

February 2023

# SIDE SHOTS

Professional Land Surveyors of Colorado

Volume 54, Issue 1



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# SIDE SHOTS

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Side Shots is the official publication of the Professional Land Surveyors of Colorado, Inc.  
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Happy New Year!

I realize that by the time you read this it will be well past New Year, but the sentiment is still the same. I hope that each one of us will enjoy all the new year has to offer. So, what does the new year have to offer? It will give us exactly what we are prepared and invested to receive. That's right, we will get exactly what we expect to get. Now I know that sometimes bad things happen to good people and life is full of unexpected events but, nonetheless, our perception of our circumstances STILL remains under our control. We have limitless ability to choose our response to everything life throws at us. I am a firm believer that a positive outlook will also influence the outcome of many, if not most, of our interactions. How many times have you entered a conversation with a client, an employee, one of your children or your spouse expecting a problem? Have you gotten what you expected? Of course you did! I challenge each of us to go into 2023 with a renewed vigor and resolve to predetermine the best outcome in every interaction and then watch with amazement as so many then turn out just that way...amazing.



As I look back over my last two years as president, I am grateful for all the interactions I have had with so many of you. I am honored to have been your president and proud of the professional community we are. I promise to help the new president and ease the transition for them to maintain the momentum we have while encouraging and certainly not getting in the way of new initiatives and successes to come. I thank all the board members for their support and commitment to the success of the PLSC and tireless commitment to the meetings and business of running such an excellent organization. I do hope that each of you will consider what your involvement will be at the state level as well as the local chapter.

My resolve to come alongside the chapters remains firm as I believe the life of the surveying community is firmly rooted in the local chapters. The PLSC is just an organizational assistant to that local engagement. It provides state level functionality and representation but is never intended to meet the networking needs of the individual professionals it represents. That remains the privilege and responsibility of the local chapters. How will you engage this year to advance yourself, your business, and your profession?

Expect all you want. Do all you can. Be all you are meant to be.

Thanks

Ralph Pettit, PLS  
PLSC President

# FROM THE EDITOR

In this edition of Side Shots, we are ramping up for the Rocky Mountain Surveyor's Summit. The Summit this year is feature packed with offerings for seasoned professionals, chiefs, and technicians alike. Our headline speaker is Dennis Moulard PLS, he is always a Summit favorite, so we expect larger numbers this year. And with larger numbers there will be more opportunities for networking and catching up with old friends. To be honest, CEUs aside, this is my real reason for attending. This group of surveyors, as a body, has so much to offer. Every year I head home from the conference energized and my mind full of new information that makes me a better surveyor.

This edition has all the usual components, the president's letter, committee reports, PLSC minutes, advertising from our favorite vendors, but this edition has an editorial like segment with an opinion letter from Knud Hermansen and rebuttal from Tom Sylvester. We decided to publish this exchange, in an effort to include our readers in

the dialogue, and I encourage you to get involved by providing your well thought out response as well.

I recently had a fellow surveyor ask me why do we invest in young surveyors, why do we get the word out to young people about the land surveying profession? I believe his question was rhetorical. My answer was "They are the future of surveying, we need them." As we enter into this new year, take a look around you... I see many new faces, many up-and-comers, and I believe it is our responsibility as professionals to foster their growth and encourage them to take this discipline, that we love, into the future and make it even better. An excellent way to invest in your young surveyors is to send them to the Summit this year.

Steve Parker, PLS  
Co-Editor, Side Shots

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# PLSC Board of Directors

## Meeting Minutes

### September 13, 2022

1. Call to Order: Pettit

Name	Position	Chapter	Attending?
Ralph Pettit	President	Central	
Brian Dennis	Vice President	Southern	x
Shaun Lee	Secretary/Treasurer	Central	x
Becky Roland	Executive Director	n/a	x
Heather Lassner	Director	Northern/TrigStar	x
Brian Bowker	Director	Western	
Ian Cortez	Director	Central	x
Todd Johnston	Director	Southwestern	x
Eric White	Director	Southern	x
Tom Sylvester	Director	Western	x
Scott Thompson	Director	Western, Legislative Co-Chair	x
Steve Parker	Ex-Officio	Central	x
Todd Beers	Non-Voting	NSPS/WFPS Delegate	
Guests:			
John Hunter		Geo-Coordinator	
Peggy Streicher		GIS in the Rockies	x
Robert Boehm		Central Chapter	
David Berglund		Northern Chapter	x
Brian Kelly		NW ¼ Chapter	
Brian Shaw		NOAA/NGS	x
James Combs		YSN	
Cole Conger		YSN	

2. Determined a Quorum (6 voting): Lee

3. No changes to the Agenda: Dennis

4. Approve October 2022 Minutes: Dennis

**Motion:** To approve the October 2022 Minutes as presented. (SL/HL)

**Approved unanimously**

5. Action Items status from previous meetings

- a. ~~Need to select new chairs for 2024 Summit~~
  - i. ~~Met with potential chairs 10/21~~
- b. CO Real Estate Journal has invited PLSC to write an article on the difference between ILC and Land Survey Plat
  - i. ST working on article for review - Here is the link to the DORA published article. <https://sites.google.com/state.co.us/architects-surveyors-engineers/ilcs>. I was originally told this was published in the Real Estate newsletter, but it actually was in the AES newsletter. I am working

on a similar article directed at the real estate community for publication in their newsletter.

- 1. LTAC invited to do webinar – 90% ready and RP will present – ST will finalize article from there (ILC/ISP differences) – went well
  - 2. Content can be shared with PLSC members and NSPS PR Committee
  - c. LTAC – asked PLSC to update webinar
    - i. BD working on this (need permission to release)
  - d. ~~Need to select new chairs for 2024 Summit~~
    - i. ~~Met with potential chairs 10/21~~
  - e. Colorado Railroad Museum Project, Lee/Brown
    - i. SL will physically stop by and take boxes back after scanning and try to get an update
      - ii. BR can assist next week
  - f. Treasurer asked to post monthly statements in a folder for Board access.
    - i. Posted to Google
  - g. Shaun will send out information on the current ACH costs/system for future Board discussion.
    - i. BR/SL to confirm drive access next week
  - h. Shaun was able to sell some of the Aztec equipment on ebay for \$532.77, which he will transfer to PLSC.
    - i. BR to issue an invoice to SL for \$492 to pay through the website
  - i. Leif Joy is to send check from County Surveyors = BR will send address
  - j. Need to update scholarship application to note payment in areas – Tom Sylvester will work on this and send to Becky to post on website
6. Financial Report, Lee/Roland
- a. SL January 6 meeting to review investment account with Key Bank
    - i. BR would like to be on the call
    - ii. Need to update signers after election
  - b. Colorado Scholarship Fund is now established with NSPS Foundation
  - c. Checking: \$10,368 Savings: \$62,854 Investments: \$164,075 (\$9K in gains) plus monies at NSPS Foundation

- d. SL sent ACH setup information to Board on Nov 14
  - i. Pay \$40 service fee for dual person banking approval
  - ii. Issue can be that if there is a delay to approve, the request is deleted/denied
  - iii. Lobbyist is set to autopay, but still requires approval to process
  - iv. SL recommends to move to personal account setup and allow a single person approval process
    - 1. No restrictions for PLSC as a non-profit for type of account
    - 2. Can set up alerts to multiple people when money sent
    - 3. Can we set a limit to ACH amounts
    - 4. Revisit in 90 days with Board to see if it is effective and review safeguards

**MOTION:** To approve change in the Checking account type to allow for single person approval for ACH transfers and add multiple contacts for payment alerts. (ST/BD)

IC oppose/TS abstention

### Approved

- 7. Side Shots Report: Parker
  - a. Met 12/13/22 – deadline is 12/26/22
  - b. Send material to sideshots@plsc.net – copies Steve, Laine and Becky
  - c. Need volunteers to help with editing and soliciting articles
- 8. Update on ballot/nominations: Pettit
  - a. Brian Dennis will run as President.
    - i. Put Ralph Pettit on Legislative Committee.
  - b. Organization Chart: Lee
    - i. BOD to review and approve next call.
      - 1. Add RMSS and QBS Committees
      - 2. Do we add information on where Chapters can participate at PLSC level?
    - ii. Need to identify where Chapters can support the PLSC Committees
    - iii. Part of the purpose is to identify volunteers at the Chapter level for support
    - iv. Focus on Committee portion at next BOD call (discuss on the January BOD call at 4PM before meeting starts)
    - v. BD/TJ to discuss offline on Chapter needs

### 9. Reports

- a. Chapter Reports
  - i. CCPS – Nothing significant to report (NSTR)
    - 1. Elections

- ii. SCPLS
  - 1. Christmas Party Friday
  - 2. Elections in January
  - 3. Filling calendar
- iii. NCPLS
  - 1. Ballots going out on 15th
  - 2. Holiday Party on Dec 21
  - 3. Filling calendar for speakers
- iv. WCLS
  - 1. Met in November
- v. SW
  - 1. Meeting next Tuesday – Dr. Don May and Brian Campbell on Village Aid Project
  - 2. No elections this year
- vi. NW ¼
  - 1. No report
- b. Legislative Committee: Thompson
  - i. Legislative session starts Jan 9
  - ii. Sunset review will be 2024
    - 1. Summer meetings by DORA to review any changes
  - iii. No legislation coming up that affects surveyors
  - iv. SL met with Arapahoe County Clerk and Recording office – offered to help with plat recording
    - 1. Targeting March 2023 to have everything online
    - 2. County Clerk and Recorders meet twice a year – next meeting in January
      - a. Working on common fees and terminology between counties
- c. Education/Scholarship Committee: Sylvester
  - i. WCCC/Scholarship Report: Sylvester
    - 1. Next steps for Endowment Program – NSTR
      - a. 10-12 graduates this year
- d. Outreach Committee: Dennis
  - i. NCPLS – Construction Con – November 2
  - ii. Adams County Career Expo – November 10
  - iii. Adams County Youth on the Job Training – March 7
- e. NSPS Report
  - i. Lobby Day/Spring Meeting in DC – March 29-April 1

### 10. NGS Update: Shaw

- a. CTMC in Golden updated with new antenna and receiver
- b. OPUS Projects 5.1 open to beta – could use more people testing
- c. Two GPS on Benchmarks webinars – Jan 9 and Feb 12
- d. GSVS 17 datasheets updated

11. GIS in the Rockies: Streicher
    - a. Successful conference
    - b. Next year at Cable Center – Sept 20-21
    - c. Filling BOD positions and Planning Committee
      - i. Will send information to local Chapters to participate
      - ii. Nomination of officers next month
      - iii. BOD encouraged to ask younger members of their staff to volunteer
  12. RMSS Repor: Johnston/Bowker
    - a. New Chapter Agreement
      - i. All Chapters
      - ii. PLSC Board approves total amount of surplus to pay to Chapters – no more than 50% of surplus (budget for \$35,000)
      - iii. 80% of approved Chapter funds will be paid to each Chapter based on total percent of PLSC membership (becomes incentive to recruit members)
  13. Rocky Mountain Work Experience Scholarship - table: Pettit
  14. New Business
    - a. Trigstar Award Money – HL will send
  15. Next Meetings
    - a. January 10 – 4PM/4:30PM
- Adjourn



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# PLSC Treasurer's Report

## Secretary Report:

### Membership Roll Call:

#### 2021

Voting: 185, Associate: 85, Sustaining: 16, Student: 8, Retired: 6, Life: ? - Total: 300

#### 2022

Voting: 257, Associate: 165, Sustaining: 22, Student: 38, Retired: 7, Life: 11, Complimentary: 4 - Total: 504

### Happenings

- RMSS 2023 Conference is approaching and is open to registration. <https://rockymountainsummit.net/>
- 2023 PLSC Refresher Course begins on January 4<sup>th</sup> held at Harris Kocher Smith, 1120 Lincoln St., Denver, CO 80203, please register at [https://www.plsc.net/2023\\_plsc\\_refresher\\_course.php](https://www.plsc.net/2023_plsc_refresher_course.php)

## Treasurer's Report:

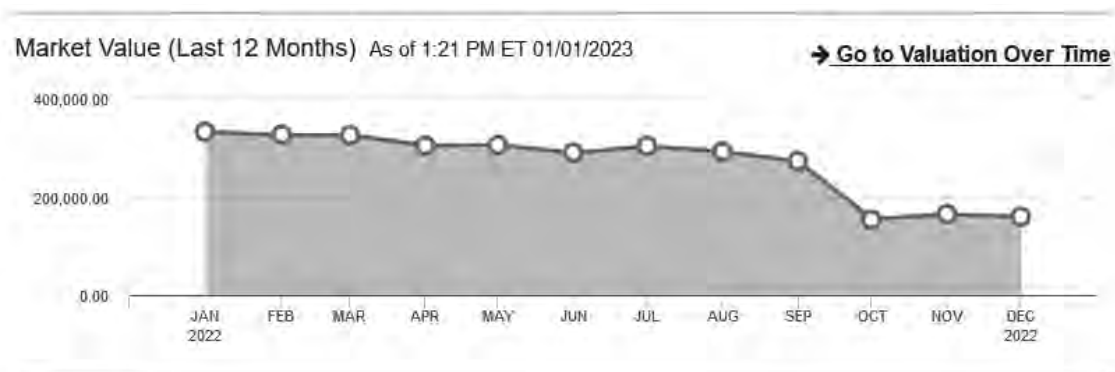
- The board is scheduled to meet with our new KeyBank account representative to review the investment account and discuss the current market outlook.
- The PLSC voted to create an endowment with the NSPS Foundation for the Professional Land Surveyors of Colorado Educational Fund. In doing so the PLSC has donated \$91,181 from the PLSC Investment Account to the Foundation to establish the Fund. The original amount comes from the donation and sale of the Stollard House.

## Current assets:

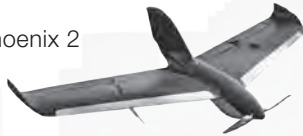
Checking:	\$10,412
Savings:	\$62,853
Investment Account (Education Fund):	\$158,944
	\$232,209

## Past Quarter in Review:

- WCCC - Western Colorado Community College [www.coloradomesa.edu](http://www.coloradomesa.edu) as listed in Colorado Mesa University Annual Report 2021-2022 the Final PLSC endowment payment has been made.
- Lobbyists Paid for 1<sup>st</sup> quarter 2023 at "Active" Level fee \$3,750
- Investment Account 2022 Snapshot:



Phoenix 2



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Indago Mapper



Omni



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# Young Surveyor Profile – Adam Kelly

By Heather Lassner

As a young man, Adam Kelly was restless. He describes himself as fidgety. He loved to learn but struggled to sit all day in a classroom. At the age of six, his family moved from Quincy, Illinois to Colorado where they settled in Westminster. Both of Adam's parents grew up on farms, and even though his father already had an Agricultural Business degree and he attended aircraft mechanics school in St. Louis but moved his family so he could attend CU Boulder's School of Engineering believing that was a better path forward. Adam's father never ended up attending because he established himself at a delivery company that paid well and did not feel the need to attend further schooling.

Coming from a family foundation of hard work, Adam attended Pomona High School and bustled through activities. With his mother at the helm, he was constantly moving and learning with the motto being, "We can do it all." Adam was unendingly encouraged to try new things and he appreciated being able to work with his hands. During high school, he began doing woodworking and built his own shop in the family garage. Setting up a way to sell his wares at craft fairs with the help of his dad, Adam learned the importance of running a business and saving money since it served as his primary source of income throughout his school years. He was heavily into sports, including football and track, but also had the opportunity to take hand drafting classes through his school. It mostly consisted of floor plans and toasters, but as he progressed from manual drafting into CAD classes, he was able to earn some college credits.

At seventeen, Adam took a class that set him on his career path. Under the tutelage of Mr. Smiley, Adam joined an Advanced Placement Field Geology course. A large part of the class was mapping. In this class, he and his classmates drove up to Vail and were tasked with creating a topo map of a parcel using a Brunton Compass with an inclinometer and pacing distances in a grid formation. Checking their work with some first-generation Garmin handhelds, they followed the contours of the land and took measurements to plot on graph paper. It was a long day in the field, followed by many hours at home doing trigonometry to calculate distances and elevations to hand draw contours. To Adam, this was an amazing experience and he "geeked out" at the thought that he had created his own topographical map.



Once high school was over, Adam still was unsure of his future career path and thus wandered a bit. He attempted to pursue Architecture and headed out of state for college. It didn't take long, however, to realize Architecture was not for him since the College or Architecture lacked the technical emphasis he craved. After a week, he switched his focus to Civil Engineering. The focus on theory and lack of kinesthetic stimuli dragged on from day to day. After a year in the program, Adam felt it wasn't for him and he returned to Colorado.

His first step into the world of surveying came not long after. He pursued an entry level engineering position up in Estes Park with Van Horn Engineering and Surveying because he still believed engineering held some positive prospects. Lonnie Sheldon PE & PLS, who had a passion for teaching, was the sort of business owner who loved to bring in green-horns and teach the ins and outs of surveying. On the first day, he stepped in assuming they were going to put him in front of a computer to work on drafting. Instead, he met up with a tall woman, Celine LeBeau, who put a rod in his hand and dragged him out to a snowy mountain hillside to search for property corners. Training with Lonnie and Celine was the first on-the-job field experience Adam had encountered. The week Adam started at Van Horn, Estes had one of the worst snowstorms in the city's history and he would spend the next two months traipsing through the snow looking for property pins. He was hooked.

Quickly, Adam came to realize that he enjoyed surveying and his fondness of geography and cartography lead him back to school at Front Range where he worked towards a GIS certificate. About three-quarters of the way through the program, Adam was hired by an oil field survey company, which consumed his time and he never returned to finish school. The first few years of his career, Adam grew professionally by taking on new and different tasks, but after some time had passed, things began to feel more routine, and he was no longer being challenged as he once had been. He decided to take a chance and branch out on his own.

Getting licensed is a big deal for any surveyor, but for Adam, starting his own business was his biggest professional accomplishment. Never had he felt like he needed to learn so much so quickly. In the first

year of business, Adam believes he learned more than he had in the previous ten years of his career. Everything was on him. He didn't have anyone to turn to for answers when clients had questions, so he consumed his free time researching and reading. He developed knowledge and confidence. It has helped him recognize he can answer questions that clients may have but differentiates what he knows he can handle and what is best referred to someone else. Much about becoming a professional is understanding what you know, what you don't know, and where to go for the answers. It's also important to always stretch your skillset at least a little bit.

One of his most memorable projects was working on the floodplain mapping of North Saint Vrain Creek in Apple Valley in 2018. Due to the catastrophic flooding of 2013, the riverbed required rehabilitation after the

## Young Surveyors



rising waters devastated the area. Once construction was completed, Adam was hired to perform an as-built survey to verify that the corrected river met the design intent. He executed a survey that was just over a mile long of river and roadway, consisting of 118 cross sections being each about 1000 feet in width. The final product combined boots on the ground and drone imagery to create an exceptional end product.

This culmination of past events and experiences has shaped Adam into the surveyor he is today. Adam can be found running Terrain Land Surveying out of his home office that reflects his enthusiasm for the outdoors, love of family, and joy of craftsmanship. A converted garage space, the atmosphere is both homey and professional, reflecting the pride Adam feels for his business and the integration of his personal and professional life. One of the many things he adores about what he does is the variety he faces on a day-to-day basis. He will tell you, there are so many things a surveyor can do from boundary to mapping to drones to GIS. With surveying, it feels like there is always somewhere new to go and Adam enjoys the opportunity to develop professional relationships with an assortment of customers and professionals in the industry. But the immense variety can also be one of the greatest challenges since the profession is constantly changing as new technology develops. He believes it can be difficult to have all the answers and to be successful, you must be able to be focused but also flexible. Any good surveyor must understand what is important and what is not and be capable of adjusting plans when you arrive at a site and discover your original method is not going to work based on the conditions you observe.

Like many of us, Adam is concerned about the amount of highly skilled people who are leaving the profession as countless survey professionals retire, but he looks forward to mentoring the next generation. He aims to encourage young people entering surveying to work with a mentor minded person who is passionate and eager to share their knowledge. If there is anything he wishes he had done differently, it is to have focused on career development instead of income. It is so easy to chase the income, but there is much more to surveying, he felt he had not acquired all the skills he might have and later wished he had. Similarly, Adam challenges everyone to work with a myriad of professionals to gain exposure to different approaches and understand a wider breadth of methods and solutions to survey problems. He believes the best development for novices engages them in the whole process from research, to client interactions, to field, to



CAD production and trusts that wholistic, well rounded experiences will result in better professionals.

In the not-too-distant future, Adam aspires to share his love of surveying with his four kids. One of the best perks of being a business owner is his ability to cater his work schedule to his family life. As his kids get older, he has made sure they accompany him on various site visits to discern for themselves what surveying is all about. He knows that being a surveyor is a great lifestyle and as he put it, "It's good to be tired at the end of the day and get scraped up a little bit going through the bushes. I love that it feels like a white-collar job where you are also digging through the mud." Until the day one or more of his children take over the family business, Adam will continue to run his Northern Colorado business with success and determination. He hopes to get up to the mountains more to track down section corners and expand his floodplain mapping opportunities. In his words, he loves the projects that let him get outside and the job feels like an adventure.

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# Tuesday, February 21, 2023 Schedule

## 8:00am - 11:15am

- *Title Grab Bag* - **J.E. Parker, Jr., Esq., HC Peck & Assoc. (PT)**

This session will provide an overview of title matters both “of record” and otherwise, facts, oddities and tips when examining title in Colorado, the Mavromatis case and other road/highway matters, and a recent case involving the centerline presumption.

- *Survey Plan Production - from Field to Electronic Deliverable (DWG) in Autodesk, Civil 3D* - **Ken Martinez, ECAD, Inc. (B/ST)**

In this class we will explore the tools of what Autodesk, Civil 3D offers the Land Surveyor and Survey Technician. If you have struggled with any part of the process of preparing plans, then this class is for you.

- Exploring the Civil 3D DWT Template for the Surveyor. Understanding Object, Label, and Table Styles. The Description Key Set. Having prepopulated Layouts with your company’s Title block information.
- BMP (Best Management Practices) when importing Survey points. Also managing Point Groups.
- Exploring the Survey Database - Generation of Auto Linework when importing points.
- Surface Creation (Topo) from Survey Points, and adding Survey Figures (lines) as Break lines to the Surface.
- Boundary creation/editing Tools and Annotation.
- Adding your information to a Paper Space Layout for final delivery to client. North Arrow, Bar Scales and Notes. What to keep in Model Space and what to keep in Paper Space.
- Printing your PS Layout to a PDF.

- *Horizontal/Vertical Curves* - **Dane Courville, CDOT (TT)**

Major features of survey mathematics are breaking down horizontal and vertical curves and solving for their different elements. These curves have embedded in them many different aspects of surveying fundamentals that are highly beneficial to learn and understand. This lesson outlines the procedures of solving for the various elements of these curves and displays the calculations in an organized and logical process.

## 1:15pm-4:30pm

- *Rules of the Road - The Beast Outside the Recorder's Office* - **James A. Beckwith, ESQ (PT)**

- *Survey Plan Production - from Field to Electronic Deliverable (DWG) in Autodesk, Civil 3D* - **Ken Martinez, ECAD, Inc. (B/ST)**

- *PLSS Breakdown & Single/Double Proportion* - **Dane Courville, PLS, CDOT (TT)**

The PLSS breakdown lesson goes through the history, rules, reasoning, and process of the breakdown and survey of public lands states. The process from start to finish is described; from base line/principal meridian, to quadrangles, to townships, to sections. Finally, the second part of the lesson is an in depth discussion on the procedures used to reestablish sectionalized lands through the mathematics of single and double proportioning.

Professional Track (PT)

Business/Software Track (B/ST)

Technical Track (TT)

# Wednesday, February 22, 2023

## 8:00am - 11:15am

- *To Accept or Not to Accept: That is the Question* - **Dennis Mouland, PLS, Witness Tree Consulting (PT)**  
At the very heart of why states decided to regulate, test, and license surveyors is one very key and complicated decision...“should I accept this monument or reject it?” As measuring technology has changed, we have seen many new “paradigms” introduced by professional surveyors to be answering this question. This course looks at several of these illogical paradigms and points us to the proper legal analysis required for this. And it might surprise you how broad that legal solution is.  
If you’re expecting a formula that will answer this question, you will be disappointed. The question is one of a legal sense, but we keep trying to answer it with math. This course will expand your view of this critical analysis which appears in every boundary survey you will ever do.
- *Bentley Open Roads Designer (ORD) Best Practices for Data Reduction-* **Bob Mecham and Chris McNulty, EnvisionCAD (B/ST)**  
The goal of this training is to work through the importing and editing of a raw CDOT TMOSS survey file to create a DGN and Terrain element deliverable using the current delivered CDOT workspace and standards for OpenRoads Designer CONNECT Edition.
- *Using OPUS & OPUS Projects* - **Brian Shaw, NGS (TT)**

## 1:15pm-4:30pm

- *To Accept or Not to Accept: That is the Question* - **Dennis Mouland, PLS, Witness Tree Consulting (PT)**
- *Bentley Open Roads Designer (ORD) Best Practices for ROW Geometry* - **Bob Mecham and Chris McNulty, EnvisionCAD (B/ST)**
- *NSRS Maintenance & Modernization Efforts* - **Brian Shaw, NGS (TT)**

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### Cost (listed as price by Feb. 17/After Feb. 17):

- **Member Full Conference - \$650/\$700**
- **Member One-Day Conference (cost per day) - \$300/\$350**
- **Nonmember Full Conference - \$750/\$800**
- **Nonmember One-Day Conference (cost per day) - \$400/\$450**
- **Student Full Conference - \$300**
- **Student One-Day Conference (cost per day) - \$250**

Professional Track (PT)  
Business/Software Track (B/ST)  
Technical Track (TT)



# Thursday, February 23, 2023

## 8:00am - 11:15am

- **AES Board Activities - Joyce Young, DORA and Kelly Miller, AES Board (PT)**  
This is a unique opportunity to learn all the activities that the AES Board manages, procedure information, and plans for future rule considerations. Joyce Young is the Program Director for the AES Board and will be presenting an overview of the AES Board activities. Board Member Kelly Miller, PLS, will highlight select statutes and rules, and follow up with an extensive Q&A with attendees.
- **R.F.P. - Request for Personality, Win People, Win Projects - John Burke, P.E., City of Westminster (B/ST)**  
People like working with people they like. And if you're not winning all the projects you are well qualified for, your inability to connect with your client may be limiting your potential. How much is this worth to you? Consulting is a very competitive business. You finally put together a team of well qualified project managers, surveyors, and technical support staff - now all you need is a bunch of paying clients to keep the business afloat and possibly even profitable! But where do you find them and how do they get to know you and trust you so that when the next RFP comes out, they craft it for your firm?
- **Pointman/Transparent Earth - Rob Martindale, PLS, CDOT (TT)**  
A deeper dive into PointMan's functionality that includes the following:
  - Correction Services (RTX, LiDAR, VRS, Base and Rover, Total station work)
  - Site Calibration
  - Data dictionary structure
  - Stakeout functions
  - What and how to collect for utility as-builts

## THE SUMMIT

## 1:15pm-4:30pm

- **Solve a Boundary Problem - A Hands-on Workshop - Roger Nelson, PLS, Bohannon Huston (PT)**  
Roger Nelson will be moderating this unique session. Attendees will review real boundary problems and work together to identify solutions.
- **The Inspired Leader - Ralph Pettit, City and County of Denver (B/ST)**  
What if our first waking breath each morning contemplated who we get to inspire and how? In this interactive course we will take an introspective look at our own mindsets, mantras, and methods, then examine tools, tips and tricks to become more inspired. We cannot inspire others until we are first inspired ourselves.
- **Use of Reality Models and Digital Twins in Transportation and Survey Projects - Mike Barkasi, Bentley Systems, Inc. (TT)**  
Reality Modeling and Digital Twins technology has been available to civil projects for over half a decade. The benefit of the Digital Twin, combining data with 3d components is obvious. For a photogrammetric Reality Model (RM), the value apart from visual impact is not as obvious and may be a limiting factor in their use in some organizations.  
This presentation will address the fore mentioned issue by presenting two use cases, survey, and inspection, both using reality models within transportation projects. It will address benefits (both in costs and safety) derived from the reality mesh and the technical challenges that needed to be overcome in capturing the data along with integrating the RM into various downstream workflows.  
See how existing and new technologies such as Artificial Intelligence (AI), machine learning (ML) and outlying technology such as Augmented Reality (AR) provide the information necessary to make both project use cases viable to improve costs and safety.

Professional Track (PT)

Business/Software Track (B/ST)

Technical Track (TT)

# Friday, February 24, 2023

## 8:00am - 11:15am

- **Ethics for the Professional Surveyor - Dennis Mouland, Witness Tree Consulting (PT)**  
Professional Surveyors and Engineers are constantly applying their math, analytics, scientific principles, and common sense (hopefully) to their tasks at hand. But embedded in each of these tasks, plus many more, are the ethical ramifications of their actions or inactions. It is surprising how often ethical issues come to the fore in our work. This course will help you examine your "moral compass" when it comes to your actual work, how you conduct business, how you treat people, and how you present yourself and the profession to the public and other design professionals.
- **Carlson Survey Fundamentals - Jim Reinbold, Carlson (B/ST)**
  - Introduction to Project Setup and Configuration
  - Overview of Common Carlson Commands
  - Beginning a Project
  - Launching Carlson Software
  - The Carlson/CAD Environment
  - Configuring Carlson Software
  - Project Settings
  - And so much more!
- **NSPS Certified Survey Technician (CST) Prep Course- Steve Parker, CDOT and Brian Dennis, Galloway and Assoc. (TT)**

## 1:15pm-4:30pm

- **Thinking Beyond Technology - Dennis Mouland, Witness Tree Consulting (PT)**  
One of the most often heard questions from PLS business owners is "Why are all my job applicants just button pushers? Can they think?" This course presents some of the negative impacts technology has had on society and on the survey profession in particular. It forces us to examine how we do things in the field and office versus how we should be doing things. And it ends with an encouragement that we in the profession will ultimately be the only people who can train our staffs in the ability to *think like a surveyor*.
- **Carlson Survey Fundamentals - Jim Reinbold, Carlson (B/ST)**
- **CST Prep Course- Steve Parker, CDOT and Brian Dennis, Galloway and Co. (TT)**

## Plus so much more!

- **CFedS Course** (only virtual presentation) Monday, February 27, 2023
  - The origins of the CFedS Program- Why are there CFedS? Are CFedS still needed?
  - The Current Program Status-Where have we been? Where are we now?
  - Future Direction- Where are we going?
  - Federal Authority Surveys- roles and responsibilities
  - State Authority Surveys- roles and responsibilities
  - Boundary Assurance Certificate (BAC)
  - Certificates of Inspection & Possession (CIP)
  - Chain of Surveys (COS)\Land Description Review (LDR)
  - Land Description Reviews

Professional Track (PT)

Business/Software Track (B/ST)

Technical Track (TT)

# *More than just education*



## THE SUMMIT

### EXHIBITS AND SPONSORS

The Rocky Mountain Surveyors Summit is not complete without the support of our vendors.

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Our sponsors are key supporters of PLSC and make the Summit one of the top land surveying events in the country.

For more information on the exhibitors and sponsors to date, or to become one of our supporting vendors, go to [www.rockymountainsummit.net](http://www.rockymountainsummit.net).

### ADDITIONAL OPPORTUNITIES

In addition to the Three Education Tracks (Professional, Technical and Business/Software), the Summit will also include:

A Kickoff Networking Event with Young Surveyors Network on Monday, February 20

Exhibitor Hall/Vendor Showcase

Longer Lunch Hours for more networking

Contests and Competitions

Updates on PLSC and the State of the Association

Go to [www.rockymountainsummit.net](http://www.rockymountainsummit.net)  
for complete information.

# The Large Crew

By Randy Bloom

My formative land surveying experiences occurred in the pre-GPS/GNSS era where it was common to have 3 to 4 land surveyors on a crew. Then, larger crews meant greater opportunity for sharing experiences and mentoring. My good fortune was to have as my first mentor and party chief, the quintessential prudent surveyor in every facet of practice, Roger Gleason, Washington PLS. The office and field tools were different then, but the lessons imparted by Roger - the everyday habits of careful observations, attention to standard field practices, records research, finding and evaluating evidence, and adhering to the proper application of the law – are timeless and directly applicable to the same situations encountered today. A full accounting of mentors who have been a positive influence are too numerous to list. Many of them, however, such as Doyle Abrahamson, Bill McComber, Gaby Neunzert, Alan Blair, John (JB) Guyton and Dr. Herbert Stoughton, were encountered via the Refresher Course. The course has served as a “large crew” for a generation of land surveyors. No less a stellar crew of instructors and mentors can be found in the 2023 Refresher Cadre, listed below.

## 2023 Colorado Land Surveying Refresher Course

The Professional Land Surveyors of Colorado, Inc. and the Central Colorado Professional Surveyors are offering a comprehensive Land Surveying Refresher Course, 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), and Colorado State Specific (CO) examinations. Each 3-hour class takes place on Wednesday evenings starting promptly at 6:00 P.M. Information and registration is available on the PLSC website: <http://www.plsc.net/>

Session	Date	Focus	Topic
1	Jan. 4	FS	Exam Skills and Testing Basics - Scott Thompson Buchanan
2	Jan. 11	FS	Survey Computations I - Lynn Patten
3	Jan. 18	FS	Survey Computations II - Tom Sylvester
4	Jan. 25	FS	GIS, State Plane, Geodesy - Dr. Jan Van Sickle
5	Feb. 1	FS	Boundary Law/Legal Terms - Dr. Jan Van Sickle and Hayley Young
6	Feb. 8	PS	Public Land Survey System - Sean Mullen
7	Feb. 15	PS/CO	Colorado Survey Law I - Roger Nelson and Rebecca Bruno
	Feb. 21-24		Rocky Mountain Surveyors Summit (no classes)
8	Mar. 1	PS/CO	Colorado Survey Law II - Roger Nelson and Rebecca Bruno
9	Mar. 8	FS/PS	Ethics/PS&FS Topics - Warren Ward
10	Mar. 15	FS/PS	Mock PS and FS Examinations - Lynn Patten

The fee for the entire course is \$425 or \$75 per individual class. In-person classes will be held at Harris Kocher Smith, 1120 Lincoln St., Denver, CO 80203. Online classes will be broadcast each night, and recordings will be available 1-2 weeks after each class. Contact Becky Roland, Executive Director, PLSC, 303-551-3266, [broland@plsc.net](mailto:broland@plsc.net) with questions. Visit the NCEES site at <http://ncees.org/exams/> to learn more about the FS and PS examinations.

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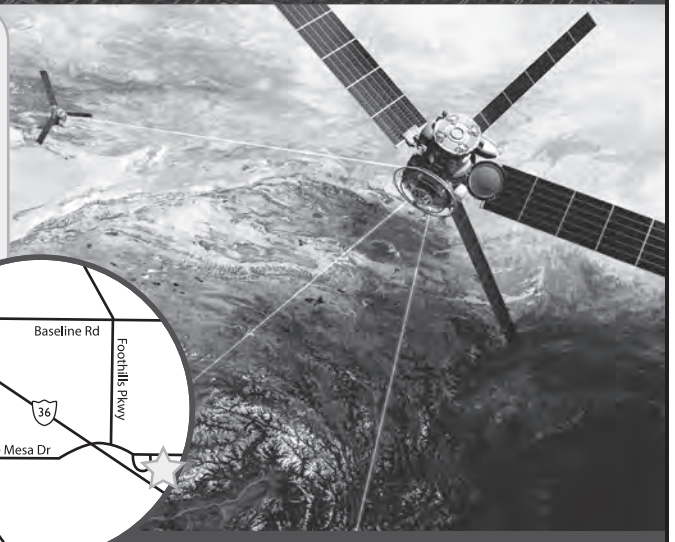
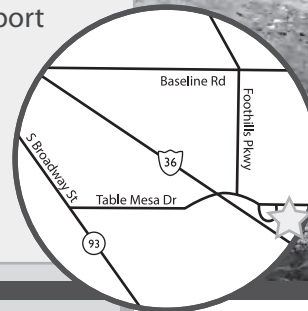
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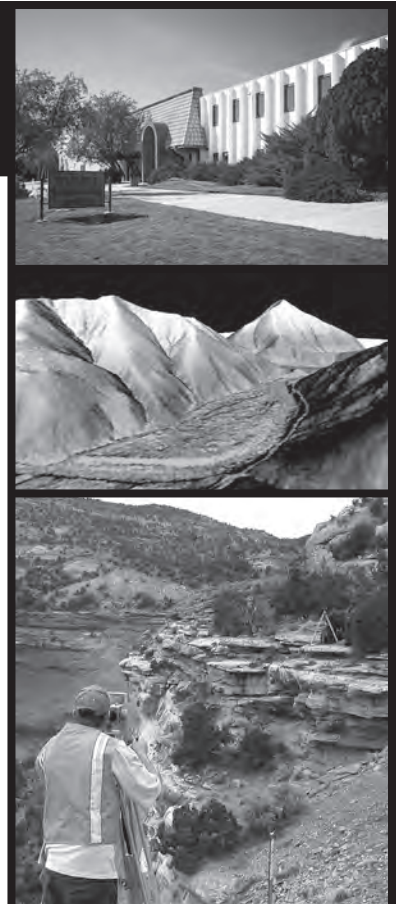
- **Associates in Applied Science Degree in Land Surveying and Geomatics** for those without prior college coursework. This program is designed to be completed within two years.
- **Post-baccalaureate Technical Certificate** for those with a minimum of a Bachelor of Science or Bachelor of Arts degree who need the required surveying curriculum to meet the education requirements to sit for the PLS exams. The Technical Certificate program is designed to be completed in one year.



Learn more at [coloradomesa.edu/wccc/programs/land-surveying-geomatics](http://coloradomesa.edu/wccc/programs/land-surveying-geomatics)



Contact WCCC Students Services at 970.255.2600 for admissions, registration and financial aid information.



# Highlights from the Western States

The Western Federation of Professional Surveyors (WFPS) held a Board of Directors meeting on October 8, 2022 at the offices of Merrick & Company in Greenwood Village, CO/

**ALASKA (ASPLS) Gary Gervelis** – ASPLS reported an increase in membership. Plans are underway for a joint conference with HLSA in Hawaii in 2023. More information about APLS can be found on their website [AlaskaPLS.org](http://AlaskaPLS.org)

**ARIZONA (APLS) Mike Fondren** – Current membership is 346, an increase from the last quarter. The Governor has appointed a new Land Surveyor member of the Board of Technical Registration (BTR). APLS will hold a fall seminar in Tucson at the University of Arizona on October 14<sup>th</sup>. Featured speakers will be Michael Dennis, Lynda Bell, and Brian Fisher. The 2023 Conference will be held virtually on April 20-22 and APLS will rejoin Nevada in 2024 in Las Vegas. APLS is pleased to announce the formation of the Arizona Young Surveyors Network. The AZ-YSN has been actively participating in outreach events including job fairs, career technical education events, and more. More information about APLS can be found on their website [AzPLS.org](http://AzPLS.org)

**CALIFORNIA (CLSA) Ray Mathe & Kevin Nehring** – The California Board of Registration has cited and fined a company for unlicensed practice. The company has filed a lawsuit against the Board of Registration for violating constitutional rights. CLSA is continuing to work on monument preservation program. More information about CLSA can be found on their website [CaliforniaSurveyors.org](http://CaliforniaSurveyors.org)

**COLORADO (PLSC) Todd Beers** – Current membership is 408. PLSC continues to actively participate in Quality Based Selection (QBS) meetings. PLSC will host a Capitol Hill Day at the Colorado state capital during National Surveyors Week. PLSC legislative committee continues to work with land title and real estate associations to define the difference between a boundary survey and an improvement location certificate. Colorado Mesa University/Colorado Community College continues to increase enrollment and currently has 92 students. PLSC is working with the NSPS Foundation to establish a scholarship fund. More information about PLSC can be found on their website [PLSC.net](http://PLSC.net)

**HAWAII (HLSA) Joanne Williamson** – HLSA is planning a joint conference with ASPLS in Hawaii in 2023. The conference will be offered hybrid with both in-person and virtual options. More information about HLSA can be found on their website [HLSA.hawaii.org](http://HLSA.hawaii.org)

**MONTANA (MARLS) Russ Kluesner and Dick Smith** – Current membership 426, an increase from last quarter. MARLS 2023 Conference will be held February 15-17 in Great Falls, Montana. MARLS is actively exploring new outreach opportunities both with potential workforce and fostering relationships with clerks and recorders. MARLS noticed an increase in the number of CST participation in 2022. Flathead Valley Community College is currently looking for professor to head the surveying program. MARLS continues to work on updating their standards of practice and has recently published the 3<sup>rd</sup> edition of the Montana Subdivision and Surveying Laws Digest. More information can be found on their website [MARLS.com](http://MARLS.com)

**NEVADA (NALS) Trent Keenan & Greg Phillips** – Current membership is 294. An increase from last quarter. The NV Young Surveyors hosted a campout in the Sierra Nevada Mountains which was well attended. Great Basin College continues to see good enrollment numbers and the College of Southern Nevada (CSN) has received initial authorization for a new land surveying 4 year degree program. NALS continues to publish, print, and mail four issues a year of the Nevada Traverse. The last issue of the Traverse was the Living Legend issue and paid tribute to Dorothy Calegari. NALS will host a fall seminar and golf tournament October 21-22 in Mesquite. NALS continues to focus on outreach and has participated in multiple job fairs, STEM fairs, and career technical education (CTE) events this year. More information about NALS can be found on their website [NvLandSurveyors.org](http://NvLandSurveyors.org)

**NEW MEXICO (NMPS) Allen Grace & Roxanne Nimmer** – NMPS will be holding their conference in the fall for the first time. The conference will be held October 21-22 at the Isleta Resort and Casino. More information about NMPS can be found on their website [NMPS.org](http://NMPS.org)

**UTAH (UCLS) Mike Nadeau** – Current membership is 335. UCLS 2023 Conference is being planned for St. George, February 8-10. Based on the last roundtable discussion at the WFPS meeting, UCLS is currently exploring the potential of introducing legislation for Right of Entry for Surveyors. The Board is reviewing proposals from several lobbyists. UCLS Standards and Ethics Committee has completed a draft of the condominium guide. The guide has been sent to the UCLS Board for review and adoption. Salt Lake Community College has decided to close the surveying program or a two-year phase out period. More information about UCLS can be found on their website [UCLS.org](http://UCLS.org)

**WASHINGTON (LSAW) Ben Petersen and Amanda Askren** – Current membership is 770, an increase over last quarter. A fall seminar will be held November 4-5 at Renton Technical College and will feature a track

for Survey Technicians as well as a CFedS workshop. The 2023 Conference is scheduled for February 15-17 in Spokane, Washington. LSAW is actively seeking a sponsor for monument preservation fund legislation. The LSAW Board of Directors donated \$1000 in memory of Jim Coan to NSPS to support the NSPS PAC Golf Tournament. LSAW is working with Kris Kline to update the Washington Common Law publication that was originally published in 2009. More information about LSAW can be found on their website LSAW.org

**WYOMING (PLSW) John Lee** – Current membership is 124. PLSW will hold a fall forum in November featuring Dennis Moulard. PLSW will award \$4500 in scholarships this year. Information about PLSW can be found on their website PLSW.org

### **WFPS FUNDAMENTAL OF SURVEYING (FS) EXAM STUDY COURSE**

WFPS online Fundamentals of Surveying (FS) Study Course includes approximately 16 hours of videos and a manual. The program not only helps to bring affordable study resources to future Surveyors but also generates revenue for our state association members. To date, WFPS shared over \$3000 in profits with our state

association members. Information on the program can be found at WFPS.org

### **STEVE PARRISH PRESENTATIONS**

WFPS has signed a Memorandum of Understanding with Steve Parrish and is currently working to record several of his presentations which will be offered for online education. Similar to the FS Exam Study Course, this program will be used not only to offer education for the profession but will also be a profit sharing with our member associations. We anticipate launching the program the first quarter of 2023.

### **WESTFED EDITOR'S FORUM**

WFPS continues to host an Editors Forum to share information and exchange ideas for building better magazines. For information, please email the WFPS Executive Office at [admin@wfps.org](mailto:admin@wfps.org)

Respectfully submitted,  
Todd Beers, PLS  
Western Federation of Professional Surveyors  
Colorado Director

# DOD (Department of Defense) Skill Bridge Intern Opportunity

Every day we hear one of our clients or fellow surveyors bemoaning the tight labor market, workers unprepared to work hard, or in harsh conditions. The DOD is looking for partners who appreciate talented skilled workers who understand how to get a job done. Period.

The DOD is offering Skill Bridge, a program that benefits employers by providing interns at no cost to the business as well as providing civilian experience to military personnel transitioning out of service. The DOD may provide base housing and will pay their salary and benefits to separating service members for up to the last 90-180 days of their Active Duty contract to work in your business and learn your specific brand of skills. The goal is for these internships to lead to job offers, if not with your firm, with one of your peers.

As an employer, there is an application and training program to go through and an MOU (Memorandum of Understanding) to sign with the DOD. The service member applies for your posted position, and much like a standard hire, you get to review their qualifications and

make an offer to a specific service member.

There are some hoops to jump through but the benefits to our industry as well as to the service member transitioning to a civilian career certainly seem to be worth the effort. Please see DOD Skill Bridge at <https://skill-bridge.osd.mil/program-overview.htm> for more specific information.

Lamp Rynearson has started the training process and expect to have several interns participating in our three offices. I will post a review next fall to let you know how our experience went. If you follow up on this opportunity, please leave me a message at 970-267-3809, or send a short write up at [Laine.Landau@LampRynearson.com](mailto:Laine.Landau@LampRynearson.com) so we can learn from one another what works well and how to make this partnership a success for our industry.

Sincerely,  
Laine Landau



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In Reply Refer To:  
CO-956  
9650

December 22, 2022

Steven Parker and Laine Landau, Side Shots Co-Editors  
PO Box 441069  
Aurora, Colorado 80044

Dear Mr. Parker and Ms. Landau:

This letter informs you of official BLM cadastral surveys in Colorado that have been accepted from September 27, 2022, through November 4, 2022, 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.

<u>Township</u>	<u>Range</u>	<u>Meridian</u>	<u>Group No.</u>	<u>Type</u>	<u>Approved</u>	<u>Plats</u>
T. 27 S.	R. 70 W.	Sixth	1741	Plat & Notes	09/27/22	1
T. 10 S.	R.103W.	Sixth	1737	Plat & Notes	10/14/22	1
T. 13 S.	R. 86 W.	Sixth	1768	Suppl. Plat	11/04/22	1
T. 14 S.	R. 86 W.	Sixth	1768	Suppl. Plat	11/04/22	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,

**TASHA HUHTA** Digitally signed by TASHA HUHTA  
Date: 2022.12.22 11:06:38 -09'00'  
Tasha Huhta  
Acting Chief Cadastral Surveyor for Colorado

# Training the Marines

By Tony Fendick and Laine Landau

Most of us know Tony Fendick as a surveyor, but he is also (and always) a Marine. When Tony entered the Marines in 2003, he enlisted to “shoot the big guns.” He was assigned to an artillery unit and received training for his Military Occupational Specialty (MOS), Fire Direction Control (FDC), in Fort Sill, Oklahoma. He excelled in his FDC training and after four months he and one other person from his unit were sent to Camp Lejeune, North Carolina for some additional training. His new Master Gunnery Sergeant asked, “Who graduated from FDC school higher?” Since Tony had, the Master Gunnery Sergeant proclaimed, “Then you are our surveyor.” Tony was crushed. Here he’d expended great effort learning a new skill and now he wasn’t going to get to use it! He thought he was going to be asking questions and checking on the welfare of the Marines on the base. Fortunately, he found out that being a surveyor in the Marines really meant learning to use equipment, equations, and computations to set control, howitzer locations, and to, yes “shoot the big guns,” or at least to give them a baseline from which to shoot.

After 6 months he was sent back to a special survey school for a month and received an additional month of CAX (Combined Arms Exercise) training at Fort Bragg, North Carolina where he learned how to survey at night including learning how to navigate using star shots. Even after all this training, his real training was “on the job.”

In 2005 Tony received a Navy and Marine Corps Achievement Medal (NAM) award for superior performance in combat in Operation Iraqi Freedom, and for his “superb work ethic and knowledge of survey” as part of a special joint survey team, Operation Magellan, which set control points over northern Iraq to allow coordinated fire control and radar operations.

After an early promotion to Sergeant, Tony trained with artillery units in four different countries. He enjoyed the

training and felt like he was answering the question he asked of his 10<sup>th</sup> grade trigonometry teacher; “When am I ever going to use this stuff?”. Her answer was “I don’t know, but you have to learn it.” His answer now? Every. Single. Day.

As a civilian surveyor Tony felt he needed a new challenge and went to work at Trimble in Westminster, Colorado. Trimble equipment is used in all branches of the military and, as with civilian purchases, Trimble provides some limited training support as part of the purchase. The military also uses a sub-contractor, “Mad Jack,” to train military surveyors. Trimble asked if Tony would like to participate with Mad Jack as an instructor for a two-week course back at Camp Lejeune in April of 2021. Tony jumped at the chance and found he truly enjoyed sharing his expanded survey knowledge with the young engineers assigned to the training session. “Young” in this case is literal, as most participants were around 18-years old.

The training included the basic “how-to” expected for the operation of new equipment but consisted of teaching the engineers how to survey including field procedures and best practices. They all got to take their survey data from the field back to the office and learned to process it through TBC (Trimble® Business Center). The progression from amateur to confident surveyor was heartening to see. The comradery of the group was nostalgic, and Tony felt that the Mad Jack program of taking the students through a project from beginning to end, including trouble shooting radio and blue-tooth connectivity issues, obtaining tech support, all the way through network adjustments and traverse closures was



Tony in Iraq as part of Operation Magellan (far left)



Tony at Camp Lejeune training Marine Engineers (8<sup>th</sup> Engineer Support Battalion Pioneer Platoon) with Mad Jack (back row, second from left) group photo in front of banner

the right focus for their time and will help this group understand the fundamentals of land surveying.

The SX10 was new technology to the Mad Jack team, so Tony got to show them basic scanning as well as autonomous scans and everyone was impressed with the utility of the equipment that also serves as a fine total station. The group created surfaces from their scans and even got to practice road and pad building and design in TBC. The cherry on the top was that they got to upload their designs into machines and see their designs constructed. Now that is some great hands-on learning!

Mad Jack is owned and operated by Robert Faircloth, a Marine veteran, and Engineer. He was assisted by Reinherd Heinz, a retired Marine Artillery Surveyor. Mad Jack trains surveyors in all branches of the military, customizing their program to the needs of the group being trained. Tony discovered personal connections with the staff and felt at home with them and the 15 engineers they were training. In a classic small-world twist, Tony's Chief Warrant Officer, Bill Dagenhart, 10<sup>th</sup> Marines, is good friends with Reinherd Heinz.

In the Facebook post that inspired this article, Tony was immensely proud to have come full circle to train other Marines right back where he started out. Here I hope at least one of them is as inspired as Tony was and starts their own path towards a rewarding career in civil



*Four Engineers around the SX10. Looks like a recruiting photo for surveying AND the Marines!*

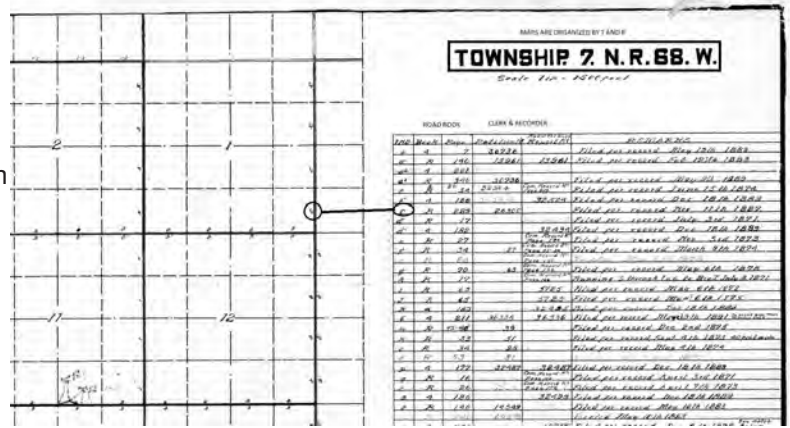
engineering or land surveying. While Tony has had many interesting experiences as a surveyor, he said “Being back at Camp Lejeune, North Carolina where I began my surveying career and having the opportunity to train these young Marines was the most rewarding experience. This has been the highlight of my surveying journey.”

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# Larimer County ROW Research – Part I

By Michael Stratton

For many years, the Larimer County Road books were housed in the waiting area at the Clerk and Recorder's Office. They were stacked on metal shelves that were ignored by all but a small portion of the office's patrons. The land surveyors knew that those moldy old leather books were research treasures. The books were removed from the outer office and moved to safety in the vault where one needed an appointment to visit them as County personnel was required to chaperone. Fortunately, most of the road books have now been scanned and are accessible remotely. The road books are index maps organized by township and range, and each road is lettered on the map. An index on the side of the map indicates the recording information for the road viewers report, or Clerk and Recorder's deed reference. These books are a great resource for old County Road right of way research. Research methods for more modern roads will be addressed in a future article.



Example of Road Book image showing road labels and index for recording information.

## Instruction on How-To-Do-Research

1. Login to the Larimer County Record Portal: <https://records.larimer.org/LandmarkWeb/>
2. Navigate to the **NAME** search type on the left.
3. Have the Party Type set to BOTH and the Name set to CONTAINS or STARTS WITH.
4. Type the phrase "ROAD BOOK" (no quotes) in the Name field and press Submit. The list of all the Road Books will come up.
5. In the columns in the search results, the **GRANTEE** column references the Township/Range of the Road Book. Type the specific Township/Range you need to find in the search field above the **GRANTEE** column. (i.e., TWP5-RG68, or 5, or 68)
6. The Road Book will come up and you can download it. This map includes an index that shows where the Petition and Road Viewer Report can be found in the Clerk & Recorder's records.
7. Find the road you need and the associated letter/number in the columns in the table on the right of the Road Book. These columns give the Book/Page of the Petition and Road Viewer Report.
8. For most of the Book/Page references, go to the **BOOK/PAGE** search type and key in the info you need, and you will find the document.
9. If you find that the books referenced in the Road Book are not available in the LandmarkWeb search, call the Larimer County Records, (970) 498-7860, to ask them for the archived image of the Road Book. The earliest books are still being scanned and may not be available in the public search engine. For example, Book R is in the archived images. Have the Book/Page ready and they will assist you.

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## CCPS – PLSC

In 2023 the Central Chapter will have our annual golf tournament and hopefully a shooting event. We had some great turnouts at the general meetings last year and look forward to continuing to have those great collaborations this year. The Central Chapter is always looking for new ideas on how we can help serve the survey community. Please send us any ideas you might have and continue to get involved!

Thanks,  
Derek Brown  
President  
Central Chapter PLSC

## NORTHERN CHAPTER

Hello PLSC, I hope you are all well.

Our first meeting following the summer hiatus was held in September. The presentation centered around tree identification. The Northern Chapter's own Celine LeBeau provided the presentation at City Park in Fort Collins, CO. The presentation was informative and provided a nice change of pace as we were able to meet outdoors on a fantastic evening.

The meeting in October centered around Chapter business including upcoming elections, changes to the budget, our Holiday gathering, and discussion about a membership drive and upcoming speaker ideas.

In November, we had a well-attended video presentation by Gary Kent titled "Easements and Rights of Way-Defining Interests". Although this was non-traditional in the sense that the speaker was not live and in-person, it was very informative and created some good discussions during and following the presentation.

We had two great events in December. On December 7<sup>th</sup>, we were fortunate to host a presentation by John Hunter on upcoming Colorado State Plane updates. This is a popular and highly anticipated subject. We appreciate that John was able to take time out of his busy schedule to provide his insight and knowledge about the upcoming changes. On December 21<sup>st</sup>, we hosted our annual Holiday Party at the Budweiser Events Center in Loveland, CO and witnessed the Colorado Eagles defeat the Bakersfield Condors 4 to 3. We appreciate all that braved the cold and snow to share the evening with us.

We are looking forward to a prosperous and eventful 2023. Stay safe and we will see you all again soon.

Respectfully submitted,  
Dave Berglund, PLS  
President  
PLSC Northern Chapter

## NW1/4 PLSC

All professions have traditions, a certain culture and even what some may call quirks. Surveying is no different and the NW1/4 even has some regional traditions. One particularly peculiar one is the honor of setting the last corner of the calendar year. Fellow surveyors at times have gone to great lengths to achieve this annual title such as "stashing" corners in particularly easy locations then going out on December 31<sup>st</sup> to set that last corner. Sometimes this has come back to haunt a particular surveyor when the plunging temperatures and increasing snowpack have made what appeared to be easy suddenly very difficult. Worse still, if the particular "stashed" area is completely clear of the insulating value of snow, the frost entering the ground can already be two feet deep and the surveyor is using a weed burner to warm the ground so that the rebar can be pounded in.

Another related tradition in the NW1/4 is the dubious honor of setting or finding the corner under the biggest pile of snow. This is not an honor any of us seek, but it happens to those of us who typically contract for a survey that runs along a Right of Way or near a parking lot. By late February or early March, these piles of snow of plowed snow can be eight to ten feet deep and hardened by all the changes in temperature. All of us have fallen into that trap of, "I saw it right there", but of course "right there" was in September when it was 70 degrees and the ground was devoid of snow. This tradition is so hard boiled in this part of the State that our most recently licensed fellow surveyor took on a 4200 acre survey on land that reaches nearly 9,000 feet. He hasn't even been told about this tradition yet. It's like he knew it through Osmosis. I think I'll go break the news to him today, ask him when he's whipping out the snowmobiles and then offer to help him in this great endeavor. Because Traditions are timeless, even if at times they appear foolish.

Respectfully submitted,  
Brian T. Kelly, President, NW1/4

# CHAPTER NEWS

## SCPLS

Southern Chapter had a great Christmas Party at Miramont Castle in December. January will be the annual meeting. We are taking February off for the Summit, and we have a guest speaker scheduled for March. Check the chapter website SCPLS.NET for all updates, resources and the calendar, or call 719-641-3355.

Steve Parker, President  
PLSC Southern Chapter

## SWC – PLSC

The SWC held an in-person/virtual meeting on December 20th at the La Plata County Fairgrounds.

We had a presentation from Dr. Don May, PE (Fort Lewis College) and

Brian Campbell, PE (CDOT) on the Fort Lewis Village Aid Project.

The Fort Lewis Village Aid Project is a “home grown” student volunteer initiative that focuses on providing running water systems to rural areas in countries such as Nicaragua and Thailand. Survey data is collected at sites, then the systems are engineered by faculty and students. They travel abroad and work with the rural Communities to construct the improvements. The SWC voted to donate \$1,000 to the Project. More information about the Project can be found at the following web address:

<https://www.fortlewis.edu/about-flc/initiatives-partnerships/village-aid-project/village-aid-home>.

After the presentation we proceeded to Chapter announcements which included:

- Treasurer’s Report: Account balance is \$10,165.34.
- The six hour field-training class with Wilderness Medic, LLC will be postponed until the Spring of 2023. An exact date has not been set yet, but more information will be available at the SWC March meeting.
- The “Surveyor Rendezvous” dinner party has been postponed until the Summer 2023. More to follow on this event.

- Registration is now open for the 2023 Rocky Mountain Survey Summit. More information can be found on the event website at <https://rockymountainsummit.net/>.
- Members of the CDOT Region 5 Survey Unit were on-hand to provide scanned archive highway plans/documents to in-person attendees.

Our next meeting is scheduled for March 21st at the La Plata County Fairgrounds.

Everyone have a great Holiday season!

Todd C. Johnston, PLS  
President - SW Chapter PLSC

## WCLS

This edition we do not have much to report. We are holding elections for our Chapter Board of Directors. I want to thank those who put their names in, you are greatly appreciated! I hope that everyone’s holidays went well, and wish everyone a great year ahead.

Best,  
Brian K. Bowker, P.L.S.  
WCLS President

## CALL FOR CONTRIBUTIONS

*Side Shots* is the official magazine of PLSC. If you have an article, information or nomination of a “Young Surveyor” a surveyor who has been in the profession for less than 10 years and has chosen a surveying career to highlight, send your information or recommendation to [sideshots@plsc.net](mailto:sideshots@plsc.net).



# Thoughts on Professional Practice and Education

## Article 2: FS Exam as a Student Graduation Requirement

by Knud E. Hermansen  
P.L.S., P.E., Ph.D., Esq.

This is the second article focusing on professional practice and education. While I suspect there is support for the thoughts I am going to reveal among the profession, many academic administrators and faculty will disagree with what I am about to say. Agreement of all is never possible. Even the best of advice is often dismissed. (Not that my advice is always the best.) There is an old Jewish saying “If God lived on earth, people would break His windows.”

By way of introduction and upon which my thoughts will be measured, I introduce myself briefly. I taught surveying for more than 30 years and still do contract teaching for surveying and engineering programs. I was a surveyor and engineer for over twenty years in the military before retiring. I have been licensed in several states as a surveyor, engineer, and attorney - almost fifty years as a surveyor. I still have an active license for each profession in at least one state.

The focus for this article will be to advocate requiring the fundamentals of surveying exam in order for a student to graduate from a surveying or geomatics program. Note and I emphasize that I am not advocating the student pass the exam in order to graduate, merely be required to take the exam.

I suspect those reading this article are familiar with the three exams required for licensure. Briefly, the first exam is the fundamentals of surveying (FS) exam. The second exam is the professional surveyor's (PS) exam. The third exam is the state specific exam. The FS exam tests the examinee on topics that a quality surveying program should cover in its curriculum. Most states, if not all states, allow senior college students to take the FS exam. Therefore, there is no barrier to prevent a surveying program from requiring students take the exam as a pre-requisite for graduation.

I provide three arguments for a surveying program to require students take the FS exam.

First, I believe a primary purpose for any surveying program is to provide graduates to feed the needs of employers and the profession. Whether the graduate seeks employment in the private or public sector, licensing is generally required to achieve more pay and higher positions. Licensing is required to own or manage surveying firms offering services to the public. What better way to begin the transition from academics to a professional stature than require the first professional exam while still

involved in academic learning.

Second, the breadth and depth of surveying knowledge will never be more retentive than at or near graduation. After graduation, the graduate tends to increase their depth of knowledge in limited topic areas of surveying while forgetting knowledge in other topic areas. By way of example, the new employee that spends the next four years after graduation doing drone mapping is likely to have forgotten a great deal of knowledge they once possessed on boundary law, measurement adjustment, and so on. Therefore, the best chance for passing the FS exam that tests on a broad range of surveying topics is immediately prior to or shortly after graduation.

I have heard students claim they will be better able to study for the FS exam later after they are employed and without the academic burdens of course attendance, homework, and course exams. I caution otherwise. My experience shows that the new graduate is often immersed in long hours at work and is soon distracted with marriage, home ownership, child raising, and family commitments. All too often the graduate who has not taken and passed the FS exam while in college, fails to pass the exam later or cannot commit the time to prepare and take the FS exam later.

For a third reason, I believe a graduate that has passed the FS exam, and placed this achievement on their resume at graduation, has many more opportunities for employment and advancement upon graduation than a graduate who has not taken the FS exam. An employer will seek out graduates and pay a higher wage to those that have already passed the FS exam. These students have proven a mastery of topics deemed necessary for professional practice and advancement.

While other compelling arguments can be made, I believe these three arguments are sufficient for those reading this article to understand the basis for my opinion. So why don't all survey programs incorporate the requirement that students take the FS exam as a pre-requisite for graduation?

I will give two reasons that seem to be prevalent reasons told to me. The first reason is that some programs rely on large number of foreign nationals to increase enrollment numbers and finance university coffers that rely on tuition money. Foreign nationals have no interest or need to pass any professional exam that is not recognized or necessary in their counties of residence. Such is their

disdain for this requirement that when forced to take the exam, they select answers without contemplation. These programs fear the foreign student will switch their studies to another program that does not require the FS exam for graduation.

The second reason, perhaps partnering with the first reason, is that program administrators do not want the FS scores to be used to judge the extent of their graduate's knowledge and ultimately the quality of the surveying program. It is no secret among the profession that many surveying programs are on tenuous grounds due to low enrollment or faculty deficiencies. Often students that should not be in college, let alone a surveying program, are admitted and moved along much as many public schools move students along to graduation. Perhaps this happenstance is the eventual outcome of

a society that gives a trophy to all participants, not just the winners. I will say no more as rational arguments sometimes get lost or ambushed when placed in this arena.

Having given my opinion, I now offer advice. My advice is for professional societies to press their local surveying programs to initiate this requirement if the requirement is not already a mandate. If the program seeks the support of the profession than the profession should seek the commitment of the program toward the profession by demanding students take the FS exam.

† Other books and articles by Knud can be found at <https://umaine.edu/svt/faculty/hermansen-articles/>

# Counterpoint to Dr. Knud E. Hermansen's Article on FS Exam as a Student Graduation Requirement and an Update on the Land Surveying and Geomatics Programs at WCCC

By Thomas W. Sylvester, PE and PLS

Becky Roland, Executive Director of the PLSC, and Laine Landau, PLS, Co-Editor of Side Shots, were kind enough to provide me a copy of the excellent article by Dr. Knud E. Hermansen entitled "FS Exam as a Student Graduation Requirement," appearing in this issue of Side Shots. They both invited me to write an article in response to Dr. Hermansen's article as a counterpoint.

Dr. Hermansen's article is well thought out and presents some excellent points regarding the timing of the Fundamentals of Surveying (FS) exam. In researching other articles by Dr. Hermansen by following the link at the bottom of his article, this article is the second of eight such articles on his Thoughts on Professional Practice and Education he has prepared over the latter part of 2021 and throughout 2022. All are excellent and thought-provoking articles, often presenting opinions that may be counter to the current thinking among some Professional Land Surveyors serving today's profession. If you get a chance, I recommend you follow the link and look for that series of articles.

Regarding his article on the FS Exam as a Student Graduation Requirement, I am a proponent of our students taking their FS Exam as soon as they practically feel they are capable of passing such an exam. Many

come to our programs having already passed the FS and are enrolled as an LSI (Land Surveying Intern) in Colorado, with some having already passed their Professional Surveyors (PS) exam. Dr. Hermansen is right in that the knowledge gained in one's education is the freshest at or near graduation. I recall many, many years ago when I was graduating with my Engineer of Mines degree from the Colorado School of Mines, we were all offered the opportunity to take the FE exam (or its equivalent in those days) upon graduation. I will admit that I was too burned out from too many final exams to be willing to sit for another test at that time and chose to forego that opportunity. Six years later after my military service, I returned to work for a Professional Engineering firm specializing in coal mining and was encouraged to become licensed as soon as practical. I remember those refresher courses and the feeling of walking through the fog as the engineering concepts were being brought back into view again and trying to regasp the concepts. At that time, the FE and the PE exams were Colorado State administered and were written tests. They allowed me to take one exam on one weekend and the next exam the following weekend. The relearning and testing process was so painful, that when notified six months later that I had passed both exams and obtained my PE license, I vowed to never let my license lapse because I never

wanted to repeat that painful process again.

I also know that experience can help solidify some of the concepts. Again, going back to my early engineering career, upon graduation, I felt quite confident that I really understood engineering. When thrown into the work when I reentered the private work force after my military service, I realized my education had just scratched the surface of what I needed to know yet was amazed that my employers expected me to know my stuff. I was expecting to be a junior engineer with most of my work being checked by more competent senior engineers before final designs or decisions were made, only to find out, they expected my work to be right and no one was really checking. What an eye opener!

Almost thirty years after I graduated from college, a partner and I bought a small surveying firm in Grand Junction and proceeded to offer surveying and engineering services. My partner was the PLS and I was the PE. Most of our work concentrated on the surveying side of the business that when seven years later, I pursued my PLS license, I was quite heartened to know that those seven years of experience gave me the confidence to take the FS, PS, and State Specific exams without major panic. I'll admit I used that seven-year time span from when my partner and I started our business to attend at least two surveying seminars a year and to take four different

surveying courses through the Metro State surveying program in their distance learning format. That seven years of experience and the added education helped tremendously with my ability to pass the tests.

Using my story line as examples and recognizing that one can lose some of their educational knowledge with time, but that experience can be a benefit, I am more a proponent that each individual should decide on their own on when the time is right for them to pursue their FS exam.

However, for the most part, I am not opposed to some of Dr. Hermansen's ideas about the FS test being required (or encouraged) as part of a curriculum. Some logistical issues would need to be considered though for our WCCC Land Surveying and Geomatics programs. In regard to the eligibility for LSI, since we have an AAS (Associates of Applied Science) in Land Surveying and Geomatics as one of our programs, some of our students would not meet the minimum of 2 years of experience to take the test, while others have plenty of experience and should be encouraged to take the test. For those taking our Post Baccalaureate Certificate program, since their degree is a non-surveying and non-engineering degree, they would fall in the category of needing a high school diploma with 4 years of experience of which they can get credit for 1 year related to education. Again, some of



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our students do not have the requisite experience while others have plenty of experience.

It also seems that NCEES (National Council of Examiners for Engineering and Surveying) is not real keen on checking the credentials for admittance to the FS or the PS test and requires the applicant “self-attest” that they have the requisite education and experience as specified by Colorado law and Board rule. That is why I now have some students that have passed both FS and PS tests but are unable to take the state specific test because they still need the requisite education.

Making a requirement to take the test as part of the curriculum for graduation for our programs may cause some of them to cross that line of “self-attesting” to their experience when they don’t truly have the requisite amount necessary by state law. I don’t think we want to encourage such action just to take the test for graduation.

However, iterating what I said earlier, I do believe each of our students should be encouraged to take the FS as soon as practical after graduation while some of the materials are still fresh in their minds and even encourage them to participate in our PLSC Refresher Courses prior to taking the test.

Later in Dr. Hermansen’s article, he presents two reasons why those in academia may not be in favor of such a requirement. The first had to do with some schools relying on foreign nationals taking their program and a concern that such a requirement could sway them from pursuing the surveying degree, hence losing the supporting tuition. The second concerned those schools that again in fear of losing the tuition chain or supporting number of students accept and mollycoddle some students through their programs to keep the numbers up. He speculates that there could be a tendency for the FS scores to be used as a measure of the adequacy of their program and that those types of mollycoddled students could bring down those scores and hence threaten their programs.

I do want to strongly assure our readers and the Professional Land Surveyors in Colorado that our programs at WCCC are NOT those types of programs. Not only is our school a supporter of excellence in education, but I personally, as a licensed Professional Land Surveyor in Colorado, have more of a commitment to my profession than the typical academic has for their school. You all have my personal commitment that we are doing our very best to educate the next generation of surveyors. We are not one of those programs that make our living from foreign students or mollycoddling the students along so that we can garner their tuition.

We accept and encourage all applicants, foreign and domestic (and we have one foreign student now) and make no distinction among the courses they are required to take. They all have to meet our exacting standards.

With the help of the PLSC, we started this program 5 years ago with 3 students and 3 classes. We filled about 90 seats this last Fall Semester, some of course were seats filled by students taking multiple classes. We graduated 7 in December bringing our total to 23 graduates from the AAS and Post Baccalaureate Certificate programs since we started.

Although our programs will be beneficial to all participants, we emphasize Colorado law and Colorado Board Rules regarding state specific issues. We can always have room for improvement and growth, but the measure of the quality of our program must be the feedback we get on how well we are doing from those employers who hire our graduates or already have our graduates on board and not based on a fear of the graduates doing poorly on the FS exam.

Any input or questions from the profession at large on what we are doing or should be doing is always welcome.

Thanks,  
Tom

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# PLSC establishes PLSC Educational Fund

In 2013, the Professional Land Surveyors of Colorado received a home that was willed to the organization by Bob Stollard. PLSC sold the home, and the proceeds were added to the PLSC Scholarship Fund. This Fund was established by PLSC under the current 501c6 organization, and donations were not considered charitable contributions.

The Board of Directors has since approved establishing the PLSC Education Scholarship Fund through NSPS (National Society of Professional Surveyors) Foundation. This partnership allows individual donors to support the PLSC scholarships and make a charitable donation. If you would like to support this fund, you can donate online at <https://www.nsps.us.com/donations/>.

PLSC appreciates the opportunity that Bob Stollard provided and honors his contribution to the profession by providing scholarship funds to students in this great profession.

## **Do you know someone taking courses for land surveying?**

PLSC has scholarship funds for students enrolled in or accepted for enrollment in a University, College, Community College, Technical School, CFedS (Certified Federal Surveyor) Program, professional seminar, continuing education course or other program in Surveying, Geography, Remote Sensing, Geomatics, Cartography, Photogrammetry, Geodesy, or GIS (Geographic Information Systems).

***See the following Scholarship Application for more information.***

# PROFESSIONAL LAND SURVEYORS OF COLORADO, INC.

P.O. Box 441069 Aurora, CO 80044

MEMBER – NATIONAL SOCIETY OF PROFESSIONAL SURVEYORS  
MEMBER- WESTERN FEDERATION OF PROFESSIONAL SURVEYORS



## SCHOLARSHIP APPLICATION

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[broland@plsc.net](mailto:broland@plsc.net)

SHAUN LEE  
SECRETARY-TREASURER

**PLSC**

Personal Data Please type or print (neatly)

Applicant Name (Last, First, MI) \_\_\_\_\_

Mailing Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone ( ) \_\_\_\_\_ Email \_\_\_\_\_

Colorado Resident Yes  No

Name of Institution, Employer, or Sponsor \_\_\_\_\_

Address of Institution, Employer, or Sponsor \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Professor/Advisor/Employer/Sponsor:  
Name \_\_\_\_\_  
Title \_\_\_\_\_ Phone ( ) \_\_\_\_\_

Full or Part Time Student  Full (min. of 12 semester/term or 18 qtr. hrs.)  Part-time  
Member of NSPS or other Professional Organizations  
 NSPS  PLSC  \_\_\_\_\_ Chapter  Other \_\_\_\_\_

Major or Field of Study \_\_\_\_\_

Academic Class:  
 Freshman  Sophomore  Junior  Senior  High School \_\_\_ Grade Level  Other \_\_\_\_\_

Current Grade Point Average (Based on 4.0 = A) \_\_\_\_\_

Tentative Graduation or Class Completion Date \_\_\_\_\_

List Future Courses:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

I certify that the information in this application is true and accurate.

\_\_\_\_\_  
(Applicant Signature) Date \_\_\_\_\_

\_\_\_\_\_  
(Professor/Advisor/Employer/Sponsor Signature) Date \_\_\_\_\_

DEDICATED TO THE IMPROVEMENT OF LAND SURVEYING EDUCATION AND PRACTICE

*continued on next page*

## **Acronyms:**

### **NSPS - National Society of Professional Surveyors**

NSPS provides the platform by which members can share their thoughts and opinions about our common interests through business meetings /committees, regional groups, and student chapters. It also provides a forum for input from other groups such as the National Association of County Surveyors, members of state boards of registration, and the Forum for State Surveying Society Executives. Membership is open to all professional surveyors and to persons trained, registered, or interested in the profession of surveying and mapping. Voting members of PLSC are automatically members of NSPS.

### **PLSC - Professional Land Surveyors of Colorado**

Professional Land Surveyors of Colorado (PLSC) is a non-profit organization dedicated to the improvement of land surveying education and practice.

Chapters: Central Colorado Professional Surveyors (CCPS); Colorado Spatial Reference Network (CSRN); Northern Chapter – PLSC (NC/PLSC); Northwest ¼ Colorado Land Surveyors; Southern Chapter Professional Land Surveyors (SCPLS); Southwestern Chapter – PLSC (SWC/PLSC); Western Colorado Land Surveyors (WCLS).

## **Qualifications:**

- Applicant must be enrolled in or accepted for enrollment in a University, College, Community College, Technical School, CFedS Program, professional seminar, continuing education course or other program in Surveying, Geography, Remote Sensing, Geomatics, Cartography, Photogrammetry, Geodesy, or GIS.
- Applicant must demonstrate a progression towards a degree, occupation, or improved knowledge base in Surveying, Geography, Remote Sensing, Geomatics, Cartography, Photogrammetry, Geodesy, or GIS.
- PLSC Scholarship awards are approved by the PLSC Board of Directors based on application and successful completion of education course with a passing grade of C or better.

## **Submittals**

Please submit the following:

- A completed Joint Scholarship Application.
- A paper consisting of a minimum of 200 words discussing why surveying is important to applicant's career goals and how applicant is going to learn about and apply surveying to applicant's work. If the application is for a particular course, seminar or program, applicant must describe how such course work will help applicant achieve applicant's goals and improve applicant's contribution to the profession of surveying.
- All official college transcripts or high school transcripts if still in high school.
- A letter of recommendation from your faculty advisor, one of your professors, your employer, or your sponsor addressed to Professional Land Surveyors of Colorado, Inc. Scholarship Committee at the address listed above.
- List any academic honors, scholarships, community service, volunteer work, or awards received since entering high school.
- Include any applicable job experience, involvement with civic and professional associations, and your plans after graduation or completion of the coursework. An oral interview may be required to determine the successful applicant.
- Paper will need to be submitted as a hard copy and in Microsoft Word format.



## **Evaluation and Selection**

The selection will be performed by the Professional Land Surveyors of Colorado, Inc. Scholarship Committee. The committee will use the following criteria to rate the submitted documents for selection.

Paper = 50%

Transcript and Grades = 25%

Other documents = 25%

## **Organization Contacts**

Contact us with any questions or comments you have regarding this scholarship offer.

Becky Roland, PLSC Executive Director (303) 551-3266

## **Please submit the completed application and required documents to:**

Becky Roland  
PO Box 441069  
Aurora, CO 80044

Or e-mail to:

**[broland@plsc.net](mailto:broland@plsc.net)**

# S U S T A I N I N G M E M B E R S

## **AIRWORKS**

Nadine Natividad  
226 Causeway St., #102  
Boston, MA 02114  
nadine@airworks.io

## **ASSURANCE RISK MANAGERS, INC.**

Lisa Isom  
10651 E. Bethany Drive, Suite 300  
Aurora, CO 80014  
303-454-9562  
lisom@arm-i.com

## **ALTURA LAND CONSULTANTS, LLC**

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6950 S Tucson Way Unic C  
Centennial, CO 80112  
720-488-1303  
marissa@alturaland.com

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Regional Sales Director  
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Eagle, ID 83616  
303-482-1836  
jreinbold@carlsonsw.com

## **DIVERSIFIED UNDERGROUND INC.**

Richard Chuapoco  
2851 S. County Rd. 137  
Bennett, CO 80102  
720-490-1321  
richard@diversifiedunderground.com

## **ECAD**

Kelly Marrill  
12130 N. Pennsylvania St.  
Thornton, CO 80241  
303-427-2231  
Kmarrill@cad-1.com

## **FLATIRONS SURVEYING, INC.**

Ed Bristow  
3825 Iris Ave., Ste. 395  
Boulder, CO 80301  
303-443-7001  
ebristow@flatironsinc.com

## **FRONTIER PRECISION INC.**

Mel Philbrook  
5480 W 60th Ave., Unit A  
Arvada, CO 80003  
720-214-3500  
mel@frontierprecision.com

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303-853-0311  
tking@geoshack.com

## **HARRIS KOCHER SMITH**

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303-623-6300  
sclarke@hkseng.com

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303-694-0012  
ken@hixonmfg.com

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720.286.2914  
robert.boehm@jacobs.com

## **MERRICK & COMPANY**

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Survey Project Manager  
5970 Greenwood Plaza Blvd.  
Greenwood Village, CO 80111  
303-751-0741  
todd.beers@merrick.com

## **NV5, INC.**

5445 Mark Dabling Blvd., Ste. 100  
Colorado Springs, CO 80918  
719-268-8535

## **PEAK LAND CONSULTANTS INC.**

Robert Wood  
526 Honeysuckle Dr.  
New Castle, CO 81647  
970-930-5700  
bmwood4466@gmail.com

## **SKLD INFORMATION SERVICES**

Kelly Mulé  
Sales Representative  
9540 East Jewell Ave  
Suite A  
Denver, CO 80247  
(303)695-3850  
kmule@skld.com

## **SURVEYING AND MAPPING, LLC (SAM)**

Mark Hall  
555 Zang Street #210  
Lakewood CO 80228  
303-988-5852  
Mark.hall@sam.biz

## **SYNERGY MAPPING, INC.**

Travis Kent  
11027 S Pikes Peak Dr. #203  
Parker, CO 80138  
303-663-4483  
tgkent@synergymapping.com

## **TERRAMETRA RESOURCES**

Lynn Patten  
2919 Bryn Mawr Place  
Longmont, CO 80503  
303-709-2903  
lynn.r.patten@gmail.com

## **TOM RICHARDSON LLC**

41255 Dublin Dr.  
Parker, CO 80138  
303-699-3524  
Gwen@TomRichardsonLLC.com

## **TOPOGRAPHIC LAND SURVEYORS**

S. Erik Dumas  
12265 W Bayaud Ave., Ste. 130  
Lakewood, CO 80228  
303-989-1461  
erik.dumas@topographic.com

## **UNDERGROUND CONSULTING SOLUTIONS**

Kelly Goff  
2701 W. Oxford Ave., Suite 6  
Englewood, CO 80110  
303-904-7422  
ucs@totalspeed.net

## **VECTORS, INC**

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10670 E Bethany Dr.  
Bldg. 4  
Aurora, CO 80014  
303-283-0343  
chuckh@vectorsinc.com

## **WESTWOOD PROFESSIONAL SVCS.**

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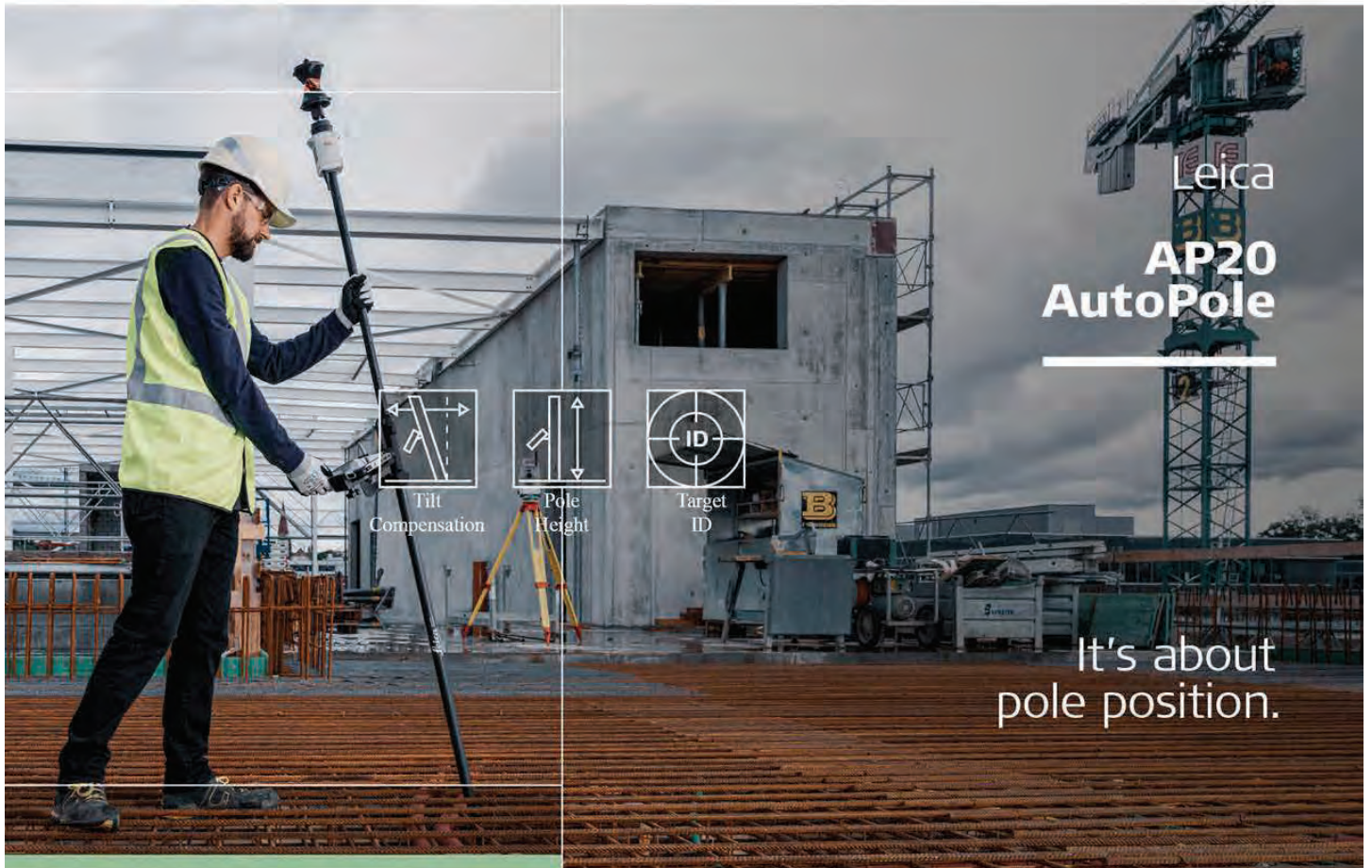
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