February 2020

SIDE SHOTS

Professional Land Surveyors of Colorado

Volume 51, Issue 1

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ROCKY MOUNTAIN SURVEYORS SUMMIT

Golden, Colorado, February 26-28, 2020

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SIDE SHOTS

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

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

We would like to invite anyone who is interested to advertise in Side Shots. Do you have something you want to sell, trade or buy? Why not use Side Shots for your next ad? We can also reproduce business cards for advertising. Ad space reservation must be arranged with Becky Roland, PO Box 441069, Aurora, CO 80044; 303-551-3266. (Deadlines: January 1, April 1, July 1 and October 1).

Current Advertising Rates:
Business card size or less - Member $25.00; Non-member $30.00
One-Half Page - Member $115.00; Non-member $150.00
Full Page - Member $225.00; Non-member $300.00
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Hello PLSC,

The Rocky Mountain Surveyors Summit, RMSS, is taking place on February 26-29 – I look forward to seeing you all there. Jeff Lucas, PLS and Steve Parish, PLS, among other great presenters, will be there, and this time it is being held at the Denver Marriott West instead of the Arvada Center. You are invited to attend an informal NSPS Young Surveyors gathering during lunch on Thursday. The chapter summit is moving to Thursday evening, and we are having a social event on Friday night. The conference committee is working very hard and raising the bar for the RMSS event this year. A special thanks to Kayce Keane, Becky Roland, Don Hulsey, Heather Lassner, Mike Greer, Robert Boehm, Shaun Lee, and Todd Beers, the RMSS committee.

I also invite you to research the benefits of your PLSC membership and log into the NSPS website (www.nsps.us.com) and read your News & Views emails. If you are a full member, and you are not receiving these emails, please let me know. There is a lot going on nationally in our profession and this is one of the best ways to stay current.

If you are interested in the direction of our profession at the state level, I encourage you to join the legislative committee and get involved. Scott Thompson, Bryan Douglas, the co-chairs of the Legislative Committee, together with the assistance of the past committee chairs Paul Bacus and Alan Blair are addressing issues every month, and I encourage you to participate in shaping the future of our profession.

In April, members of the PLSC board of directors will be participating in the 2020 NSPS Day on the Hill. There we will be meeting with numerous senators and representatives in Washington DC, lobbying on behalf of our state, the geospatial markets and the surveying profession. If you have a survey related issue that you feel we should bring to Capitol Hill, please reach out to me.

Sincerely,
Steven Parker, PLS CFM CFedS
PLSC President
719-641-3355

FROM THE EDITOR

I have been asked by the PLSC to take on the role of Editor of *Side Shots*, which I consider to be an honor and a privilege. I am following in a long line of editors since the first issue in 1968, including Gerard Pesman, Sharon Summers and Warren Andrews, through 1974. From 1975 until 2007, an astounding 32 years, the editor duties were handled by Art Hipp, who's "The Editor Sez" columns were nicely done, and provided regular, and very firm, urgings to renew your memberships and get those dues in. Our publisher tells me he used to show up in person at their office, with all of the materials "in a shoe box." I have moved on to Word documents, digital photos and email, but Art's methods served him well. I'm quite sure I won't last as long as Art did, but will do my best! Then JB Guyton was editor from 2007 to 2019. He is still undergoing aggressive chemotherapy, adhering to a reduced work schedule, and wishes everyone in the PLSC well.

This issue features more detail about the courses and instructors for the annual Surveyor's Summit conference in Golden. When you are done reading your paper copy of this issue, consider handing it off to a colleague who might take an interest in signing up. Thanks to Becky Roland and Kaycee Keane for putting together the 4-page description.

The remaining courses for the PLSC refresher are in this issue, then there is an article from Tom Sylvester about responsible charge surveyors, a.k.a. captains of the ship. JB has been busy writing about a chance encounter with Governor Polis at a local Whole Foods store, and the importance of reaching out to our government officials to advocate on behalf of the profession. Earl Henderson took a break from explaining a rule this month to write about the important difference between the terms accuracy and precision. Gaby Neunzert wrote an excellent piece on the metre (as opposed to the meter), and Alan Blair weighs in on the controversy surrounding the U.S. survey foot, and provides another backyard astronomy note for the quarter. Becky Roland submitted the PLSC board meeting minutes of November 20th, and Shaun Lee provided asset balances as his treasurer's report. And we have a collection of highly readable and interesting columns from the six regional PSLC chapters.

I will take a cue from Art Hipp and JB, and ask that you consider writing about a topic of interest for our next issue – get your name out there, build your resume or reputation, or just do it because it's a great way to share your knowledge and communicate with your colleagues across the state. My email is cpower@flatironsinc.com and I would very much like to hear from you. I hope to continue this 52-year tradition and keep *Side Shots* interesting, newsworthy and relevant, and a valuable part of your annual membership. Which, of course, you need to renew ASAP!

Chris Power
Editor, *Side Shots*

The next NSPS Lobby Day will be April 1, 2020 in Washington, DC. If you would like to attend as part of the PLSC Delegation, please contact Becky Roland at broland@plsc.net. PLSC does not have funding for additional attendee travel support, but all members are welcome to attend if they would like.

Rocky Mountain Surveyors Summit

February 26-28, 2020 ~ Denver Marriott West

PLSC is pleased to announce Jeffery Lucas, JD, PLS as our Headline Speaker

Jeffery N. Lucas is the Survey Manager, Alabama Operations, for ESP Associates AL, Inc, a multidisciplined engineering and surveying firm headquartered in Fort Mill, South Carolina (Charlotte area). Lucas has been in the surveying business since 1976. Lucas is a licensed attorney and was admitted to the Alabama State Bar in 2003. Lucas specializes in land boundary issues as an attorney, land surveyor, consultant, mediator and expert witness. Presentations will be:

How to Make a Boundary Determination That will Win in Court

Relevancy in the 21st Century

SOMETHING FOR EVERYONE

The 2020 Rocky Mountain Surveyors Summit Planning Committee has developed a program with something for everyone.

- **Boundary Law**
- **Office Track for Project Managers and Drafters**
- **Field Track for Crew Chiefs and Instrument Personnel**
- **Business Tracks**
- **CFedS Track (2 CEUs)**
- **DORA Track**
- **Water Law**
- **New Datum (NGS) Session**
- **USGS and FEMA Track**

The 2020 Rocky Mountain Surveyors Summit will have multiple tracks of education for every skill level and every person in your office.

	Cost:		
	1-Day	**2-Days**	**3-Days**
PLSC MEMBER:	$200	$375	$550
NON-MEMBER:	$300	$475	$650
STUDENT:	$ 75	$125	$200

Become a PLSC Voting Member for only $150/year (includes NSPS membership).

If you are not a PLSC Member, you can join when you register and receive the member discount. Catered breakfasts & lunches will be provided on all days. Online registration is available at the PLSC web site (www.plsc.net).

EXHIBITS:

This year, the Summit will have an expanded exhibit hall with more equipment, products and services to see. There will also be social hours at the end of each day to relax and network with exhibitors and colleagues. Friday night will include a Casino Night.

Rocky Mountain Surveyors Summit Schedule

February 26-28, 2020 ~ Denver Marriott West

Wednesday, February 26

BOUNDARY TRACK

How to Make a Boundary Determination that Will Win in Court (8am-5pm)

Speaker: Jeffery N. Lucas, PLS, ESQ

PROFESSIONAL TRACK

Pondering the Hayden Survey of the Colorado and Adjacent Territories (8am-12pm)

Speakers: Jason Emery PLS, Patrick McGranaghan

Ethics for Land Surveyors (1pm-5pm)

Speaker: Alan Blair, PLS

OFFICE TRACK

GPS, Geodesy and the Ghosts in the Machine: Office Edition (8am-10am)

Speaker: Michael Dennis PHD RLS PE

Office Research and Project Considerations (10am-12pm)

Speaker: Rebecca M. Bruno

Title Insurance: What you need to know (1pm-3pm)

Speakers: Jill Hatfield, Joe Belongia

Incorporating Title Commitments in Land Surveying Deliverables (3pm-5pm)

Speaker: Brian Dennis, PLS

5:00 PM-8:00 PM

Exhibitor Social - Exhibitor Introduction, Raffle

Thursday, February 27

FUTURE OF SURVEYING TRACK

Relevancy in the 21st Century (8am-5pm)

Speaker: Jeffery N. Lucas, PLS, ESQ

BUSINESS TRACK

Key Marketing Trends, Social Media, SEO and Going Digital (8am-12pm)

Speaker: Melodie Reagan

Contracting for Projects Large and Small: A look at Contracts and Insurance for Land Surveyors (1pm-3pm)

Speakers: Brian Anderson, Barbara Sable

Attracting and Keeping Great Employees (3pm-5pm)

Speaker: Kim Eickhoff

Rocky Mountain Surveyors Summit Schedule

February 26-28, 2020 ~ Denver Marriott West

FIELD TRACK

GPS, Geodesy and the Ghosts in the Machine: Field Edition (8am-10am)

Speaker: Michael Dennis PHD RLS PE

Field Procedures in the PLSS (10am-12pm)

Speaker: Sean T. Mullen

Best Safety Practices for Field Crews (1pm-3pm)

Speaker: Gary Gable, PLS

Utilities and Marked Utility Lines for Field Crews (3pm-5pm)

Speaker: Ken Goff

5:00 PM-8:00 PM

Exhibitor Social: PLSC Awards, Long Standing PLSC members, TrigStar Winner, Scholarship Winner, Etc.

7:00 PM-9:00 PM

Chapter Summit

Friday, February 28

CFedS TRACK

Advanced Topics & Case Histories in Mineral Survey Resurveys (8am-5pm)

Speakers: Gene Kooper, PLS, Steve Parrish, PLS, CFedS

COLORADO LAW TRACK

AES DORA Board Activities (8am-12pm)

Speakers: Joyce Young, Kelly Miller, PLS

Water Law 101 (1pm-5pm)

Speakers: Anthony Basile, John Dingess

FEDERAL TRACK

3D Elevation Program (3DEP) (8am-9am)

Speakers: Darcee Killpack, Carol Lydic, Josh Nimetz

Flood Hazard Mapping: Past, Present and Future (9am-12pm)

Speaker: Matthew Buddie

New Datums and Coordinates in 2022: A Spatial Odyssey (1pm-5pm)

Speakers: John Hunter, PLS, Michael Dennis PHD RLS PE

CST TRACK

Q and A session for CST Exam (8am-10am)

Speaker: Alan Blair

CST Exam (Level 1, 2 or 3 offered) (10am-4pm)

5:00 PM-7:00 PM

Casino Night

Join us at our new venue!

The Marriott Denver West in Golden, CO, is our new location. The Marriott is offering a discounted rate of $139/room per night for attendees. For reservations, call 1-888-238-1803 and mention CO Land Surveyors for discounted rates. There is an online link on the Summit web page.

2020 Rocky Mountain Surveyors Summit is hosted by the Professional Land Surveyors of Colorado and the Front Range Chapters.

Here are just a few reasons to attend this event:

- **Professional growth for all; from amateurs to experts**
- **Learn new ways to protect your license**
- **Learn the latest about emerging technologies**
- **Discover better practices**
- **Find new ways to market your company**
- **Discover timesaving tips and shortcuts with your software**

Our event has designed time for networking with your peers as well as the exhibitors. This promises to be our best conference yet, so don't miss out on the special pricing!

2020 ROCKY MOUNTAIN SURVEYORS SUMMIT
February 26-28—Denver Marriott West, Golden, CO

The best way to get all your education in one place!

- **Up to 24 hours of continuing education units available!**
- **Certified Federal Surveyor (CFedS) continuing education units offered!**
- **NSPS Certified Survey Technician Exams (Level 1-3) proctored at this event!**

10TH ANNUAL
ROCKY MOUNTAIN
Surveyors Summit
—2020—
FEBRUARY 26-28

Rocky Mountain Surveyors Summit Sponsors

February 26-28, 2020 ~ Denver Marriott West

PLSC could not provide the Rocky Mountain Surveyors Summit without the generous support of our sponsors.

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2020 Colorado Land Surveying Refresher Course

Offered Online and in Classroom

The Professional Land Surveyors of Colorado, Inc., and the Central Colorado Professional Surveyors are offering a comprehensive Land Surveying Refresher Course beginning January 8, 2020. 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. Look for information about the online class at http://www.plsc.net/

Fundamentals of Surveying

Session	Date	Topic
1	Jan. 8	Overview of NCEES FS and PS Examination
2	Jan. 15	Survey Computations I
3	Jan. 22	Survey Computations II
4	Jan. 29	GIS, State Plane, Geodesy
5	Feb. 5	Boundary Law/Legal Terms and Definitions

Principles and Practice of Surveying and Colorado Specific

6	Feb. 12	Public Land Survey System
7	Feb. 19	Colorado Survey Law I
	Feb. 26-28	**Rocky Mountain Surveyors Summit - Marriott Denver West**
8	Mar. 4	Colorado Survey Law II
9	Mar. 11	Mineral Survey Retracements
10	Mar. 18	Mock PS and FS Examinations

Registration, Fee, Location

The fee for the entire course is $425 or $75 per individual class. Registration is open beginning November 1, 2019. See http://www.plsc.net/ for registration and online 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. Online classes will be broadcast each night, and recordings will be available 1-2 weeks after each class. If attending in person, 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.

Land Surveying and Geomatics Degree Program at Western Colorado Community College, a subdivision of Colorado Mesa University Grand Junction, Colorado

The Captain of the Ship:
Responsible Charge and the 2020 Rocky Mountain Surveyors Summit

By Thomas W. Sylvester, P.E. and P.L.S.

As we finish the fall semester of our Land Surveying and Geomatics program and are gearing up for our spring semester, I want to remind all of you that education and continuing education are not only for the college students but vitally important to all of us. To borrow a little from my article before last year's Rocky Mountain Surveyors Summit, I want to again discuss "Responsible Charge".

Earl Henderson has written some excellent articles for *Side Shots* discussing Responsible Charge. To not detract from his excellent interpretations, I will iterate the AES Board Rules under 2.2 Definitions:

Responsible Charge of Land Surveying. The Board shall interpret "responsible charge" of land surveying, as defined in Section 12-25-202(10), C.R.S, as follows.

"Responsible Charge" of land surveying shall mean that degree of control a professional land surveyor is required to maintain over land surveying decisions made personally or by others over which the land surveyor exercises supervisory direction and control authority.

(a) The degree of control necessary for a land surveyor to be in responsible charge shall be such that the land surveyor:

(i) Personally, makes surveying decisions, or personally reviews and approves proposed decisions including consideration of field observation, physical evidence, and recorded data whenever surveying decisions that could affect the life, health, property, and welfare of the public are made. In making said surveying decisions, the land surveyor

Three of Tom's "SURV 100 – Introduction to Surveying" students who just finished staking a 20° horizontal curve on 25-ft centers. They are from left to right: T.J. Cross – Dallas, Oregon; Nolan Stretton – Pagosa Springs, Colorado; Garrett Meyers – Cedaredge, Colorado

shall be physically present, or through the use of communication devices, be available in a reasonable period of time as appropriate.

(ii) Judges the validity and applicability of recommendations prior to their incorporation into the work, including the qualifications of those making the recommendations.

(b) Land surveying decisions that are made by, and are the responsibility of, the professional land surveyor in responsible charge are those decisions concerning work that could create a danger to the life, health, property, and welfare of the public, such as, but not limited to, the following:

(i) The selection of field observations, physical evidence, and recorded data to be investigated, compared, and analyzed.

(ii) The selection of methods or procedures to be used to accomplish the work.

(iii) Work products that comply with all relevant surveying statutes.

(c) As a test to evaluate whether a land surveyor is in responsible charge the following must be considered: A land surveyor who signs and seals documents in responsible charge must be capable of answering questions as to the surveying decisions made during the land surveyor's work on the project in sufficient detail as to leave little doubt as to the land surveyor's proficiency for the work performed. It is not necessary to defend decisions as in an adversarial situation, but only to demonstrate that the land surveyor in responsible charge made them and possessed sufficient knowledge of the survey project to make them. Examples of questions to be answered by the land surveyor could relate to criteria for the procedures of data collection, analysis of field data, recorded data and final determinations. The individual should be able to clearly define the degree of control and how it was exercised and be able to demonstrate that the land surveyor was answerable within said degree of control necessary for the surveying work done.

(d) The term "responsible charge" does not refer to financial liability.

(e) A professional land surveyor who adopts, signs, and seals work previously surveyed shall perform sufficient review and calculation to ensure that all standards of practice required of licensees are met, including satisfying the relevant criteria stated in paragraphs (b) and (c) above, and shall take professional and legal responsibility for documents signed and sealed under his/her responsible charge.

I have known Professional Land Surveyors who insisted that they and only they would set the final pins on property surveys.

I have known and know of Professional Land Surveyors who are so busy with so many crews, it's hard to fathom that they could be truly in responsible charge of all their projects. However, I'd like to equate those latter individuals to the **Captain of the Ship**.

The U. S. Navy puts extraordinary responsibilities on the Captain of a ship. He is totally responsible for anything and everything that goes on or doesn't go on under his command. He can have hundreds if not thousands of sailors and officers under his command. None are superfluous. It takes each and every one of them doing their assigned jobs to the best of their abilities in order for the ship to operate effectively, whether just steaming underway or in combat.

The Officer of the Deck, any officer, or any enlisted person can make a wrong decision while underway and the Captain can be asleep in his bunk below. Should such a wrong decision cause the ship to go aground, collide with another ship, any of which could cause damage, injury, and loss of life, the Captain is the one that must answer. He will most assuredly lose his command, and most likely will get court martialed.

There were a couple of instances in the last two to three years where a couple of navy ships in the 7th Fleet operating in the western Pacific collided with merchant vessels. Unfortunately, not only was their damage to the ships, there were injuries and loss of life. After a thorough investigation, not only did the Captains of the ships lose their commands, but the Commander of the entire 7th Fleet lost his command. They take this stuff seriously!

How does the Captain eat, sleep, or keep from worrying himself to death with all that responsibility riding on his shoulders? He ensures his crews are trained. He runs drills. Repeats the training. Repeats the drills. Train and drill. Train and drill. Repeated for all aspects of his ship. And repeats continuously. Then when he must attend to some other duties or eat, or sleep, he has the confidence that his junior officers and the crew know what they are doing and will do it well. And he has trained his subordinates that if anything unusual comes up, that he is notified immediately.

For those of you who are owners of your surveying companies, or in supervisory positions, or upper management, are you the Captains of your ships? Not only should you get more training, you should insist that your employees get more training, whether they are junior professionals, staff, office technicians, or field technicians. Don't just encourage them to get more training but insist upon it. Pay for their training. Pay for their time getting the training.

Repeating from my article last year, your investment in the time and expense of furthering their education will pay back huge dividends as time moves on. Your AutoCAD and research techs will gain further insight on what we surveyors do and why and vice versa. The field techs will learn new techniques, gain greater understanding of boundary law, and become more involved with the profession. Your party chiefs will add to their repertoire of knowledge. Your supervisors will increase their knowledge and gain confidence with their charges becoming better trained. With all their increased knowledge, your company will make better decisions, make fewer mistakes, and increase the productivity of your output.

This in no way diminishes your responsibility as "Person in responsible charge". As the PLS in charge, we cannot always be out there with the crew on every measurement, look at every piece of evidence found, or even know if there may be additional evidence out there that wasn't found because the field crew didn't know what to look for. But with continued emphasis on training, and practice, and continuing education for the crews and office techs, and discussions with the crews and office techs, etc., etc., we can rest much easier knowing that we have competent capable people striving their best to ensure the final product is a proper professional job well done.

The Rocky Mountain Summit is coming up this **February 26 – 28, 2020** at the **Marriott Denver West in Golden, Colorado**. Note that the venue has changed from past years. This is an excellent three-day seminar with Technical Tracks, Professional Tracks, and Master Tracks.

If you can make it to the Summit, please do so. Send your staff. If you are part of that staff, ask your supervisors for the time to attend and if they will help defray the cost. If you or your staff can only make it to part of the seminar, every little bit helps.

I will be attending this 2020 Rocky Mountain Summit. I have several students who I have not met face to face yet. If you can make it, please look me up. If possible, I'd love to try to have lunch together with as many of you as I can. We will have three days to meet that end. I also plan on having a booth for the WCCC Land Surveying and Geomatics program manned during breaks. Any current or past student, interested future students, or supervisors interested in the program, please stop by to visit. I'd love to meet you and talk about our program.

Be the Captains of your ship or be a crew member of a ship shape company well captained! See you there!

JB Guyton and Governor Jared Polis at Whole Foods – Building a Relationship to Facilitate the Legislative Process

By John B. Guyton, PLS

I am very happy to report that since the last issue, my cancer status has become more stable than the doctors predicted, so I wanted to write something for *Side Shots*.

My wife and I had a pleasant encounter while eating lunch at Whole Foods in Boulder in late December. Colorado Governor Jared Polis was next to our table with his family. I greeted him with a handshake and congratulated him on his election in Colorado just over a year ago. I reminded him that we had met each other on NSPS Lobby Day in 2018 on Capitol Hill at his office in the House of Representatives. He remembered the NSPS delegation, and what was impressive is that he recalled the issues we raised during our visit. I was able to thank him for his support of the NSPS agenda in Congress. Governor Polis was friendly and genuine with his time. This was an unexpected and pleasant visit. While he seemed very unassuming and blended into the usual Whole Foods crowd, there was a fleet of black Cadillac SUVs in front of the store for security.

After leaving and returning home a bit "star struck", I reviewed the encounter with my wife who had met him in Washington on NSPS Lobby Day. The most salient point of his conversation was to remind and encourage the importance for each member of the survey community to become involved with our current representatives. Governor Polis suggested that we contact Representative Joseph Neguse on surveying issues that directly affect Colorado at https://neguse.house.gov/contact. It is easy to complain about government and issues that affect our profession, business and personal interests. It takes a little energy to write a letter to our elected officials but Governor Polis make clear that the effort of doing so is critical. To condense the essence of his conversation he reiterated, "This is the way the system is designed to work". I spoke with Becky Roland and she reminded me that no one is excluded from attending and participating in the NSPS meetings. Your NSPS membership is included in your annual PLSC dues.

Colorado is experiencing unprecedented growth. Encouragement of controlled development is beneficial for our community and business. Making connections with our representatives so they become aware and remember our contribution is critical to protecting the place where we live. I extended an invitation for Governor Polis to visit Flatirons Surveying. I intend to make time to visit Representative Joe Neguse with Becky Roland.

Please join your community and become informed about the issues that will change the nature of our business. You can do this by encouraging your colleagues, licensed or not, to join the PLSC and attending local chapter meetings.

JB Guyton with then-Congressman Polis in 2015.

Scenes from past NSPS Lobby Day meetings.

Accuracy vs. Precision

By Earl Henderson, PLS

No, that is not a reference to a legal case between two families named Accuracy and Precision. But it is time for another diatribe about the difference between these two terms. And it's time because of how shockingly and excessively the term accuracy is misused. And many times, its misuse is by surveyors writing for national publications. Which leads me to believe that not only do the licensed surveyors writing the articles not understand the difference, but that the editors of those same magazines don't understand the difference either. The difference is clearly defined in the book *Definitions of Surveying and Associated Terms* published by the ACSM and ASCE (from back in the day) wherein the definition of "accuracy" reads, "Degree of conformity with a standard or accepted value. Accuracy relates to the quality of a result, and is distinguished from precision which relates to the quality of the operation by which the result is obtained." The definition of "precision" goes into much more detail about the quality of instrumentation and methodology of the measurements taken while also containing the same phrase quoted above about "accuracy". The difference is also clearly defined in other dictionaries and publications with substantially the same meaning.

Precision describes how well you are able to measure something given the instrumentation and methods available to you. For instance, are your measurements really precise to ±0.01' just because your instrument and data collector settings are set to display that level of precision? I can say with confidence that none of us working in Colorado as boundary surveyors are capable of that level of precise measurement. I can set my equipment to report my measurements to ±0.001' or even more precise than that. But it still won't mean that my measurements are actually that precise. Even if I get a traverse closure of 1:100,000 it doesn't mean that my measurements are precise to the nearest 0.000001'. It just means that over the course of that particular traverse the errors balanced out and I got lucky.

Accuracy, on the other hand, describes what you're measuring and not how well you measure it. If, God forbid, you choose to measure only one monument in a group of five monuments you found in a pincushion, accuracy describes if you're measuring the correct monument and not if you measured it to ±0.001'. Accuracy describes your decision-making abilities more than it does your measurement capabilities. In other words, if you are measuring the correct objects. A great illustration I've used over the years is that if I'm hired to survey Lot 12 in a particular subdivision but mistakenly survey Lot 21, I may have completed a very precise survey that is completely and totally inaccurate.

But other than providing me a place to vent my vocabularial frustrations, why define these two terms here at all? It's because the difference between accuracy and precision is not just limited to national publications. The difference can also be seen quite often on many Land Survey Plats right here in beautiful Colorado wherein a boundary is described precisely the same as the deeded or platted dimensions while the found monumentation at the property corners is noted as being something like 0.10' North and 0.06' West. This type of notation represents a fundamental misunderstanding, not only of the legal aspects of retracement land surveying, but also of the difference between accuracy and precision. And most especially, that misunderstanding is exemplified if the monumentation is the original monumentation of the property. And even more so if that original monumentation was set decades, or even centuries, in the past. We should all understand that the original monument defines the corner location no matter if that original monument was set in the 1800's or yesterday. No matter how precisely or imprecisely the original monument was set, it is completely accurate.

The dimensions on a plat or in a description do not define anything. They merely provide us with direction on where to find the original monument or the best evidence of the original monument's location. If you do not understand this most basic concept of retracement land surveying, I hear McDonald's is hiring. Where the rubber hits the road is on your plat. I hear plenty of PLS's spout about how original monuments define the corners but still indicate that the original monuments are not at the corner, like in the above example, by 0.10' or so. You have to walk the talk, and we do our walking on our plats. A recent Lucas Letter referring to *Riley v. Griffin, 16 Ga. 141 (Ga. 1854)* contained this quote from that case when describing the use of original monumentation over dimensions, "This doctrine is found scattered, broadcast, throughout the authorities; and I had supposed to be too well understood and established, to require to be discussed at this day." Can you believe that the judge thought this concept should be well understood in **1854** when it's obviously still not well understood in 2019?

But what do you do when the monument you found at or near the corner is not the original monument? First, you must determine, to the best of your ability, when, how and by whom that monument was set. Many times, we're not able to answer some or all of these questions. That's why we get paid such enormous sums of money, to then make a judgement call. That call is NOT, does the found monument conform to the

dimensions? As mentioned, the dimensions don't define anything. What you should be asking yourself are questions that focus on if the found monument was set accurately not precisely. The accuracy of the previous surveyor is not defined by the precision of your measurements. And don't forget that the previous surveyor may have been more precise than you. (As an aside, this is a concept not often considered by the modern PLS. Most seem to consider their own measurements to be the most precise when it's quite possible that they are not.) So in order to not accept a found monument at a corner, which is precisely what a notation of "monument found 0.10' north" means, you have to be able to articulate why that found monument is not accurate, not why the found monument does not agree with your precisional/dimensional location. Board Rule 6.5.4.1 requires that you be able to articulate why the monument you found that a previous PLS set to represent the corner is not where you think the corner is. Articulate means that you need to be able to describe why and not measure why.

I believe it was A.C. Mulford in 1912 in his book *Boundaries and Landmarks, A Practical Manual* that first articulated the phrase, "it is far more important to have a somewhat faulty measurement of the spot where the line truly exists than it is to have an extremely <precise> measurement of the place where the line does not exist at all." *<Correction added>* Mulford understood the difference between making measurements and "defining clearly the boundaries of the land which he must measure." So much so that he did not include in his book any methods for making measurements because defining the land to be measured is the far more difficult task. And it is precisely because that task is difficult that we are required to obtain a license to practice the art of land surveying. Any technician can be taught how to measure well and how to dimension land based on a set of numbers found in a deed or on a plat. That's why we are able to delegate that task to field crews. It is the true professional, nay artisan, that is capable of making accurate decisions from the precisely measured evidence.

Be safe out there.

And the Metre Is

By Gaby Neunzert, PLS

Even though usually displayed in units of feet, the metre is the primary unit every time a distance measurement is made with either an old-fashioned chain or by pressing the “measure button” on an electronic instrument. The unique story of the metre should also be of special interest for surveyors, since its length is derived from the size of the earth.

Spelling

Metre – the primary unit of length of the US and the SI (metric) system,

Meter – a device for measuring a physical phenomenon, for example: a volt meter,

Pun – the earth is the meter of the metre!

Background:

In our technical world, the measurement units are either “artificial” (man-made) or “natural” (based on nature). Of all basic constants (length, weight, etc.) of the metric system, the metre was the only value based on a “natural” dimension. In 1791, the French “Academie des Sciences” accepted the most likely value, as the 1/10,000,000 part of the earth’s meridian from the pole to the equator. The number is derived from a meridian survey in central France and it became the permanent fixed value standard of the metre. An easy concept - provided the size of the earth is known.

Ever since Columbus and subsequent voyages of discoveries, the size of the earth became a topic of necessity. In 1533, the Dutch, Gemma Frisius (1508-1555) published the first modern, theoretical trigonometry treatise of triangulation to accurately locate places on the earth. He also theorized that an accurate clock could be used to determine longitude, which was not accomplished until 1736 by John Harrison (1693-1736). Again, it was the Dutch Willibord Snellius (who rediscovered “Snell’s Law” of refraction) who in 1617 determined the radius of the earth (with 1 degree of arc, about 107 km vs. the modern value of 111 km). This value was used by Gerhard Mercator (1512-1594) and others for mapping the earth.

Starting about 1668, the French surveyed several triangle meridian chains which from 1792-1799 ultimately culminated with the survey by Jean Baptiste Joseph Delambre (1749-1822) and Pierre Mechain (1744-1804) from Dunkirk to Barcelona. These measurements were most probably used to define the metre. The French also sent an expedition to Peru, modern Ecuador, from 1735 to 1744 to measure the length of an arc at the equator, and another expedition was sent to Lapland from, 1736 to 1737, to measure the arc at northern latitudes. Subsequent calculations showed that the earth is indeed an oblate body, i.e. the equatorial radius is larger than the polar radius and it is the shape used by GPS. Now, based on GRS’80, the length of the meridian from the pole to the equator is 10,001,934.7 m.

The modern legacy:

In 1875 the International Bureau of Weights and Measures (BIPM), located in Paris, made 31 prototype meters of 90% platinum and 10% iridium. Numbers 21 and 27 were sent to the US. On April 5, 1893, Dr. Thomas C. Mendenhall, then Director of the National Bureau of Standards, issued Bulletin 26, declaring this prototype to be the primary standard of length and the kilogram the primary standard of weight (mass), thus physically placing the US on the metric standard. Paradoxically, the U.S. Congress never enacted the official law to place the U.S. on the metric standard, even though previously in 1866 the US Congress had authorized the use of the metric system. Finally, in 1959 the US standard foot was redefined as the International foot at 0.30480 m exactly; the US Survey foot remained at 1200/3937 = 0.304 800 609 601 m. On paper, this now makes the survey foot 2 ppm longer than previously. In order to provide a more laboratory-oriented standard of length, the metre is now defined as the distance travelled (in vacuum) by a laser light emitted from Krypton 86, in 1/299,792,458 seconds.

For the record: Colorado State Plane Coordinates 1983 are published in metres (CRS 38-52-103) and can be converted into survey feet with1200/3937.

In bygone days, the user had to rely on the manufacturer to properly size the graduations on the level rods or the embossing on the steel chains. In turn, the surveyor had to visually read and then manually record the data in a field book. Enter the electronic age with its automatic measurings and recordings; where on the ground interferometry (phase shift) is used and for GPS

both transit-time and interferometric measurements are employed. In a Total Station a phase shift between the return signal and the internal reference signal produces a difference in time parameter. This time shift, times the speed of light, corrected by the environmental and mirror corrections, allows for the calculation of the measured slope distance. For GPS, after all the environmental and electronic corrections are applied, a difference of time between the receiver and satellite is calculated. This allows, together with the speed of light, to determine a pseudo range and then the position of the receiver. Secondly, phase shift is used to calculate the smaller incremental distances. All measurements and calculations are made metric and only as the last step, survey feet are displayed for the answer

References:

ACSM, 2005, Definitions of surveying and associated terms; American Congress on Surveying and Mapping, Gaithenburg, MD, 20879

Alder, Ken, 2002, The measure of all things; The Free Press, 1230 Avenue of the Americas, New York, NY 10020

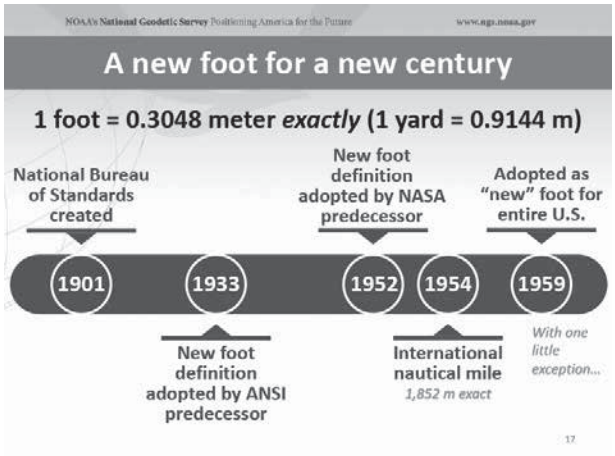
continued on next page

Just One Foot

By Alan Blair, PLS

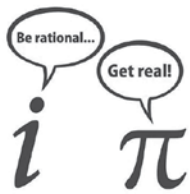
Have you decided upon which foot to stand your ground? The topic of the recent request from the National Institute of Standards and Technology (NIST) to comment on the "Deprecation of the U. S. Foot" might be of interest. The question arises in anticipation of the 2022 datum. I received the information about the request from a colleague still in Federal Service and I took the opportunity to offer my opinion. I'm not sure how widely the request was circulated, so I'm not sure how many of you knew about it. NSPS knew about it and it was mentioned in the News and Views newsletter. The most recent newsletter republished the article written by Michael Kulish for the November issue. I was very impressed with Mr. Kulish's detailed discussion. You can read what he wrote on the NSPS website, January 2, 2020 News and Views. My comments for the Federal Register were more succinct and expressed with much less certainty. I am a bit ambivalent regarding the topic, though I have tripped over the inherent problems of having two feet on many occasions in my career. The comment period is closed, but here is a link to Federal Register request if you would like to see it: https://www.federalregister.gov/documents/2019/10/17/2019-22414/deprecation-of-the-united-states-us-survey-foot For this article, I wanted to provide an account of some of my personal encounters with the foot fight and the move to malevolent metric measures.

The first bit of research I needed to do was to seek out the definition of "deprecation" and then try to apply it to the U. S. Survey Foot (SF). (Be careful should you type the word into your computer to spell it correctly as a slight variation of the spelling may lead you to a definition of what our new puppy may do to a foot of any nationality.) Deprecation means, "to express disapproval of" (again, there may be an application of the aforementioned misspelling related to my puppy's behavior). Expressing disapproval sounds a little wimpy if NIST was hoping to end the use of the SF definition. "Tsk, tsk", said NIST, when the surveyor converted his metric measurement using the Survey Foot definition. A little more research shows that the International Foot (IF) became the official definition of the foot many years ago. Here is one of the slides from a recent webinar created by the National Geodetic Survey (NGS) called, "Putting the Best Foot Forward". https://www.ngs.noaa.gov/corbin/class_description/NGS_Survey_Foot/



I will make a presumption that the readers of *Side Shots* understand the basics of the difference between the International Foot (IF) and the Survey Foot (SF) and that the difference between the two is generally a negligible 1 part in 500,000. On the occasions where a surveyor is managing measurements on a grand scale, it's critical if results are to be published in United States Customary Units (USCU). I don't know how obvious the toggle between foot definitions may be in any of the software used for geodetic calculations these days, but it might be worth a look with whatever you might be using. A blunder setting the incorrect definition can be big when working with state plane coordinates.

Is the deprecation of the use of the SF by NIST akin to what the Indiana State legislature tried to do in 1897 when it presented a bill to declare 3.2 the legal value of PI? The value of the foot relative to the meter is a bit more arbitrary than the value of the circumference of a circle to its diameter. The proper foot definition only has significance when converting lengths from metric (SI) to USCU and is only problematic when managing large numbers or the definition is confused, undisclosed or your calculating device cannot use a sufficient number of significant figures to accommodate the SF ratio. The proper value of PI is a bit more axiomatic.



Recall in 1975 (or, maybe you read about it in your history book) when Congress passed the Metric Conversion Act which made SI the preferred system of measurements for the USA. Road mileage signs showed dual units for a while under the Carter Administration. I miss the heady days of being given permission to go 100. The best foot forward became a moot point as the USA joined the rest of the world (except Liberia and Myanmar) and conversions between systems of measurements were no longer relevant in the USA. Oh wait, maybe that was a dream I had when thinking about writing this article.

When NAD 83 was developed, the NGS made SI the official unit of measurement for SPCS 83. So, for sure this time, converting from SI to USCU was no longer required as surveyors across the nation enthusiastically embraced SI as they were already well acquainted with a decimal system of measurement. The question of IF or SF was finally rendered as unimportant as the question of whether kerosene oil or whale oil should be used in lamps. I guess I must have dozed off there again as we are still discussing which foot to use.

My own intimate relationship with the metric system came during my tenure with the Federal Highway Administration (FHWA). During the 1990s, the Federal Lands Division (FLD) of the FHWA, where I worked, began converting all of its plans and specifications and manuals to SI specifications. All of the manuals were rewritten with both USCU and SI measurements and later only in SI. All the State Departments of Transportation were likewise required to convert or risk the loss of federal funds. Some states were enthusiastic while others held out as long as they could. Contracts for construction were written with metric specifications. The need for conversion to USCU was considered somewhat unnecessary as all aspects of the construction projects were to remain metric from the initial surveying to the final construction. The reality was somewhat different as many of the contractors were converting all of the specifications to USCU during construction. When the questions of conversion were raised by surveyors, I tended toward answering, “Just Don’t Do It” (apologies to Nike). You can imagine the complexity of explaining to landowners, who were being persuaded to sell their property for a project, that they could trust our metric equivalents of area because we worked for the government and we were there to help. (The question of upon which foot we stood was seldom raised by the general public). The highway bill of 1998 cancelled the requirement for using SI in contracts and everyone woke up from that dream and rewrote all the manuals and specifications using good old USCU. I cannot imagine the cost of that experiment.

In 1999, the Mars Climate Orbiter missed the planet due to dual units in specifications. I do not know if the ongoing saga of standing on both feet played a significant role, but after that, all government contracts, manuals and specifications were mandated to be presented in SI units and we all lived happily ever after in a metric world. Rats, did I doze off again?

I know I sound like I don’t consider the foot fight to be important. I am well aware of the issue and the podiatry perplexities that may come with deprecating the SF. We have need to assure the integrity of historical records, but we have seen units of measure come and go as we once pulled our chains to place parcels. My ambivalence is not based on a lack of concern for the consequences if the SF is indeed deprecated, but rather, based on the history (some of which I have recounted here) that leads me to believe that neither NIST, NGS, FHWA, POTUS, SCOTUS, Congress nor any government agency can, in fact, change our system of measures. Even if NIST “tsk, tsks”, it will be ignored and the status of the SF will likely remain “quo”.

To illustrate the magnitude of the difference between the IF and SF definition, here is a piece of Colorado trivia related to the statutory origins of our SPC Zones. Our origins are uniquely Colorado based on my less than exhaustive research into the matter. One might wonder from where the rather unique selection of coordinates came. Compare Colorado’s choice to a few other states:

Colorado: This origin is given the coordinates: x = 914,401.8289 meters and y = 304,800.6096 meters.

Utah: This origin is given the coordinates: x or E=500,000 meters and y or N=2,000,000 meters.

Kansas: This origin is given the coordinates: N = 400,000 meters and E = 400,000 meters.

Oklahoma: This origin is given the coordinates: x = 600,000 meters and y = 0 meters.

If you wonder where our state came up with such a unique starting place for our SPCS 83, use your calculator to convert the metric origin to feet. If your computing device holds enough significant figures, the origin is x=3,000,000 SF and y=1,000,000 SF. Don’t trip on your International Foot or your origin will be X=3,000,006 and y=1,000,002. That might be a large enough discrepancy to notice.

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Colorado State Office
2850 Youngfield Street
Lakewood, Colorado 80215-7210
www.co.blm.gov

CO-956
9650

December 20, 2019

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

Dear Mr. Guyton:

This letter informs you of official BLM cadastral surveys in Colorado that have been accepted from June 20, 2019, through September 30, 2019, officially filed, 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 https://glorecords.blm.gov.

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

Township	Range	Meridian	Group No.	Type	Approved	Plats
T. 22 S.	R. 49 W.	Sixth	1661	Plat Only	06/20/19	3
T. 23 S.	R. 49 W.	Sixth	1661	Plat Only	07/17/19	4
T. 1 N.	R. 90 W.	Sixth	1693	Plat & Notes	07/25/19	1
T. 1 S.	R. 94 W.	Sixth	1694	Plat & Notes	08/09/19	1
T. 5 S.	R. 75 W.	Sixth	1186	Plat Only	08/21/19	1
T. 47 N.	R. 9 E.	NMPM	1710	Plat Only	08/23/19	2
T. 51 N.	R. 12 E.	NMPM	1708	Plat Only	09/09/19	3
T. 1 N.	R. 72 W.	Sixth	1713	Plat Only	09/13/19	1
T. 46 N.	R. 6 E.	NMPM	1687	Plat Only	09/30/19	2

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

Sincerely yours,

Randy Bloom
Chief Cadastral Surveyor for Colorado

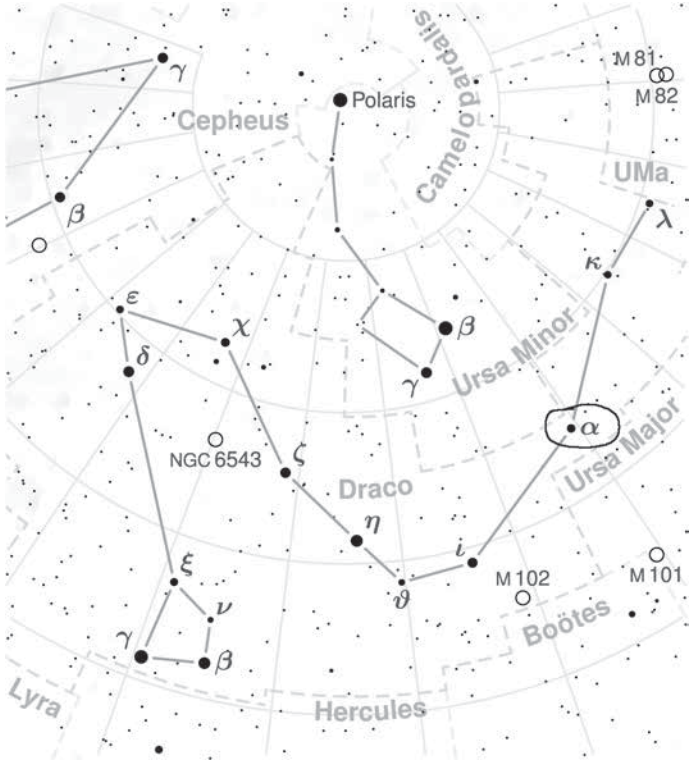
INTERIOR REGION 7 • UPPER COLORADO BASIN
COLORADO, NEW MEXICO, UTAH, WYOMING

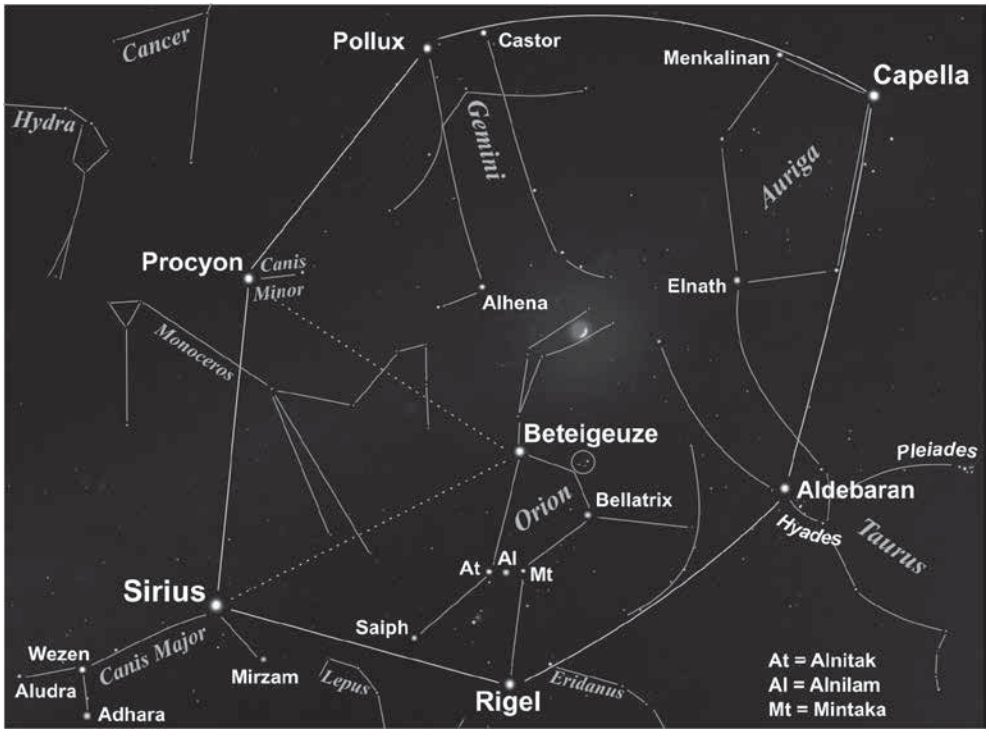
Backyard Astronomy Note for the Quarter

By Alan Blair, PLS

After enjoying the astronomy note from last quarter, The Great Gaby Neunzert contacted me to help him solve the perplexing problem of puzzling the declination of Polaris at the time the Egyptians were preparing the pyramids. Only Gaby could ponder such a problem. It did get me to thinking about my perspective of sky watching. It has only been within the last several years that I truly began appreciating the sky show with the anticipation of what stars will appear in the same early evening sky as the year progresses. Of course, I knew the stars were not static, but Gaby's query got me to thinking about how the apparent positions of the stars has changed over millennia. Gaby has had a habit of getting us surveyors to think about stuff for what seems a millennium.

Thuban is circled.





Right now, I'm enjoying the Winter Circle (Hexagon for the geometry purists). Orion's belt will appear more and more horizontal in the early evening sky as we march into Spring. And, I can begin to anticipate the appearance of Arcturus and the promise of warmer, longer days.

Board of Directors Meeting Minutes

November 20, 2019 • 4:30PM

1. Call to Order: Parker

Name	Position	Chapter	Attending?
Steve Parker	President	Southern	x
Don Hulsey	Vice President	Southern	
Shaun Lee	Secretary/Treasurer	Central	x
Becky Roland	Executive Director	n/a	x
Paul Bacus	Director	Northern	x
Eric Carson	Director	Central	
Brian Dennis	Director	Southern	
Mike Greer	Director	Central	x
Leif Joy	Director	NW ¼	x
Eric White	Director	Southern	x
Tom Sylvester	Director	Western	
Scott Thompson	Director	Western	x
Todd Beers	Ex-Officio	Central, NSPS Rep.	x
Parker Newby	Non-Voting	Southwest	
Roger Nelson	Non-Voting	WFPS Delegate	
Guests:			
John Hunter		Geo-Coordinator	x
Peggy Streicher		GIS in the Rockies	
Heather Lassner		TrigStar	x
Todd Johnston			x

2. Determination of Quorum (6 voting): Lee

3. Any changes to the Agenda?: Parker
   a. Approve Minutes from October 2019 Board Meeting

MOTION: To approve the October 2019 Board Meeting Minutes as presented.
Approved unanimously

   b. Colorado Assn. of County Surveyors
      Joy
      i. Been around about 15 years
      ii. About $4,500 in bank that they would like to donate
      iii. Would like to explore becoming a "Chapter" of PLSC
      .iv. Need more participation/support and want to maintain existence
      v. PLSC has been a tremendous help with legislative issues/support
      vi. Board discussion was in support of helping and suggested continued discussion/input on best way to move forward
      vii. Steve Parker suggested continued consideration over the next month and discussion at the next Board Meeting. Consider roles, definition of support, etc.
   c. Proclamation under Legislative Committee Report
   d. Meeting with Jeff Jones City of Denver (re: Plats)" Beers
      i. Visited store room – 100 boxes of 12"x12"x36" each
      ii. All have been scanned and Jeff is comfortable that these can be removed by PLSC
      iii. Jeff is planning to retire mid-next year
      iv. Colorado Historical Society could be a resource for storage, but need to have an agreement in place to partner with them
      v. Paul will review his files and provide a name for Colorado Historical Society
      vi. Consider contacting State GIS folks as well for digital backup
      vii. Denver Water houses documents with Iron Mountain. Merrick does as well. Todd Beers will ask about pricing.

4. Financial Items: Parker/Lee/Roland
   a. 2019 Financials
   b. Investment Update from Key Bank (Savings, Earnings, Performance)
      i. $6200 in checking; $$63,500 in savings
   c. NSPS Foundation
      i. Becky will move forward with NSPS Foundation MOU
5. GIS in the Rockies: Streicher
   a. No additional report

6. Colorado Coordinator Activities: Hunter
   a. Met with CDOT and received their support.
   b. John will send the letter out to stakeholders before the end of the year.
   c. John will work with Becky to process for electronic signature of the letter.

7. WCCC Update/Scholarship Committee: Sylvester
   a. No new scholarship applications but a few students have noted interest
   b. Todd provided a scholarship fundraising example from Louisiana to Tom Sylvester to consider developing for Colorado
   c. Tom noted that when he retires (not now) the replacement will need to be paid more
   d. Tom will develop a letter for Steve and Becky to review and send to members

8. Awards: Parker
   a. Rename one of the PLSC Awards after JB Guyton
   b. Consider a new award
   c. Board suggested that the award should only be given once per year
   d. Possibly a PLSC Volunteer Award
   e. Steve Parker will reach out to JB to ask his opinion.

9. Summit Update: Lee/Roland
   a. Met for training on the conference app
   b. Kayce has been gathering the final bios and photos from the speakers
   c. Website is being finalized
   d. Meet next week
   e. Eblast to go out this week with registration links (registration and sponsor/exhibitor)

10. NSPS Update: Beers/Parker
    a. MOU Renewal – Steve will take care of this this week

11. QBS Update: White
    a. Needs to get information on history of PLSC involvement
    b. Becky will send the contact information – QBS Colorado is managed through ACEC

12. Reports
    a. Executive Director: Roland
       i. Will set up Sandbox Training with Brian Dennis and BOD/Leadership
    b. Lobbyist/Legislative Committee: Thompson
       i. Governor's Proclamation for Surveyors Week
          1. Becky reached out to Alan Blair for information on how to submit. We could possibly get this information from our lobbyists as well.
       ii. Working on Paperless Recording legislation with CCCA (County Clerks)
       iii. Checked CCI legislative calendar and did not see any issues that affect surveyors
       iv. Still needs to get in touch with Charlie Tucker on abandoned railroad issues
    c. Membership Committee: Carson
    d. Outreach Committee: Dennis
       i. Adams County Career Fair – 6000 middle school students of which 300-350 stopped by the PLSC booth
       ii. Put posters from NSPS on boards for future display
    e. Education Committee: Hulsey
       i. No additional report
    f. Trig Star Committee: Lassner
       i. Payment sent to NSPS for State license. Heather will follow up and send everything out by the end of the year
    g. CST Committee: Blair
       i. No additional report
       ii. CST II will be provided
    h. *Side Shots* Report: Roland
       i. Deadline January 1 for February mailing
    i. WFPS Directors' Report: Beers/Nelson
       i. Need new WCCC information for career fairs and events to Becky
       ii. Next meeting is during RMSS
       iii. Call Friday to discuss endorsing a candidate for NSPS
       iv. States asked to share State Plane Coordinate legislative language

13. Chapter Reports
    a. Southern: Hulsey
       i. Christmas Party December 6 at Miramount Castle
    b. Central: Clarke
       i. No report
    c. Northern: Fendick
       i. Next meeting is party at Budweiser Event Center December 17 for the hockey game (private suite)
    d. NW 1/4: Whelen
       i. Next meeting December 4 in Steamboat Springs
    e. Western: Thomas
       i. Last meeting two weeks ago – Scott Thompson presented on Rights of Ways and Canals
       ii. Ballot will be mailed soon
       iii. James Combs was at the meeting (Young Surveyors Network)
    f. Southwestern: Johnston
       i. Meeting on October 15 and elected officers
       ii. Will host a dinner December 13 at Irish Embassy Underground for members and non-members to encourage participation in PLSC

14. Next Meeting Date and Location
    a. Meet monthly: January 7 at 4:30
    b. BOD business work group: January 25 at 8AM

15. MOTION: To adjourn.
Approved unanimously

PLSC Asset Balances, December 30, 2019

Submitted by Shaun Lee, PLSC Treasurer

Financial Institution	Purpose	Holdings
Key Business Savings	Operating funds	$62,818.13
Key Business Checking	Operating funds	$3,860.56
AssetMark Investments*	Education funds	$279,655.07
Total Assets:		$346,333.76

* Rate of return on account for 2019: 17.34%.

CHAPTER NEWS

CCPS

I hope that everyone is well and that you had a safe and enjoyable holiday season.

As the calendar turned to 2020, we had our election and are set to swear in a new board of directors. Robert Boehm is our President elect for 2020 and Derick Brown is our Vice-President elect. We are still short a director to fill out the positions. The new board will go into effect at the conference. Thank you all to voted and if you are interested in filling the last spot, please reach out to the CCPS board.

As we look at 2020, the Surveyors Summit is coming up at the end of February at the Denver West Marriott. Jeff Lucas is our featured speaker and the discussion should be interesting. We look forward to seeing everyone.

We are in the process of determining the agenda for 2020 and if you have any ideas, please feel free to reach out to the board.

The CCPS will be hosting a Surveyor's social to celebrate Surveyors Week again this year. It is the third week of March – Sunday, March 15 through Saturday, March 21. It will be at the New Terrain Brewing Company in Golden during that week. Please watch for the announcement and plan on joining your fellow surveyors to enjoy a beverage and some conversation.

We have updated our webpage with some Google Earth KML/KMZ's that you might find helpful. When you have a moment, please head to the website and look.

On a personal note, I would like to say thanks to all of our members and associates for their support of our chapter. I have enjoyed my time on the board since I joined over ten years ago and although my time is finished, know that the friendships that I made over these years will last a lifetime.

Shawn Clarke, PLS
CCPS - President

NC-PLSC

The Northern Chapter was excited to host Vectors, Inc. for a packed class on field equipment maintenance. This was one of our biggest turnouts in 2019! We were pleased to see many field crews from survey companies along the Front Range attend this class and take away some knowledge that will surely put them on a successful career path.

Heading into 2020 we had an amazing turnout for our Holiday Party where we gathered in a 40-person suite overlooking the ice for a Colorado Eagles hockey game. The event was catered and we all enjoyed a toast to welcome a successful coming decade.

Going into the new year, we will be hosting Laine Landau who will be speaking about boundary determinations, and Ronald Jung, an attorney that will be presenting boundary cases.

As always, we welcome anyone who would like to attend our meetings that are held on the first Wednesday of every month.

See you all at the Rocky Mountain Surveyors Summit!

Tony Fendick, PLS
President, NC-PLSC

NW ¼ PLSC

The NW 1/4 met on December 4th, 2019 at the Community Center in Steamboat Springs. After dispensing with the preliminary boring stuff like minutes and Treasurer's report, the members got down to two key issues that are starting to affect Routt County and Steamboat Springs in particular.

A few years back, CDOT and the City of Steamboat Springs adopted a Highway 40 access plan to limit and specify access to Highway 40 throughout the City of Steamboat Springs. Some of these access locations already exist, some are simply easements on paper and many of them require upgrading or relocating an access as several businesses may be combined for that particular ingress/egress. The issue lies with discovery of the access plan for a potential buyer purchasing a developable property. The CDOT access plan is not a recorded document attached to the deeds of the hundreds of properties that front on U.S. Highway 40 throughout the city limits. A title search or title commitment will not have it as a recorded document at the Clerk and Recorders office except in a few limited cases. Therefore, an owner has to approach City Public Works and City Planning and know the right question to ask to get the answer. There is also no funding attached to this CDOT document. It is an unrecorded plan without money. One cannot assume that the visible curb cut onto Highway 40 is indeed allowed for future development by the City or CDOT. And so, a developer submitting a plan to the City of Steamboat Springs can be negatively surprised to find out they must engineer and fund a new access for their property.

The second major topic of the evening was Road Viewer's Reports. These exist throughout the State of Colorado, but are most prevalent in rural counties such as Routt County. Even Moffat County which lies to the west doesn't have as significant an impact from these century old reports. So, what is a Road Viewer's Report?

As Routt County and other rural counties were getting settled, neighboring ranchers would approach the county and ask that a strip of land be considered as a County Road Right of Way. Many of these "roads" in the early 1900's or late 1800's were simply two tracks or wagon roads at that time. Some of them are still barely passable today. A Road Viewer was sent out from the county to describe the strip (or right of way) that should become a county road. In some cases, there are ledgers showing dedication by the land owners to Routt County and accepted by the chairperson of the Routt County commissioners. Only in a few cases were these Road Viewer's Reports ever recorded. The vast majority of them sit in either the back vault at the Clerk and Recorders office or the County Road and Bridge Department. They will not appear on a title search or title commitment. Therefore, a landowner gets a rather unpleasant surprise when Routt County does not want to issue a building permit for a residential dwelling until this 100-year-old issue is resolved by dedicating a 60' wide strip of land to Routt County. On top of that, the County Attorney wants the Deeds of Trust Beneficiary approval and the lenders are frequently out of state or difficult to locate. More on this later…guess we all start building without a building permit!

Brian T. Kelly, PLS
Vice President, NW 1/4

SC-PLSC

Our July members meeting was held at the El Paso County Department of Public Works in Colorado Springs and our guest speakers were John Hunter & Joey Stone. We had a great audience participation, with many questions asked and answered about the new upcoming 2022 Reference Frame and the creating of LDP's for our specific counties or zones. Our monthly dinner was many platefuls of delicious Rudy's BBQ! Earlier in the month a motion was made to nominate Gary Rust of Colorado Springs Utilities as the Southern Chapter "Champion" (Committee Chair for the Southern Colorado PLSC). Gary was voted in unanimously and will be our mentor in the creating of our own Low Distortion Projections. Gary will be attending monthly meetings at the Denver Water offices in Denver and then relaying information back to our chapter meeting each month. We welcome you with open arms Gary! We took the month of August off for a short hiatus and regrouped at AJ's Restaurant at the Walking Stick golf course in Pueblo. At this meeting Gary Rust brought lots of information from his first meeting with the NGS group on the 2022 Reference Frame. Gary will be a great asset to our many meetings to come. Joe Alessi has also informed us that the Miramont Castle in Manitou Springs has offered to give us a display area to exhibit any survey equipment we desire to showcase to the public as they

tour the facility and this will also compliment the "Sawyer Garston" collection of survey documents. Everyone is always welcome to join and participate in out monthly meetings. Feel free to login to our website calendar at www.scpls.net.

Don R. Hulsey, PLS
Southern Chapter President

SWC-PLSC

The Southwest Chapter met on October 15th. At this meeting, elections were held for Chapter Officers. Newly elected Officers are *Todd Johnston, PLS – President, Josh Casselberry, PLS – Vice President and David Seiler, PLS – Treasurer/Secretary*. Many thanks to Parker Newby, PLS for his service as Chapter President over the last couple of years!

The Chapter held a "Surveyors' Holiday Rendezvous" on December 13th at the Irish Embassy in Durango. This gathering/membership drive was open to not only PLSC members, but also non-members. Survey field and office personnel were encouraged to attend as well. We had a great participation, saw many new faces and met with old friends. Special thanks go out to the Committee that put this event together.

The next Chapter meeting will be held on January 21, 2020, 5:30 PM, at the Durango Community Recreation Center. Steve McCormack, PLS and Daryl Crites, PLS with Caddis Aerial with give a presentation on drone surveys.

Todd C. Johnston, PLS
President - SW Chapter PLSC

WCLS

The fall meeting was held on November 13, 2019 at Main Street Bagels at 7:00 am with 11 in attendance. As always, free coffee and bagels were available to those attending courtesy of the WCLS.

Mesa County surveyor Scott Thompson informed us that new county development codes will be coming out soon with a final draft available online as well as a comment form. A brief presentation was also given by Scott Thompson on "Canals and Boundaries."

New attendee James Combs gave a brief summary of the Young Surveyors Network and how it helps bridge the gap between surveying students and state and national societies.

Election ballots have been distributed for the new officers and 2 director seats that are open.

Alec Thomas, PLS
President, WCLS

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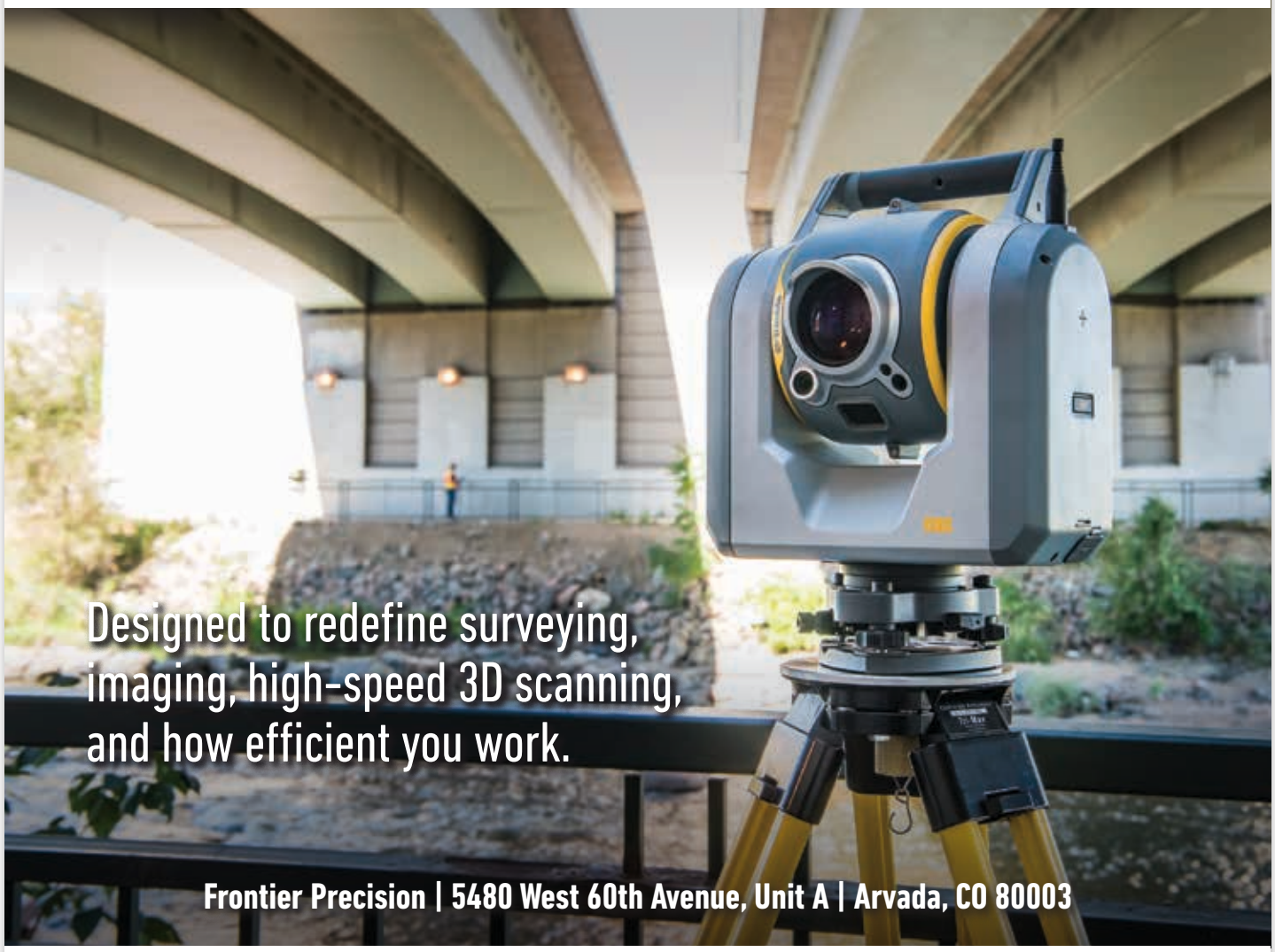

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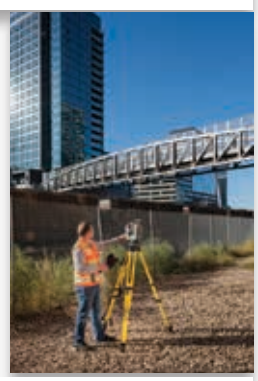

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