

THE NEVADA TRAVERSE

Journal of the Professional Land Surveyors of Nevada



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THE NEVADA TRAVERSE

This publication is issued quarterly by the **Nevada Association of Land Surveyors** (NALS) and is published as a service to the Land Surveying profession of the state of Nevada. *The Nevada Traverse* is an open forum for all Surveyors, with an editorial policy predicated on the objective of NALS and Bylaws, Article II, which reads:

"The purpose of the association shall be to promote the common good and welfare of its members in their activities in the profession of Land Surveying; to promote the common good and welfare of the public in terms of professional land surveying activities; to promote and maintain the highest possible standards of professional ethics and practice; to promote public awareness and trust in Professional Land Surveyors and their work.

This organization, in its activities and in its membership, shall be non-partisan, non-sectarian, and non-discriminatory."

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The Editor's Corner



By Trent J. Keenan, PLS

State of the State – Nevada Land Surveying Edition!

With 2021 coming to a close, it is time to provide updated data based on my article published in The Nevada Traverse 47.4. I will make this an annual edition of delivering the most current data provided by the Nevada Board of Professional Engineers and Land Surveyors and Great Basin College (please see the Table for the current data). Unfortunately, the data provided by the State Board falls right in line with what I wrote last year. We lost a negative -16 in-state licensed land surveyors in the previous 12 months for a couple of reasons, either they did not renew their dues and are marked inactive? Or they retired and moved out of the profession. Therefore, this Table data is based on "current/active" licensed land surveyors in the state. As you can see, we are trending downward, and we need to find new ways to get the younger generation involved.

2020 vs 2021

Nevada State License Data Comparison

2021 data as of 11/5/21



AGE RANGE	All ACTIVE PLS	RESIDENT ACTIVE PLS	NON-RESIDENT ACTIVE PLS	Overall Net Change from 2020	Net Change Resident
21-25	1	0	1	0	0
26-30	2	0	2	+1	0
31-35	11	3	8	+1	0
36-40	34	9	25	+3	0
41-45	64	26	38	+4	+1
46-50	82	35	47	-3	0
51-55	83	41	42	+3	+1
56-60	109	52	57	0	0
61-65	114	44	70	-6	-5
66-70	81	28	53	-11	-7
71-75	46	25	21	-6	-1
76-80	13	1	12	-5	-3
81-85	7	3	4	-2	-2
86-90	1	1	0	0	0
	648	268	380	-21	-16
2020 data	669	284	385		

The second update is on the status of Great Basin College student enrollment.

Overall Enrollment 2021 - Active 117 Enrolled 84

48 Active AS Students of which 31 are enrolled in Fall 2021

72 Active BAS Students, of which 53 are enrolled in Fall 2021

Nevada Enrollment 2021

Active 42 Enrolled 32

18 Active AS Students from NV, of which 13 are enrolled in Fall 2021

24 Active BAS Students from NV, of which 19 are enrolled in Fall 2021

CONTINUED ON NEXT PAGE ►

Overall Degrees 2021

9 BAS degrees Awarded

4 AS degrees Awarded

Nevada Degrees 2021

4 BAS degrees Awarded

2 AS degrees Awarded

Anticipated Nevada Degrees 2022

5 BAS degrees Anticipated

As you can see from this data, we will not be able to fill the gap of new licensees coming up through the education system and replacing the retiring licensees. So again, this goes back to get more of the younger generation involved. As a company, please stop looking for the most experienced surveyor available, hire the young person instead, train them from within and provide them with a great career within our profession. This is one of the most significant ways to help build the profession's labor force back up.

We do hopefully have a ray of light coming our way! A couple of weeks ago, the Advanced Education Committee, along with the current 2021 NALS President Justin Moore, the 2022 NALS State President Robert Carrington, NALS Past President Nancy Almanzan, and current Southern Chapter President Frank Wittie, had a great conversation with Doug Sims who is the present Dean for the School of Science and Mathematics. Doug wants to create a Bachelor of Science program within CSN based in Las Vegas. The program will have all live classes, and mostly at night, so anyone working in the profession will have the opportunity to attend the classes live in Las Vegas, or if Online learning is better for you, then you will still have that opportunity through GBC. I think both programs will support each other. One more benefit that Doug feels will help our profession is that fact that the student body within CSN is currently around 35,000 students, so even if we just get a few students wanting to find out what this or that class is, we will at least bring some additional awareness to the profession. All positives right now in my mind!! **"Education is not the learning of facts, but the training of the mind to think."** -Albert Einstein

Now let's take a look at what else is in store for this edition.

Mr. C.de Baca writes an excellent personal opinion about the state of surveying education in the silver state. Carl brings up some very valid points that no one can dispute. All the tools we are using are just for bringing "awareness" to the profession. But we need these tools to start the conversation and get us in front of the students. No, we will not have the kids running up to us at the end of a Trig-Star presentation and jumping into the profession. But if we start getting in front of the kids in elementary school with Get Kids Into Survey, and then again when they are in middle school with Skills USA, or Future Cities, etc., by the time they hear our presentation again at the high school level, they will understand what the land surveying profession has to offer them as a career. We still have a lot of work ahead of us to develop a full outreach presentation, but I can say it is in the works. Outreach is my passion, and I **WILL** make it happen. Hopefully, this new information I wrote above

will appease Carl just a little bit. We love you, Carl; thank you for always providing us with content that will make us think! Another article is an abstract of a podcast conversation about Surveying and the Great Education Debate. The podcast had some of the professions best provide their thoughts and concerns about the education requirements throughout the country. Please send me your thoughts! **It is better to debate a question without settling it than to settle a question without debating it – Joseph Joubet**

Lastly, there is another abstract article based on the podcast I did on The role of mentoring in Land Surveying. I was part of a panel discussion with the current CLSA President Rob McMillian and Brandon Montero from Arizona. It was a great conversation and I hope you find it useful to help kick start your mentoring program with in your own company. **Mentors: We make a living by what we get, we make a life by what we give – Winston Churchill**

Please send in your comments or articles so that what we print is what you want to read! Articles for the next edition are due on February 1st, please. **Every man owes a part of his time and money to the business or industry in which he is engaged. No man has the moral right to withhold his support from an organization that is striving to improve the conditions within his sphere! – Theodore Roosevelt**

The holiday season is a perfect time to reflect on our blessings and seek out ways to make life better for those around us – Terri Marshall



About the Cover...



A composite image of different photos taken from articles throughout this edition of The Nevada Traverse.

Photo credit: Jeremy Long (Full Metal Worldwide)

**Do you have a cover shot you would like to submit?
Email: nals@NvLandSurveyors.org**



The President's Message

By Justin Moore, PLS, NALS President

As we enter the 4th quarter of 2021, and the final months of my presidency, I'd like to sincerely thank all the state board members, our chapter board members, committee chairs, central office, and all the volunteers that makes NALS function month after month. It takes a lot of hard work from each of you to make this Associate relevant and meaningful for our members. I was very fortunate to have the board members I did, and the success we had this year is directly due to your dedication. It is a privilege to have served with you and feel great pride knowing that the future of NALS is in great hands!

In July, I called for us to open the conversation of "How can NALS help fill the current employment gap". We decided that a roundtable discussion during our statewide virtual meeting in September would be an excellent opportunity for our members to voice their opinions and ideas and how we could best work for them. Here is a list of the ideas tossed around from our members:

- NALS can host a booth at the NSPS conference and the school counselors conference.
- Encourage mentorship through our professionals within our communities.
- Offer apprenticeships or "job shadowing" within our firms to high school students.
- Great Basin College career fair.
- TV / Radio advertisement.
- Military/Veteran recruitment through our Active Duty and Guard bases.
- Work Visas
- Remote drafting / work from home.

These are all great ideas, and we appreciate everyone's participation! I would like to ask the 2022 board, to carry this momentum and create an Ad Hoc committee to explore and implement some of these ideas. Earlier this year I signed into action a new MOU with NSPS regarding our Equipment Fund and this could be an excellent opportunity for us to utilize some of those funds.

I would also like to acknowledge our Chapter Presidents Jake Johnson(Lahonton) and Frank Wittie(Southern). It was a goal of mine this year to have the local chapters start meeting in

person again. The pandemic lead into isolation and distanced the group. NALS did a great job keeping us together through virtual meetings, but I think we can all agree that nothing beats the real thing. Over the summer NALS (state) and the Chapters both began meeting again in-person. Attendance was great and every month we are noticing more and more members showing up. The state will continue our quarterly virtual meetings, and chapters will continue with monthly in-person gatherings. I encourage everyone to reach out to your peers to check in and remind them that NALS is still in full function and has many in-person and virtual platforms for them to participate in and continuing building those networks and relationships.

I would also like to mention our state event from back in July. NALS hosted an 8-hour continuing education workshop, golf tournament, and going away party for our beloved Steve Parrish. This event was the biggest honor of my presidency and top 3 of my career. Hosting such an event for the legendary Steve Parrish is something I will cherish for the rest of my life. I was also honored that evening with presenting some long awaited and well-deserved awards. I would like to congratulate once again Jason Higgins our 2019 Surveyor of the Year, and Greg Phillips our 2020 Surveyor of the Year. Both these individuals worked their asses off as NALS president. They represent the highest standards within our profession, conducted mentorship to the next generation, and demonstrated what it takes to be successful in your profession and personal life. I am lucky to call both these gentlemen my mentor and friend.

Lastly, I'd like to promote a couple upcoming events.

Registration for the upcoming 2022 Western Regional Survey Conference, **LIVE** from Las Vegas is now open! Please visit www.plseducation.org to register now. We are anticipating over 1,000 attendees and this will be a conference you will never forget!!! Also, throughout the year I've been asking all of us to give back to the profession that has provided us with so much. There are many ways to do that. Become a member of your local chapter board, volunteer on a committee, attend your monthly meetings, mentor the next generation, or donate monetary to your favorite non-profit. If you are considering donating, please consider the NALS Education Foundation and Mentoring Mondays. The NALS Education Foundation has continued to help support our students throughout this pandemic, awarding over \$12,000 in scholarships just last year alone. This foundation relays on our conference auction and private donations to function and we have missed the past 2 years of auctions due to the pandemic. They would very much appreciate any and all donations. Additionally, Mentoring Mondays has been a staple for many of us every Monday at 4:00 pm. This is a national format hosted by Trent Keenan with new guest speakers and topics every week that impact us all, regardless of experience or age. Please visit www.mentoringmondays.xyz or reach out to Trent directly and ask him how you can help make a difference.

Humbly,
Justin Moore, PLS



The Journey of Young Geomatics Professionals

Prepared by Trent J. Keenan, PLS & Kristina Poulter



The average age of a surveyor today is approximately 60 years old. But there are new young professionals making their mark on the industry each year, and they are powered by a sense of energy and optimism.

Young surveyors and geomatics professionals were attracted to the professions for a mix of reasons.

Like the surveyors of decades past, many of them enjoy the ability to work outdoors and see the impact of their work take shape before their eyes.

Others are drawn to the ability to continually learn new technology and contribute to new infrastructure.

*An abstract of The Geoholics Podcast –
Episode Geoholic Anonymous
from October 11, 2020*



On the Geoholics podcast, three young geomatics professionals joined us to share how their career started, and where it's going.

Entering the profession

We'll begin by introducing the three surveyors we interviewed and how they entered the geomatics profession.

There's no doubt that surveyors stumble on the profession in many different ways. Often the path to becoming a surveyor is a windy road, complete with unexpected twists and turns.

About Gabby:

Gabby's journey began with an interest in 3D technology, specifically when it came to the gaming industry. Then she came across a company called Cesium, a platform for software applications designed to enable the power of 3D data.

That discovery led her to get involved first as a developer, and then in the areas of open source, GIS, and 3D communities.

Currently, she's busy leading a team to apply 3D technology in partnership with Komatsu, a Japanese construction equipment company.

Gabby's team partnered with Komatsu to create an app that brings data—such as from drone flights and smart construction machines—into one portal in order to enable 3D measurements.

If you've ever heard the term "digital twin," that's Gabby's current work in a nutshell. Today's companies are interested in collecting data and making models.

"What you can do is create this three-dimensional digital twin model of your construction site, or your buildings if you're in real estate, or your city if you're in city planning, and using these to make real-time decisions about your projects," Gabby said.

About Chris:

Next up is Chris, who has worked at ODOT since 2016. His work has taken him all over the west coast, completing projects on behalf of the Department of Transportation.

He enjoys working in the public sector because there is a commitment to doing things the right way. Working for the public good means that his team has both the opportunity and the resources to see projects through and partner with other talented organizations.

More than anything, Chris enjoys doing work that benefits both the surveying profession and public citizens.

Currently, he coordinates the UAS program which is focused on harnessing data in large geospatial data sets.

"Everything has a coordinator, right? Everything happens someplace," he said. "We're the folks that coordinate that. So, let's find a way to leverage that type of information and data that we already have, and we're already collecting. Get it in people's hands, in the public's hands and everybody that needs it."

His mission is to make public data useful and equitable, just like data in the private sector is carefully collected once and then mined over and over.

About Jose:

Jose's career started in civil engineering in 2008, when a national guard recruiter enticed him with a scholarship. He was placed in the closest job that the guard had to civil engineering at the time, which happened to be land surveying.

He was still pursuing an engineering career when a 2014 national guard mission took him to Chile. There, he assisted with a surveying project to connect the north and south ends of the country to create a more direct travel route.

"We were helping them do some of that construction work and I was just like holy hell, why haven't I been doing this survey work for the last eight years?" he said.

When he got home, Jose quit his engineering job, went out into the field as a surveyor, and never looked back.

The different layers of mentorship



Finding the surveying profession is one thing. But in order to truly succeed and get established, it helps to find a good mentor.

Some mentors will help you learn the technical side of things, as you work side-by-side almost in an apprentice or shadowing capacity.

They teach you how to press the right buttons, deliver maps, and operate machinery.

But Chris says that the best mentors go beyond that, taking on the role of a coach and guide, through both life's professional and personal challenges.

"Work is not just all DTMS and drones and LIDAR. It's 'I broke up with my partner, my parents are passing away. What do I do? I'm afraid to take the test.' All of these other things that we seem to struggle with," Chris said.

Chris has now reached the point where he can act like a mentor himself. He's focused on imparting the wisdom that he wishes he's gotten when he was just starting out.

Mentorship takes education to the next level

Gabby's opinion is that mentoring has been crucial to her success. While education can provide a good foundation of knowledge, school can only teach you so much.

"When the rubber meets the road, mentors are really what leads you to opportunities and what helps you overcome certain problems as they come up, and really give you the set of tools that you're going to be using every day," she said.

"Formal education gives you a lot of the tools you need, but not necessarily how you should use them. And I think a lot of what mentorship ends up teaching you, is how to solve problems when they actually come up."

She's had multiple individuals that she considers mentors, including the CEO of Cesium and senior developers that she works with.

Jose agreed that you need someone to take you beyond the theoretical knowledge of books and into the real world.

"You can learn as much as you want from a textbook, but you're not going to get the same experience. You're not going to get the same knowledge, or the feedback, or constructive criticism, whatever you need. That red line 'WTF' on one of your plats, you're not going to get that from a textbook," he said.

All three professionals agreed that education was truly important, and that education and mentoring are most powerful together, with one helping build upon the other.

It's also undeniable that the best mentees have the mindset of a student, with a humble outlook and a hungry willingness to learn.

**EVERY NEXT LEVEL OF YOUR LIFE
WILL DEMAND A DIFFERENT YOU.**

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Mentorship is a two-way street



It's also important to remember that both young and experienced surveyors can learn from one another. Anyone can mentor anyone, regardless of age or background.

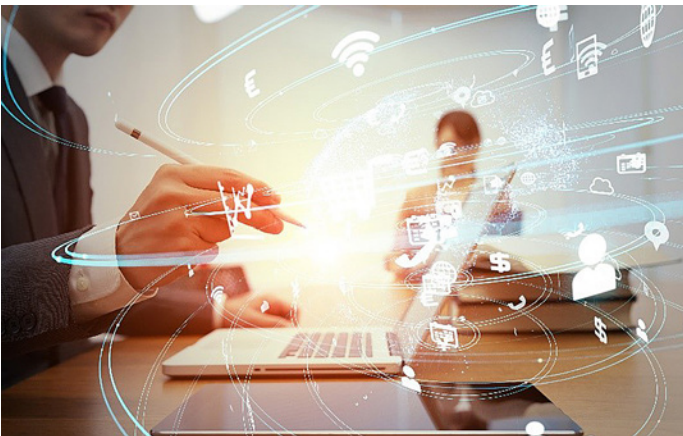
"Everybody should have a mentor, even those I'll use old 'grouchy guys,'" said Chris. "I think if we don't have mentors that are younger than us, that they're failing themselves."

There are three or four separate generations hard at work in the surveying world today. The way that a young "digital native" sees something will be unique from how a more senior, traditionally trained surveyor sees something.

"Those are two very different ways of growing up, and they both can educate each other and help each other along," said Chris.

For Jose, mentors are the ones that helped give him the push he needed to reach new levels in his career. Now, it's all about helping to pay it forward.

Understand what's behind the tech and embrace technology



Entering surveying today looks different than it did a decade ago. New technology is being developed and honed each day.

It's important for new surveyors to be willing to tackle the challenge of technology. Luckily, it seems that tech is also surveying and geomatics' new biggest draw.

"It's going to appeal to the younger generation, just because it's a shiny toy and people are going to want to learn how to use it and do something outside of the ordinary with it," said Jose.

That said, you can't just be pressing buttons; you also have to be committed to understanding what's going on beneath the surface.

There's an increasing demand for fast and efficient data collection.

But no matter how easy it gets, there's always going to be questions, things that go wrong, or formatting issues.

"I think there still is an incredible need for people to understand what's going on behind the scenes of all that technology," said Gabby.

No one knows what's coming next in terms of new tech like AR and VR that could be used for 3D visualization. It's exciting but will take work to master.

"It's an exciting future, but we're definitely going to need people that understand the cogs and gears of how it goes on," Gabby said.

Chris said that the danger of technology is that it makes things "too easy." When the emphasis is on ease and speed, it can quickly devolve to just beating the company next to you in order to make a profit.

"I think that's just unfortunate, because I think there is plenty of work to go around in a lot of ways," he said.

The danger is when we stop thinking, because that also makes the work less interesting.

"I'm simply like one of those grouchy old guys now," Chris joked. "It's good to think your way through it a little bit."

Get involved

Once Gabby, Chris, and Jose got established in their careers, they all started looking for ways to get involved and spread the surveying love to others.

The goal? To raise awareness about the profession, welcome new faces to the profession, and help them progress in their careers.

Chris, Jose, and Gabby have gotten involved with the NSPS, which is a great organization for young

surveyors.

"I met some of my favorite people in the world through that group. And so, I think one of the greatest benefits is one gaining access to your state organizations is important because they're going to be the folks that are going to be supporting you through these meetings and the meetups with the national group," said Chris.

Involvement in the NSPS allows for exposure to what's happening in surveying in other states, at a national scale.

It's great for job opportunities, too.

"At this point, I could call up, a half a dozen to 12 folks in any one state and potentially get a job," said Chris. "Or maybe they're traveling, with a problem. They can call me and vice versa. And so, it's just building that social network."

Jose recently got involved with the NSPS diversity committee that kicked off not too long ago.

"There's definitely a lot of opportunities for young surveyors to kind of champion that, and I think expand the areas that we've been focusing our resources on. Because not only are we not doing enough recruiting as it is, but we're also narrowing and focusing our efforts in the same areas every year. So, expanding that," Jose said.

As part of the Texas Young Surveyors group, an offshoot of NSPS, he's also helped put together a booth at the Houston Hispanic Forum's 34th annual education and career fair. Close to 5,000 students came by the booth, intrigued by the 3D sandbox display.

"It's a really good way to build those bonds and do something that you're not going to be able to do by yourself because you don't have those resources," Jose said.

Almost every state has an NSPS professional organization, with a representative that you can contact. If not, you may be able to create a young professional's group in your state.

It's an excellent way to take part in and contribute to something bigger: the surveying profession as a whole.

Meet young people where they are



When you're trying to connect with young individuals like high school and college students, it may take a different approach than in years past.

"The younger generation, maybe they don't want to cut brush with a machete or start at the bottom or whatnot," said Chris. "We just need to be more flexible. We don't need to have these really strict 'this is how I've always done it. This is how you're going to make it through to be a surveyor.' I don't think that those serve us any longer."

This will require about how the surveying profession fits into the modern world.

Chris gets hands-on by teaching an entry-level survey course at a local community college. He also helped start

the Young Surveyors Network in Oregon, and partners with the technical education campus in Salem, Oregon, which teaches some surveying material.

"There's this really cool program where if you have some sort of engineering degree or surveying degree, we rotate you through the businesses that you might be working with as a surveyor at ODOT for two years, and then you get a full-time job at the end," he said.

These are the types of innovative internships that surveying needs.

"Surveying was built by folks that weren't afraid to get dirty. And it seems like the work that needs to be done is just getting out to the schools and the high schools," Chris said.

For those who aren't afraid of hard work out in the field, a little hard work getting involved off the field is just another rewarding professional challenge.



Rita Lumos

Follow Up to the Last Edition of The Nevada Traverse (48.3)



RITA LUMOS – A Professional Among Professionals!
A Friend to All! An Example for All!

I don't recall how many years ago I met Rita, but it was several decades ago. I remember feeling like I already knew her, as she made an immediate impression with her warm smile and open invitation to be your friend. Rita's relentless dedication to our land surveying profession, her contributions of time and expertise to multiple Boards, her mentoring of women in surveying, and her impact on our profession - locally, nationally, and internationally - sets her apart as an "Extra Special" friend and colleague.

My favorite memories with Rita are sharing surveying information on projects in Las Vegas, surveyor conferences, Great Basin College survey program support, and personal meetings with Rita at her home in the VC Highlands and Reno. Your door was always open, and the special banner you made for me, to accompany a piece of an aspen-bearing tree scribed by the one and only "John Benson" crew, is priceless to me.

It has been a privilege to learn from, consult with, work with, and personally benefit from my association with Rita Lumos. THANKS for the memories. I send my Love, Admiration, and Best Wishes for many more years of the Good Times that you deserve.

Sincerely,
Steve Parrish

Dave James "THANK YOU" response to Sept 2021 Nevada Traverse living legends cover story Rita Lumos

In 1999, when I was in my first year as Chair of UNLV's Department of Civil and Environmental Engineering, Rita Lumos, who was then the Chair of the Nevada State Board of Engineers and Land Surveyors, contacted me to inquire if UNLV would consider proposing an ABET-accredited 4-year degree in Land Surveying to prepare for the anticipated year 2010 deadline for requiring a bachelor's degree for a Nevada Land Survey license. I was receptive to the idea, and Rita, well prepared as always, had the name of a consultant who could meet with UNLV and develop a recommended curriculum.

Rita also provided background and context on the need for the program, including lack of nearby ABET-accredited programs (the nearest one was at California State University Fresno), how all other developed (and many developing) nations had a 4-year requirement for licensure, how the LSI and PLS examinations were increasingly curriculum-based, and how the professions areas of work and technologies were rapidly evolving.

Although my paternal grandfather, a mining engineer, had surveyed mines and ore deposits in the southwest in the 1900's-1920's, this was my first professional introduction to land surveying, and I described to Rita, that I was ignorant of the field but was interested in learning about the profession. Rita immediately put a plan into action. In addition to NALS paying the educational consultant's fee, she arranged for me to visit with land survey firms in southern and northern Nevada to learn about all aspects of the profession, invited me to NALS meetings, and also prepared meeting agendas, north and south where UNLV would present the consultant's plan for NALS' members review, discussion and decision.

True to form, thanks to Rita's thorough preparations, the land survey degree proposal was completed, and I presented it to northern and southern NALS chapter meetings, where after extensive review, it was approved. Rita also worked to obtain resource commitments for the program, including obtaining NALS' members' support for 60 \$2,500 student scholarships a year and offers to lend or donate all needed equipment to conduct the program, when including photogrammetry, GPS and total stations, valued at well over \$1,000,000. She also introduced me to the research opportunities in land surveying and geomatics, including examples of externally funded research projects that were underway at other 4-year/graduate institutions in Canada and the US. All UNLV had to do was come up with three faculty positions to teach the undergrad curriculum.

Rita had left no stone unturned. With her backing and guidance, we had a total package of context, direction, resource assessment, financial and equipment support commitments and curriculum ready to go! Unfortunately, in my 3 years as chair, UNLV's College of Engineering went through three different Deans, and then the financial crisis associated with 9/11. Only the first Dean, Dr. Bill Wells was supportive of committing UNLV's resources to a 4-year program. Although Rita and I met with the two succeeding deans, Rita in her position as NVBPELS Chair, neither would commit resources for the 4-year program. We

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A Modest Proposal

(No – not that one...)



I think it be might time to embrace the end of imperial measurements. Maybe it's finally time to take another run at the meter. After all, we have, in the span of just one generation, eliminated our country's entire identity, uprooted everything that made this country unique and either took it to the attic and stuffed it in unlabeled boxes for some future yard sale, or took it straight to the dump. *Grannie's dead. What are we going to do with all this stuff, none of us want it...* At this point, who are we, if not Europeans with funny accents? Don't believe me? Look at what we are wearing and listening to... and driving. 501's, Lynryd Skynyrd and the metallic pea family truckster are long gone. So long toxic Americana.

Plus, now that Tom Brady has rendered any further mention of the yard, or its more plebian sidekick, the foot, completely useless, it may, at long last, be time to drop those antiquated units into one of those boxes upstairs and move on with our lives.

From a science standpoint, the conversion will be easy. We surveyors could stop using feet on a Friday and come in the next Monday morning ready to work in mm, cm and m without missing a beat. Oh sure, we would have to change the way we think about gassing up the truck, what with liters being such a tiny little unit of fluid measure, but so what? No, that stuff is easy. It will be harder to wrap our head around the million other things in everyday usage that contain imperial measures. Every May, we'll have to get used to thinking differently about both the Kentucky Derby (2.0116 km) and the Indy 500 (804.673km). The Indy 805? Things like that will take some getting used to. 655.80km from Verdi to Wendover? 704.89km from Reno to Las Vegas? Those numbers look funny. But we can get used to them.

On the other hand, the effects of going metric on cliches, metaphors and analogies using imperial standards have largely been ignored. Some work will certainly need to be done in this field. While I could go out tomorrow and perform my next

boundary survey using metric measurements, I'm not how I would feel coming back to the office and describing my day, using the same old tired imperial phrases. We will need to convert these as well.

*My client didn't think the old fence was on his boundary line, but apparently, his neighbor insisted that it was exactly on the line, not 254mm off in either direction. So, there I was, up to my hips in the blackberry bramble, 1.54m south of the fence, staring down at an old iron pipe. It hit me like 907 kg of bricks. I was looking at a fence of convenience – the neighbor's convenience, that is. Oh well, give 'em 2.54 cm and they'll take 1.61 km, I guess. The neighbor's mouth was flapping 160.93 kph. When I suggested that the fence was encroaching on my client's property as evidenced by the original monument at my feet, he threatened to thrash me within 254 mm of my life. As I pounded the 1.219m lath into the ground and wrapped it with a meter or so of pink flagging, things got ugly. The neighbor's face looked like 64.3737 kilometers of bad road. He said if I didn't get off his property that very instant, he would bury me 1.8288m deep. He yelled over his shoulder in the direction of his house and out came his spouse, through the ratty screen door and carrying a shotgun. Was it a man or a woman? I couldn't tell. All I know is that inside that flowery frock was 4.54 kgs of s**t in a 2.27kg sack and that gun looked loaded, so I hightailed it out of there. How big was the shotgun, you ask? 37.8333 gauge. Do the math.*



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Surveying and the Great Education Debate

Prepared by Trent J. Keenan, PLS & Kristina Poulter



Perhaps nothing is discussed more frequently—and heatedly—in surveying than educational requirements.

Should formal education be required for surveying? If so, how much?

If required, how standardized should an educational requirement be among states?

And is education *really* necessary, or would an apprenticeship model do the job equally well?

*An abstract of The Geoholics Podcast –
Episode Geoholic Anonymous
from August 23, 2020*



The truth is the question is even more complicated than it sounds. But there are some unique models out there that provide a starting point for the creative educational solutions that have the power to move surveying forward.

We spoke to several surveying professionals who have also been teaching in the classroom for decades to get their firsthand take.

Modern surveyors benefit from education

One thing is becoming increasingly clear: the surveying profession is becoming more complex each year.

Surveying has a rich set of histories and traditions, but that doesn't mean that surveying practices are stuck in the past.

The rise of new technologies means that while senior surveyors could happily complete a career without needing any formal education or technology training, new surveyors may not have that luxury.

Joe Paiva, PLS, is the CEO of GeoLearn, an online continuing education company designed for licensed land surveyors and technician training. He's also an adjunct instructor at the State Technical College of Missouri.

Missouri happens to be a state that has minimal education requirements for land surveyors. No college degree is required, just 12 credit hours of surveying coursework. It's something Joe's been working to change for years.

Joe believes that just because things were done one way in the past doesn't mean that the surveyors of tomorrow should be shortchanged.

"I want my children to be better than me. I want my students to be better than me. And I want their students to be better than them. And if we don't have that way of thinking in the profession, and we don't have enough of us educators and other people with four-year degrees who have a broader view of how that works, how do you pass the baton?" Joe said.

"We sometimes as a profession tend to think of our profession as being static. That there's nothing changing in how we do our work, whether that's the legal aspects or any other thing."

His opinion is that we can't be a profession that is always looking in the rearview mirror. Instead, we need to transition into a profession that is looking forward to the future, and education is a part of that.

Jim Coan is a professional land surveyor in Washington and Oregon and a certified federal surveyor. He worked for 1 Alliance Geomatics in Seattle and taught at Renton Technical College for 23 years.

He agrees that we need to look forward. "I used to tell my students that when I started surveying in 1968, it was closer to the way George Washington surveyed than the way we're surveying today," he said.

"We're not plain surveyors anymore. We're geomatic surveyors, like it or not. And we need to know that stuff, and we need those technicians to know it."

Jim currently teaches a class on random error theory, which he believes is one of the most valuable classes a surveying technician can learn because it teaches important measuring skills.

"I used to be one of those guys: nope. We don't need any education requirements," Jim said. "But my mind has been changed. We need to have the technical expertise. And that comes through a combination of experience and education."

Education differentiates you from the crowd

Even if you live and work in a state with little to no formal education requirements, education is the way to go if you're serious about advancing in the profession and standing out from the crowd.

Education doesn't have to consist of a four-year surveying specific degree.

While a four-year degree in any subject is a valuable asset because of the critical thinking skills it provides, the reality is that most surveyors are non-traditional students by the time they make it into a classroom.

Maybe they discovered surveying late in life and already have a family to feed.

Or maybe they've been happily working as a technician for many years before getting the urge to take the next step in the surveying profession.

Adam McCartney is a survey party chief at the Maricopa County Department of Transportation in Arizona. With 19 years of experience in the field, he enrolled at Great Basin College just three semesters ago.

"I've made a pretty good living being a solid technician and party chief in the field. And there's no reason that I can't continue to do that for another 20 years and sail off into the sunset. But I have a drive inside that's pushing me to go beyond being just a party chief," Adam said.

Adam already has a CST Level 3 and is now on the path to getting licensed. However, he knows that the more serious he gets about becoming a professional, the more opportunities he'll have to advance.

"Arizona has no educational requirement for licensure, so anybody can go get a license in Arizona. And I've seen some surveys that are evidence of that. And so, what I wanted to do was try and do something that in the future is going to separate myself from my peers because it's getting more and more competitive out there," he said.

He hopes that obtaining a Bachelor of Applied Science in land surveying will help give him an edge.

It took him nearly two decades to decide to get a four-year degree, not just because his motivation took a while to kick in, but because it was daunting to wrap up a full day of work as a young surveyor and then go straight to class afterward.

"I reached a point when I discovered Great Basin College. And with the advent of online technology, there were really no more excuses for me not to do this. I can do it right here from my desk at home late into the night, early in the morning," Adam said.

Surveying is a delayed vocation



In his many years as an educator, Joe can attest that many surveyors end up in the classroom later in life.

"A lot of those people [I teach] have never been to college in their life. Some of them are 50 years old," Joe said. "For many people, becoming a licensed professional is a delayed vocation."

The complication arises from the fact that there are few dedicated surveying programs in the country and fewer still options that offer older students the flexibility to thrive.

Todd Horton is an instructor at Parkland College in Illinois, where he created a land surveying program in 2001 and is the director of the construction management program. A teacher for over 23 years, he is also the owner of Meridian Geospatial Consulting.

He recognized that traditional classroom education models weren't meeting the needs of most surveyors.

Instead of sticking with the status quo, Parkland College decided to change things.

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"We've evaluated our market and realized the low hanging fruit—the people that want the most to come to get training and get licensed—are the ones who can't because they're already working. So, we have changed our model so that instead of having to come to classes during the week, they come to get our hands-on labs on weekends."

In other words, instead of coming to class once a week for 16 weeks, surveying students can come for three weekends per course.

"Our mantra is come earn 24 credit hours of surveying but coming to Parkland one weekend a month for 24 months," Todd said. "Our students really love it because it fits their life."

This is the crux of the debate about surveying education: we do need education, whether it's a degree or continuing education, or both.

But what we also need are innovative methods for getting that education, such as online programs, boot camps, or weekend labs.

Educational programs for surveyors must be nimble

Saying that we need flexible education opportunities and creating those opportunities are two very different things.

Particularly at four-year institutions, changing things up is a long, drawn-out process fraught with political complications.

It's often much more possible—though still not easy—to make meaningful changes at more agile community colleges.

Joe, Jim, and Todd each have compelling examples to share of ways the institutions they've taught at have implemented changes for the better.

"In Missouri, we've decided to provide as much of the education online as possible so that they can get it no matter where they are in the state, or for that matter in the country," Joe said.



Like the weekend lab option that Todd described at Parkland College, Joe's seen even more flexible options in play.

"When I taught for a year at Texas A&M Corpus Christi, they allowed labs to be done remotely mentored. So, we have lab projects, and we tell the students, if you are too far away from campus, you find the licensed surveyor who will actually sign on the dotted line and provide the equipment," Joe said.

That means students could partner up with a boss, mentor, or another licensed surveyor to complete the lab work using that surveyor's equipment instead of traveling to campus in person to use equipment at the school.

Completed lab work is then sent in to be graded in the normal manner, once signed off on by the local surveyor.

"We're still doing the grading the same way. We still provide the same outline for how the project is done. But different people do it differently. And I think that's a good recipe—not the only recipe—for in the future being more inclusive of the entire population to have access to good surveying education," Joe said.

At Renton Tech, Jim said the two-year surveying program was founded based on a vocal need from the profession.

"The education committee chairman for the LSAW, Land Surveyor Association of Washington, came to the school and said they wanted to put together a two-year program," Jim recalled. "The president of the school said, yeah, we'll look into that. But we have to get a buy-in from the profession first."

Jim presented the case for a two-year program at a Renton Tech board of directors meeting and explained why such a program would be valuable. The board then endorsed the plan, and the surveying program was born.

To further design the program for actual surveyors, Renton invited professional surveyors to campus.

"The Dean said if you could have your surveyors learn anything you want them to learn, what would it be? And they started writing it down, and we refined it from there. And that's how we created it," Jim said.

To say the program was a successful model would be an understatement. According to Jim's tracking, the program has hosted 78 professional land surveyors and over 100 LSITs. To top it off, Jim is currently employed by one of the graduates of that very program.

Todd is also excited about new programs being formed in Illinois.

Through the US Department of Labor, the Illinois Professional Land Surveyor's Association has created a new apprenticeship program.

"We call it a boot camp, basically learning how to set up and operate basic instruments. After that, those apprentices will be starting some formal training. It'll be effectively four college-level courses at Parkland College spread out over the next two years," Todd said.

The belief is simple: if they grow an apprenticeship program, some of those apprentices will eventually self-identify as future land surveying professionals and voluntarily seek out the next step in their career.

Again, this type of program is made possible thanks to an agile and flexible mindset.

"One of the reasons that Parkland is able to keep doing its thing is that we're fairly nimble from a business model standpoint," Todd said. "We have the ability to hire people based on their experience, whereas some of the universities don't. Because of their charter, they have to bring people in with the masters and the Ph.D. level. And there's not very many of those."

The overhead and the infrastructure at the university level can be a blessing, but it can also be a cost that has to be dealt with.

When Todd says Parkland is nimble, he means that they transitioned from a traditional survey program to their new weekend land surveying program format in just six months.

The program was first advertised at the 2017 annual conference of land surveyors. The demand was instantaneous.

"That very day we announced it, I had people coming to our table saying, where do I sign up?" Todd said.

Technicians are undervalued



All this talk about education should not detract from a single important fact: perhaps the greatest asset to the land surveying profession are its technicians.

"We also have to tell our surveyors that if you choose to stay a technician, you can make a very good living. Every person does not have to become a professional technician. As we all know, they're worth their weight in gold," Jim said.

If you're a licensed land surveyor, try to picture your day-to-day workflow without technicians. You probably can't.

Not everybody has the aspiration to become a licensed professional land surveyor, and that's okay.

Surveyors, instrument operators, and party chiefs are all engaged in the work that makes companies money. They are literally invaluable.

Todd agreed that technicians are the foundation of the profession.

"Generally, when I talk to people, they're saying we need three to five technicians for every land surveyor. And I know in my state, there's been such a push over the last two decades to make sure that we're getting professional land surveyors pumped out that we have neglected our technicians. Our technicians are the most underserved and most important people in our profession," said Todd.

The moral duty to mentor others

Many successful surveyors have thrived without education. Typically, that's because they were lucky enough to encounter an incredible mentor who helped shape their future.

While mentorship is still incredibly important, good mentors—like formal surveying educational programs—are becoming fewer and far between.

That's why the surveying profession truly does need a combination of education and experience under mentorship to see the best success.

"The loss of mentoring is a trend that parallels our technology," Todd said.

"We went from taping everything and doing control work with invar tapes and things like that. And we got an EDM. Wow. Crew size started shrinking. And by the time I showed up doing survey in the early nineties, if you had a three-person crew, you're working for the state. And if it was a two-person crew, that was everybody else. And now we're down to one-person crews."

If you're on a one-person crew, that means you're flying solo, with no mentor or coworkers insight.



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The State of Surveying Education in the Silver State

A Biased Opinion

Prepared by Carl C.de Baca, PLS



Greetings, fellow surveyors. This quarter's whiny monologue pertains to the state of education in the State of Nevada. Specifically, Surveying Education. Let's break this into two separate-but-overlapping parts, high school surveying education and college surveying education.

First up, high school. Ah, an easy one, a softball,

so to speak. Simply put, there is no high school surveying education in Nevada. Am I wrong? Are there technical schools in Las Vegas and/or Reno that are teaching lessons, classes, or curricula in our field of technical expertise? Perhaps, but if so, they have not reached out to NALS, and NALS hasn't gone looking for them. The pages of his award-winning journal have not told their story. So, I maintain that they must not exist.

Now, short of that, what else is there? Trig-star. Good old reliable Trig-star. The five questions that make up the Trig-star exam are a lesson in how to use trigonometry to solve surveying problems. No one doubts the truth of that. But for the few schools statewide that participate, the exam is typically shoehorned into an over-busy curriculum, and it is doubtful that students get to spend much time pondering how one could make a profession out of knowing the law of sines. While there are plenty of examples of younger math prodigies doing well on the exam, the program is really aimed at juniors and seniors with Algebra, Trigonometry, and maybe some Calculus under their belts. Frankly, these kids are already on a path toward college by the time they encounter the Trig-star exam, and it is doubtful that the test lures many or any students to our profession. The national coordinator of the program will be the first to tell you that Trig-star is not about recruiting it is about awareness. That's fine. Awareness is good. For instance, I am aware that the Pony Express delivered mail across the wild west before the invention of the telegraph. I am aware of the caboose and how railroads had an observer stationed in the caboose to observe that the cars in front of the caboose were trouble-free. I am aware that service stations once had attendants that stood by the pumps all day and pumped the gas for their customers. I'm aware of lamplighters in nineteenth-century cities, and, a little closer to home, I'm aware of five-person field crews. Hell, I'm aware of taxi cabs. Awareness didn't do anything for any of these examples.

The point being, I am not anti-awareness, but I am pro-recruiting, and Professional Surveying organizations like ours, like CLSA, Like NSPS, should be finding or developing recruiting tools to reach into the high schools. However, I'm having a really hard time developing any enthusiasm for the 'Get Kids into Survey' program. Seriously – comic books and cartoon posters? *"Mom, I saw this cool poster today with a helicopter and a dragon and a Yeti, but he was dead. I think I want to be a surveyor when I grow up."* Okay, we could capture one or two future surveyors in that scenario... if that early program led into something in high school to keep them interested and on track.

Look, the target age group for 'Get Kinds into Survey' is too young, and even if you support it and I turn out to be dead wrong, it will be fifteen years before you can do your happy dance at my lack of vision. How advanced will the median age of a licensed land surveyor be by then? The only true alternative out there is the SkillsUSA program which exists in many if not most high schools throughout the nation. They have a Surveying program, it is amazing. I have written about it before, so I won't belabor this screed with any more about it. Look it up.

Alright, Mr. Sunshine is now moving on to the state of college education for the venerable profession of Land Surveying in the Silver State. Let's quickly dispense with the facts and proceed to the opinions, which is where I always head. Mark Twain said, "Never let the truth get in the way of a good story" and I definitely agree with Nevada's greatest author, even if he wasn't a surveyor. Here, then is the 'Carl Notes' version of how we ended up with the Great Basin College LSG program.

Some years ago, NALS and the Board of Professional Engineers and Land Surveyors and our state legislature conspired to require that future surveyors would need to be sporting a bachelor's degree in Land Surveying when they come calling for licensure. Since there was not currently a school in the state offering such a degree, the group wisely set a date by which, if no bachelor's program was established and running, the requirement would sunset. Committed NALS members then set out to persuade one of the two Nevada universities to establish the program. What they soon met with was the hard reality of University Economics. Neither UNR nor UNLV had any interest in the program. Both had Civil Engineering programs, but neither saw the potential for a Surveying program. College Education is a business and no business plan demonstrating that educating surveyors could be profitable was shown to these schools. An endowment to pay for a professor was suggested but NALS did not have a million dollars with which to set up an endowment. So, we were rebuffed, and how!

Dropping down a level, Northern Nevada Community College, which had just changed its name to Great Basin College, had announced that it was interested in developing some baccalaureate programs, Nursing being the prominent example. NALS approached the school and after some negotiating, they somewhat reluctantly decided they were game if NALS did all the work finding and recruiting a qualified educator. Rita Lumos took the lead and through her national presence managed to find a willing professor with western roots. Dr. James Elithorp, an OIT and Purdue grad had most recently, and very successfully, established the Troy State Surveying program in Alabama and was up for the challenge of moving to the middle of nowhere and doing it again. Thank goodness for

Jim Elithorp! He came, created a robust curriculum from scratch and proceeded with the business of educating surveyors. It was slow going because no one wanted to move to Elko to matriculate. After about three years, in a desperate move to save the program, he moved the entire thing to the internet, making GBC's Land Surveying Geomatics program, the first in the nation to be entirely on-line. That turned out to be the move that would keep the program alive but oddly, the vast majority of the small on-line enrollment was made up of out-of-staters. Even more curious, most of the students were L.S.s going back to school get their degree.

NALS was a very passive partner in all these developments. Since the student body was primarily non-Nevadan, our organization was not very motivated to support the program. NALS was not particularly encouraging in their high school outreach or even within their own ranks of employees to direct students into the program. Even our scholarships were routinely given out to OIT and Fresno state students. At some point, after getting repeated warnings from both GBC and NSHE (Nevada System of Higher Education) the LSG was tagged as a "low-enrollment" program that could be done away with, if the enrollment figures didn't improve. Elithorp, feeling only tepid support from NALS, elected to leave Great Basin College and become a tenured professor at another college, far away. GBC then opted to close the "low enrollment" program and only kept it alive long enough to honor its commitment to the few students who would graduate within the next two years. These were dark days indeed, but to bring out an old and overwrought cliché, it's always darkest before the dawn.

The school's first order of business was to close the program to new enrollment and then to find and hire a replacement for Elithorp. Unfortunately, this job would only be for a term of two years to allow for students already enrolled to graduate. GBC then reached out to NALS with an invitation to sit on the panel that would review applications for this temporary hire. Norm Rockwell, an engineer and land surveyor from Elko, and long time NALS member, and myself were chosen to participate. We reviewed the initial pile of applications, helped whittle that pile down to two applicants, and sat in the on-line interviews with both finalists. Byron Calkins, a graduate of, and adjunct professor at New Mexico State was selected unanimously by that panel, and that selection has proven to be great for the program.

Then a funny thing happened. The economy was dragging itself out of the big slump and interest in program from prospective students began skyrocketing. A year into Calkins' tenure, the school decided that they couldn't ignore that many potential students and they reopened the program to new enrollment. In the meantime, NALS had finally got the message and redoubled its efforts at supporting the program and establishing scholarships. In the seven plus years since the program has reopened, it has flourished and now, for several semesters in a row there are over a hundred students taking Surveying classes. Only a handful are signed up for the bachelor's program but still, there is a big ripe body of future surveyors if we could reach out to them and lend them support and encouragement. It's not all wine and roses – the majority of enrollees are still from out of state and that is not optimal.

And this leads me, after all the blah, blah, blah that came before to the real point of my argument. Where are the Nevadans among the ranks of the GBC LSG program? I won't name names, but where are the survey staff from XYZ Engineering and ABC Surveying? Why aren't the NALS members who are owners and managers of firms up and down the state, helping themselves, helping the profession and helping the school by encouraging their employees to take classes and eventually graduate and get licensed? Holy crap, could it get any more obvious what we need to do to survive as a profession?

And while I am busy losing friends and influencing people, why, dear Lord, why are we still talking about UNLV as a possible alternative to GBC? The numbers say it won't ever pencil out. UNLV doesn't want a program that graduates 10 students a year. It would never pay off. Oh sure, they give lip service to being interested in maybe working out a Minor in Surveying for their Civil Engineering students. Really? Is the Nevada Association of **Land Surveyors** genuinely interested in supporting the profession by making it easier for engineers to become licensed to practice surveying? Would you call those folks surveyors? I'm sure the BPELS would happily go along with this because to a certain degree, licensure is a numbers game for them. It looks to me like the Board is already bending over backwards to broaden their interpretation of what education qualifies an applicant.

Maybe standing behind an effort to get surveying licenses for engineers is the easiest path to addressing our waning numbers. Certainly, this path might be easier than the hard work it would take on all our parts to develop survey education at the high school level or shepherd our own staffs into taking on-line classes. But is it right? What's next, giving them our hard-earned scholarship money to get that Minor?

Seriously, give away the farm if you must, but count me out on that one. I don't care one whit about a Minor in Surveying for Engineering students.



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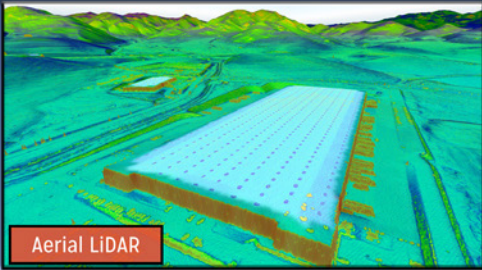


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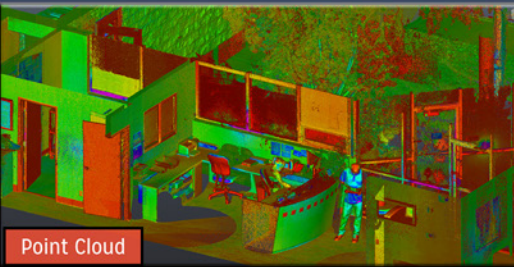
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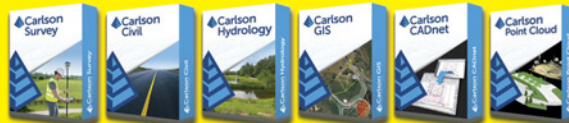
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Nevada Young Surveyor's Network

Prepared by Heather Keenan

In October, we had our final Young Surveyors meet up for the year. This was at Lawyers- The Prime Rib as a dinner meeting to discuss the upcoming events for 2022 and an overview of the Fall NSPS Meeting in Illinois. We will have quarterly meetings again in 2022. The first is in February. We have also discussed making another camping trip in July/ August.



During the NSPS Fall meeting, Denver Winchester (YSN President) discussed the student competition outline for Spring 2022. This competition will be a two-day event; Day 1 is a Monument Hunt. The first portion of the competition will be a staged scavenger hunt-type event. You will be provided a list of DC area monuments that are assigned a point value and provided the day before the event. The ones farther away or more logistically challenging are given higher values due to the risk of finding less. Monuments will have some significance to the broader theme, and information about each will be provided. Teams will be released from the Hotel in 30-minute increments and have 6 hours to complete. Teams will be provided metro cards. Rental Cars are not allowed (Uber/ Lyft/Taxis are permitted provided all team members travel

together.). Teams will be accompanied by a member of the YSN or, if unavailable, a member of NSPS.

Teams will accumulate points based on the point values of the monuments visited. The proof will need to be given in a photo with timestamp or group photos at the location. Extra points will be provided for social media posts with those photos using #NSPS and #YSN.

Day 2 is a Measurement Exercise. The second portion of the competition will evaluate students' technical ability while requiring some knowledge of historical concepts. This will be a three-part exercise in two locations—transportation and equipment to be provided. The basics of the three separate portions are described below. Extra points in this portion will be available to any team who would like to perform these tasks in period dress. Students will be asked to complete a three-wire level loop. Students will be asked to perform a four-sided traverse with a steel tape and a compass. And finally, Students will be asked to triangulate a known position from 2 other known positions with a theodolite. This will be done twice, and the result will be the average of both. The performance will be graded based solely on the accuracy of the resulting coordinates.

We encourage everyone to get involved in the Nevada Young surveyor's Network. We have a great group and have a lot of fun together! Please stay tuned for upcoming activities throughout the State and you may also visit our website to view the most current events. www.nvyoungsurveyors.org





Dear NALS & CLSA Colleagues,

The NALS Summer Seminar & Awards Banquet, on July 15, 2021, ended with a humbling, heart-felt, tear filled evening for Gloria, Aryelle and me. We were in the packing stage of a move from the "Battle Born" state of Nevada after 36+ years of building close friendships with cherished colleagues on both sides of the Sierra Nevada Mountains. Though our residence remained in Nevada, we felt equally welcomed in California with endless involvement with NALS and CLSA. We apologize for the delay in acknowledging your efforts to attend the Banquet and share your precious time with us on this special occasion.

During these 36 years, I have been surrounded with mentors, from both states, endless opportunities to learn more about our PLSS, and showered with more honors than I have deserved.

The move to Idaho has been difficult. My dedicated soulmate, Gloria, has endured 56 years of marriage, as of November 11, and is past due in selecting the final location to begin our true retirement.

With this note we **THANK YOU** for the years of true friendship, guidance, and support in endless ways. A *THANK YOU* seems small when compared to all you have given me and my Family. In early 2022 we will have a spare queen bed, full private bathroom facilities, and a fridge full of food to entertain anyone who would like to visit. Idaho Falls is a gateway to Jackson Hole, Yellowstone, and a primary route into Montana should you happen to need a stayover coming or going.

My phone and email remain the same:
(775) 224-3122 & surveyorx10@gmail.com.

With a **SINCERE WISH** that this 2021 Holiday Season is better than 2020, you remain COVID-free, and 2022 finds you **BLESSED WITH HEALTH, HAPPINESS, & PROSPERITY.**

**Best Regards,
Gloria, Aryelle, & Steve Parrish**

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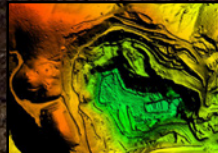
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The Role of Mentoring In Land Surveying

Prepared by Trent J. Keenan, PLS & Kristina Poulter

In any industry, there is perhaps nothing so formative and influential as a great mentor.

This is particularly true in the land surveying profession, where unique laws govern each state and various project sites lie around every corner.

We gathered several veteran surveyors to share their thoughts on the role of mentoring and how it can be best facilitated in the modern world.

*An abstract of The Geoholics Podcast –
Episode Geoholic Anonymous
from September 27, 2020*



How do you define mentoring?



Some people define mentorship as a professional coach.

But a deeper meaning of mentorship is an expert guide who is actively seeking to give back to the next generation.

That's how Trent Keenan, Rob McMillan, and Brandon Montero conceptualize it.

Trent is the owner of Diamondback Land Surveying and the founder of the popular Mentoring Mondays program.

"For me, mentoring is basically giving back to the profession and honestly expecting nothing in return, except for creating another generation of surveyors that will continue what we're doing and the legacy that we're doing," he says.

Rob works for the California Department of Transportation and is the president-elect for the California Land Surveyors Association. As far as he's concerned, a mentor role isn't a teacher; it's in a special league of its own.

"It's a different niche. I've benefited from a long list of mentors. Some who I didn't realize were mentoring me at the time, and then later I get faced with some kind of situation and my response was what I learned from my mentor five years earlier," Rob said.

Now that he has been a surveyor for over 35 years, Rob's finding a clear passion in seeing his mentees achieve success.

"Mentoring is critical, absolutely critical to land surveying. Historically our profession is described as the art and science and technique of location. And that art portion is really difficult to master in a classroom. And it's not much easier to master in the field in today's work environment. There's a lot of information for people to learn, and subtle nuances are the keys to success," said Rob.

Brandon Montero is a senior survey manager at Oakland Construction in Arizona and a training consultant for Elevate Construction.

He added that mentoring goes beyond expertise; it's also mastering the daily reality of surveying over the theoretical.

"Sometimes over the course of our career, we develop that secret sauce for the way that we do things or why we do things. And so passing those things, on versus just the book-smart knowledge. And then really understanding how the tasks that we're doing support the overall craft. We're not just doing tasks for the sheer force of completing that task and checking it off a list," Brandon said.

Brandon likened mentoring to the factor that helps fellow professionals truly thrive versus just getting by.

"We could picture a plant just coming up in a patch of dry dirt, all by itself. On its own, maybe it'll thrive. Maybe it's going to make it, depending on the conditions. Or, could we add water regularly? Could we add nutrients regularly? Sure it could grow on its own, but could it really thrive? Could it shoot up at a faster pace? Could it out bloom the competition?" Brandon said.

The bottom line is that the more we invest in mentorship, the more we equip the next generation of surveyors for lasting success.

Mentorship bridges the classroom with the real world

There's no question that classroom education plays a valuable role in preparing individuals to think critically and to introduce budding surveyors to new concepts and innovative technology.

But the gap between theoretical book knowledge and boots-on-the-ground knowledge must be bridged.

Mentoring can be the glue that allows that to happen.

Trent, whose daughter is studying surveying in college, has seen firsthand just how quickly curriculum is taught in school today.

For instance, she spent three to four weeks learning about bearings and distances, and then it was quickly time to move on to the next topic.



"There are certain things on the academic side of things where I see that the mentoring world really needs to be on the back end because they're having to go through school so fast and learn the subject matter so quickly that they don't fully understand it. They're just getting the most basic understanding of the data," Trent said.

That's not even factoring in the reality that sometimes, the surveying technology is changing faster than schools can update their curriculum to match.

This means that mentoring and real-world experience takes on an even greater role and is ideally something that occurs during formal schooling as well as afterward.

Brandon is currently teaching Construction 201 at Arizona State University as part of the construction management degree.

"We're teaching survey math; we're teaching Traverse Computation, the principles of precision and accuracy. I would say that the fundamentals are being taught. But we all know that there's a difference between something that's conveyed to us theoretically," Brandon said.

"Getting your hands on a piece of equipment and maybe leveling it up for the first time in your life once is not equal to the amount of experience that you can gain when you're out in the field."

The realm of the classroom can be thought of as teaching you the building blocks: math, specific concepts, and the history of the profession.

But breaking away from the confines of the syllabus and learning how to put it all together requires experience—preferably with a mentor to help shepherd you along the way.

"I would even think about robotic total stations or GPS, whatever is the most current, the newest, the flashiest. Someone coming up in their career might see that as *the* tool, the most precise tool. But somebody that has the experience and has done things, the old methods, conventional methods, et cetera, they might look at that as one of the tools that they have in their toolbox," Brandon said.

Mentors can help young surveyors understand their toolbox, both figuratively and literally, in order to know what tools they need when confronted with a real-life task.

Technical expertise is not the same as mentoring



Despite the element of technology in modern surveying, the value of mentoring transcends the need to be up-to-date on the latest innovations.

Yes, a new surveyor coming out of college may have more knowledge about a specific new technology than you do. But the veteran surveyor has a mastery of the broader principles that make surveying tick.

"Technical expertise is not the same as professional mentoring, helping someone grow to be a professional, to help them integrate with clients, to help them communicate with a project team, versus technical expertise, totally different. But the sum of both of those things is what makes someone an amazing employee, an amazing professional," Brandon said.

Professional mentoring means helping your mentee navigate the professional side of the surveying world, which means bigger-picture thinking beyond helping them succeed in day-to-day jobs.

"Are you teaching them how to move ahead in the company, as far as the way they integrate with the project team? That professional mentoring is a big thing. Directing them to resources or books like *How to Win Friends and Influence People*? Some of those ground-up things, the building blocks of being a professional, is a totally separate world from technical skills," said Brandon.

No surveyor is going to be an expert at every single facet of surveying, and that's certainly not a requirement to be a good mentor.

"Before, it was the traditional boundary, Topo and staking. We're long past those," Trent said.

But while you may not be an expert in LIDAR or UAV, but as a professional, you learn to focus on what you're best at and navigate the other silos within surveying, subcontracting out work as necessary.

3 steps to building a good mentor-mentee relationship

A rewarding mentorship is a two-sided affair.

It takes a mentee who is eager to learn and dedicated to growing and improving to further their career.

CONTINUED ON NEXT PAGE ►



And it takes a mentor who is willing to learn their mentee's career objectives, figure out how their mentee learns and absorbs information best, and put in the time necessary to help them move the needle on those goals.

#1: Learn your mentee's goals

First off, being a mentor doesn't necessarily mean dragging your mentee down the exact same career path you took.

Your mentee may have a specific vision for what they want out of their professional career, or they may need your help imagining the options available to them.

Not all mentees will have the goal of becoming a licensed land surveyor. Some may be setting their sights on being a survey technician. That's why the first step is to have an explicit conversation in which you ask what their goals are.

"A good mentor is definitely just coming up with a plan understanding the mentee's goals, and really pushing the mentee to be able to ask the questions or want to be able to go after this profession," said Trent.

#2: Learn how your mentee communicates and learns

The next step is to get to know your mentee in terms of how their brain operates to help them thrive professionally.

"Understanding how your mentee communicates or learns is huge. Are they a person who learns by listening? Are they a person who learns best by looking at diagrams and seeing things explained and pictures? Do they need to put their hands on something for it to get down into their memory?" asked Brandon.

We all have ways that we communicate that come naturally to us, that's part of the mentor's role is to figure that out.

This isn't rocket science and doesn't require a teaching degree. It simply means paying attention to how your mentee absorbs and retains information.

This step is also important because, just like some romantic relationships, some personality styles just aren't compatible.

It's better to recognize that clash earlier rather than later. If your type A personality doesn't mesh well with your mentee's personality, it's to your benefit to connect them with another professional you may know who would be a better fit for them.

#3: Check in with your mentee regularly

Once you establish a relationship and know a bit about where your mentee wants to go professionally, the final step is just to be there for them.

Again, a mentor is not a teacher. You don't need formal lessons plans and quizzes to feel like you're making progress. You just need to be there for your mentee when they need you.

"The mentor-mentee relationship isn't so much about what the mentor can teach that mentee, but how the mentor can help guide that mentee to their ultimate destination," Rob said.

The most important ingredient to a successful mentor-mentee relationship is time.

"It's going to take tons of time and devotion. Hourlies or weeklies face-to-face, lots of time and dedication," said Trent.

At the beginning, your relationship might be more time-intensive as you get them on their feet.

As time goes on, it will be less structured, but communication should still be regular, even if it's just an hour per month spent on more high-level questions and topics.

"If you've got staff that you train, you don't spend every day looking over their shoulder. You put them on a task, and then you check in periodically. And it's the same thing with mentees," Rob said.

The impact of one-man surveying crews

One major impediment to the ability to create mentor relationships is the sharp rise in one-man survey crews.

Due to cost, personnel shortages, new technology, or all of the above, one-man crews are becoming the new norm. This means limited time for new and veteran surveyors to work side-by-side.

"Every time there's a major leap in technology, the number of people in the survey party has declined. This has reduced the opportunity for new staff to learn from others as a part of the day-to-day work," Rob said.



"Because of that, we're losing the opportunity for daily transfer of the tacit knowledge, as a matter of course. I guess the fancy way to say that is the training hierarchy has been decimated."

If one-man crews are the new normal at your company, it means that mentoring cannot be as casual and organic as in decades past. It needs to become part of your business plan.

"We have weekly meetings where we go over how we are doing as a department, but also root cause analysis. Being really honest about the mistakes that we've made. Training moments where we go over let's reassess some of this math that maybe we haven't talked about in a while," Brandon said.

As an organization, you need to consider how you are going to counter-balance the isolation of the one-man crew setup and allow your crew to develop as professionals in other settings, whether that's weekly meetings like Brandon described above or something else.

Online mentoring opportunities

Thankfully, as one-man crews have risen, so have online mentoring forums.

Today, you can mentor on Zoom. You can mentor on a phone call. You can join a surveying Facebook Group. Or you can join formal networking events such as Trent's weekly Mentoring Mondays sessions.

Mentoring Mondays takes place every Monday on Zoom and features a live presentation and PowerPoint led by a surveying professional, followed by a Q&A.

Several meetings have lasted over two hours, thanks to the discussion afterward, which is a clear sign that many surveyors out there have an appetite for the community, dialogue, and informal continuing education led by their peers.

The Mentoring Mondays discussion portion often brings rise to new questions and topics, which then become featured topics for the meetings that follow.

Online platforms also lead to an exciting diversity of geographic locations and backgrounds. If you get creative with technology, you can also do things like draw on the screen, do math problems, and show photographs and boundaries.

Brandon's company, Oakland Construction, hosts events like week-long boot camps that focus on technical training and professional development.

"They do one-day technical trainings on the use of a builder's level, use of a total station, things like that," Brandon said.

When companies build professional training into the business model and into the workweek, it sets the tone that professional development and keeping skills sharp is valued.

"It's really easy to expect our guys sometimes to go and do self-help or professional development on the weekends, or, Hey, maybe we can get together on a Saturday. But when you don't pay somebody to do something, you might as well just tell them it's not that important," Brandon said.

Being a mentor can seem intimidating or too time intensive. But the truth is that there's almost nothing more important than sharing your hard-won expertise in whatever ways you can.

Sometimes, it's as simple as getting out of the way and letting other surveyors do the work you're best at, letting them fail, and then taking the time to explain what they should do differently next time.

You need to make a conscious choice to become a mentor. But it's a choice worth making.

Mentorship can go both ways, and you're learning as you go.

For mentor and mentee alike, the relationship is always a win-win.

Mentors:

We make a living by what we get, we make a life by what we give – Winston Churchill



Thoughts On Professional Practice and Education

Prepared by Knud E. Hermansen, PLS, PE, PhD, Esq.



Article 1: Faculty Licensure

This will be the first of several articles giving thought to the topic of professional practice and education.

I have reached the age where I have a great many opinions and have no fear of sharing them. I have no employers that would take umbrage of my opinion. Perhaps some current or past clients might object but they are free to seek others to perform their services should they wish.

If this is the first of several articles I plan to write, I can introduce myself thoroughly in this article and be reticent about an introduction in later articles.

I am retired after 30 years of teaching though I still do contract teaching for surveying and engineering programs. I have also retired from the military where I was a surveyor and engineer for over twenty years. I have been licensed in several states as a surveyor, engineer, and attorney. I still have an active license for each profession in at least one state. I have consulted in a wide variety of roles offering surveying, engineering, and legal services. I have surveyed many miles of boundaries. I was a member of a licensing board at one time. On numerous occasions I have served as an expert witness, trial attorney, appeals attorney, arbitrator, mediator, boundary commissioner, and, of course, a professor and instructor. Old age, experience, and my varied and unique practice I hope gives me a perspective that will generate some thought, no doubt some controversy, and perhaps some changes.

In this missive I will focus on surveying faculty qualifications. I will not and never claim to be among the best faculty. I am sure there are some former students that will claim I am not even a satisfactory faculty for I had hard standards and high expectations that left some students disgruntled and unhappy

that I chose to apply these standards to them. As I said, I am too old to change or even give much care to what a young student, lacking experience, may believe. To put it simply, their opinion is seldom my reality. After the graduate has practiced in the surveying profession for fifty years and still wishes to maintain a low opinion of my instruction, I will welcome their thoughts and give them worthy consideration.

The point I wish to make in this missive is to give my opinion on faculty licensing. I do not believe a quality surveying program must require every faculty to be licensed to practice the profession of surveying. However, I do believe a majority of faculty should be licensed to practice the profession. I will offer three reasons for my opinion.

First and most importantly, I am of the firm opinion that no amount of education and research in surveying or 'geomatics' (as some programs prefer to use), allows a faculty to provide the impactful presentation experience allows. Of course, any person wishing to become faculty and claim they have experience outside of academics should have enough experience to be able to qualify and sit for professional exams in at least one state.

I am mindful that some faculty may have experience in areas of surveying practice that their state of residency will not accept toward licensure. Yet, that person will not be prevented from applying and being licensed in some other state that does accept their experience for licensure. (There is no state, by law, that can demand residency in the state before being licensed.) By way of example, I would refer the reader to some states that require a license for and therefore must accept experience in areas of remote sensing and GIS when applying for professional licensing.

Second, I believe it important that faculty set an example that will encourage students to seek professional licensing in the surveying field. This is done most effectively by the faculty themselves being licensed to practice the profession of surveying. I have seen numerous articles in professional magazines that lament the aging of the licensed surveyor population and how few young persons are entering the profession. Many employers lament the difficulty of finding young persons interested in filling employment openings. Young adults are not given a good example by allowing surveying instructors to be unlicensed.

Third, I believe faculty are much more inclined to have been or become active in their state and national professional societies when licensed. I am of the very firm belief that a successful college surveying program must enjoy the support of state surveying societies. To enjoy that support, there must be continuous interaction and familiarity between the academic program and the professional society. The interaction and familiarity are often absent or tenuous at best when faculty are not licensed. Lacking a license, the faculty can't be a full member of the professional society.

I have such a firm opinion on the importance of requiring licensed faculty, that I would demand licensing as a prerequisite for a faculty member even at the sake of academic qualifications. If the only choice to fill a faculty position was between a licensed

individual and one with a Ph.D. of similar temperament, I would opt to always take the licensed individual.

Many universities that host surveying programs require a Ph.D. These same surveying programs do not require professional licensing of faculty. For some reason which I cannot comprehend, even after 30 years in college teaching, university administrators think it much more important to hire a Ph.D., without practical experience, often without experience as a resident, to teach surveying topics. The administrator will not accept someone without the Ph.D. that would have many years of relevant experience, relevant license, and familiarity with the residency where a graduate is likely to seek employment.

Having given my opinion, I now offer advice by suggesting ABET and professional societies make strenuous and consistent requests of administrators of surveying programs to demand current faculty become licensed and new faculty to be licensed prior to employment. The line is very clear. If a person wishes to teach in a surveying or geomatics program, they should have a professional license.

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



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Presenters: Dane Courville, PLS and Knud Hermansen, PLS, PE, Ph.D.

WestFed Highlights

The Western Federation of Professional Surveyors (WFPS) held a Board of Directors meeting on October 16, 2021 at the Wild Horse Pass Resort in Chandler, AZ.



HIGHLIGHTS FROM THE WESTERN STATES

ALASKA (ASPLS) Steve Buchanan – The ASPLS Board of Directors and local ASPLS Chapters have continued to meet virtually. There has been a significant decline in membership and ASPLS is looking at ways to promote membership. Currently, they have not planned for 2022 Conference. More information about APLS can be found on their website AlaskaPLS.org

ARIZONA (APLS) Mike Fondren – Current membership is 332. APLS will be participating in the 2022 Western Regional Survey Conference which will be a joint conference with Arizona, California, Nevada, Utah and WestFed held in Las Vegas March 30 – April 2, 2022. The Governor has filled the remainder of the vacant Public Member seats on the Board of Technical Registration. Public members now account for a majority on the Board. APLS held their first in-person meeting since the pandemic. The meeting included a seminar featuring Jeff Lucas followed by a golf tournament. More information about APLS can be found on their website AzPLS.org

CALIFORNIA (CLSA) Kevin Hills & Ray Mathe – Current membership 1415. Membership is down assumingly due to pandemic. CLSA will be participating in the 2022 Western Regional Survey Conference which will be a joint conference with Arizona, California, Nevada, Utah and WestFed held in Las Vegas March 30 – April 2, 2022. CLSA is set to distribute more than \$40,000 in scholarships this year. CLSA has started a Young Surveyors Network (YSN), and the public awareness committee is working on a Military Service to Surveying program. More information about CLSA can be found on their website CaliforniaSurveyors.org

COLORADO (PLSC) Steve Parker & Todd Beers – Current membership is 323. Legislature is considering eliminating the state requirement for County Surveyors. A PLSC Chapter is coordinating with the Colorado Railroad Museum to assist in the cataloging and digitally scanning records housed at the Museum. PLSC attended the School Counselor's Association Conference as well as other outreach events. More information about PLSC can be found on their website PLSC.net

HAWAII (HLSA) Cliff Yim – Current membership is 96. Counties are easing restrictions and starting to welcome back inter-Island visitors. HB244 (Land Court Deregistration Bill) was passed in the State Legislature and HLSA is working to clarify information. HLSA will work to introduce Right of Entry legislation in 2022. The 2022 Conference will be shifted to a virtual platform due to COVID restrictions. More information about HLSA can be found on their website HLSAhawaii.org

MONTANA (MARLS) Russ Kluesner and Dick Smith – Currently 423 members in MARLS. MARLS recently distributed approximately \$13,000 in scholarships. MARLS is working on

legislation to create a set of requirements for creating Easement Exhibits, and Legal descriptions. Have just gone through a change in our website, (www.MARLS.com) to make it easier to navigate. The 2022 Conference will be held in Missoula, MT, on February 23-25, 2022. Still having issues with unlicensed practice, as well as the MT Department of revenue wanting to change and even not recognize certain Certificates of Survey. MARLS held their first "in person" Board meeting, in conjunction with a continuing Education seminar, at Fairmont Hot Springs Resort on August 27-28, 2021.

NEVADA (NALS) Trent Keenan & Greg Phillips – Current membership is 262. NALS membership continues to increase. NALS will participate in the 2022 Western Regional Survey Conference with Arizona, California, Nevada, Utah and WestFed. The conference will be held March 30 – April 2, 2022 at the Luxor in Las Vegas, Nevada. AB 3 passed which pertains to electronic transfer of certain maps. NALS continues to publish and mail four issues of the Nevada Traverse magazine each year. NALS held their first in-person event July 15-16th in Reno. NALS continues to hold statewide virtual "roundtable" meetings to engage the membership and continues to focus on outreach. More information about NALS can be found on their website NvLandSurveyors.org

NEW MEXICO (NMPS) Allen Grace & Diego Cisneros – NMPS will be airing some commercials on PBS to spotlight a career in surveying and the four-year degree program. NMPS is discussing moving their annual conference to the fall as so many associations hold theirs in the spring. More information about NMPS can be found on their website NMPS.org

UTAH (UCLS) Mike Nadeau – Current membership is 335. UCLS will participate in the 2022 Western Regional Survey Conference with Arizona, California, Nevada, Utah and WestFed. The conference will be held March 30 – April 2, 2022 at the Luxor in Las Vegas, Nevada. UCLS Fall Forum will focus on CST training. UCLS has approved a budget to support the development of a Young Surveyors Network. At the end of the legislation session a bill was amended that created issues with boundary line adjustments. Unfortunately, the bill was pushed through and UCLS will now work through the proper channels to resolve the issues this has caused. It was noted that UDOT was exempted in the legislation. The bill sponsors now understand the issues that were caused and will work with UCLS to fix the legislation. More information about UCLS can be found on their website UCLS.org

WASHINGTON (LSAW) Ben Petersen and Tony Chenier – Current membership is 799. The 2022 Conference will be held March 2-4 in Vancouver at the Hilton. LSAW continues to hold virtual meetings during the pandemic. LSAW is currently holding a weekly webinar every Friday morning with topics focused for survey technicians. LSAW continues to promote the NGS GPS on Benchmarks program. Memorial service was held to celebrate the life of both John Thalacker and John Abenroth both of which were early leaders of WestFed. More information about LSAW can be found on their website LSAW.org

WYOMING (PLSW) John Lee – Current membership is 115. The fall technical seminar will be held November 4-5, 2021 in Casper, WY and will feature Anthony Cavell. PLSW continues to seek a sponsor for 2022 datum legislation. PLSW is working with the Board of Registration on outreach efforts. More information about PLSW can be found on their website PLSW.org

CONTINUED ON PAGE 40 ►

NSPS Nevada Directors Report



NSPS

Prepared by Nancy J. Almanzan, PLS

The Fall NSPS Meeting were held in Oak Brook, Illinois on September 22-25, 2021. This was the first in-person meeting in over a year, but there were some Directors who chose to attend virtually. This year NSPS is celebrating its 40th anniversary. The day before the fall meetings kicked off there was a golf tournament held on September 22nd to support the NSPS Political Action Committee (PAC) which was attended and participated in by myself, Ray Almanzan, Jerry Juarez, Trent Keenan, Heather Keenan and Robert Carrington.

Executive Director Update:

Mark Sargent, the current NSPS President and a committee consisting of two members of the Executive Committee (Ex-Com) and three directors have put out a solicitation for applicants to fill the NSPS Executive Director position that will be vacant when Curt Sumner retires. Curt has also been involved in this process. Interviews are set for two candidates and there should be a decision made by the end of the year.

Committee Meeting Highlights:

Bylaws & Resolutions/Policy & Procedures

- A proposal was made to change voting for Ex-Com from all membership to one vote per state.
- Discussion around limiting nomination of Vice President from same state in two consecutive years.
- Discussion around a motion to refine language around limitation of powers of the Executive Committee.

Education Committee

- The Young Surveyors are taking the lead on the student competition that will be held in conjunction with the Spring Meeting in Washington D.C. The initial announcement has been sent, and schools are responding. The competition will have two components: A scavenger hunt near the Mall in Washington, DC, and some sort of a field exercise. The YSN intends to provide committee members as mentors during the competition. The competition will also be designed to be a fun experience for the teams, instead of making it a challenging exercise.
- The University of Massachusetts Geomatics Program is thriving with student enrollment over 160 due to option to complete program virtually. They have four fulltime instructors.

Western States Directors Council

Doug Schneider from Arizona was voted in as the new Chair, myself as Vice-Chair, and Joanne Williamson from Hawaii as Secretary.

Mentoring Mondays – <https://mentoringmondays.xyz/> We should make sure all our aware of this website and great educational content created by Trent Keenan.

Joint Government Affairs

- See details at the link below to a 15-page update provided by Miller/Wenhold Capitol Strategies, LLC – NSPS Government Affairs Consultant.

<https://cdn.ymaws.com/www.nspus.us.com/resource/resmgr/2021fallmeeting/NSPSGovernmentAffairsUpda.pdf>

NSPS PAC

- The 2021 Day on the Hill was held virtually in 2021 with thirty states participating. The goal is to have all states and territories participate in 2022 either in-person or virtually.

NSPS Foundation

- Sixteen scholarships were awarded in 2021. The total of the awards was \$32,000.
- Amazon Smile will donate 1% of all member purchases designated to a charity of the member's choosing. The NSPS Foundation is an eligible charity.

CST

- CST has contributed \$49,100 to NSPS in 2021. The testing, following a COVID-affected year, is showing increased activity. In 2020, only about 160 applicants sat for the test. So far in 2021, 376 applicants have applied for testing.

Motions Approved include the following:

NSPS Board approved a \$50 membership dues fee for the NSPS Fellows.

NSPS Board approved a purchase of 200 books by prominent title expert, Richard Bales.

NSPS Board approved the creation of the staff position of Executive Emeritus, which may be offered to the current Executive Director (Curt Sumner) upon his/her retirement with a one-year term renewable at the discretion of the Board of Directors.

NSPS Board approved motions related to Boy Scout Merit Badge including the creation of a subcommittee under the public relations committee who will be contacting the Boy Scouts of America about assisting them in updating the Scouting Surveying Merit Badge.

NSPS approved the nomination of Aaron Leach to be Trig Star representative to serve on the NSPS Foundation Board of Directors.

Anticipated Motions at Spring Meeting:

The Governance Committee is reviewing Bylaws VIII, Section 5, which defines the process for Election of NSPS Officers. Currently, the election of the President-Elect, Vice President, Secretary and Treasure is determined by a vote of all NSPS members. It is being proposed that this be amended to these positions being elected by the Board of Directors (one vote per state). The rationale for this is that many of our members do not vote and/or do not have familiarity with the candidates, and there is a concern that NSPS leadership could be controlled by those states with the greatest population and number of members and the states with a small population of surveyors would be at a disadvantage.



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Lahontan Chapter Update

Prepared by Jake Johnson, PLS

This summer has been a busy time for surveyors within the Lahontan Chapter area. The golf tournament and workshop in July were both well attended, and Steve Parrish was well honored before his move out of state at the awards banquet. This summer has also been extremely busy as far as workload for the surveying community with more work to do with less staff to do it in many cases.

In October we held our first in person meeting of the fall at the La Posada Real restaurant. Nick Charles with Lumos and Associates shared a presentation about the Carson River Watershed and how it is changing.

To finish out the year we will be holding a chapter meeting on November 10th at La Posada Restaurant and a Christmas get together in December at a time and date still to be determined. Please keep an eye out for email invitations for those events.

As we close out 2021, the board has put together a list of candidates for the 2022 Lahontan Chapter Board. The slate of candidates for 2022 are as follows:

- President – Jake Johnson
- Vice President – Michael Detwiler
- Treasurer – Todd Enke
- Secretary – John Gomez
- Chapter Directors – Eric Sage, Seth Horm and Brett Clarke

Lahontan Chapter Reps to be Jake Johnson and Michael Detwiler. An email was sent out October 25th asking for additional nominees. At the time of this writing, no addition candidates have been nominated. If no additional nominations are received by November 4th, the current Lahontan Chapter Secretary, Michael Detwiler, will submit a unanimous ballot electing the slate of candidates as is.

Finally, I would like to thank the 2021 Lahontan Chapter Board for their help during what has proven to be another interesting year. As we navigated another year impacted by COVID-19 mandates and closures, the 2021 Lahontan Board continued to meet regularly and worked to continue Lahontan Chapter business. The board worked on providing chapter meeting opportunities virtually as well as in person, continued work on the NEVADAGPS network with Utah, assisted with the Education Foundation Golf Tournament and seminar this summer, and many other projects.



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SPOUSE/GUEST (if attending – see Spouse/Significant Other Registration below) _____

MEMBER REGISTRATION

	BY MAR 2	AFTER MAR 2	AMOUNT
Conference (Wednesday - Saturday) \$525 \$575 \$ _____			
<small>Includes: Wednesday through Saturday workshops and sessions. Includes Refreshment breaks; Wednesday, Thursday, and Friday luncheons, IceBreaker Reception and Scholarship Auction Dinner.</small>			

Conference One Day \$225 \$275 \$ _____			
<small>Select Day: <input type="checkbox"/> Wednesday <input type="checkbox"/> Thursday <input type="checkbox"/> Friday <input type="checkbox"/> Saturday (half day, no discount)</small>			

NON-MEMBER REGISTRATION

	BY MAR 2	AFTER MAR 2	AMOUNT
Conference (Wednesday - Saturday) \$625 \$675 \$ _____			
<small>Includes: Wednesday through Saturday workshops and sessions. Includes Refreshment breaks; Wednesday, Thursday, and Friday luncheons, IceBreaker Reception and Scholarship Auction Dinner.</small>			

Conference One Day \$325 \$375 \$ _____			
<small>Select Day: <input type="checkbox"/> Wednesday <input type="checkbox"/> Thursday <input type="checkbox"/> Friday <input type="checkbox"/> Saturday (half day, no discount)</small>			

OTHER REGISTRATION

Spouse/Significant Other Registration \$275 \$ _____			
<small>Includes entrance to Exhibit Hall, Wednesday, Thursday, and Friday Luncheons, Icebreaker Reception, and Scholarship Auction Dinner.</small>			

Full-time Student Registration \$275 \$ _____			
<small>Must attach current student ID. Includes: Wednesday through Saturday workshops and sessions. Includes Refreshment breaks; Wednesday, Thursday, and Friday luncheons, IceBreaker Reception and Scholarship Auction Dinner.</small>			

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NALS Board of Directors Meeting

Thursday, October 21st, 2021 • Horrocks Engineering • Las Vegas, Nevada

MINUTES

CALL TO ORDER

President Justin Moore called the meeting to order at 8:30 AM.

PLEDGE OF ALLEGIANCE

President Justin Moore led the Board of Directors in the Pledge of Allegiance.

ROLL CALL

Justin Moore, President
Robert Carrington, Vice President (via telephone)
Nick Ariotti, Treasurer
Greg Phillips, Immediate Past President
Crissy Willson, Executive Director
Todd Enke, Director
Jake Johnson, Director
Frank Wittie, Director

Absent: Bill Kruger, Secretary and Jason Higgins, Director

Guests: Nancy Almanzan, Committee Chair, Trent Keenan, Committee Chair, and Heather Keenan, Young Surveyors Network

PRESIDENT'S REPORT

Report distributed to the Board of Directors.

President Justin Moore thanked the Board of Directors, Committee Chairs, and Chapter leaders for their dedication and hard work over the last year. NALS is a volunteer organization and although it takes time to contribute to the association and the profession the benefits of professional development and fostering networking relationships is invaluable.

TREASURER'S REPORT

Financials included in the agenda.

Executive Director Crissy Willson recommended that the Board invest additional funds in a CD.

MOVED by Nick Ariotti and **SECONDED** to authorize Crissy Willson to open a NALS CD in the amount of \$35,000. **MOTION CARRIED.**

MOVED by Jake Johnson and **SECONDED** to accept the financials as included in the agenda. **MOTION CARRIED.**

A draft 2022 budget was included in the agenda. The Board requested that a general line item for Outreach be established in the amount of \$2500 and the individual line of TrigStar be removed. This will make outreach funds more flexible to be used for a variety of activities. As NALS still has a credit for the TrigStar license from previous payments during the pandemic, if TrigStar is still of interest to the Chapters it can continue.

The Board discussed participation at the NSPS spring meetings which include Day on the Hill. Other states send multiple representatives to that event. The Board requested the NSPS budget increase to \$5000 in order to send an Officer in addition to the NALS NSPS Director to Day on the Hill.

MOVED by Jake Johnson and **SECONDED** to approve the 2022 budget, as amended. **MOTION CARRIED.**

MOVED by Todd Enke and **SECONDED** to provide Association Management Services (AMS) a \$5000 incentive bonus for 2021. **MOTION CARRIED.**

STEVE PARRISH FINAL POINT

Steve Parrish has requested that his final point be set while he is still here to participate in the presentation. Greg Phillips, Matt Gingerich, and Trent Keenan have been working to establish the location, design of the monument, and other logistics. The point will be set at Great Basin College. The cost for the point and the additional commemorative paperweights have been negotiated.

MOVED by Frank Wittie and **SECONDED** to allocate up to \$2000 to purchase a final point marker and commemorative paperweights for Steve Parrish final point. **MOTION CARRIED.**

50TH ANNIVERSARY

Crissy reported that 2023 will be NALS 50th Anniversary. Our conference is scheduled for Silver Legacy and we should start considering ways in which we will celebrate.

Some ideas:

- 50th Anniversary Logo
- Recognition of Charter Members & Past Presidents
- Recognition of 25 Year Members
- Silver Coin, Challenge Coin, Commemorative Paperweight
- 50th Anniversary Issue of Nevada Traverse – Share Memories – Interview Past Presidents

Please send ideas to Crissy at nals@nvlandsurveyors.org

ADVANCED EDUCATION

Advanced Education Committee Chair Trent Keenan provided an update on Great Basin College (GBC).

Enrollment remains strong with 117 active students of which 42 are Nevada residents.

In 2021 there were 9 Bachelor degrees awarded.

A second professor is still needed and GBC is supportive of hiring a second professor. However, it is difficult to find applicants that meet GBC specific requirements.

Discussions regarding a program at UNLV that will transfer to GBC are ongoing.

ADVANCED TECHNOLOGY

Advanced Technology Chair Todd Enke provided the Board of Directors with a link to an article regarding use of SpaceX Starlink for GPS. Todd will prepare a brief article for the Nevada Traverse.

BOARD OF REGISTRATION

Director Frank Wittie attended last meeting Board of Registration

and Participating Association Liaison (PAL) Council meetings. NALS continues to have representatives attend each of these meetings so that we can keep the membership informed.

NEVADA TRAVERSE

Editor Trent Keenan reported that Rita Lumos was appreciative of being featured in this year's Living Legends edition.

Please continue to submit articles and NALS reports.

If there is a vendor that you do business with that is not currently advertising, please encourage them to do so. We also need more business card ads. Business card ads are only \$165 for the full year (4 issues) and is a great way to support the Traverse.

CONFERENCE

The Western Regional Survey Conference will include Arizona (APLS), California (CLSA), Nevada (NALS), Utah (UCLS), and Western Federation of Professional Surveyors (WFPS). The conference will be held March 30-April 2, 2022 at the Luxor in Las Vegas. Registration for the conference is open.

The 2023 Conference will be held at the Silver Legacy in Reno, Nevada.

LEGISLATIVE COMMITTEE

Report included in agenda.

Legislative Committee Chairman Robert Carrington provided a final report for the legislative session. AB 3 passed which relates to electronic transmission of certain maps and other documents. The Legislative Committee will work with the Board of Registration and determine ways in which this new requirement can be met.

MEMBERSHIP

Report included in agenda.

NALS membership continues to grow. January 1, 2021 NALS had 238 members and as of October 11, 2021 total membership is up to 245. The fact that the NALS membership remains strong during the pandemic is a testament to the benefits provided by NALS and the way in which the leadership has kept the membership engaged.

NOMINATING COMMITTEE

Nominating Committee Greg Phillips reported that no write-in nominations were received and therefore, per the bylaws, a unanimous ballot is cast.

Congratulations to the 2022 Officers who will be installed at the January 2022 Board of Directors meeting.

Robert Carrington, President
Nancy Almanzan, Vice President
Nick Ariotti, Secretary
Todd Enke, Treasurer
Justin Moore, Immediate Past President

NSPS

NSPS Director Nancy Almanzan reported on the NSPS fall meetings which were held in the Chicago area. The minutes

from the NSPS meetings are not yet available. One of the most important announcements was the retirement of Curt Sumner as the NSPS Executive Director. An RFP was issued and two applicants have applied, both Land Surveyors, as was required in the RFP. A decision is supposed to be made by the end of the year.

Doug Schneider from Arizona has been appointed as the Chair of the Western Directors Council and Nancy has been appointed Vice Chair. Deregulation continues to be a hot topic among the Western Directors Council. During an NSPS Surveyor Says! Podcast the deregulation white paper that NSPS was directed to write in 2016 was discussed. A copy of the white paper is not available on the NSPS website but can be requested. After review of the white paper, it appears that many of the important points were missed and additional work needs to be done in order to make it a resource for states facing deregulation attempts. The Alliance for Responsible Professional Licensing continues to be a good resource.

<http://www.responsiblelicensing.org/>

NEVADA YOUNG SURVEYORS NETWORK (YSN)

The YSN held a successful camping trip that they plan to continue each year. A dinner was held in October and all other meetings were held virtually.

The national YSN is reviewing their bylaws but have encouraged state YSN's to officially affiliate with their state associations. NALS previously suggested chartering the YSN as a Chapter of NALS. Information has been sent to the NV YSN Chair Nick Montoya and he has confirmed the YSN's interest in moving forward. Crissy will work with the YSN and the Board as needed to move forward with creating a Nevada YSN Chapter.

CHAPTER REPORTS

The Lahontan Chapter has scheduled in-person meetings for October 13th and November 10th. The annual Christmas party date and location is to be determined. The 2022 Chapter Board has been established. Jake Johnson and Michael Detweiler will serve as NALS Directors.

The Southern Nevada Chapter (SNALS) will hold their Christmas party on December 3rd. SNALS is finalizing their 2022 Chapter Board. Frank Wittie and Trent Keenan will serve as NALS Directors.

MEETING SCHEDULE

November 4th – Statewide Virtual Meeting Roundtable
January 20th – Lahontan Chapter Meeting
January 21st – NALS Board of Directors Meeting (Reno, NV)
March 30th – April 2nd – Conference
April 22nd – NALS Board of Directors Meeting (Las Vegas, NV)
April 23rd – SNALS Chapter Picnic
July 14th – NALS Board of Directors Meeting (Reno, NV)
July 15th – Lahontan Chapter Golf or Picnic
October 21st – NALS Board of Directors Meeting (Las Vegas, NV)
October 22nd – NALS EF Golf Tournament (Las Vegas, NV)



then went to Nevada State College, then in its early stages of formation, to propose the program, but were again turned down. It was after this second 'no thank you' that the program, most happily, found a home at NSHE's Great Basin College, again due to Rita's tireless searching and support.

I will always extend my deepest gratitude and recognition to Rita, a far-sighted and thorough professional, for the opportunity to learn about land surveying, and for the opportunity to work to support the creation of a 4-year program in Nevada. Although my efforts ultimately failed at UNLV, I'm very glad that the GBC program has the support of the professional community and can contribute to the steady improvement of the state of professional practice in land surveying and geomatics in Nevada and the USA!

Sincerely,
David E. James, Ph.D. PE F.NSPE



WFPS FUNDAMENTAL OF SURVEYING (FS) EXAM STUDY COURSE

WFPS is excited to announce the release of the FS Exam Study Course which includes approximately 16 hours of videos and a manual. Topics included are based on the current NCEES Fundamentals of Surveying (FS) exam specifications and recommended knowledge. <https://ncees.org/wp-content/uploads/FS-CBT-specs.pdf> Presenters: Dane Courville, PLS and Knud Hermansen, PLS, PE, Ph.D.

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"I see mentoring as something that we have to replace somehow. And I think the apprenticeship models are a great way to do that," Todd said.

If we can't do mentoring in the same way we did in the past, that means we need to find new ways to impart those same lessons.

Apprenticeships or structured training programs like those that exist in parts of New York and California could be part of the answer. Because the reality is that multiple-man crews will not return anytime soon due to economic factors and a shrinking surveyor workforce overall.

"Maybe state associations are standing up their own training programs. Maybe it's not even a formal apprenticeship, but maybe it's a matter of saying, hey quarterly, we've got this cadre of talented surveyors who are also pretty good at teaching. And we're going to have technician camp once a quarter in different corners of the state," Todd said.

"An adage that I have learned, and it doesn't just apply to surveying, is 'match the tool to the task.' And when it comes to education, sometimes we're going to start with the tools we have. I know that not every state has the ability to stand up an educational program, but they do have talent. Talent within their professional associations. And I believe as a profession; we have a great opportunity ahead of us to cultivate that talent."

As surveyors, we have a moral responsibility to help pass the torch to future generations.

Creating quality learning opportunities, both inside the walls of a classroom and out, will be the collaborative task that faces community colleges and professional organizations in the future.


Editorial notes: Mr. Jim Coan, cited in the article and was part of this podcast, unfortunately, passed away on August 8, 2021. Jim was a gentle giant in the profession and a huge advocate for education and mentorship. Jim will truly be missed!

The was also mention of the lack of land surveying college programs in the United States. There are more than you think available. Check out the list compiled by Heather Keenan for the Nevada Young Surveyors Network and the www.landsurveyingcareer.com

<https://www.google.com/maps/d/u/0/edit?mid=1zlp3MSGCxBZVpqwnRwXKclUULzJim92W&ll=39.03463421580769%2C-100.44850335000001&z=5>



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Members have spoken and we are listening! To fill the void left by the ending this past July of the NSPS Radio Hour, the weekly radio show hosted by Executive Director Curt Sumner, we are proud to announce our new podcast, **"SURVEYOR SAYS!"** featuring all things surveying.

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