

Treasure State Surveyor

"CONTINUAL EDUCATION IS THE BACKBONE OF OUR PROFESSION" D.L.E.

VOLUME LVIX

OCTOBER 2022

ISSUE IV



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by James Flansburg*



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Co-editor: Vivian Weaver

The Montana Association of Registered Land Surveyors is a statewide organization of professional land surveyors licensed to execute land surveys in the state of Montana and dedicated to improving the quality of professional land surveying and land records in the state of Montana. MARLS motto is:

“WE MEASURE UP”

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Mark your calendar
to join us at the
February 15 - 17, 2023
MARLS Conference



President's Message

Stewart J. Willis, PLS

Fellow Members,

As we transition from the summer heat to cooler temps in the fall, I hope this message finds everyone healthy and doing well. I encourage everyone to take a deep breath, look around, and enjoy the beauty that our great state has to offer this time of year. It is spectacular to see mother nature do her thing, and a great time to be in the field getting some work done.

Our organization and its representatives have been busy through the summer months keeping our great profession on track and moving forward on both the state and national levels. Big thanks to all of you. The 2023 legislative session is just around the corner and our legislative committee is working hard to stay on top things. Please reach out to me or anyone on the committee with any questions, or input about possible items coming up in this session. We are also in the thick of planning our 2023 conference coming up in February in Great Falls. It is shaping up to be an excellent conference.

I have had the opportunity to listen to some newer surveyors just starting their journey in our profession recently. One comment I've heard numerous times is "I had no idea surveyors did so much" or "I can't believe how many things need a surveyor". I smile and reflect back on when I was saying that, as I'm sure you all have done at one point. We are a special group of professionals that is commonly unknown in what exactly we do, but we always seem to be needed. I look back on my journey and am very grateful I get to call Land Surveying my profession. Sometimes we get caught up in the workload and normal day to day survey duties. I encourage everyone to take a minute once in a while and remember how important and unique we are as professionals. How history has shaped the path for our profession to this point, and how we need to pass that along to the next generation of "I had no idea surveyors did so much".

My best wishes for everyone to stay healthy and safe while we move toward the winter months. As always, I encourage everyone to check the MARLS website for updates, news, and information on the latest topics.

Sincerely,

Stew J. Willis - PLS, CFedS
MARLS President



About the cover...

Artwork by
James A. Flansburg, PLS

Contact Mrs. James Flansburg if you are interested in Jim's artwork.

He specialized in bronzes, ink sketches and watercolors.

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MONTANA ASSOCIATION OF REGISTERED LAND SURVEYORS MISSION STATEMENT

PREAMBLE:

The true merit of a profession is determined by the value of its services to society. Therefore, the Montana Association of Registered Land Surveyors does dedicate itself to the promotion and the betterment of the profession of land surveying as a social and economic element vital to the welfare of society.

The objectives of the association are:

- ◆ To promote the common good and welfare of its members and the public in the profession of land surveying.
- ◆ To advance the study of land surveying and the education of land surveyors.
- ◆ To promote public knowledge, faith, and reliance in licensed professional land surveyors and their work.
- ◆ To foster and maintain high standards of professional ethics in the practice of land surveying.
- ◆ To foster and support legislation generally beneficial to the profession and to the citizens of the state of Montana.
- ◆ To promote closer relations, understanding, and cooperation within the profession.
- ◆ To establish better relations between the land surveyor and other professions interested in land surveying.
- ◆ To aid and encourage the interest of associate and student members of the association.

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MARLS Scholarship Foundation, Inc.

Surveying Scholarships and Surveyors Assistance Fund Information

The MARLS Scholarship Foundation, Inc. (MSF) consists of two funds being the MSF Scholarship Fund and the MSF Surveyor's Assistance Fund. MSF Scholarship applications available at www.marls.com.

The MSF Scholarship Fund awards scholarships to first and second year land surveying students and also the National Trig-Star Program for high school students. The MSF Surveyor's Assistance Fund is intended to help surveyors with financial assistance. Should you know of a MARLS member with a financial need or crisis, please discuss at the chapter level and forward your recommendation to MSF President Bill Weikel or Kay. The MSF Board of Directors will take the recommendation into consideration.

2023 MARLS CONFERENCE

February 15 - 17, 2023

Heritage Inn

1700 Fox Farm Road, Great Falls, MT

On behalf of the Northwest Chapter of the Montana Association of Registered Land Surveyors (MARLS) we invite you to join us at the 2023 MARLS conference being held February 15 - 17, 2023 at the Heritage Inn, 1700 Fox Farm Road, Great Falls, Montana. We will begin the conference on Wednesday, February 15, 2023 with a full day pre-conference seminar presented by Dennis Mouland. Thursday (16th) and Friday (17th) will be multi-sessions of 2 to 4 hours each with many speakers already committed to speak Thursday and Friday.

We are also providing breaks during each seminar to allow attendees more time to converse with our exhibitors. On Thursday, February 16th, the evening conference activities will commence with an exhibitor's reception followed by our annual MARLS banquet and the MARLS Scholarship Foundation's annual scholarship auction including games and the MSF silent auction. We hope this is a fun filled event that everyone enjoys while supporting it's worthy cause. MSF Auction donation sheets will be posted and available soon. We look forward to seeing you at this coming year's conference.

SLEEPING ROOM RESERVATIONS:

Hosting Hotel is the Heritage Inn, 1700 Fox Farm Road, Great Falls, MT 59901

Available block rate check in dates include from February 14 - 17, 2023 nights and check out dates included through 2-19-23. Single Rate: \$96.00/night + tax.

Please make your sleeping room reservations by 1-30-2023. Cutoff date for MARLS blocked rate is 1-30-2023. Phone reservations: 406-761-1900 and ask for a room under the block Montana Association of Registered Land Surveyors with code (MARLS) Single \$96/night + tax.

Alternate hotel: Sleep Inn & Suites/Main Stay Suites

Phone: 406-761-4600: MARLS sleep room rate to be announced later.

Registration packets will be mailed out and posted online at www.marls.com in early December. Conference Registration: Register in advance ~ Early Bird registration must be received by February 1, 2023. MARLS accepts Visa, MasterCard, Discover and American Express (a 4% convenience fee will be added to your total amount for registration)

Contact Kay at kay@marls.com for a membership application or at www.marls.com or to renew your MARLS membership.

We look forward to seeing you in February. Thank you for your continued support of MARLS and the surveying profession.

MARLS Contact information: Attn: Kay McDonald at PO Box 359, Columbia Falls, MT 59912. Ph: 406-253-5527
Email: kay@marls.com Website: www.marls.com

More conference information and registration forms will be available at www.marls.com. A full conference schedule will be posted on the MARLS website at www.marls.com

MARLS CONFERENCE REGISTRATION REFUND

POLICY: Full refund will be given if cancellation is prior to February 1, 2023. No refunds after February 1, 2023.

2023 MARLS Conference fees include Wednesday's Pre-Conference Seminar lunch and breaks. Thursday and Friday breakfast and lunch, Thursday banquet & MARLS Scholarship Foundation's scholarship auction and Thursday/Friday breaks.

Chairpersons for the 2023 Conference:

Conference - Kay McDonald and NW Chapter President Kristine McMahon

Speaker committee: Kristine McMahon and Stew Willis

2023 Conference tentative speakers:

Pre-conference speaker Dennis Mouland Boundary

Dave Dorsett and Linda Smith

Lisa Isom—Assurance Risk

Curtis Clabaugh

Joe Dolan, PLS

John Stahl, PLS

Randy Snyder, Attorney

NGS, MLIAC, MT State Library, RTN seminar

Legislation round table - Jamie Reed—chair

Trent Keenan, PLS

Ben Peterson, PLS

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Exhibitor packets will be mailed in November.



Rosebud Creek south of Rosebud
Picture by Darryl Magnuson

Celebrating the 50th Anniversary of the Brooks Act

by John Palatiello

On this day, October 27, in 1972, President Nixon signed into law legislation providing for qualifications based selection (QBS) of architecture, engineering, (A&E) and related services, including surveying and mapping. It was 50 years ago today the Brooks Act became law.

At the time of its enactment, the Brooks Act was a radical departure from the norm of lowest bid in Federal procurement. It set a precedent that enabled qualitative factors to become commonplace in various contemporary acquisition procedures. In other words, A&E was for past performance and best value before it was cool.

Enacted by Public Law 92-582, the Brooks Act was named for its author, then-Representative Jack Brooks (D-TX). Although agencies had used qualifications as an evaluation and selection factor, followed by negotiation of a fee that is “fair and reasonable to the government” for A&E services for more than a century, the legislation was necessary to codify the practice.

“Ask 10 A&E firms to bid on the design of a particular facility and many agencies will take the easy way out and select the low bidder. Under such circumstances, we may end up with a technically capable architect or engineer, but one who, for lack of experience or because of a desire to stay within his bid reduces the time spent on field surveys or in the preparation of detailed drawings, or in providing inspection services. As a result, the government may have saved itself a half of one percent to the cost of construction, operation or maintenance,” said Senator Jennings Randolph (D-WV) on the Senate floor during the 1972 debate on the legislation that became the Brooks Act.

The “qualifications based selection” or “QBS” process is codified for Federal agencies in title 40 of the United States Code, section 1101 and implemented in the Federal Acquisition Regulation (FAR) at 48 CFR 36.6. Passed on a bipartisan basis and supported by lawmakers in both parties over the ensuing 50 years, the process is also recommended by the American Bar Association in its Model Procurement Code for State and Local Government, and has subsequently been adopted by almost every state in a “mini-Brooks Act”.

The law emphasizes an investment in quality and competence in A&E services, so the integrity of buildings, facilities and other government activities dependent on designs, drawings, surveys, and other related services could be relied upon during construction, operation, and maintenance over the life of such structures and program activities.

The law requires an agency’s public announcement of its requirements for professional A/E-related services, interested firms compete by submitting their qualifications, usually on a standard government form, SF 330, the agency evaluates the firms’ submittals and selects a short list of most qualified firms for an interview. Based on evaluations of the firms’ qualifications, experience, past performance and other factors, the agency determines which firm is the most qualified to meet the government’s requirements. The government prepares an

independent estimate of the anticipated cost, and a negotiation is held between the government and the selected firm to arrive at a price that is fair and reasonable to the government. In the process, the government holds the cards. If a fair price cannot be negotiated, the government is free to terminate the negotiation and begin discussions with the second ranked firm.

It is rare that the United States suffers from faulty buildings. When such failures do occur, such as the 1978 implosion of the roof of the Hartford Civic Center or the 1981 collapse of the Hyatt Regency Kansas City skywalk, Congress investigated these incidents and issued a report on “Structural Failures in Public Facilities” in 1984. It found, “procurement practices that lead to or promote the selection of architects and engineers on a low bid basis should be changed to require prequalification of bidders with greater consideration given to prior related experience and past performance.” The chairman of the subcommittee conducting the study and publishing the report was then Rep. Al Gore, Jr. (D-TN). As President, Ronald Reagan said at a ceremony recognizing design excellence in Federal buildings said, “Good design doesn’t cost money. Good design saves money, and you know how that warms my heart.”

When earthquakes, hurricanes, and other calamities impact foreign countries, the destruction to buildings too often results in tragic loss of life. In America, such instances are rare, due to strong building codes and excellence in A/E services employed through the QBS process. Non-construction related services also benefit from the emphasis on quality. A recent drowning in Loudoun County, Virginia was attributed to inaccurate and incomplete mapping use by the local 911 emergency response system. The Commonwealth of Virginia does not use its state QBS law for this mapping program.

The Brooks Act, licensing of design professionals, and strong building codes contribute to the fact that hurricanes and other natural disasters, while tragic, do not result in the property damage and loss of life in the United States that is experienced in most other countries.

When the landmark Competition in Contracting Act was enacted in 1984 in response to the scandals related to over-priced coffee pots and toilet seats bought by the Pentagon, Congress defined the QBS process as a competitive procedure in Federal law. During consideration of the original Brooks Act in 1972, Senator Edward Gurney (R-FL) explained “any Federal procurement officer ... will tell you that competition based on professional-technical qualifications is every bit as hot and demanding as competition based on price, perhaps more so.”

The famous showman, P.T. Barnum, is well known for saying, “There’s a sucker born every minute.” What is less known is that Barnum also observed, “The smartest way of deriving the greatest profit in the long run is to give people as much as possible for their money.” To the nineteenth century British author John Ruskin is attributed the observation, “It’s unwise to pay too much, but it’s worse to pay too little. When

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you pay too much, you lose a little money — that is all. When you pay too little, you sometimes lose everything, because the thing you bought was incapable of doing the thing it was bought to do. The common law of business balance prohibits paying a little and getting a lot — it can't be done. If you deal with the lowest bidder, it is well to add something for the risk you run, and if you do that you will have enough to pay for something better.”

The Brooks Act saves money. There is no evidence that selecting architects, engineers, surveyors, or mapping professionals on the basis of qualifications, competence, experience, and past performance results in higher costs. Indeed, given that such services amount to less than 1/10th of 1 percent of the total life cycle cost of a structure or facility, but affect the operation and maintenance costs over the life of the facility, the research and data shows the investment in quality in design-related services saves money and human lives. A study conducted jointly by the University of Colorado and Georgia Institute of Technology drew from a database of approximately 200 public and private construction projects in 23 states, including transportation, water, commercial and industrial projects, ranging in size from relatively small projects to those costing hundreds of millions dollars. Its authors compared various procurement methods, including QBS, best value, and low-bid, with such factors as total project cost, projected life-cycle cost, construction schedule, and project quality outcome. Results showed that using QBS to procure the design

component of a construction project “consistently meant lower overall construction costs, reduced change orders, better project results and more highly satisfied owners than in other procurement methods”.

The Brooks Act is a law that has worked for 50 years. It contributes to the public health, safety, and welfare, as well as is part of what makes the United States the envy of the world.

John Palatiello is Administrator of the Council on Federal Procurement of Architectural & Engineering Services (COFPAES), a coalition of leading professional societies and trade associations in the design field and an association executive serving several organizations in the architecture, engineering, surveying, mapping, and geospatial community.

MARLS website www.marls.com
MARLS members sign in today!

MARLS members ~ We encourage you to sign into the MARLS members only site to keep you up to date with MARLS information, participation of our MARLS members' discussion board, legislation, meetings, reports and many more current news and announcements.

We also encourage you to use the MARLS discussion forum to let us know if you have ideas, comments or just want to chat.

Contact Kay at kay@marls.com if you need help signing into the members side of the MARLS website.

Saving surveying: What does it take to get people involved?

Printed with permission and prepared by Trent J. Keenan, PLS & Kristina Poulter
[An abstract of a Mentoring Monday's presentation from March 1, 2021](#)



In almost every state, the number of licensed surveyors is dwindling in comparison to the number of surveyors who are projected to retire in the coming decade.

In Alaska alone, over 12% of surveyors will disappear from the ranks in the coming years. While a short-term viewpoint might celebrate more work and higher wages for the surveyors who remain, from a long-term standpoint, the situation looks grim.

Surveyors are a passionate bunch. Many surveyors who "retire" can't seem to stay entirely out of commission for long. It's the type of passion that results in a thirst to pass down knowledge and wisdom to future generations. So how can we ensure that enough hands will be ready to take up the reins?

During a recent Mentoring Mondays, surveyors in attendance brainstormed the challenges and hurdles facing the profession.



Balancing academics and experience



Michael Schoder, PLS and retired BLM Chief Cadastral Surveyor for Alaska is concerned about filling the surveying ranks.

He thinks that the solution to the dilemma likely lies in creating a system of mentoring.

While the University of Alaska has a strong geomatics program for surveyors, including a dedicated cadastral track, Michael doesn't know if education alone can inspire and prepare the next generation of surveyors.

"The problem is that in my view is that you can't do this all with academia. And I think once we said, hey, well, it's a four-year degree. Great. We can train them. Now I can back off. I don't have to mentor them. I know when I get somebody out of one of those programs, they're going to have some basic knowledge," Michael said.

While programs these days are sophisticated, a thorough career like surveying requires a delicate balance of hands-on experience.

"Working experience is huge. And it's really hard to get the people that want the right desire to be in the field or deal with that," said Michael.

He raised the point that many young potential surveyors are also considering careers like engineering, which can have a much faster return on investment than a surveying degree. When it comes down to weighing finances against passion, passion doesn't always win when higher education degrees clock in at up to \$40k per year.

"I really think the best surveyors are the ones that get the passion. You know here we are, some of us in retirement that we - I thought when I walked out, hey, I've done it for 45 years. I'm going to do something else," Michael said. "I don't think we can take the surveying out of a real surveyor. You can't."

A new House Bill in Florida

Other states are grappling with this same question and experimenting with ways to find the answer.

Florida just introduced House Bill 821, which will allow the education path to open back up in Florida. The concept is that surveyors will need six years of experience, but the balance between academic and work experience can vary.

If the bill passes, it means students can choose to pursue a four-year degree followed by two years of experience, or a two-year degree followed by four years of work experience, or even elect to do six years of experience only.

(Continued on page 11)

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Mark, another surveyor in attendance, doesn't think the Florida bill will pass - and feels that it would be a disservice to the surveying profession if it did pass.

"I understand professionalism, but I also understand that this isn't a profession that most people don't even know about. And we haven't done a good job of advertising it to the masses. And all the schools are dropping their geomatics programs. So we're at a disadvantage as an industry of getting fresh talent into it. And we're not doing anything to attract that fresh talent," said Mark.

He did note that some of the best surveyors he knows were able to get their license without a four-year degree - so this is a tricky dilemma.

"We've shot ourselves in the foot, and I don't see what we're doing to help solve the situation," Mark said.

***UPDATE: the bill died in the Commerce Committee on April 30, 2021, but I am sure this is just the beginning of these types of bills that will be introduced over the next decade! We need to keep a close eye on every state's legislative sessions!**



Finding good teachers



Michael noted that regardless of when and how surveyors-in-training learn, they still need to learn the same quantity of information.

That means that if less training is done in the classroom, it falls on the shoulders of the supervising land surveyor to teach them on the job.

"You're going to have to mentor and train those people in those higher-level subjects and teach them how to learn and teach them how to research and find their answers on their own," said Michael.

"But that's a big commitment. And I don't know. You know you look at a lot of firms; you got one LS and a whole bunch of field and office staff. He doesn't have time to look over the shoulders and

walk around and spend those types of hours if they're not getting that four years."

Even if many professional surveyors had lots of free time on their hands, there's also no guarantee that they would be good and effective teachers. True teaching is a skill, and requires preparing content, getting up in front of people, and doesn't always offer the ease of one-to-one mentorship when done in a group setting.

"There never is an easy answer for total learning out of the field. There's never an easy answer for learning totally out of school. So you've gotta balance. You've got to have a balance. You've gotta be able to take the time," Michael said.

Crowdsourced mentoring

Michael described a former job at the Department of Transportation where he experimented with mentoring at scale.

He decided to devote every Wednesday to preparing anyone interested in pursuing their surveying license.

"When I was at DOT, I had bad morale. When I went in there, people were in the union. They didn't know where they wanted to go. And I said, well, hey, how about we do something for you? How about let's get you all your LS license, said Michael.

So every Wednesday, everyone came in early. Those who wanted to learn land surveying did so under his instruction. It took structure and dedication, but it paid off. Today, four of those individuals now have their licenses.

In a way, Michael sees online workshops like Mentoring Mondays as the perfect mentoring program, bringing novices and professionals together every week.

"I mean, this is crowdsourced mentoring, right? So why does every LS that maybe isn't a good teacher, but gosh, you want to learn how to do elevations with GPS? Who better than retired NGS head Dave Doyle who is going to talk



(Continued on page 12)

about it in two weeks?" said Michael.

Suppose a program like Mentoring Mondays can be formalized, recorded, and turned into lesson plans. In that case, it could serve as the perfect vehicle to take the full weight of teaching off of busy professional land surveyors' shoulders.

The value of CFedS

While how to structure surveying education is up for debate, the value of education as a whole is undeniable.

Every professional surveyors can benefit from life-long continuing education. One program heavily discussed among attendees was the [CFedS program](#), which provides the training necessary to execute boundary surveys on or near federal interest lands.

"As a professional land surveyor and also a past BLM chief, I think it's invaluable. And if you have a need for continuing education, why not? Because you'll get more in-depth sight into the federal procedures of original surveys and dependent resurveys, understand the plats, and how to do acreage from a plat without dimensions when you have government lots. A lot of little things like that," Michael said.

While the value of pursuing CFedS depends on where you live and practice, the program has both educational and social benefits.

"It's good credentials. I know this from being on the other side of the fence at an agency too. If I'm looking at a proposal from a company and they show me some of their staff have CFedS designations, I know that those people took the commitment to do all the hours of going through it. And they had to have a passing grade. That shows an interest in higher learning and a commitment to continuing education far beyond what they needed to do to keep their license," said Michael.

Steve Parrish, PLS, the current chairperson and training coordinator for CFedS, has seen 1,300 people sign up for the program since 2006, with about 550 certified CFedS currently practicing.

He is currently organizing five presenters for an upcoming conference, where participants can take a special two-credit hour CFedS course that is offered at half the price of the regular online course.

Attracting attendees



A shortage of new students in surveying programs isn't the only problem facing the surveying world.

At the state level, chapter organization meetings are not seeing participation and attendance from people from the field.

While private-sector employees tend to show up, others don't. The pandemic has only served to exacerbate this pre-existing issue.

"A lot of it has to do with the influx of probably that individual company and what they're willing to step out and do for those guys that say hey look, we want you to advance yourself and just not be a technician or a robot for us," said one attendee.

Surveyor shortages and public scrutiny

John Brady, PLS, a surveyor located in Fairbanks, Alaska, has his own concerns about surveyor shortages.

"This year, I am president of our local Fairbank's chapter of ASPLS. And I'm the youngest guy in the room by 30 years, usually sometimes even 40. And that's a huge issue to me. Because what is the society going to look like in 10 years when I'm pretty much the only one left?" he wondered.

That's one reason why John is so thrilled to have the opportunity to participate in Mentoring Monday sessions and connect with other surveyors across the United States.

"That's the beauty of the technology we have available these days to be able to network outside of our locales and be able to actually get an idea of what people are doing across the country and across the world," he said.

John is also a fan of the [Get Kids Into Survey](#) program, which inspires future geospatial experts. During the pandemic, he's been working the program into the homeschooling curriculum for his own children.

"I mean, it's great in one sense because I'll always have a job. But I also want to see the profession grow and continue on and still be around when I'm ready to pass it off to the next generation. Which hopefully will be quite a ways down the line," said John.

Trent Keenan, PLS, raised the important point that fewer surveyors does not necessarily translate into riches and smooth sailing for the surveyors that remain.

"As much as we talk about it's going to be nice because we're always going to have job security; I think the biggest problem that we're

going to run into is the public can't wait around for three, four, five, six weeks when we tell them that we can't get to it for a month and a half. So we're going to have an issue on the PR side of things," he said.

In other words, efforts to grow the surveying profession aren't just to ensure there are more bodies in the office. It's to prevent the unknown of new legislation that could follow when the necessary work of surveying simply can't be done on time.

A new teaching model

It's becoming clear that what the surveying profession needs is a new teaching model, where practicing experts and retired professionals can join forces to create engaging and comprehensive educational content without burning out.

Crowdsourced mentoring like Mentoring Mondays and recorded lessons may be able to provide a digital starting point.

For physical in-person classes, Ian Wilson, PLS, is interested in exploring shared teaching opportunities.

"In Evergreen College out here, I keep getting jingles from them saying, can you come to teach a class? Can you come and teach a class? I do not have time to spend, unfortunately, to teach an entire semester of classes. And one thing that I've proposed over and over again, and it seems to get crickets or falls on deaf ears, is to get together a few surveyors," he said.



In Ian's vision, he would be able to commit to three weeks teaching about survey boundaries, after which another surveyor would pick up where he left off with another topic, and so on until the 16-week semester was over.

Why has his idea fallen on deaf ears? He imagines it must be due to the internal logistics at the college.

"Somebody is going to have to really do some work on this because then you run all the crap about, okay, now we've got ten teachers who are going to be here. Ten guys are going to teach this seminar next semester. Do they all need to be set up as employees? How do we - you know, there's a whole lot of logistics that need to be dealt with, but somebody has got to do it," Ian said.

Despite the unknowns, one thing is clear: a passion for the profession drives surveyors. And where there's passion, anything is possible.

With modern technology at our fingertips, there's hope that we can bridge the centuries-old art of surveying with the modern world, helping to educate and inspire a new generation of surveyors to follow in our footsteps.

If you are interested in learning more about [Mentoring Mondays](#) or volunteering as a featured speaker, please contact [Trent J. Keenan](#).

For Sale by Rich Jensen PLS Oak stamping block/anvil for Aluminum Survey Cap

Rich Jensen has stamping blocks for sale and below is information on ordering them. I have also attached information with picture for you to order one – Order info below.

Oak stamping block/anvil for Aluminum Survey Cap

The oak block is designed to accept aluminum survey caps having a nominal stem diameter of 1-1/4" or less and the cap may be inserted from either side of the block. Caps having a top diameter of 2-1/2" or less may be stamped at any point on the cap and it will be supported. For caps having a top diameter larger than 2-1/2", it is recommended the stamping take place only where the cap is supported by the block.

The block has a single coat of tung oil finish to help preserve the wood and should last for years. Paste wax or tung oil applied to each end of the block each spring (at least once a year) will help preserve the block for a longer time. After time the surface of the block may become splintered from constant impacts, when this happens either replace the block or sand it down to remove the splinters. The oak splinters will pierce the hand easily if care is not taken.



Blocks may be ordered at rj406orig@fmtc.com, larger size blocks are available and a price will be quoted at the time of the order. The quoted price of each block purchased will be billed to you.

Rich Jensen, PLS

Single block: \$25.00 each
3 or more blocks: \$20.00 each

2022 MSF Scholarships Awarded

*Left: Clay Treece presenting left to right:
FVCC Students Awarded: Isaac Ries, Eli Horn, Brian Dao*



Congratulations to the seven students of FVCC, MSU and Highlands College of MT Tech who were awarded by the MARLS Scholarship Foundation's scholarship committee for 2022 MSF awards.

The MSF Scholarship Fund awards scholarships to first and second year land surveying students. MARLS holds a MSF scholarship auction annually at the MARLS conference. We ask that you make an effort to fill out the annual MSF auction donation sheet (available at www.marls.com, by email or in your 2023 conference invitation to register for the conference). You do not need to attend the conference to donate an item or a monetary amount. In the last 33 years we have been able to disburse well over \$130,000 of scholarships.



2022 MSF Scholarships Awarded



Left: Dan Stahly, PLS and right Doug Smith presenting MSU students Henry Wilkey and Benjamin Erickson the MSF 2022 Scholarship Awards

Support our MSF Scholarship Annual Auction

Left: Eric Martin, PLS, Highlands College surveying instructor and right Shannon Marinko presenting Highlands college student Jayce Bishop a MSF 2022 Scholarship Award



William Karas, PLS (right) presenting FVCC Student Elijah Quick a MSF 2022 Scholarship Award



Reminisce Of An Old Surveyor Measuring a Distance by Taping

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

I don't like to think of myself as old but I am. I have been surveying for close to 50 years. The difference between how I used to survey and how surveying is done now is different. This difference was brought to the forefront of my thinking one day when I was surveying with a young surveyor. As we compared the distance we measured between two corner monuments to the distance set forth in the original survey performed in 1968, the young surveyor was appalled that the original surveyor was off six tenths of a foot between the two monuments. Until this young surveyor spoke I was thinking that the 1968 surveyor had done some exceedingly good measuring given the fact that the distance between the monuments was almost 2,000 feet across uneven landscape filled with puckerbrush. My young associate had never used a tape to measure a long distance. Had he done so, I think that he too would have marveled at the accuracy of the 1968 surveyor.

I would be surprised to hear that any surveying firm operating at this time still tapes long distances. If there is some firm that still practices this ancient art, surely they cannot compete on a fee basis with another firm.

So my young colleagues in the profession will better understand how the boundary they are now retracing was measured, I will reminisce about the lost art of taping a long distance.

Taping required at least two people in the survey crew. Three were ideal, with a person on each end of the tape and one person on the instrument to keep the two people on a straight line between the end points.

My employers at the time were somewhat tight-fisted with expenses so most of my taping was done with one other person.

With the direction to be measured selected, a distant object was chosen to use as a point of reference to guide us while taping. I suppose when taping across open land, a pole was included as part of the survey equipment. The pole was placed in the ground on line with the direction to be taped and used to guide the taping crew. Where I surveyed there was always some natural object that could be used or an appendage of a tree or bush where ribbon could be hung to serve as a guiding point.

Unless we were in farmland or urban land there followed some physical labor as brush and other vegetation was cut and removed from the direction to be taped. Of course if the distance to be taped was part of a traverse, the direction of the traverse was often selected so as to avoid the denser portions of vegetation thereby saving a great deal of physical labor involved with cutting a traverse line. If memory serves me, I seem to remember more time spent cutting a clear a line in preparation to taping the distance than actually measuring the line.

My employer favored a 200 foot steel tape. Most surveyors employed the standard 100 foot steel tape. I heard of a few surveyors that employed a 300 foot steel tape. The longer tape meant fewer markings on the ground that I shall explain later. However, the longer tape made a wicked sag unless extra tension could be exerted on the ends of the tape to reduce the

sag. Of course the extra tension made plumbing the tape more difficult. Still, I came to appreciate the longer tape and used it when I first practiced on my own after becoming licensed.

Now I will say here and now that I was well familiar with tape corrections such as sag, tension, and temperature. We never made those corrections nor do I remember a surveyor that I met at this time that did so though they were common subjects in academic learning. I do not believe these calculations were omitted from ignorance. It must be remembered that calculations during these times were done without benefit of an electronic calculator. As a result, any calculations involving multiplication and division were a tedious undertaking.

Also, the errors associated with the failure to make tape corrections were often as not dwarfed by other factors present in the boundary survey. Would a temperature or sag correction to the steel tape make much of a difference when the corner monument was a 22 inch diameter tree or a three foot diameter stone pile?

My employer did deem it important that the taping be done on a straight line and as near to horizontal as possible unless the end of the tape could be placed at the instrument allowing a vertical angle to be read and used to reduce the slope distance to a horizontal distance. I do not remember ever employing a hand level to check to insure the tape was horizontal, the level of the tape being accomplished by a fair estimate with the eye.

Leveling the tape required a plumb bob be suspended from at least one end of the tape and usually at both ends of the tape. Even on relatively level ground it was necessary to suspend the tape above the ground and employ plumb bobs or else the tape would weave up and down over brush we had cut, fallen trees, stones, and high grass that was normally present on the line of taping.

I don't believe a plumb bob can be found among the equipment of the modern surveyor. Perhaps it may be found buried in the equipment box on the survey truck yet. The plumb bob does not hang from the belt of the surveyor like it did decades ago. To come to the field without a plumb bob was a serious omission – akin to forgetting the tripod. Not only was the plumb bob necessary for taping but it was a necessary piece of equipment to hang under the tripod in order to place the instrument over the point, the optical plummet not being present on transits and compasses that were used to measure directions at that time.

Beginning at the instrument, the tape was laid out in the direction to be measured. Perhaps laid out is the wrong word – for the procedure was to grab the 'zero' end of the tape and drag it in the direction to be measured until the rear tape person would yell "stop" or some other recognizable command. Now in doing this simple task it was important that someone watch the tape or at least be sensitive to the resistance to the drag offered by the tape to prevent the tape from looping upon itself where continued tension would cause the loop to collapse and the steel tape to break. Careful observation was especially important when turning the tape back upon itself. Breaking a tape would cause the ire of even the most placid employer because there was no reason for this event to occur but for negligence. I am sure some survey crew members did try their best to think of some other plausible excuse that would explain a broken tape and not attach blame to themselves.

Having dragged the tape to its farthest extent without causing the tape to break, the forward tape person would be directed to the right or left by the rear tape person so as to cause the forward tape person to be on a straight line between the two

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points where the distance was required. This is where the pole or point of reference spoken of earlier assists the taping crew.

More times than not it seemed this simple task would reveal that the forward tape person had passed on the wrong side of a tree or bush requiring the forward tape person to drag the tape back to the offending tree or bush and pass on the correct side of this transgressing vegetation. Surely if the tape did not kink or break in laying the tape out, the risk of a break by kinking the tape increased with this realignment because the forward tape person was looping the tape back upon itself and was now agitated with the extra effort necessary to make the measurement. In their frustration they would tend to pull on the tape harder than good practice should allow.

In some instances, it would be determined that rather than drag the tape back and go on the other side of the offending vegetation, the vegetation could be cut and removed. This idea was good in theory but often fraught in practice. More than once I have seen a good swing of the machete or brush hook designed to cut the offending brush not only cut the brush but go on to cut the tape as well, the tape being next to the offending brush because of the circumstances I have mentioned.

It was always a discussion among survey crew members whether the employer will think the intelligence of an employee to be less if they broke the tape with an overlooked kink or the result of a powerful stroke of a machete. Thankfully that is one conversation and confession that will no longer occur with modern survey practice.

Once satisfied the tape is aligned properly in the direction of the survey, the tape would be raised off the ground in a manner to effectuate a level line. In raising the tape, the taping party often discovers that the recent maneuvering with the tape has allowed the tape to seep under some brush that had been previously cut in clearing the line and allowed to remain in the vicinity. The discovery of the offending vegetation occurred when an effort is made to raise the tape and one or more pieces of brush would also rise with the tape. At this discovery some vigorous attempt is made at shaking the tape to throw off the offending brush. This effort seldom worked other than to jerk the end of the tape out of a person's hand.

With the failure of shaking the brush off, it became necessary for someone to once again walk along the length of the tape and remove offending pieces of brush that had found their way to laying on the tape rather than under the tape.

If a person is following this story and is counting the trips along a particular segment of line, they will realize that the distance of the tape has probably been walked three or four times. First, a person must walk the line to cut a clear sight along the line. Second, a person will walk the line to drag the tape to set up the measurement. The third walk occurs when retracing the steps in order to come back around the correct side of a tree. Finally, the fourth walk of the line is to throw off brush and vegetation that has climbed on the tape. I know that vegetation can't move or climb on its own but if you had been there you would swear it does just that.

Finally, the tape could now be raised off the ground to effectuate as near as possible a horizontal line that could never be a straight and level line since the weight of the steel tape always caused a sag. To remove some of the offending sag, tension had to be applied to the ends of the tape. I suppose there were surveyors that employed tension handles in the field that allowed the tension, measured in pounds, to be carefully applied to the tape's length but I have never met the field crew

that used them in the field doing a boundary retracement survey. Perhaps a diligent survey firm would have had at least one tension handle in their office in order to show a new employee what 15 to 20 pounds of tension felt like.

For those surveyors that have never seen a tension handle, a close similarity can be visualized by thinking of certain weight scales with a handle at one end and a hook at the other end that are sold to fisherman to weigh the trophy fish they plan to catch. I suspect that some of the survey tension handles that were purchased by surveyors were used more often for weighing fish rather than applying tension on a tape.

With the tape raised off the ground, great skill must now be employed to do several tasks at once. The tape person had to keep the tape level, at a consistent tension, and steady enough to fix a point on the ground using a suspended plumb bob.

The rendition of these tasks in print does not begin to describe the difficulty of combining these tasks in practice. First, the plumb bob string must remain fixed and immovable on a mark found on the tape. This requires one hand be employed to clamp the plumb bob string securely to a mark etched on the steel tape. The other hand is employed pulling on the end of the tape to keep a constant and desired tension. It must be remembered that the steel tape is a smooth ribbon but for some minor roughness caused by marks on the tape surface indicating feet, tenths and hundredths of a foot. The last two mentioned etchings only present at the ends of the tape. The combination of the tension, tape smoothness, and liberal sweat on the hands resulting from the physical labor involve in surveying at the time and the reader can deduce the challenge required in making a measurement while exerting tension on the tape. Usually a leather thong at the end of the tape was used rather than holding the tape itself. A consistent tension was employed by tucking the hand next to the body and leaning the body in the direction away from the other person in order to render the desired tension.

Where a leather thong was not present or 'breaking the tape' required, often as not the tape person would grab hold of the tape and bend the tape down at their hand to afford a better grip – much as a person would do when pulling a rope to get a better grip. This grip often left a 'jog' in the tape at the completion of the measurement. After years of usage, a tape would no longer lay flat but would have rises and dips along its length that would be coupled with a few points of extra thickness where the tape had been repaired.

Let me pause in my rendition of taping to state that when I speak of 'breaking the tape' in this instance, I am not speaking of physically breaking the tape. Rather the phrase was used to indicate the entire length of the tape was not to be employed in making the measurement required.

Long ago, some entrepreneur invented a tape clamp. The tape clamp was a handy little gadget that allowed the user to firmly secure the tape with the clamp using the two finger rings that were part of the clamp. Using the finger rings, the tape could be easily pulled without bending of the tape or permitting a slippage along the tape.

I doubt much money was made from the invention. The survey firms that had purchased this gadget were likely as not to leave it unused in the office. When brought to the field, it never seemed to be with the tape person that needed it.

Having mastered the combination of holding the tape level, keeping pressure on the tape, and keeping the plumb bob string

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firmly attached to a mark along the tape, the tape person could now focus their attention to the suspended plumb bob that was likely as not swinging over the ground much as a lookout does in a crow's nest over a ship in rough seas. Restraining the plumb bob from wild gyrations required the tape person to periodically tap the plumb bob into the ground until the swinging of the plumb bob settled down.

The person at the rear of the tape had a mark that the plumb bob had to be over. When he was satisfied that he had wrestled the plumb bob and by extension the appropriate part of the steel tape over this point he would repeatedly shout some agreed upon term to the forward tape person to let that person know that a measurement could now be reliably made by the forward tape person.

I have seen the patience of the rear tape person sorely tested by the inability of the lead tape person to make a timely mark or reading. The rear tape person will make repeated statements of "good" or "mark" to indicate that he is over the point and the measurement can be made. After some repetition, the rear tape person will become agitated by his own endless repetition and may be heard to stop the repetition in order to yell: "god damn it, I'm good at this end. What is taking so damn long."

If the forward tape person was not measuring to a previously established point, they would tap the plumb bob point onto the ground to make a mark in the dirt, having previously kicked away grass, leaves, and twigs to clear a space on the ground. Once the forward tape person was satisfied the mark made by the plumb bob point represented a fair measurement, they would release the tension in the tape and put a pin into the ground at the mark. This pin would become the basis for the rear tape person to advance upon and measure over.

As I previously mentioned my employer was a kindly man but did not feel justified in purchasing equipment that was not absolutely necessary. Rather than using chaining pins, as they were commonly known, to fix the limit of the tape measurement, we would use nails or sticks with flagging tied to the end of the stick.

Having marked the length of the tape on the ground, the forward person would drag the tape in the direction of the survey to begin again the process of making the next measurement. The rear tape person would follow with the other end of the tape. Now if the rear tape person was not paying attention, they would likely as not kick the pin or nail out of the ground before they spotted it. If the rear tape person did a good job of kicking the pin loose from the ground, the taping would have to begin anew back at the starting point with numerous expletives used against the rear tape person for not paying attention to where they placed their feet. To avoid repeating the process of taping or bringing upon themselves embarrassment and attracting the ire of the other crew members, more than one rear tape person made a best guess where the pin may have resided before they inadvertently kicked it out. If possible the misfeasance was corrected without the forward tape person realizing what was being done.

I should mention that had the forward tape person measured into a mark or corner already fixed, his job was a little more difficult. Rather than stick a pin, nail, or stick in the ground, he had to find a way to maintain the tension, keep the tape horizontal, maintain a steady plumb bob over the point, and read the marks on the tape at the plumb bob string.

This was done by firmly clasping the plumb bob string over and on the tape using the index finger and thumb and sliding the string along the tape until the plumb bob was over the desired

point. The tension was then released while still keeping a firm grasp of the string on the tape. Once all the other distractions were eliminated, the forward tape person could peak under his thumb and see what incremental hundredths of a foot mark the string was held upon.

At this point it is worth mentioning a problem that has plagued surveyors using a tape or chain for a couple of centuries – keeping track of the whole lengths that are used when measuring between two points. When a survey crew measures long distances, it is necessary to tally the number of full tape lengths used. Now it would be wise for a crew member to make a mark in a field book each time a tape length is achieved. What is wise and what was done are two different things. If field books were not available putting notches on a stick or moving stones or acorns from one pocket to another was employed. Despite the best efforts, there are numerous distances where a tally was lost or added that should not have been.

I have alluded to a plumb bob suspended from the tape to the ground. The term 'suspended' is only accurate after some effort is obtained to stop the plumb bob from swinging in arcs over the ground. It is not possible to get a plumb bob to hang from the tape to the ground without some swinging. The plumb bob was determined to be contrary when let loose to hang. There were times when the plumb bob was stationary but not vertical as in the case when the plumb bob had to be dropped from chest height and there was a strong wind blowing across the open field. It seems to me that the wind was usually combined with cold temperatures. To all the other problems I have alluded to in trying to keep the plumb bob steady over a mark must be added the lost sensitivity of the fingers when using gloves and the shaking of the body from the cold temperature.

Eventually, the plumb bob was finally settled into compliance by tapping the plumb bob upon the ground until finally the tip of the plumb bob was confined to a small area meeting the tolerance of the tape person. Of course before the tapping could take place, the forward tape person usually had to expose the ground by kicking away sod, sticks, leaves, and other debris using the toe of his boot. This often accounted for the delay that caused the agitation of the rear tape person that I have previously mentioned.

I must not close this reminisce on taping before adding a few more tidbits that provide some added insight into taping practice.

Many tapes were not marked or inscribed like a more recent steel tape or the fiberglass tape still found in the surveyor's tool kit. What I mean is the tape did not contain marks to the hundredth of a foot along the entire length of the tape. The old tapes were only marked every foot except for the very end of the tape where the tenths and hundredth of a foot marks could be found. This necessitated the rear tape person find a whole foot mark to hold to and the forward tape person use the end of the tape to measure the increments of a foot. To set this up involved the forward tape person yelling back to the rear tape person to 'take a foot' or 'give a foot.'

While on the subject of marks on the tape, I must state that dragging a tape along the ground for days, weeks, and years often succeeded in smoothing the tape and erasing the stampings of the whole feet and making the marking of whole feet difficult to read. More than once I had to look up or down the tape to find a readable mark and work my way back to the mark I was to hold at in order to know what whole foot I was holding at.

I have about exhausted my memory of taping but for three

situations often encountered in taping. One situation is the delicate taping required when taping through an electrified cow fence with a steel tape. I need say no more on that topic as the reader can well imagine what often happened. I must add that in addition to the electrified wire, once the survey crew has cleared the electric fence and entered the field, the reason for the electrified wire becomes obvious. Curious cows tend to congregate about the surveyor and become a hindrance in the taping process. However, I suppose a curious cow or heifer is far better than the bulls I encountered from time to time that took offense at the red often worn by the surveyor.

The second situation not fondly remembered is taping upon a concrete or asphalt surface. Since such surfaces were often flat and without obstructions, the tape was laid flat on the surface. Tension was put on the tape ends during the measurement with knuckles touching the asphalt or concrete. In such cases one tape person usually released their tension unexpectedly with the result that the other tape person often left some skin from their fingers on the rough surface of concrete or asphalt.

The third situation that still can incite bad dreams occurred when taping across a busy road or sidewalk. You did not have to experience this situation in order to imagine the peril of a tape suspended above the road surface when a car is observed much too late traveling down the road. Dropping the tape quickly to the road surface would often preserve the tape. Yet, there is many a time the survey crew returning to the office with a broken tape that claimed this very event to be the cause of the broken tape. Of course, there was nothing they could have done to prevent this happening. At least that is what they claimed.

I will close this reminisce by speaking about securing the

equipment used in taping. The tape was coiled with attention paid to making consistent sized loops. The tape was then thrown. I don't mean heaved to the side. I mean that the tape was made into a figure 8 then into a compact circled loop using a twisting of the hands. Throwing a tape was an art that was often done at a surveyor's convention to show prowess. If a person did not know how to throw a tape it turned into a wrestling match where the tape refused to cooperate and often as not ended in a jumble rivaling any fishing line tangle. If the person did know how to throw the tape, a person watching would have the unmistakable impression that a magic trick just occurred. One minute the tape is in a large loop and the next it is neatly coiled in a compact loop.

The other item of equipment deserving some effort at storage was the plumb bob. To see a plumb bob being stored with the string hanging loosely from the end of the plumb bob would reflect poorly on the owner. At some point, another inventor came up with a gammon reel that wound the string up unless the owner resisted the urge of the gammon reel. Before the gammon reel arrived at the scene, a plumb bob string would be carefully wrapped around the head of the plumb bob and a slip put into the string to hold the string in place. A carefully tug on the string would unwrap the string from the plumb bob. A knot in the plumb bob string spoke of an untrained crew person. A knot in a plumb bob string was akin to a hang nail on the finger – it's presence always felt and always hanging up at inopportune times.

Keep this rendition of the taping process in mind young surveyor before disparaging that old surveyor that taped those long distance one small segment at a time.



Are Your Staff Performing UNLICENSED Land Surveying Activities?

By: Robert M. McMillan, PLS EiT

Being retired gives me too much time to spend on Facebook. Too often I see posts from survey technicians asking questions about "performing unlicensed surveys." Of course, they do not phrase it like that - for example, a recent post in a Surveying group asked "How much should I charge to set wood stakes at the property corners for the construction of a new house. I know I can't set IPs because I'm not licensed. It is a million \$ house." Many presumably licensed land surveyors discouraged the unlicensed practice in this case the post originating in Texas. Alarmingly there were many

encouraging responses from unlicensed people saying "\$50 an hour" or "\$85 an hour" encouraging this technician. When called out on it, these encouragers responded with "I do it all the time" and "This is my side hustle" even getting belligerent at me for pointing out that they were breaking the law and demeaning the profession.

So what do you think? Are your technicians "side hustling" on the weekends? Are they using your equipment with or without your knowledge? Could you be held responsible for their mistakes? Will your E&O insurance cover you? Might your license be in jeopardy for aiding and abetting? B&P Code §8780(b) (7).

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The Business of Land Surveying

Prepared by Trent J. Keenan, PLS
& Kristina Poulter

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In 2002, Daniel E. Beardslee was the founder of a surveying company that he had owned for over 25 years. He stated the following regarding the tenuous relationship between land surveyors and business development skills:

"It has been my experience that surveyors as a group exhibit poor business practices. There are certainly exceptions, but my opinion is that poor business management has been the only reason that land surveying has not risen to the level of other professions in the eyes of the public. There is no reason, after all, why surveyors should be considered with less regard than engineers, lawyers, or dentists, except for one thing – money. Engineers, lawyers, and dentists are all regarded, in general, as being better off financially than we are and are therefore placed higher in the social stratum of society. If surveyors were perceived as being as well off, they would, over time, be held with similar esteem. We have only ourselves to blame for this fate, and good, common-sense business decisions can help us elevate ourselves."

Twenty years later, the land surveying profession finds itself at the epicenter of multiple forces.

There is a labor shortage spurred by an aging workforce and the complications of the global pandemic.

There is a notable pay discrepancy between surveying and professions like engineering. Per the 2020 Department of Labor's statistics, the median pay for surveyors was about \$65,000 per year compared to \$88,000 per year for civil engineers (a roughly 35% pay gap).

There is more work available than ever before, with a

skyrocketing demand for surveying work.

Much of Beardslee's pronouncement seems to ring true through all of this. So why do many land surveyors struggle with business development, and how can business owners take steps to become better at it?

Surveyor Kent Groh conducted a recent three-part Geoholics podcast series dedicated to this issue. What follows is a synthesis of the advice that was shared by eight knowledgeable survey professionals.

What is business development?



It's not surprising that surveyors aren't experts at business development. As with many professions, there are few to zero business courses offered or required during the pursuit of the profession. Business skills must be picked up on an ad hoc basis, from trial and error or from knowledgeable mentors.

The old saying rings true: you don't know what you don't know.

Most surveying business owners are typically busy thinking about each month as it comes, simply aiming to make enough profit to keep their business running smoothly and their employees paid.

But a true benchmark for success is more than money in, money out. A long-term, thoughtful strategy can help you generate a better reputation and more money over time.

"I think long-term objectives is something that's honestly missing a lot," says Byrom Hess, the Chief Financial Officer at Rountree Inc.

"Too many people are just focused on hey, I need a job right now for my guys. They're not looking at okay. Are we still going to be able to do this and be as profitable three years from now?"

Do you need a formal business development plan? Not necessarily.

Many large companies do have formal business plans, but often they don't change at all from year to year, or the goal is simply to grow the business by a certain percentage point.

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A good business is run less on a formal business plan document and more on refining your processes and behaviors over time so that you and your employees are happy. It involves cultivating a refined skillset around activities like networking, billing, hiring, branding, community involvement, and more.

Relationships are the lifeblood of business



If there's only one lesson to take to heart, it's to recognize that a strong business relies less on project volume and more on building relationships.

"Relationships" doesn't simply refer to client relationships. It also encompasses relationships with fellow surveyors, tradespeople, and smaller and larger companies.

"Business development I think of mainly as retaining existing relationships, building new relationships, and also fence-mending and making sure that the people and clients that we might not feel great about, or project managers that are gone, that we always reach out. It's all about relationships in business development and having that key capability to be able to gather intel and have it first," says Dorina Bustamante, Director of Business Development at Ritoch-Powell and Associates.

"I'd also say that it's vital to have healthy relationships with your colleagues and competitors. Sometimes we have to divide and conquer. Sometimes if it's government work, you can only win so much with a certain agency. So we're constantly discussing how we prime or sub. And the teaming dynamic is very exciting."

In terms of clients, you want to establish your reputation as a reliable expert. In terms of other survey firms, you want to be able to partner together if the need arises. And in terms of fellow professionals, you want to maintain a working knowledge of who does what, and who you might want to someday hire.

Relationships function like compound interest. The more you put into them, the more you'll get out of them over time.

Don't chase commodity-driven clients

But how do you get out of the day-to-day trenches and into the point where you're focused on those higher-level goals?



The first step is to think hard about the clients and projects that you're pursuing.

Ideally, you don't want to work with clients who view surveying purely as a commodity, without any value for your expertise.

"I refuse to race to the bottom. I am trying to find those clients that are going to respect what I do and pay me the most I can," says Nolan Mark, owner of On The Mark Land Surveying LLC.

"I'm not charging \$200-300 for a lot survey. It's just ridiculous. I don't want to go out there and burn my time to do something like that, or maybe a mortgage lot survey that's just two pins, tape up a house, and throw in a piece of paper and then the realtor's happy and they get a close. I'm going to tell you what I think the cost is going to be, and that's what it's going to be."

When you go from working for someone else and having a secure paycheck to running your own business, you need to think about profit. That means aiming to be the lowest bidder to win work is usually a losing strategy in the long run. Nolan would much rather quote a price that's higher, and have clients choose to pay him that rate because they trust him to get the job done.

Michael Thompson is the President of Halma Thompson Land Surveys Ltd., where he has a staff of seven employees. He says that he occasionally will take commodity clients like land-transaction surveys, but it's not his focus. It's just to fill in the gaps.

"We will do that, but that's just something to keep the guys busy while we're not doing work that actually makes money, the better margin work that we really want to go after," he says.

"You really don't want your services to be a commodity. I'd say you're going to fall into one of four models. Either you're the cheapest, you're the fastest, you add value, or you make your client feel special. You don't want to be the cheapest, and being the fastest is a lot of stress. So I really want to be in that market where I'm going to add value to the client, or I'm going to make my client feel special.

And that's where you get the most reward, and you get the most money."

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Despite appearances, there are many clients out there where price is not the primary concern. Many clients would rather have work done, and done well, than go for the lowest rate. That's exactly what Byrom Hess has experienced. Many of his clients are fixated on quick turnarounds, for example, and are willing to pay handsomely for it.

"Some of our more profitable clients, it's because they know, hey, I call you and I need that in 24 hours, you're going to stay late and jump through hoops and get it done. And that's what allows us to have higher profit margins for that client, because they know that.

But each client's a little different. So that's why you need to get to know and find out what's important to them," he says.

Pursue the right projects



In today's market, pursuing high-margin projects is easier than ever.

"People are so busy right now, they won't even answer their phones. They won't reply back," says Will Wing, owner and CEO at Infinity Land Surveying, LLC.

"So if you just take the time to reply back to them, literally that's how easy it is right now. That's it. They're just like, 'oh my God, you replied to my call. Yes. Can you meet with me?'"

The key to picking the right projects is learning to say "no" to the wrong projects.

If you fill up your plate too quickly just to keep your team busy, you could end up having to turn away work that you want.

It's easy to fall into the trap of saying yes, but saying no will help put you in the driver's seat. When you push back against bad clients and unreasonable deadlines, you set the tone for everything that follows.

Dorina has found this to be true in her work at Ritoch-Powell and Associates. "We shouldn't just go get a job because they can hire us.

We should find the fit. And that's what we do, is try to find the fit."

So what kind of surveying jobs have the best margins?

Below are several areas that received special mention from surveying business owners:

- Publicly-funded projects
- Specialty areas like telecom and solar
- Utility projects such as powerline and gas
- Projects that are qualification-based

If you're only doing construction staking, for example, you're always going to have a low margin and will need to rely on volume. But if you focus on a variety of projects where you can charge a premium for your expertise, you can make more profit.

More profit is key if you want to invest in your business and employees.

"We can no longer commoditize this kind of work, because the biggest premium is employees," says Rich Antonio, VP of Business Development at Alta Southwest.

"If you don't invest in your employees in the future and highlight those, there is no growth in the future, because the rest of it doesn't matter."

High-margin projects mean that you can invest in employee training and technology that will help maintain your competitive edge.

Analyze your billing strategy



Once you have your ideal clients, you also need to consider how you're billing them. There are no right or wrong answers here, and they'll depend on your client relationships or the project type. But there are billing strategies that will serve you better, in certain instances, than others.

Collecting money up front

One strategy you may not have considered is to require full or partial payment for your services up front.

Want to weed out clients who aren't serious? Require some payment up front. Want to avoid hounding bad clients for

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months? Require payment up front. The amount of time you have to spend collecting outstanding payments are hours out of your valuable week.

In short, there's no need to be afraid about asking for a deposit for a professional service. A common model is to charge 50% up front, and the remaining 50% upon completion.

"We do for this for residential," Byrom says. "If it's someone that we work with all the time, then we don't. But if it's someone like, 'Hey, we have a little boundary survey for our property.' If we're going to take a project on like that, or even if it's like a new client that we're unfamiliar with, a lot of times we'll say like 50% up front. Because it's just the unknown."

Michel agree that he's a fan of collecting a retainer via credit card in advance.

"Especially if it's boundary staking type of work, get a retainer or get that credit card number before invest in that," he says. "You run into situations where someone says, 'oh, can you please state this boundary for me?' And then they find out, oh my neighbor's fence is two feet on my property. They should pay for that. And then all of a sudden you're in a loop. You'd never get paid for that. So you got to take that retainer head time, and you're going to weed out a lot of undesirable clients."

Again, if you have pre-existing clients that you trust, this method is probably not necessary. But there's no reason you can't charge some clients a deposit and grandfather other clients into your circle of trust.

Time & materials vs. lump sum

You have two major options when it comes to how you bill: lump sum, or based on time and materials. There are cases to be made for each type.

Time & materials:

- Makes sense when scope is unclear
- Makes sense for almost all construction projects
- Guarantees you'll get paid for the time and effort you put in

Lump-sum:

- Makes sense for boundary and topo work
- Makes sense if you have a client who wants a firm number, without any surprises
- Inspires you to become more efficient so that you can benefit from higher profit

"In general, we try to do percent complete. I look at percent complete is the more efficient we can be," says Byrom. "I like to be able to say, Hey, let's become more efficient. How do we do this? And then use that to become more profitable. because if you're doing T&M, then your billing rate is basically what your profit's built into. So you're going to have to make sure that billing rate is at a rate that's right."

Michael says that many clients, such as landowners and farmers, prefer to avoid the headache and confusion of T&M. Instead, they want a straightforward number.

"If you have a farmer that wants to subdivide a piece off a quarter section, they don't really care that you charge this much

an hour and it's going to take this much. Do you have an estimate? Just tell them it takes \$5,000. This will be done. And that's where they want to hear. They don't want to hear oh, here's my hourly rate and blah, blah, blah. Just add it up. You figure it's going to be \$4,000. So you tell them \$5,000," he says.

Overcharging slightly in cases like these isn't sleazy, it's part of the process of mitigating your risk. Some clients you'll clock in under the lump sum number, but others you'll spend extra time on.

Find the right employees



If you're a new business or just getting started as a sole proprietor, chances are you are thinking about when and how to grow your team.

Despite the current labor crunch, most small business owners are not comfortable hiring just anyone. Most are looking for the right fit.

"At the end of the day, it's finding somebody that's that really has the drive and the interest, and that wants to pursue it, says Will. "I've got the insurance ready, I've got the paycheck, I've got everything in the background is ready. It's just finding that diamond in the rough."

Sometimes the right fit means the right experience, other times it means finding someone you know you can rely on.

"You want to clone yourself," he says, but "they don't have to be perfect. Just somebody that can meet your criteria as the edges lead them in the right direction."

Nolan knew that he was ready to hire once he felt like he had perfected being a business of one, and then got tired of working all-nighters and every weekend.

But you still have to learn to let go and delegate in order to make it over the hurdle with a first hire or new hire.

"When you're the one doing everything and you're going to start passing that onto somebody, it's nerve-racking. Because I'm hiring a guy with zero experience in survey, but I can trust him. I know who he is. I know his background. Trust is going to go a long the way more than hiring a guy I don't know that wants a

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truck, wants a phone, wants everything handed to them right away, but he might leave tomorrow," Nolan explained of the individual he's in the process of onboarding now.

While no one can see the future, you want to hire with the future in mind. Can you see an employee sticking with you over the next years to come?

"When you're going to take on people, you have to put a lot of thought into how you're going to retain them. Where are they in life? Do they have young families? Do they really want to be in this business?" Michael says.

Michael says that he would rather overpay a new hire than have to replace them in six months simply because of a slight paycheck gap.

Your best bet is to treat your employees as an extension of your family.

"I think that in general, survey companies treat their field staff like shit," Michael admitted. "Most people want to have a family. They want to have a good life. They want to be able to have their weekends to do whatever they want. To meet their needs, you need to be able to allow people to do that. I don't like to say 'oh, if you're in survey, you work a lot of overtime. He can make a lot of money.'"

If you're not sure where to start looking for employees, Bill Swope, the Geospatial & Survey Business Development Manager at Halff Associates, Inc., has some advice.

He recommends working with associations and community groups to present surveying opportunities to interested groups.

"I'm lucky enough with the company that I'm at that they give me a lot of autonomy with what I do. And they feel that if I go out and help with things in the community that will bring business our way to in the end," he says.

That's why he does lots of work with the ISD in Texas—to plant the seeds for future partnerships and hiring opportunities with Halff Associates.

"They don't understand that the careers in surveying and geospatial are even there. They don't have job code classifications for this. So a lot of it is working with them to understand what's actually there, and what those opportunities are for their students once they get out of high school."

Stay on top of new technology

To stay competitive and maximize profit, it's also wise to stay abreast of the latest surveying technologies and applications.

Now more than ever, it's more important that we listen to what our clients are saying. If we listen, we're going to get a better understanding of their challenges, and how technology can help solve them.

"Change is just constant. And in particular, with what I do in geospatial, that change seems to be coming in at such a breakneck speed," says Bill. "With geospatial, I'm trying to find new ways to use the technology, to expand what we do."



Bill finds himself constantly adapting geospatial technology to fit new sectors, or to find new ways to service existing clients. Ultrasonic drones can now map oil and gas systems, and assist with leak detection, for example. New technologies make new applications to surveying endless.

"When it comes to the geospatial realm, it's just data collection. It's just a more efficient means of doing data collection, and new and different ways of doing data collection. But it's because we've gotten this new technology that allows us to do this. We're able to change perceptions about what land surveying is and how it can be expanded in the future and moved into different markets. So I think it's really exciting and it's fun to be at the forefront of this," Bill says.

It's not in every industry that you can see significant advancements happening before your eyes.

Build your brand



Not all the work of running a successful business happens within the walls of your office or within the confines of your job site.

There is also branding to consider, and a large part of building a brand happens through the process of community development. "Aren't we all community builders in what we're doing? And isn't civil engineering and this early pre-development all community building? We literally link roads and sidewalks and public spaces and private spaces together. So yeah, this is community development," says Dorina.

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With Ritoch-Powell and Associates, she is able to work with nonprofits like the Urban Phoenix Project and many other advocacy organizations.

When Dorina sees membership and sponsorship opportunities, she doesn't do them halfway.

"If we're going to be a member of something or sponsor something, then we need to have a dynamic role. I need logo glory. I need my leadership present. I need to make sure that we get the bang for the buck. And if we're going to become a member of something, we need to have an engaged staffer who's attending and reporting back and creating opportunities for further engagement."

When you get involved, you create value that goes far beyond your business. It's a win-win all around.

There are also lots of innovative opportunities for bringing the community into what you do and onto client project sites.

"If you bought a historic building or adaptive reuse, invite the city council person and do a little ribbon cutting or a Mazal Tov or something. Because it really helps clients feel valued and also see that the team spirit, and that everyone is there for the long haul," Dorina says.

Think of it as a chance to give back.

"I think sometimes in business development or sales, we feel like we take. We're always asking, we're taking. So it's nice to be able to give back sometimes," Bill says.

"I think it helps them to build morale within the company itself as well, because you start feeling better about yourself and then it just shows to the community at large that you're willing to invest some of your time and effort in them as well."

Advice from small business owners

We'll cap off this article on the business of land surveying with a quick-fire round of solid advice from small surveying business owners. These are some of the things they found important to starting a solo practice and keeping it running smoothly.

Save money before you go solo:

The best advice given to Will? Do not start a surveying business if you don't have enough money to survive for one year without getting a paycheck.

"If you're going to get good jobs, these are with cities, with towns. And they don't pay every two weeks," Will cautioned. "They pay when the project is done, and the surveyor is usually the last one on that list to get paid. So you really need to understand that before you start out, because that's a rude awakening."

Hire an attorney and accountant

This is a must-do for any new business owner. Even better?

Hire professionals who are somewhat close to your own age, so that they can grow with your business and service it for many years to come.

Says Nolan, "You need an attorney, you need an accountant. On top of that you need a bank. You need financial backing. There's other things to think about besides just, 'I can go out and survey this tomorrow because I have a license.' Nobody's questioning whether you're a surveyor when you start your own business. You gotta be a businessman first, and then a surveyor second. Because otherwise you're not gonna make it in this world."

Pay yourself like an employee:

You don't want to be worried about meeting your minimum expenses as you grow your own business. One way to alleviate those basic pressures is simple: pay yourself a salary. An accountant or financial advisor will likely tell you the same thing.

"I have overhead of \$54,000 a month, and it's a lot of pressure. You got to hit that minimum target in order to make money. But I don't worry about it too much, because I pay myself. That's very important if you're going to be a small business professional is pay yourself first," says Michael.

"Don't get into this idea that, 'oh, I can get tax savings if I just live off dividends and run my company this way.' No. Just treat yourself as an employee, and everything gets a lot easier. Some months you might lose money, some months you might make money. If you're losing money more often, then you have a bad business model and you just have to look at it. But once you pay yourself and you know that you have that set salary, then you can make proper business decisions without having the emotional rollercoaster of am I going to be able to pay my mortgage this month?"

Follow your passions:

The great part about surveying is that it can feel equally like work and play.

"The hardest part about being a business owner for me is separating the love. Because I absolutely love surveying. I get jobs that maybe I wouldn't do, but 'God that's a fucking awesome area, and I really want to go check that shit out.' So yeah, I'm going to do that job," says Will of a potential new job site.

"I've always wanted to get up there and work in that area and now I'm going to get paid to ride my quad up there all day long and go dig around and look for this shit that I've always wanted to check out? Like it's awesome."

Make sure that you find a good balance of projects that make money, and projects that you enjoy. Hopefully, they will be one and the same.

Be sure to join the Business of Land Surveying group on LinkedIn!



4 Challenges of Running a Survey Business

An abstract of a Mentoring Mondays presentation from January 18, 2021



Landon Blake is the President and Senior Land Surveyor at [Redefined Horizons](#). He established his surveying business in February 2020, mere weeks before the current health crisis was branded a global pandemic.

With just under 12 months of business ownership under his belt, Landon joined us for a Mentoring Mondays seminar to share his insights. His goal was to share the significant challenges that he encountered during his first year in business.

Two decades in the survey business.

While Landon is running his own show for the first time, he's been surveying for over 20 years. A stickler for doing things the right way, Landon jokes that he decided to start his own business after getting fired from several jobs for being a rule-follower.

"One of the challenges I've had as a land surveyor is working for larger civil survey firms and just getting a civil side of the house to do things the right way," Landon said. He describes the challenges of convincing civil engineers to file a record survey, among other things.

That desire to do a thing correctly as a surveyor isn't just about being principled – it's also about protecting yourself under the law.

"If you're a licensed professional, it's somewhere in between being an owner and being just a regular professional," Landon explained. "There is a difference when you're a licensed professional, and you're signing and sealing your own work; you carry some responsibility with you."

He gave the example of when he was newly licensed and working for a survey company. Because the California statute of limitations is ten years, he asked his company if he could start keeping a copy of the file for each survey he signed off on. They told him flat out "no."

"I had a dilemma as a licensed professional; what do I do?" Landon asked himself. His solution? He made a copy anyway. The moral of this story, Landon said, was that as a licensed surveyor, you have to live up to the code of the profession, even when there is an unclear hierarchy of authority.

"You become personally responsible for your work. And there's a natural tension therebetween that desire to make as much profit as possible and doing things the right way," Landon said. His insistence on doing things right – not just under budget – was a driving factor to go into business for himself.

Challenge #1: Misinformation in the marketplace.

The first challenge Landon discussed was misinformation in the marketplace. Outside of the survey world, many people in other industries simply don't know what surveyors do.

The specific group that Landon discussed on the Mentoring Mondays seminar was real estate agents. During the early days of his business, Landon targeted them almost exclusively. He did an entire series of marketing campaigns and in-person educational presentations with 200+ agents – and got crickets.

Why? Landon was targeting private residential real estate, which in theory could benefit significantly from land surveying. He was also banking on the fact that real estate agents have a

fiduciary duty to ask the right questions for their clients. But ultimately, he realized that agents saw surveyors as an annoying setback at best and a money pit at worst.

"Most real estate agents do not want to talk to a surveyor. Because all I'm going to do is find problems. And if I find problems, what happens to their deal? It goes away. We blow up their deal," Landon said.

He realized that zero real estate agents were interested in surveys, regardless of whether they represented the buyer or seller. Of the buyers and sellers themselves, only the buyers represented a potential client pool.

These days, Landon has abandoned his focus on real estate agents and targets buyers directly. "We're trying to get directly to the buyer either through the Internet or through professional associations," Landon said. "I have to try and get to the person whose money is on the line."

The myth about title insurance.

Another common misconception Landon encounters is the idea that real estate title insurance offers protection to buyers. He hears people parrot this so often that he's dubbed title insurance the most misunderstood product in the commercial real estate industry.

"Buying title insurance and thinking it's going to solve all the real estate problems you might have is like going out into a blizzard in a bikini," said Landon. "Title insurance doesn't cover very much. It doesn't. In fact, you could drive a school bus through the exceptions in your typical title insurance policy."

This should not come as a surprise, as it's not exactly a secret. If you grab a typical commercial policy, it states the many exceptions that would cause coverage to be withheld. For example, the "survey exception" says that title insurance will not cover anything that would be resolved or revealed by a properly executed survey. If you have a survey performed, the title company will remove that language. But most buyers don't commission one.

"These aren't mom and pop buying a home," Landon clarified. "These are people that are buying and selling commercial property, district property, retail property. They don't understand what's covered by their title insurance."

It's clear that an initial survey's cost would be preferable to denied coverage and the resulting lawyer fees. But sadly, buyers don't discover this until it's too late.

Lack of clarity around survey cost.

Another challenge Landon encounters regularly are clients who have no idea what a survey actually costs. Real estate

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agents often quote clients a ballpark figures that are thousands of dollars too low. This isn't done purposefully; it's just yet another result of misinformation. He has set out to rectify this by talking about survey costs regularly on Landon's [YouTube marketing channel](#).

"I was on the phone with a real estate agent today. He owned some property up in Castro Valley. It hasn't been surveyed since the GLO went through," Landon said. "It's got some Caltrans right away running through it. There are no monuments set. I looked at some records and got some poking around. I figured I got two or three days crawling around the Hills there in the East Bay, trying to find some corners."

He quoted \$20,000 for the job, only have the owners push back in confusion. Ten years ago, they'd had another survey done for only \$3,000. But it turned out that only four corners had been set. The wooden stakes the original surveyor had used were long gone. The owner had never received a copy of the survey. And there was no survey on file with the county. To Landon, it looked like an illegal survey.

"At the end of the conversation, the guy said, you know what, I'm glad I talked to you," Landon said. "He said that I get it. I understand why it's going to cost what it costs."

This illustrates the need for increased client education, but it also points back to the matter of surveyor integrity. When surveyors cut corners – no pun intended – it can have painful consequences for landowners and future surveyors alike.

Challenge #2: Finding your.

At first glance, all surveyors may provide essentially the same service. But in reality, there are clear professional niches within surveying. As a business owner, it's to your advantage to specialize in a niche.



Landon believes that most modern firms are too general. As land surveying becomes more professional due to sophisticated technology and equipment (such as UAV), it can be helpful to hire specialists when you need them rather than try to be an expert at everything yourself.

"Part of the way that you can be successful is by figuring out your niche and try not to take on the whole world, to take on everything," Landon said. "It's just it's going to raise your equipment costs, and you're going to need more people to be trained in more different things." For now, Landon employs three full-time staff members who are all focused on one specific market.

Don't chase work outside your market.

It can be a challenge to remain committed to your niche

and your company vision – especially when you want to maximize profits. The result is that you have to walk a fine line between pushing your team to learn and grow and not biting off more than you can chew.

Landon gave the example of a client that reached out to him in December 2020. It was a client that he had a great relationship with. The client needed some work done, and he was willing to pay generously. Landon was tempted to take the project but instead chose to refer the client to another firm, setting for a finder's fee instead of a big payout.

"I don't chase stuff out of my market," said Landon. "I said, hey, I would love that work right now. I could really use it. It's wintertime, and things are a little quiet. But that's not in my wheelhouse. I don't have the right toolset. I said, let me refer you to an excellent surveyor that does that kind of work." He referred the work to his friend's surveying company, where they had the \$300,000 UAV LIDAR set up that was perfect for the canal mapping job.

While Landon and his partner struggled with the decision to turn the project down, they soon felt some peace of mind. "We ended up helping with the project a little bit," Landon said. "After I saw that thing on the ground about that second day, we were out there; I looked at my partner. And I'm like, man, I am so glad we didn't bite this off. Cause we'd have got our butts kicked."

The silver lining was that they maintained an excellent relationship with the client and also got to work alongside an expert firm and learn some new technology. At the end of the day, Landon was confident in his decision to remain faithful to his niche. As a brand new firm, you have to walk before you can run. You have to control your growth intentionally. And no matter how long you've been in business, you don't want to face the ethical dilemma of practicing outside your area of competence.

Challenge #3: Transferring knowledge to junior staff.

Perhaps the biggest key to business success in any industry is passing along expertise. When staff members are adequately trained and empowered to succeed, they can contribute directly to the company's success. They are also often more likely to stay with a company for a long time.

But this is easier said than done. Education is a huge time investment for employers, and while the value of sharing



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expertise is clear, it often gets pushed to the back burner.

"If I get hit by a bus tomorrow, what happens?" Landon asked. "The answer right now is we're in big trouble. And so I want to not be in that place."

This topic struck a chord with all in attendance on the Mentoring Mondays call. Below is a summary of the collective wisdom they shared.

Encourage self-sufficiency.

We've all had that thought that perhaps the fastest and easiest way to accomplish a task is to do it yourself. That may be true, but it's also shortsighted. In the long term, business owners need to have team members they can rely on to share the burden and do a job well.

This comes by intentionally giving your team the space to be self-sufficient. It can mean giving your number two in command more solo tasks. Or it can mean letting someone new and green accomplish a job, even though it may be painfully time-consuming to watch.

This means working hard to get his number two guy licensed within the next 18 months for Landon. Not only does he want him licensed, but he also wants him confident. "We were out today, and he did a boundary survey, found about 15 corners by himself," Landon said. "And I could not have been there today, and he'd had done all right. I was there cause he's still learning, but I'm always thinking about how I can make that knowledge transfer process more efficient."

Use video as a training tool.

One of the ways Landon has discovered to increase efficiency is by using video as a training tool. It's another method that's very time-consuming to set up on the front end but then saves him an enormous amount of time later.

For example, you can personally sit down with every new team member and give the same talk over and over. Or, you can record the lesson once and then instruct them to watch the video.

"Now, instead of having to stop and teach the same thing again, the second or third or fourth time, I can tell my team member, Hey, go watch this video that I recorded. And then when you come back, let's sit down for 10 minutes and talk about it," Landon said. "I think it allows us to scale the learning without the cost, which I'm excited about."

Landon specifically likes video as opposed to a written, textbook-style learning format. While you still need written guidelines and workflows, videos are more engaging, and many people learn better on a screen.

"I'm trying to get my knowledge out of my brain and onto paper in a manner that my people can follow. And that's a massive effort. That's constantly overwhelming me," Landon said. "There's a lot that I've just assimilated over the last 20 years that I'm trying to put down on paper for folks and put in a video for folks."

Reduce turnover.

Having a strong and supportive company culture is the key to a stable workforce. The surveying community, like many industries, suffers from a high turnover rate. Every time an employee moves on, you need to find and train a replacement. And that process is quite expensive and time-consuming. Because even if a new employee has the technical skillset in place, they aren't yet an expert at your business and your niche.

In order to retain staff, you need to support and empower them. And when you regularly transfer expertise and reward the accumulation of knowledge, you will win their appreciation. Encouraging and inspiring your team members might seem daunting, but it can happen in several small ways that add up.

For example, imagine an employee is offered the chance to work at a new firm. The pay and benefits are roughly the same as their current company. How will they make that choice? If their current firm has mentored and supported them, they will likely feel no urge to move on to a different firm. But if the new firm is known for its great mentors and culture, and your firm is not – you have a problem.

Connect education with compensation.

Landon is currently running a new experiment in an attempt to motivate and retain his younger team members. His most unique professional development program aims to reward education with compensation directly.

How does it work? It's a point-based system where points earned translate to a higher paycheck. "You earn points for the stuff you learn on the job, and we track it. You're evaluated every month, and we track what new skills you're learning on the job, and those are assigned points. And then we also have points you can earn off the job. So by taking a community college course or getting one of your CSTs. Or you can earn points by watching videos and reading articles," said Landon. "And then what we do is we tie that directly into your compensation."

They set up the program so that a certain percentage of points can be earned on the job, but the rest need to be achieved outside of work. This incentivizes employees to pursue professional growth both on and off the clock.

This system also prevents employees from feeling discouraged when hard work goes unrecognized – because it doesn't. "I don't want a situation where I've got somebody that's been working for me for a couple of years, and I failed to recognize their growth. Because that's a problem," said Landon. "That forces me as an owner is to sit down and say, hey, I hired this guy who was a dipstick three years ago, and I still think he's a dipstick, but the reality is he's not a dipstick anymore. He's at three years of training under my partner and me. And here are the things he knows that he didn't know three years ago. Am I paying them appropriately?"

Landon hopes that over time, the program serves to both increase retention and encourage employees to invest in their own future.

Remember that training scales over time.

The great news is that once you successfully train a few key people properly, the burden of training new employees can be shared. The more diverse your team becomes, the better you can have training relationships between junior and senior staff members.

"I didn't properly anticipate how much of the training I was going to have to do, just because we're a small firm," said Landon. "I look forward to when I've got a couple of people underneath me that can take on some of that, so as you grow, your ability to train scales, right? Because if I train three people now, those three people can each train three people."

When you first start, the training burden can seem difficult to bear. But it's important to remember that every hour you spend training a team member is an investment. Whether they are an 18-year-old new surveyor or a 30-year-old surveyor



about to be licensed, the time you spend training is never wasted. It pays dividends down the road.

Challenge #4: Balancing free and paid expertise.

The last challenge that Landon discussed was that of walking the line between free and paid work. While educating the public is undoubtedly part of the responsibility of being a land surveyor, you also don't want to let it put you out of business.

Landon likened it to a land attorney, who at some point has to stop answering questions for free and get a client to sign a contract. "One of the things that I've learned from attorneys is attorneys have to be careful, because, at some point when they're given that advice, they acquire a responsibility to that person, whether they're under contract or not," said Landon. "I'm not exactly a hundred percent sure how those rules apply to surveyors, but it's made me a little more cautious about how much advice I'm willing to give."

So while Landon does take many phone calls at the office, he tries not to spend hours doing work that would typically be paid. Spending two hours on multiple calls a day can quickly eat up your workweek, and clients are quick to devalue your time.

"I had a gal just a month ago that told me she was going to hire me for a survey. I pulled all the maps. I figured out where the corners were. I was answering questions about her zoning. I spent two days with this gal trying to get her prepped and ready to sign a contract," Landon said. "And then she called me the third day and said, hey, I found an old retired engineer that lives two blocks down from me. He's going to do my survey for

WE OFFER 3 KINDS OF SERVICES

GOOD-CHEAP-FAST

BUT YOU CAN PICK ONLY TWO

GOOD & CHEAP WON'T BE **FAST**

FAST & GOOD WON'T BE **CHEAP**

CHEAP & FAST WON'T BE **GOOD**

\$1,500 bucks."

The argument for free expertise.

The Mentoring Monday group seemed polarized on this topic, with some attendees saying that they would educate clients no matter what. Some argued that you leave potential clients with a positive experience when you position yourself as an educator. Even if they don't secure your services personally at that time, they leave thinking of you as an expert and are ready to refer your name or utilize you in the future.

It's clear that there is no one "right" way to straddle the line between free client education and paid client work. For Landon's fledgling company of three employees, time is precious. He has learned through trial and error to act accordingly. And when he does give out a hefty serving of free advice, he requests something like a review for the company website in return.

"That is one way for me to get a little bit of value," said Landon. "If you are helping people and demonstrating some value, it doesn't hurt to ask for a little referral, a little testimonial. A lot of times, people will do that for you."

[If you are interested in learning more about Mentoring Mondays](#) or volunteering as a featured speaker, please contact [Trent J. Keenan](#).



WESTERN FEDERATION OF PROFESSIONAL SURVEYORS REPORT

Report from the October 8, 2022 Board meeting in Denver, Colorado by Russ Kluesner MARLS Delegate #2, and WFPS Chair-Elect

- ❖ Steve Parish is almost complete in his video instruction series, which will be available at it's completion, via WFPS website.
- ❖ Each states approach to a Safety Manual Template, for anyone to use as the needs arise for one to be in place.
- ❖ We spent quite a bit of time during our roundtable discussion looking over each state that currently has a Monument Preservation law. Looking at preparing some sample documents that a person from any state could use when preparing similar legislation.
- ❖ We are doing the same thing with a Surveyors Safety manual, to also be used by anyone wishing to create one for a client or for their own company.
- ❖ Trent Keenan had more teaching aids and sample gift packets he has been giving out to middle school and grade school children, introducing them to Land Surveying, and all the directions one can take within the profession. We all brought several samples of our Association's newsletter/magazine for other members to view and hopefully, get a few ideas for their own.
- ❖ Please remember to take a look at the WFPS FLS study course available through WFPS, and MARLS.
- ❖ Still looking for partners for the 2026 WFPS conference. Typically join with States that are having their conference about the same time, (spring). 2024 will be in Las Vegas in conjunction with Nevada, and California.
- ❖ Final point and Shared memories for Richard Heirien will be in Lewiston Idaho in February. Exact day TBD.
- ❖ Our next meeting is scheduled for December 2nd or 3rd, 2022, via Zoom meeting. Spring meeting will be in Spokane Washington, to coincide with LSAW annual conference February 17, 2023. Summer meeting will be in Salt Lake City in June, exact date TBD.



Montana Association of Registered Land Surveyors 2022 – 2023 Membership Application

Applicant's Name _____
 Company Name _____
 Home Mailing Address _____
 City _____ State _____ Zip Code _____
 Work Mailing Address _____
 City _____ State _____ Zip Code _____
 Daytime Telephone _____ Cell Phone _____
 Email _____
 Date of Birth ____ / ____ / ____
 Montana PLS or LSI License # _____
 Send mail to Home ___ Office ___
 Are you registered in any states other than Montana? ___ If yes, list: _____

Check Class of Membership Application:

- \$230 ___ Active PLS Member** - Professional Land Surveyor in good standing in the State of Montana.
- \$80 ___ Associate Membership** - Actively training as a PLS under the direct supervision of a PLS and is recommended by a MARLS PLS.
- \$190 ___ Non-Resident PLS Membership** - PLS who resides outside Montana and does not practice in Montana.
- \$190 ___ Affiliate Membership** - Any person in a profession or business associated with the profession of land surveying who is approved by the MARLS BoD.
- \$230 ___ Sustaining Membership** - An individual or institution that desires to assist financially in the work of the Association.
- \$125 ___ Emeritus Membership** - Any person who has been registered in the State of Montana as a PLS, and who otherwise complies with the requirements for Emeritus status as specified by the PELS Board of Registration, State of Montana.
- \$20 ___ Student Membership** - Any person who is enrolled as a student in a higher education surveying curriculum.

I agree to observe the By-Laws of the Montana Association of Registered Land Surveyors and to support it in its endeavors.

Signature _____ Date _____

Make Checks Payable to MARLS

Visa/MC/D/AE # _____ Exp. Date: ____ / ____

CVVC Code: _____ Billing Zip Code: _____ (4% convenience fee added to credit card payment)

For July 1, 2022 - June 30, 2023 MARLS annual dues: TAX INFORMATION: Federal tax law limits the deductibility of membership dues expended for legislative purpose for 2022 – 2023 MARLS reasonably estimates the deductible portion of your dues to be 90% for tax purposes only. \$10 of your dues is disbursed towards 4 issues published annually of the Treasure State Surveyor magazine for tax purposes only.

Membership applications are available at www.marls.com

Mail application to:

Montana Association of Registered Land Surveyors
P.O. Box 359, Columbia Falls, MT 59912

Phone in at: 406-253-5527 (Kay McDonald)

Email to: kay@marls.com



*MARLS Scholarship
Foundation, Inc.
P.O. Box 359
Columbia Falls, MT 59912
Phone: 406-253-5527*

**Montana Association of Registered Land Surveyors Scholarship Foundation, Inc. (MSF)
First Year Surveying Student Scholarship Application Requirements
MSF Scholarship Application must be submitted by August 1, 2023**

MARLS Scholarship Foundation has scholarship funds available for students who are interested in pursuing an education in surveying.

A number of scholarships of up to \$2,000 may be awarded for the 2022-2023 school year to students entering the 1st year of a 2-year surveying curriculum or the 2nd year of a 4-year surveying focused curriculum, either of which is recognized by the Montana Board of Engineers and Land Surveyors as meeting the requirements for a person to eventually become a Licensed Professional Land Surveyor. A Montana High School Graduate attending a comparable curriculum at an out of Montana institution will be eligible for a 1st year scholarship, providing they can offer proof that the curriculum meets the requirements for becoming a Licensed Professional Land Surveyor in the State in which the curriculum is offered. A person entering a 4-year curriculum will need to be registered in at least one surveying related course during their 2nd year.

A number of scholarships of up to \$700 may be awarded for the 2022-2023 school year to students entering a curriculum at a Montana Institution which will provide a surveying technician level of education. A number of Montana community colleges and branches of State of Montana Universities may offer surveying technician programs.

Application: Scholarship awards will be determined based on a combination of academic achievement, financial need, work history, course of study, and a submitted essay. To apply for scholarship funds please supply the following information in a neat and orderly format (*It is important for you to recognize that the Foundation takes into consideration how well the requested information is presented*):

1. **Type of scholarship being applied for.**
2. **Full name, address, telephone number, and email address.**
3. **Description of financial need.**
4. **Work experience, especially any surveying experience.**
5. **The name and location of the high school you are attending, or you attended. Include the month and year you graduated or are anticipating graduating. If you are in a 4-year program, provide the name of the institution you are attending.**
6. **If necessary, provide proof that the curriculum of an out of Montana institution meets the requirements for becoming a Licensed Professional Land Surveyor in the State in which the curriculum is offered.**
7. **Your high school grade transcript to date. If you are in a 4-year program, your grade transcript to date.**
8. **The name of the school you are planning to attend or have been attending and the program you will be enrolled in.**
9. **A one-page essay describing what interested you in pursuing an education in surveying, and your career goals.**

Your application packet shall include the following statement along with your signature and the date:

"I hereby certify that all the information on this application is true and correct. I understand that any false information in, or deliberate omissions from, this application may be grounds for rejection of the application and withdrawal of any scholarship award offer. I agree that I will abide by the decisions of the MARLS Scholarship Foundation Board of Directors as they relate to this Scholarship application".

All decisions regarding scholarship awards for the 2023-2024 school year will be made by the MSF Board of Directors. Awards of scholarship funds will be made after receipt of proof of enrollment.

Applications may be downloaded at www.marls.com

MSF Scholarship Application must be submitted by August 1, 2023

Submit application materials to:
MARLS Scholarship Foundation, Inc.
Attn: Kay McDonald
Email: kay@marls.com
PO Box 359, Columbia Falls, MT 59912
Phone: 406-253-5527



*MARLS Scholarship
Foundation, Inc.
P.O. Box 359
Columbia Falls, MT 59912
406-253-5527*

**MARLS Scholarship Foundation, Inc. (MSF)
Second Year Surveying Student Scholarship Application Requirements
Scholarship Application must be submitted by August 1, 2023**

MSF has scholarship funds available for students entering the 2nd year of a two-year surveying curriculum or the 3rd year of a four-year curriculum with a surveying emphasis.

A number of scholarships of up to \$3,000 may be awarded for the 2022-2023 school year to students entering the 2nd year of a 2-year surveying curriculum or the 3rd year of a 4-year surveying focused curriculum, either of which is recognized by the Montana Board of Engineers and Land Surveyors as meeting the requirements for a person to eventually become a Licensed Professional Land Surveyor. A Montana High School Graduate attending a comparable curriculum at an out of Montana institution will be eligible for a 2nd year scholarship, providing they can offer proof that the curriculum meets the requirements for becoming a Licensed Professional Land Surveyor in the State in which the curriculum is offered. The applicant must be at a minimum currently enrolled in the 2nd semester of a 2-year surveying program or the 4th semester of a four-year program with a surveying emphasis.

Application: Scholarship awards will be determined based on a combination of academic achievement, financial need, work history, course of study, and a submitted essay. To apply for scholarship funds, please supply the following information in a neat and orderly format (It is important for you to recognize that the Foundation takes into consideration how well the requested information is presented):

1. Type of scholarship being applied for.
2. Full name, address, telephone number, and email address.
3. Description of financial need.
4. Work experience, especially any surveying experience.
5. The name and location of the institution you attended for your 1st year (or 2nd year if appropriate) of surveying education.
6. Your post high school grade transcript to date.
7. Name and location of the institution you are planning on attending for your 2nd or 3rd year of surveying education.
8. If necessary, proof that the curriculum of an out of Montana institution meets the requirements for becoming a Licensed Professional Land Surveyor in the State in which the curriculum is offered.
9. A one-page essay describing what you have learned about surveying to date and how that knowledge will assist you in achieving your career goals.
10. A letter of recommendation (sent directly to MSF) from a school counselor or Surveying Instructor who you had contact with at the institution of your 1st year (or 2nd year if appropriate) of surveying education. The letter should include the writer's opinion as to your qualifications, character, and attitude. All recommendations are confidential.

Your application packet shall include the following statement along with your signature and the date:

"I hereby certify that all the information on this application is true and correct. I understand that any false information in, or deliberate omissions from, this application may be grounds for rejection of the application and withdrawal of any scholarship award offer. I agree that I will abide by the decisions of the MARLS Scholarship Foundation Board of Directors as they relate to this Scholarship application".

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Submit application materials to:
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Email: kay@marls.com
PO Box 359, Columbia Falls, MT 59912
Phone: 406-253-5527

 MARLS MARKETPLACE	PRICE	QUANTITY	TOTAL
2017 Montana Road Law Book by Peter Dayton for sale (Hard Copy) 2017 Montana Road Law Book by Peter Dayton for sale (PDF on Flash drive)	\$130 \$100		
MARLS Membership Pin - This pin is a ¾ diameter gold colored pin with the MARLS logo.	\$6.00		
MARLS Land Survey Monument Sign ~ (Metal)	\$2.75 ea.		
2022 MSSLR Book - 3rd Edition—NEW ARRIVAL PDF 2022 MSSLR Book on flash drive	\$50 \$45		
Shipping and Handling	Orders to \$30 add \$10 Orders over \$30 add \$20		
TOTAL AMOUNT ENCLOSED			\$
Name: Shipping Address: Credit Card: Expiration Date:			
Mail to MARLS, PO Box 359, Columbia Falls, MT 59912 or email: kay@marls.com or Phone order to: 406-253-5527			

The articles that appear in the Treasure State Surveyor have been selected to assist you in the advancement of not only the profession of land surveying at large, but also in your pursuit to better offer professional services individually, to better your company's integrity level, to hopefully increase your financial success and to promote the public health, safety, and general welfare for your clients. It is time for you to get involved through your articles, ideas and involvement. Please submit your articles of interest, humor and experiences to be included in the next issue of YOUR publication of the Treasure State Surveyor to kay@marls.com.

Stewart Nash's Online Books
 To download Stewart's e-books, go to smashwords.com. At the top of the page you can search for books and authors. Type in Stewart Nash. Four novels and one theology book will be seen. Click on the titles to see what it is about and at the bottom of the description are the downloading options. Below those is the historical book titled, John Mullan-Soldier, Explorer, Road Builder.
 For his book titled The Last 300 Miles the web address is: <https://www.kobo.com/us/en/ebook/the-last-300-miles>
 It is also on Amazon as a Kindle book. This book is under G. Stewart Nash. Please rank the book if you read it.
 You can contact Stewart at snash32@citywest.ca for more information on his books.
 TO ORDER THE BOOK "The Western Nomad - Memoirs of a Land Surveyor" by G. Stewart Nash, PLS, to order call Kay at 406-253-5527 - \$10 plus S&H.

MARLS LIFE MEMBERSHIP QUALIFICATION

1. Any person who has reached the age of sixty (60) years and who has been an Active Member in good standing for at least fifteen (15) years shall be a Life Member.
2. Any person who is or who has been a Licensed Professional Land Surveyor in the State of Montana for a minimum of twenty-five (25) years and who has been an Active Member of the Association, in good standing, for at least fifteen (15) years may apply for Life membership. Approval of such application must be given by a majority of the Board of Directors.

PLEASE CONTACT KAY MCDONALD
(kay@marls.com) to see if you qualify for life membership

National Society of Professional Surveyors
5119 Pegasus Court, Suite Q, Frederick, MD 21704
Phone 240-439-4615 Ext. 105 - Fax 240-439-4952
www.nsps.us.com
E-mail trisha.milburn@nsps.us.com

To Join NSPS as a MARLS Life members, Fellow or Student members: You are invited to join NSPS with the NSPS membership form at the NSPS website www.nsps.com. **Please send your payment and form directly to NSPS for processing.**

NSPS - MARLS Joint Membership for all MARLS in-state PLS members: For those members qualified as MARLS in-state Active PLS members: MARLS in-state Active PLS NSPS membership dues are paid by MARLS annually. MARLS Membership year is July 1 - June 30 of each year. For MARLS new licensed in-state PLS members: NSPS sends our newly MT PLS licensed persons of MARLS in-state Active PLS membership category their NSPS new member packets by mail which is also a one year free NSPS membership.



2022 3rd Edition Montana's Subdivision and Surveying Laws and Regulations

*Prepared and Published by the
Montana Association of
Registered Land Surveyors*

Montana's Subdivision and Surveying Laws and Regulations 3RD EDITION - Published March 2022

Contents:

- Montana Subdivision and Platting Act
- Uniform Standards
 - Uniform Standards for Certificates of Survey
 - Uniform Standards for Plats
 - Uniform Standards for Monumentation
- Montana Sanitations in Subdivisions Act
- Sanitation Rules
- Corner Recordation Act
- Principles, Definitions & Activities
 - General Principles
 - Geomatics Definitions
 - Activities Included in the Practice of Land Surveying
 - Activities Excluded in the Practice of Land Surveying
- Montana Land Surveyors Right of Entry

The MSSLR book is also available for \$45 in PDF version on a flash drive sent to you by mail.

Please note: All PLS active members of MARLS have receiving a complimentary copy from MARLS of the 2022 MSSLR 3rd Edition book in the mail. If you want another hard copy please order per below.

To order a MSSLR 2022 Book - 3rd Edition (hard copy)
Please submit \$45 per copy plus \$5 S&H with your order:

MARLS, PO Box 359, Columbia Falls, MT 59912

Phone order to: 406-253-5527

Email order to MARLS at kay@marls.com

All Credit Cards accepted

Name: _____

Address: _____

Phone: _____

Email: _____

Credit Card: _____

Expiration Date: ____/____/____ 3 Digit Code _____

Breakfast on the Bighorn numbered prints

The MSF of the "Breakfast on the Bighorn" limited edition number color prints are available for purchase from MARLS Scholarship Foundation. This 250 copy limited edition print has been created from the original painting by Montana artist "Shorty" Shope depicting a Roy Bandy 1912 GLO survey camp. This colorful reflection of surveying in the early 1900's has previously been seen in the "Tiny" Tillotson survey book.

Copies of the print will be available from MARLS Scholarship Foundation in the following form:

15" X 20 1/2" print paper for \$95.00 plus S&H.

Prints 1 through 15 are reserved for MSF Scholarship auction and special presentations.

Make checks payable to: *MARLS Scholarship Foundation, Inc.*

To mail orders:

MARLS Scholarship Foundation, Inc.

Attn: Kay McDonald

PO Box 359

Columbia Falls, MT 59912

PHONE order to: 406-892-4579 with credit card

Email: kay@marls.com with credit card with expiration date

We accept Visa, Mastercard, AE and Discover cards



www.marls.com

Join the member's side today

contact Kay

MARLS Foundation Surveyors Assistance Fund

◆ Helping surveyors in need of assistance.

◆ Donations may be sent to:

◆ MARLS Foundation Inc., P.O. Box 359, Columbia Falls, MT 59912

◆ (Make checks payable to: MSF Inc.)

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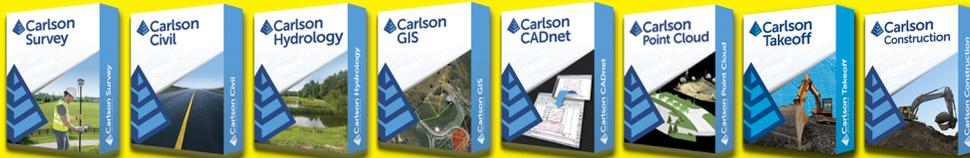
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MARLS - Illinois Mutual Disability Insurance Plan

The MARLS BOD recognizes Illinois Mutual as a preferred carrier for individual disability insurance. As part of the Illinois Mutual Association Program active members would be eligible for a 5% discount when they purchase disability insurance from Illinois Mutual through Raymond Kojetin.

[Illinois Mutual Quoting Tool](#) can be found on the MARLS website in the member site.

You then have the option of emailing the agent Ray Kojetin at raykojetin@gmail.com with your contact information if interested in this valuable member benefit. You may also view this at www.marls.com in the MARLS member's only site.



The articles that appear in the Treasure State Surveyor have been selected to assist you in the advancement of not only the profession of land surveying at large, but also in your pursuit to better offer professional services individually, to better your company's integrity level, to hopefully increase your financial success and to promote the public health, safety, and general welfare for your clients. It is time for you to get involved through your articles, ideas and involvement.

Please submit your articles of interest, humor and experiences to be included in the next issue of YOUR publication of the *Treasure State Surveyor* to kay@marls.com. Your involvement is greatly appreciated.

This is our challenge to everyone in our Society to share some history and photos for all to enjoy.

Our goal is to print in each quarterly issue a "Survey Monument History Moment" article or any article from our MARLS members. Send your history article to Kay McDonald at kay@marls.com

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