August 19, 2016

Hampton Inn, Grand Junction

1. Call to Order: Todd Beers

In attendance: Todd Beers, Kayce Keane, Alan Blair, Becky Roland, Paul Bacus, Teresa Smithson, Patrick Green, Leif Joy, Paul DeGraff, Tom Sylvester and J.B. Guyton.

Not in attendance: Eric Carson, Steve Parker, Parker Newby, Mike Bouchard and Roger Nelson.

Guests in attendance: Shawn Clark, Chris Power, Pam Fromhertz, Gaby Neunzert, Gigi Richard-CMU, Kris Murphy-CMU and Peter Krick.

2. Determination of Quorum (6 voting): Confirmed

3. Discussion/Update on Colorado Mesa University Surveying Program

- Reviewed the current licensure requirements
- Asked if a certificate program would be a viable option for education
- CMU still needs to evaluate ABET accreditation
- The survey noted a desire for online education and CMU needs to evaluate how that can work for a surveying degree
- CMU wants to offer programs that are sustainable for preparing for the workforce
- There are different types of Associate's Degrees that could be offered (surveying tech, surveying technology, etc.)
- CMU is still developing the program and has not hired faculty yet. They will have to hire a person with a higher degree than what the program offers, such as a Master's Degree.
- NM program is going to close. WY is a civil engineering program with surveying programs.
- Next steps: CMU needs to prepare a proposal that details the program, instructors, etc. They will want feedback from PLSC on this. Gigi welcomes feedback now from anyone. Goal is to cover needs of the FS. Budget process starts next month for next year's programs. 2018 is the soonest the program can start.
- Make sure that Kayce Keane is copied on communications as the PLSC Education Chair.
- CMU does have a certificate program for GIS.
- Recommend sending the survey to surrounding states.

4. Approval of Minutes from previous Meeting

MOTION: To approve the April 26, 2016 and August 2, 2016 minutes as presented. (Blair/Smithson)

Approved unanimously

5. Scholarship Resolution for approval

MOTION: To accept the resolution on the Purpose of PLSC Scholarship Fund as presented. (Smithson/Blair)

Approved unanimously

6. QBS Invitation (\$1,200/year)-Does PLSC wish to participate? Need board member assigned to attend meetings.

- a. Board consensus is that there are better uses for the funds.
- b. Todd will send QBS information to the Board for review, if anyone wishes to revisit this in the future.

7. AAGS Affiliation Discussion — Does PLSC wish to be a member?

- a. Tabled to next Board meeting.

8. New certificates from DORA are not of quality. A surveyor who has recently received his certificate would like PLSC to ask DORA to improve the certificate to make it something to be proud of.

Adjourn (Joy/Smithson) 5:35PM ■

Chapter Summit 2016 Transcript

August 19, 2016, Grand Junction

In attendance: Todd Beers, Becky Roland, Shawn Clarke, J. Leif Joy, Paul Bacus, Patrick Green, Tom Sylvester, Peter Krick, Mark Johannes, Alan Blair, John Guyton, Chris Power, Teresa Smithson, Pam Fromhertz

Todd (Beers) – Introductions and ID of attendees

JB (Guyton) – We will go through items in the agenda, the most important of which is what is going on with Colorado Mesa University and their earlier presentation to the board. There are fewer impediments to a new program than I have seen in past efforts.

Tom (Sylvester) – They are still looking for input, looking at 2 and 4 year program options, making sure people who graduate will have a job to go to. We are trying to help out with curriculum suggestions, reaching out to programs in other states. Positive comments so far, going in a great direction, don't want to lose traction.

JB – Tom and Patrick have done a great job getting us to this stage.

Alan (Blair) – We really need to provide them input on curriculum, and need to get some people to work hard on it. I want to be a part of it.

Teresa (Smithson) – I am glad that they have been talking to the people in Oregon, who have a really good program. The students are passionate and excited. They are performing research at an undergrad level, a modern program, and students are excited.

JB – What are the next steps?

Alan – At Ferris, where I went to school, they provided enough course work that you could sit for the PE or PS exams.

Shawn (Clarke) – If engineering is provided as a byproduct of a program, that's great, but we as surveyors should be focused on developing a program to generate more surveyors. There are many schools for engineering degrees but few for surveying.

JB – Should the PLSC be doing more that might involve the Legislative Committee, or input from Gaby Neunzert?

Tom – They (CMU) are looking for input, including curricula for both a 2 and 4 year degree program. We don't have to reinvent the wheel.

Alan – It's difficult to do. We can't just grab an old program. I don't disagree with Gaby, we have to define what surveying is now.

Mark (Johannes) – Looked at the other way, what should a graduate know?

Teresa – When I met with them a month ago, I made suggestions. There are the fundamentals, but we have hydrographic, the GIS, you can't specialize in it all. I suggested course sharing with other universities. We are a small, niche profession, unlike engineering, with limited resources. They should be pooled, with shared students and coursework.

Paul (Bacus) – I was looking at the basics of what

they have, boots on the ground, because no one with an associates will have hydrographic course work.

Teresa – I'm talking about a bachelor's level, which will be higher level courses and could be shared resources.

Leif (Joy) You might start with the current PLS exam and work from that.

Pam (Fromhertz) – We need to develop a committee for this. At least start with the universities that have been successful, don't pull out of thin air. I believe Oregon has been writing some of our NGS guidelines. They are doing leading edge stuff for us.

Tom – We need to keep in mind the reality of the logistics for the logistics. We need to rely on existing resources to get started, and Dr. Richard, the head of the Engineering Department is available to head the new department. You don't need to go out and find a new PhD. At Metro, there was one person. At CMU, she could hire associates as needed.

JB – I think there is a preponderance of agreement that we focus on a 2 year program for now, given that we have no program at all right now and need a result. 4-year needed also.

Teresa – For a certificate, it can be strictly surveying; for an associate, you have 3 or 4 classes and the rest is English, math, etc. For a bachelors, it is basically a combination of the two.

Tom – An associate degree is easier to establish. A PhD is not necessary. Question about ABET accreditation.

JB – ABET was very difficult at Metro.

Teresa – What about professors at CU Denver, as curriculum resources? Both Jan Van Sickle and Toly. They have expressed interest in helping. Toly put together a curriculum for there but it didn't fly.

Todd – Curriculum is a broad term. What are needed and essential right now are a course list, titles, and what they want to touch base on, that's what they want from us and what we want to see for students coming out of their program and be prepared.

Leif – I think it should include things like computer programming.

Todd – There are ample avenues that we can identify for them.

Pam – I just pulled up the courses at OIT, a good starting point. Otherwise you end up talking in circles.

Tom – Alan, if you will chair that committee, I would like to help you out.

Alan – I would hesitate to chair this, at some point we need to get someone to slap something together that we can discuss.

Todd – So Paul, Alan, Tom and I will work on a draft.

JB – To move on, program in New Mexico has failed, not totally dead yet.

Leif – Why did Metro go down?

JB – They are sensitive to the head of the program, tied to one person who leaves. The CMU proposal is tied to the organization and not the person, and would be more sustainable. Steady funding also critical.

Teresa – If the programs are seeing jobs for graduates, they will have a harder time cutting it. You cannot do a land surveying program, it is not economically viable. Must be tied with GIS.

Pam – You need to promote things in a way that people will understand, gadgets, etc.

Tom – Theresa's idea of colleges exchanging programs is good, being a regional center. Not enough students for each state to be on their own. Politics involved too, sending tax dollars to other states.

Teresa – It exists now, students from other states paying in state tuition via a consortium.

JB – We have made some progress with this. Let's move on to #3, continuing education.

Todd – A lot of folks I've talked with are in favor of Colorado having mandatory continuing education. Some of the biggest complaints from the board have been about subpar surveying. Now, in pushing this forward, we need to be sure we have the support of DORA for a state statute. They must have support of the board.

Paul – I went through every state from North Dakota to California, looking at continuing education. When programs for engineering were developing, they discovered that engineers did so many different things that standardization of what they needed for CE didn't work. We need it because life is moving on, must keep up.

Todd – The board already sees the problem of subpar surveying, and service to the public is affected. The board understands that surveying is different. We have technology, case laws and rules that are changing. Studies of effectiveness are lacking, but the boards can see the results and are positive, unlike ten years ago.

Peter (Krick) – My background is in Florida, with mandatory CE since 1980. For six years I sat on a monitoring panel for surveyors who were violating minimum standards. 9 out of 10 complaints were for those at fault for not charging enough to do the job. In the first ten years of mandatory continuing education, the older surveyors were the most trouble. Now there are relatively few called before the panel because time has weeded out the older surveyors. But the quality of work is not improving. The first few years were voluntary, and people lied, reporting years they did not have, so they went to mandatory. ACSM would not give credit for my Florida license. I pay about \$1,200 a year for the classes. The surveyors argued for years to be out from under the engineers and architects.

Todd – That is a worst case scenario, and not where we want to go.

Paul – Florida is the biggest example. Other states register classes with the state board, submit curriculum, etc. Board only involved if there is an audit. We can't keep the guys who fail.

Teresa – I taught some classes in the east, which had to be approved in advance. I submitted a one sheet synopsis of the course, benefits, etc. New York was the worst. The admin staff looks at these and don't understand.

Todd – These are all horror stories; we are not getting anywhere repeating them all, I am more optimistic about DORA.

JB – We have an opportunity right now that we didn't have before; we have heard how not to do it, but it's time to move on.

Leif – So are we all for or against continuing education?

Todd – We are all for it. We are continuing to pursue it for Colorado.

JB – Let's move on to the issue of county surveyors.

Paul – We are about ready to go to war. We need to have each chapter reach their representatives to educate them about county surveyors and our roles in the community. Most are in the Denver metro area, but smaller areas have a better chance of making an impression on someone representing multiple counties.

Todd – Peg Ackerman has been our lobbyist for a number of years, doing monitoring lately. But is now actively lobbying, for \$15k a year, for the county surveyors bill, and also to educate about surveyors.

Pam – So we are back to how you are going to educate about surveyors, same thing with educators. How to get their attention at a level they understand is the challenge.

Todd – Peg and Steve asked for a bullet list of items for that, which were provided.

Paul – Beyond surveying, we need to put a face on it, have a government presence, saying you can't get rid of county surveyors, and it makes a difference.

JB – Litigation has changed everything, in Boulder people call their lawyers before surveyors. Traditionally, surveyors solved problems. Avoiding litigation benefits the public.

Paul – I agree and see your point. We have the worst PR.

Pam – We need to hire someone to do that for us, who would be better at it.

Leif – None of us do the same thing in the same manner. We can talk about this stuff, but we are missing the problem, must define role.

Patrick – We need to let the legislators know of the benefit we are to the public, and they don't know until it is too late. We keep land corners out there that are a big benefit to John Public. And they don't understand it. Hiring a PR expert to project image is a good idea, that's what they do.

Todd – How about NSPS, JB? Who is their PR person? If they aren't doing it, they should be.

JB – John Byrd is the liaison, I will talk to him about it.

Paul – One last thing. If you get opposition, we want to know why, and what the problem is.

JB – Moving on, some of these topics can be skipped.

Who gets *Side Shots*?

Becky (Roland) – All voting members, and associate members. It is not a cost issue. If we send out one, that is a fixed cost. We host *Side Shots* on line, for free. Students currently not receiving a print copy, low population without a current program. But refresher course students are offered it. And when one passes the exam, they get one free year of membership.

JB – On line membership renewals is next.

Becky – Good responses having membership renewal as part of the conference registration. On line form without logging in is popular. Renewals will be going out in late September, and on line registration for the Summit will go on line in October.

Leif – How much of a tax deduction is there?

Becky – It is a business deduction, not a charitable one.

Teresa – it is a Schedule A deduction, depends on your tax bracket.

Todd – This is the first time in 20 years you can renew in September and register in October, much progress.

Becky – For the website, we are in need of fresh photos and a new member spotlights, two paragraphs and a photo. Student members would be good. Also, we have a fairly active job board for postings, right on the home page.

Teresa (Smithson) – Shawn Lee, who works with me, is starting a Facebook page. It is just a start but looks really good. I will send the link to Becky for the PLSC website. Need to have Facebook.

JB – I will keep the website on the agenda for future meetings, as it is an active topic.

Tom – Western seminar was not under the education tab on the website, people had trouble finding it.

Becky – It was on the calendar section on the home page.

Todd – For website information, the sooner it is submitted, the better. Events should be in multiple locations on the site. Also, we have had money in the budget for the website, I think we should be engaged with someone who does these as a business, volunteers only isn't working. Such a person would have a different perspective.

Becky – For the website itself, we can control who gets access for updates, the problem is that we just don't get the information. Someone who is really dedicated and has the time is needed. The critical issues, news, isn't getting updated.

Todd – Shawn Lee is all over this stuff, we need to take advantage of people who have a passion. I'd like to get us where we need to be.

Becky – Also, the website is not just used by surveyors. People looking for surveyors call our office, looking for a surveyor. We have a link to the DORA site. You can search by city for a licensed surveyor. We were going to get a map of PLSC members that people could refer to.

JB – That would be a good value added feature, for

more members. We had 690 members when I was President, and we have less than 400 now.

Todd – We have 312. I would like to have a list of all licensed surveyors, identify which are current PLSC members, get this to the chapters. I would guarantee that someone in that group knows the non-members and could get on the phone to have a conversation. Why aren't you a member? That is the best way to get new members by far. I have been hoping for this for six years now. Everyone needs to take some responsibility and just do this.

Paul – What about GoToMeeting for the chapters? You can type in questions, avoid a long drive to attend a meeting.

Todd – Chapters have different kinds of meetings, some have speakers, others are just business meetings.

Becky – This has been paid for, there are challenges with overlapping dates, and audio problems.

Tom – In our chapter, we end up with a good core group that comes and are very active. Some non-members show up and are very active, but have not joined.

Becky – I've been in other organizations where the non-members are charged and members are not, a subtle hint that they need to join.

Pam – One idea is a name badge, to wear to meetings. For a webinar, what about recording and posting those on the website?

Paul – I would not want people thinking they could listen to those for continuing education credit.

Todd – I think the GoToMeeting for chapters would be a good thing to try.

Becky – You need a podcast type microphone, not the ones in a laptop. People cannot hear otherwise.

Pam – What about a listserv? NGS uses them, you sign up and email the listserv, and anyone on the list can respond. You could also put *Side Shots* out on that, exposing it to more people.

JB – A lot of good ideas. Any other discussion on remaining items, like long term goals? I think most of these have been covered already. Crisis has brought people in before, and is why there are chapters.

Todd – It is good to keep these on the agenda, they get people to think.

Tom – We sure appreciate all of you coming over to our side of the mountains. Please take advantage of the area while you are here. There is the peach festival in Fruita, the National Monument, the San Juans to the south.

Todd – Thank you guys for putting this together. ■

CCPS

The Central Chapter would like to extend its gratitude to Teresa Smithson for her presentation at the August general meeting relating to the time she spent in Afghanistan and Iraq from 2007 to 2015 as a surveyor and geospatial professional. Also, the Surveyor Social held at Dave and Busters this summer was well attended; refreshing drinks and fine food were had by all!

Fall is here and school is back in session. For those of you taking classes or paying for classes (if you are a parent of a college student) scholarship money is available for survey related instruction. Look for the scholarship application on the CCPS website if you are interested, www.centralcosurveypro.com. Congratulations to Bobby Savage for being awarded a \$1000 scholarship from CCPS for classes at Sheridan College.

Two CCPS Board of Director members recently relocated out of state (good luck to Aaron Willis and Tony Perazzo on their future endeavors), so we currently have one opening for a Board member – the candidate does not have to be a PLS. If you or someone you know is interested in serving on the Board of Directors please send an email to colocentralsurveyors@gmail.com.

Kevin Kucharczyk, PLS
CCPS Vice President

NC-PLSC

The Northern Chapter of the PLSC had a meeting in September that was productive, although poorly attended. We had 5 members but no quorum, so we used the time as a planning meeting and established a rough outline of meeting content for the coming year. Our October meeting was last night and we had a much better turnout and a quorum so were able to hold nominations for vacant seats and a vote to install those volunteers. Steve Parks from King Surveyors has stepped up to be the President, President-Elect is vacant, Heather Lassner is our new Secretary-Treasurer, and Pete Paulus, Tony Fendick, and I will serve as Directors. Thank you for stepping up! We are still looking for a volunteer to fill in as the President -Elect, so if you are disappointed about not being nominated, please give me a call and we'll add your name to the November agenda. Kevin Bowman is stepping down as Secretary-Treasurer and I want to thank him for the work he has done, and for the invitation for a Chapter BBQ at his new house in Denver!

Heather has volunteered to update our website, both in content and function. In particular we plan to have our meeting locations, program, and conference call-in number available in advance of our email-blast meeting

invitation. Our hope is that the information will be easily available and if a topic is of interest, you will join us in person or via a conference call. We'd also like to have links to materials from our presenters, for instance John Von Nieda's spreadsheet of every survey performed within the City of Fort Collins.

There was some discussion about recruiting, and while a beefed up website and great programs will help, we are also planning to make surveyor-to-surveyor calls to ask if our peers are interested in joining, and if not, find out why. We also discussed adding some membership perks. Potential perks: BLM hard drive data for surveys, memberships to County or private document retrieval systems as offered by SKLD. The above ideas all seemed better than another hat, so we are looking into the logistics and costs associated with providing those services or something like them. We also discussed participation in College Career Days. In the past we have only pursued high school students, but we are going to try the college scene, especially concentrating on geology and forestry students. The topic of recruiting brought up the related topic of wages. There is interest in another wage and salary study, and questions were raised about why Colorado is not a "prevailing wage" state.

The responsibility for drafting this letter now passes to Steve and Heather, so I will say farewell. I expect great things from the next generation of leadership. Despite working long hours, they have an undeniable enthusiasm for our profession.

Laine Landau, PLS
President, NC-PLSC

NW ¼ CLS

The NW ¼ met October 6th, 2016 at the Clarion Inn in Craig, Colorado. Business items discussed included our account balance (exciting), a continuing update on the City of Steamboat Springs Base Station as well as latest trends with the County Surveyors. Then we proceeded into the topic of the evening, which was Business Practices, the discussion being led by William Whelen, the NW ¼ V.P and also a PLS.

Although we as surveyors typically are absorbed by either the latest technology, or a fascination with an ancient survey, William brought the discussion of business practices to the forefront. Unless we are in the business of practicing surveying for free and not truly professionals, we had better listen! An interesting note that was mentioned is that we in the surveying business are often concerned with what we are charging as opposed to what we are really collecting. Who in the surveying business hasn't had an issue at some time with accounts receivable well past thirty days?

CHAPTER NEWS

And the odds of collecting once past ninety days do keep plummeting dramatically. Therefore, it is important to watch the “Decaying Account” — or how old the Accounts Receivables are — to monitor those accounts as they approach thirty days, sixty days and, heaven forbid, ninety days. The older they are, the more attention they should receive, which entails something none of us enjoy — being a bill collector. It is either that, or go out of business if they get too great, or charge a higher rate to make up for the volume of Accounts Unpaid. Because at some point, a surveying business of any gross volume, from \$100,000 to millions a year, needs income to stay solvent.

William also brought up the fact that not collecting past due invoices can affect the most fundamental of business operations: Cash flow, equipment purchases, lines of credit, payroll and lease payments to mention a few.

So, how to be a hero instead of a zero? One of the most fundamental things William mentioned was getting paid upon delivery of products, whenever possible. Appraisers get their money for an appraisal collected by the bank, why shouldn't surveyors? Just because a realtor gets paid at closing doesn't mean a surveyor should wait 45 to 60 days after survey completion until closing. Whenever possible, have direct contact with clients and written work orders! He also mentioned not continuing to do work with clients or construction companies that have the surveyor working in month three, when they haven't been paid for the first month! That means they are either doing a poor job of billing and collecting for the job, or they are using the subcontractors money to fund their business. In the case of almost all public jobs, there is a seven day payment requirement upon the prime contractor being paid, so the subcontractor doesn't go around the contractor and lien the County, City or State.

We concluded the meeting by 8 PM so we could all get home to our residences in three different counties without taking out the local wildlife. That's also bad for business!

Brian T. Kelly
President NW 1/4

SC-PLS

The Southern Chapter took 2 months off from meetings for the summer. The September Members Meeting was held at Farnsworth Group in Colorado Springs. One of our ongoing topics was to create a presence with the City of Colorado Springs and create a Local Government Liaison Committee. This would allow the surveyor committee to have a say in the upcoming changes to the subdivision codes

that are adapted by the city and county planning and engineering department. Brian Dennis also brought up a topic with the Boy Scouts Of America, Denver Area Council, Peaceful Valley Scout Ranch located in eastern Colorado near the town of Elbert at about 7000 feet in elevation. Brian and Steve Parker would like volunteers to help with the 3000-plus acre boundary and setting control for the property. If enough volunteers come forward, Brian and Steve can complete the static portion of the control network in one or 2 days over the weekend. This will also help the Boy Scouts to learn surveying skills while helping locate property and section corners. We also finalized our menu options for our year-end Christmas party in December. This event will be at The Sunbird Grill & Tavern in Colorado Springs. In the end we all enjoyed a mouthwatering spread of smoked brisket, pulled pork, baked beans, and fried okra from Bird Dog BBQ.

For more details and to get involved with southern chapter events, check us out at: www.scpls.net

Don R. Hulsey, PLS
SCPLS President

SWC-PLSC

The SW Chapter met in July and hosted guest speaker Todd Johnston, CDOT Survey Coordinator with Region 5 Survey/ROW unit. Todd presented a very informative history of CDOT right of way and plan processes from the 1920's to present. His talk covered historical aspects of construction plans, deed development and monumentation that have occurred over the years. Monumentation was particularly interesting since there have been a variety of styles used over the years and many of us have found them in the field. Lively discussion ensued regarding research of ROW plans and their use in boundary analysis. The Chapter really appreciates Todd's efforts and willingness to present this information to the members. Thank you, Todd.

Our next meeting will be held on October 18th at 6:00 PM in the Eolus room of the Durango Rec Center. I will be leading a round table discussion on surveying along the Durango and Silverton Narrow Gauge Railroad. This historic railroad alignment nearly cuts La Plata County in half north/south and though half of it is abandoned, there is much activity on the remaining portion. We'll be discussing records research, ROW/easement location and determination, and a variety of other survey related topics.

Parker S. Newby, PLS
President – SW Chapter PLSC

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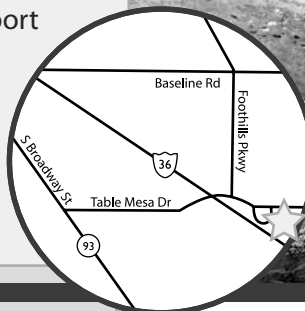
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