The Tarheel SURVEYOR

SPRING 2021 No. 21.1

More Than Meets the Eye

p. 14

Sustaining Members

Help us support these great companies that support NCSS.

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www.duncan-parnell.com

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www.gpinet.com

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www.capefearengineering.com

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Allied Associates, P.A.
Winston-Salem, NC
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CH Engineering, Inc.
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www.ch-engr.com

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www.egps.net

Hayes Instrument Company
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www.hayesinstrument.com

AP Surveying PLLC
Shelby, NC
www.apsurveyingpllc.com

Concord Engineering & Surveying, Inc.
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www.cesilds.com

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www.encompassservices.com

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www.imcipls.com

Avioimage Mapping Services
Charlotte, NC
www.avioimage.com

Davis-Martin-Powell & Associates Inc.
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email:stakes@intrstar.net

The Tarheel SURVEYOR

Spring 2021

In This Issue...

Cover Photo of Member, Chris Cole (left) & friend Glenn Longhurst courtesy of The Georgia Jewel.

ABOUT NCSS:

- Founded January 31, 1939
- Second oldest professional surveying organization in the United States
- Only professional surveying organization in NC
- Affiliated with the National Society of Professional Surveyors and, therefore, all Professional Members are also accounted as members of NSPS as of July 1, 2013

OUR MISSION:

"A society of professional surveyors and their associates dedicated to enhancing professionalism, improving legislative awareness and promoting the profession of surveying."

Who We Are

NCSS 2021 BOARD OF DIRECTORS

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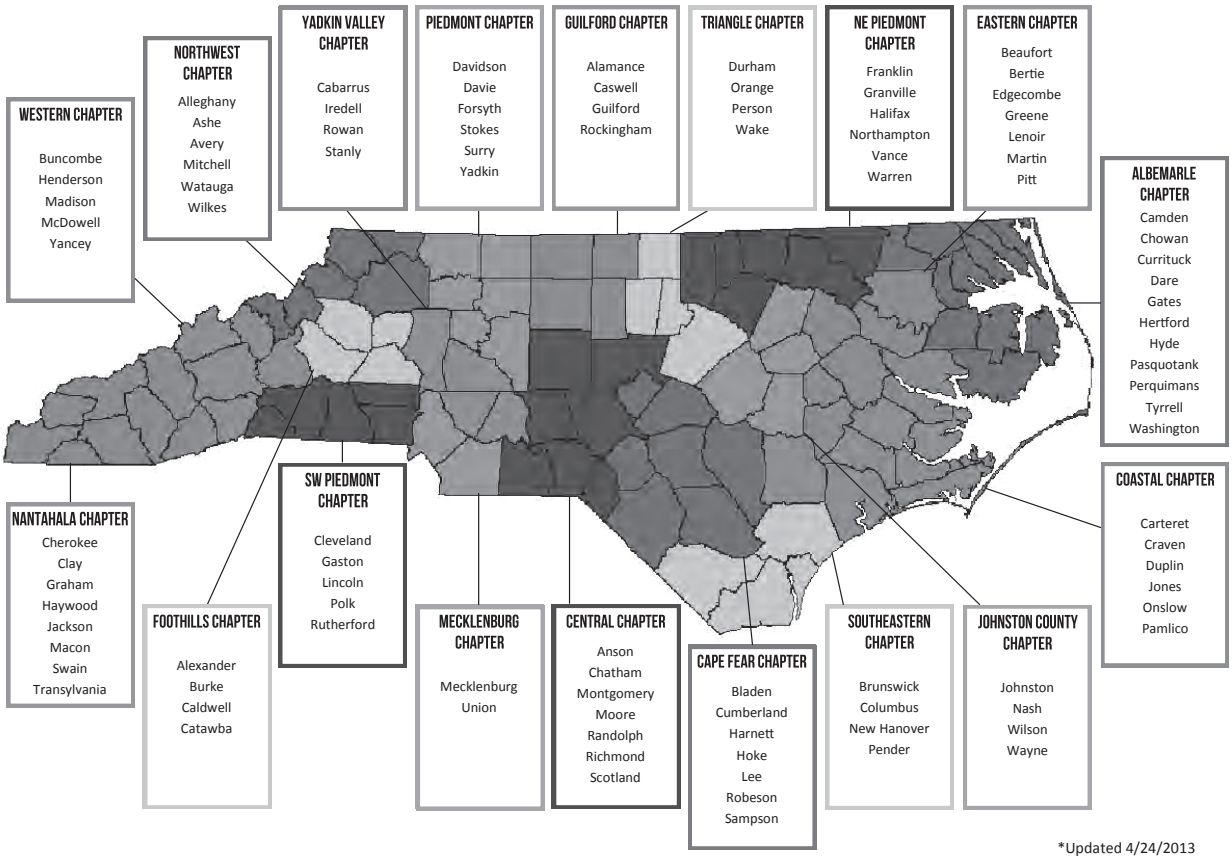
Sherri L. Barron
sbarron@ncsurveyors.com

CHAPTER MEETINGS

CHAPTER	DATE & TIME	LOCATION
Albemarle	4th Tuesday | 6:30 pm	Various Locations, NE Counties
Cape Fear	Last Tuesday | 6:30 pm	Various Locations, Fayetteville
Central	Last Tuesday | 6:00 pm	Blake's B-Que, Candor
Coastal	Last Monday | 6:30 pm	Sagebrush Steakhouse, Morehead City
Eastern	2nd Monday | 6:30 pm	Parker's BBQ, Greenville
Foothills	2nd Tuesday, 7:00 pm	Timberwoods, Morganton
Guilford	3rd Tuesday | 6:00 pm	Cooper's Ale House, Greensboro
Johnston County	2nd Tuesday | 6:00 pm *no meeting Jul-Aug	Holt Lake BBQ, Smithfield
Mecklenburg	1st Tuesday | 6:00 pm *no meeting Jul-Aug	Dilworth Grille, Charlotte
Nantahala	3rd Tuesday | 6:30 pm *no meeting Jun-Aug	Various Locations, Sylva
NE Piedmont	4th Tuesday | 7:00 pm	Johnny Bulls, Louisburg
Northwest	3rd Tuesday | 6:00 pm	Various Locations, Boone & Wilkesboro
Piedmont	4th Tuesday | 6:00 pm	Hickory Tavern, Winston-Salem
Southeastern	Last Wednesday | 7:00 pm	Carolina BBQ, Wilmington
SW Piedmont	2nd Thursday | 6:30 pm	Olive Tree, Rutherfordton
Triangle	3rd Tuesday | 6:30 pm	Currently Meeting Virtually
Western	2nd Tuesday | 6:00 pm	AB-Tech Campus, Asheville
Yadkin Valley	2nd Wednesday | 6:30 pm	Pancho Villa's, Salisbury

Please contact chapter president to confirm meeting details before attending.

NCSS Local Chapters



*Updated 4/24/2013

Director's Notes

For those of you who have an aunt, daughter, or mother named Shirley, I am sorry for my next sentence. I hate Shirley. Truthfully, it would be more accurate to say I hate "surely." For the past year, the NCSS staff has done everything in our power to be good stewards of our resources as we endeavor to support your profession. It seems our planning is always intermingled with the phrase, "surely by (*month of choice*) we'll be able to meet." As we have been repeatedly disappointed, I tease the staff that I do NOT like Shirley. However, she can redeem herself. After a full year of pandemic restrictions, our readers may be interested in the condition of NCSS and a glimpse of what lies ahead in 2021.

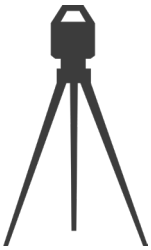
The financials are tight but not grim. NCSS has four sources of income: membership, education, conference, and golf. From March 2020 through March 2021, we have canceled our spring golf tournament, several seminars, the 2021 Conference & Trade Show, and the 2020 Institute. One can now appreciate how important the Finance and Budget Committee's decision to carefully set aside money over the last four years to prepare in case our ends do not meet on June 30th. Thankfully, your faithful membership support makes a huge difference. Despite lost revenue, our membership still met our projected budget totals.

The Society has applied for a Payroll Protection Plan (PPP) loan now available to 501(c)6 organizations. Our CPA prepared the application and submitted it to our financial institution. We may qualify for as much as $23,000 if accepted. This financial aid will certainly allow NCSS to continue to perform our duties without interruption of services to our members.

Many of you experienced firsthand the difficulties of hosting seminars during the pandemic. Venues canceled, instructors canceled, and participants canceled. Circumstances seemed to change daily. However, I am very thankful that we had no reports of COVID clusters after seminars. Our online courses provided many surveyors with a viable alternative to meeting in person. It also showed many of our members how easy the platform is to use through our website. These courses made a vast difference in our ability to provide you with continuing education credits. I want to thank those chapters who expended monumental efforts to host classes for us. Churches seemed to be the only venues that would have us. Chapter partnerships are crucial to our success, and their 2020 efforts were highly commendable.

The generosity of our chapters continues to encourage me even into the spring. The SW Piedmont Chapter has offered to host an ALTA seminar this spring with all proceeds donated to NCSS! This type of response is why we are the oldest professional association in North Carolina. Surveyors take care of each other. Thank you for your patience and encouragement; Shirley [*sic*] 2021 will be better.

I regret that we were unable to host the NCSS Annual Conference and Trade Show in Pinehurst. It was a difficult decision not taken lightly. However, your health and social experience during the conference were the top priorities. As the number of cases and hospitalizations increased after Thanksgiving, the Conference and Executive Committees determined no safe options were available for us to gather. Pinehurst, always a most



Schedule at a GLANCE

APRIL 16, 2021
CFS Update Webinar
12:30pm-4:30pm
4 PDHs
Webinar via Zoom

APRIL 23, 2021
ALTA Survey Update and Review
SW Piedmont Partnership
8:00am-4:30pm
7.5 PDHs
Shelby, NC

MAY 19-20, 2021
Basic Photogrammetry (Photogrammetry Competency Course, Sect 2)
8:00am-5:00pm
16 PDHs
Wake Forest, NC

MAY 21, 2021
Aerial Image Processing (Photogrammetry Competency Course, Sect 3)
8:00am-5:00pm
8 PDHs
Wake Forest, NC

gracious host, deferred financial penalties as we willingly committed to a new contract February 23-26, 2022.

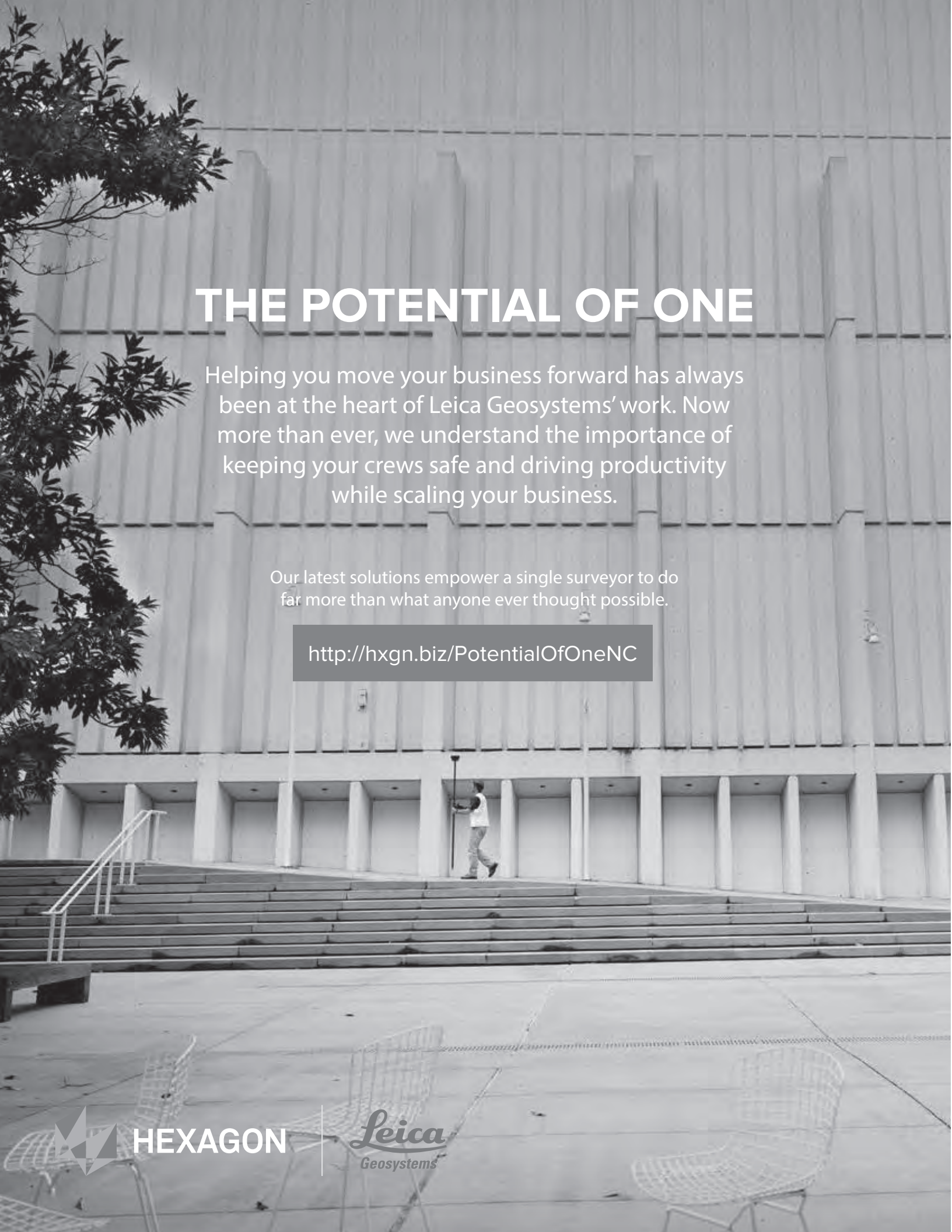
Looking forward, we plan to host the Annual Golf Tournament on May 14th at River Ridge Golf Club in Knightdale. This year's tourney will begin with a shotgun start at 9:30 am. NCSS will provide breakfast and lunch, and each member of the winning team receives $125.00. Later that evening, a small banquet will be held at our office to present the awards for 2020 customarily presented at the Annual Conference.

As I write this article, the numbers of cases and deaths are falling, the vaccinations are ongoing, and Governor Cooper has eased restrictions slightly. I have great hope that Shirley [*sic*] we will get back to normal soon.

Christy C. Davis
NCSS Executive Director

CONGRATULATIONS TO THE 2021 PLAT CONTEST WINNERS

Overall Winner	**Timothy Guisewhite**
Boundary-First	Missy Flanagan
Boundary-Second	Chris Cole
Boundary-Honorable Mention	Cory George
Topographic-First	Darius Nazari
Topographic-Second	Brandon Simpson
Subdivision-First	Timothy Guisewhite
Subdivision-Second	Chris Cole
As-built Commercial-First	Brandon Simpson
As-built Commercial-Second	Jeffery Hazzan
As-built Residential-First	Timothy Guisewhite
As-built Residential-Second	Missy Flanagan
Non Conforming-First	Jeffery Hazzan
Non Conforming-Second	Chris Cole
ALTA-First Place	Timothy Guisewhite
Subdivision Design Plan-First	Timothy Guisewhite
Subdivision Design Plan-Second	Chris Cole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Letter from the President

I am pleased to be writing this, my first "Letter from the President." To say that it's been an interesting journey is an understatement. I usually try to have a solid plan. One thing that many of us have learned this past year is that plans change on a dime. On Saturday, February 20th, Jeff Jeffreys handed me the gavel, and I realized that in some ways, I had viewed this as the destination, but it wasn't at all. This moment was just the beginning, and I wasn't entirely sure that I was ready.

I guess that's about right after the year that we've just had. This wasn't the Saturday morning after the Conference like I'd planned. All those plans had changed, and unfortunately disappeared, despite the preparations we had made.

In planning the Annual Conference, I had an opportunity to work with a great Conference Committee team. We carefully monitored the COVID numbers, Governor's restrictions, and the event host's policies. With the Institute already having been canceled, and only a small number of seminars occurring, we realized that this conference needed to deliver education offerings that provided a good number of quality hours.

We settled into a three-scenario plan. Plan 'A' would be a "business as usual" conference with social activities, short courses, and access to a floor with vendors, equipment, and refreshments. Plan 'B' would be much more restrictive. We would have a limited number of attendees with very little vendor interaction. Education in plan B would take priority.

Then there was plan 'C'. Let's call it the "Doomsday Scenario". Plan 'C' was the worst-case situation. Increased restrictions and health risks would mean that the conference would not be viable. The decision to cancel the conference was not an easy one to make. The committee placed the health and safety of the Society members first and made the recommendation to cancel this year's conference. At least we had a plan.

The conference not materializing was just one example of many recent disappointments. It would be easy to see it as a failure, but at the end of the day, we helped to keep our members healthy and the Society didn't lose the monetary deposit that we paid to the event host. With the conditions on the ground, it was possibly the best decision that we could make. It was just not the result we envisioned.

Many of us have seen highs and lows in surveying. Economic downturns, legislative mandates, and competition from other geospatial science practitioners are just a few examples of challenges we have faced. More changes will be coming our way and we need to start making plans. We will need to create a vision of where we want to be, and then make it happen.

For those in our ranks who are younger in their careers, you should be asking: "How will I advance my career? Should I further my education, take a new job opportunity, or learn a new skill in emerging technology?" For those of us "seasoned professionals," we need to safeguard our businesses against recession, and we need to plan for retirement. Then, of course, there is always the discussion around a succession plan. Who will replace us when it's time to take off the boots and hang up the plumb bob? Are we doing enough to recruit and mentor new surveyors?

Our careers, our association, and the profession are too important, too valuable to leave these things to chance. For most of us, surveying isn't what we do, it's who we are, and the profession needs members to guard it and advance it.

Over the next few months, The Society's committees and the board of directors will be discussing many items that will need our attention over the coming year. Now is a great time for members to communicate with their Chapter Presidents to help set priorities. You may have a need for more online education, or need help connecting with chapter meetings via Skype, or other concerns. The purpose of this Society is to enhance and support its members and that is where our focus will be.

I am not sure what this next year will look like, but I do know I want to have a plan in hand and have our membership working towards our shared goals. In the words of Yogi Berra, "If you don't know where you are going, you'll end up someplace else." We wound up someplace else in 2020. I feel certain that most of us don't want to do that again! Stay safe, work hard, and get involved. I'm looking forward to working with all of you this year.


Peter & wife Kathy

Peter J. Brennan Jr., PLS
NCSS President 2021-2022

Education Foundation

by J. David Lee, PLS
Education Foundation President

The North Carolina Society of Surveyors (NCSS) Education Foundation would like to thank everyone who took part in the 2021 Cash Raffle and American Surveyor Rifle Raffle. In addition to the support of the individuals who purchased tickets, the NCSS Education Foundation would also like to thank the Northwest and Coastal Chapters for the financial support of the Rifle Raffle.

Proceeds from both raffles will support scholarships for students enrolled in the NC A&T State University Geomatics program and North Carolina (NC) Community College geomatics programs. In 2020 we issued $15,000.00 in scholarships; $5,000.00 was awarded to NCA&T to help all their students with tuition needs, and the remaining $10,000.00 was awarded to the following students.

Candidate	Scholarship Recommendation	Currently Attending
Andrea M. Watiker	$1,500.00	NCA&T
Charles E. Langdale	$500.00	CPCC
Jarred D. Swanger	$750.00	AB-Tech
Jonathan W. Terry	$1,250.00	NCA&T
Joseph S. Mancuso III	$1,250.00	NCA&T
Joshua C. May	$1,250.00	NCA&T
Lyndon J. Higdon	$1,000.00	NCA&T
John R. Langevin	$600.00	NCA&T
Zebulen R. McNeill	$600.00	NCA&T
Adam D. Yascavage	$700.00	Wake Tech
Scott R. Sanford	$600.00	NCA&T

Cash Raffle Winners
Grand Prize – Hencle Matheson - $2,000.00
2nd Place – Jeff Allen - $500.00
3rd Place – Bob Skelly - $500.00
Winning Ticket Seller – Neil Shepherd - $100.00
American Surveyor Rifle Winner – Kris Schmidt

An additional way you can support the NCSS Education Foundation and geomatics students in North Carolina:

Two Ways to Order Your Specialty Plate

- Order your tag using the form found at https://www.ncdot.gov/dmv/downloads/Documents/MVR-27LS.pdf

- Or order when renewing online: https://www.ncdot.gov/dmv/title-registration/license-plates/Pages/specialty-plates.aspx

Musings….

by Peggy Fersner, PE

It is hard to believe that it has been almost a year since we retreated to our home offices and discovered Zoom for both work and Happy Hours – who would have thought. I tend toward optimism, and I discovered some interesting traits about myself over this time that I did not realize. I really like working from home! Maybe because my office at the University is a closet (fact check with Jerry and Christy) but my home is filled with light. Light automatically creates a happy mood – right? Also, I am at my best for the mental work in the morning. I sit down at my computer at 6 AM (and yes, there is a bathrobe involved), but I can get so much done in those first three hours. I am not sure that I can go back to a traditional work schedule, in all honesty.

The Zoom environment has allowed me to "visit" with my distance students and get to know them when we get together to go over a sticky problem. We can share screens and work through a solution, solving it in real-time. Having a tablet where I can write on the screen makes that so easy. That has been a tremendous improvement over emails and phone calls.

A downside to this pandemic is our reduced recruiting, which is Jerry Nave's responsibility. Usually, every spring, he makes his rounds of the community colleges that have the Geomatics Technology programs so the students can put a face to our program. This is our second spring without that occurring. Hopefully, that will return in 2022. Employers have stepped up to the plate, and many are now recommending that their highly motivated employees investigate opportunities opened to them by attending A&T, and for that, we are thankful. Our students are encouraging their corporate colleagues to attend as well. That has been an interesting development. This past week I had two inquiries from homeschoolers who are attending two different community colleges. They will get their Associate of Arts or Science (AA or AS) degrees in the spring of 2022, as well as their high school diplomas. They wanted to know what courses would best transfer to the Geomatics program so they could possibly graduate with their BS in two years. These bright young folks are planning ahead.

These new industrious candidates naturally cause me to think of the success of our recent graduates. Readers may not be aware that NCSS's current President, Peter Brennan, is one of our graduates? Dale McGowan, NCSS Secretary/Treasurer, will FINALLY graduate in December of 2021. He is a true picture of a typical student pathway. They start and stop their education until finally graduating. Adam Canoy serves on three committees for NCSS: Education, Conference Planning, and Chapter Relations/Membership Development. I would say that he jumped in with both feet. Others are now owners of their own companies, and some will be given partnerships once they graduate. These things make it worthwhile for the faculty as we see our efforts pay off for our students. Here's to many more graduate success stories in the future!

Peggy Fersner is the Geomatics Coordinator at NC A&T State University in Greensboro. She has been on staff since 1993, teaching surveying, GIS, and hydrology courses. She has earned both her BS and MS in Civil Engineering.

NSPS Memorandum of Understanding

In 2012, NCSS agreed to partner with the National Society of Professional Surveyors (NSPS) to foster membership on both the state and national levels. As a result, your membership with NCSS now includes dual membership with NSPS. Read the MOU on our website at: www.ncsurveyors.com/about_ncss/governing_documents/nsps


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High Accuracy Monitoring

by Norman Ribelin, PLS

When a power producer first asked me to provide monitoring services on a river system with four dams, I had no idea what I was venturing into; however, I was confident I could find possible answers. This task seemed simple enough—accurate measuring was just what I had been doing throughout my professional career. Over the past nine years, however, my understanding of the client's needs have increased; and, at the same time, my confidence to measure with such accuracy has been sobered!

Just what is "high accuracy monitoring"? In my observations, I have come to understand that monitoring really is "to observe or measure qualities or progress of something over a period of time." "Monitoring," therefore, also means "surveillance with examination." (According to some sources, "surveillance" comes through French, from Latin, as "over vigilance".) "Surveillance" seems very similar to our professional name of "surveyor" or, in my simple terms, to "see over from above."

When first tasked to provide monitoring services, I had lasers, prisms, and robotic total stations. I believed these to be the best surveying "toys" available. The difference, from what I had provided over the years, was consistency of measurement at a thousandth of a foot precision along 1500 feet baselines. At this point, I became painfully aware of the term "consistency." When performing boundary surveys, "high accuracy" means plus or minus one hundredth of a foot, or maybe even a quarter of an inch, depending upon conditions merited in the field. And, if the rod leans to the right or left, compensating errors make the work look good.

In addition to the precision of the measurement, the surveyor must also consider the structure of a dam. Is the baseline clear? Could the surveyor sight a single base line and then measure up or down stream? Oops! Introduce lighting fixtures, construction, ospreys, swarms of flies, vegetation, heat, and numerous other concerns, and the measurement simplicity is thrown out the door. Some dams require climbing hundreds of steps in a day's time through several cycles. Performing this task as a single person, or "one-man" mode, creates additional challenges. Then introduce a dam on an arc with offsets at hundreds of feet instead of a quarter of an inch or tenth of a foot. No two structures are similar, and each one produces a new challenge in streamlining the procedures to measure the changes.

Through the course of my monitoring career, I have developed an intense desire to provide consistency of measurement. "Bell curves," "95 percent confidence," "two-sigma," and "outliers" were terms that I vaguely remember in seminars, all the while trying to not show myself nodding off. These values became important to me as I pondered one question: "How can I trust the values that I am reporting?"

Having a geology background in college, I know that the earth is not sitting still. All things are in motion. The earth's crustal plates are moving; the structures

that I needed to occupy are flexing; and my equipment was expanding and contracting through temperature changes. How could I account for all these variables so that systematic error or careless blunders would not creep into my measurements?

I came up with this philosophy: Make repetitive measurements as fast as possible. I also realized that I needed to automate the measurements when possible so that I could keep my sticky fingers out of the numbers.

Finally, I discovered that not all equipment is created equal. The simplest and most rudimentary equipment we use is the most crucial equipment for an accurate measurement process. Tripods are foremost, followed by prisms. They are different, with different accuracies and various costs. Generally speaking, the most expensive piece of equipment is supported by the least expensive piece of equipment. In other words, surveying infrastructure is only as good as the least important equipment supporting the measurement process.

High accuracy monitoring certainly challenges the surveyor's intellect, experience, expertise, and resources. Experience through trial and error, concentrated study, and a hard-work ethic can make high accuracy monitoring a reality.

Norman Ribelin has been a licensed Professional Land Surveyor in NC since 1980. He graduated from UNC-Chapel Hill in 1972 with a BS in Geology. He became a licensed surveyor in 1980 and joined NCSS the same year. Norman has served as President of the NCSS Yadkin Valley Chapter and is a member of the NCSS Education Committee. He has operated Ribelin Land Surveying, Inc. in Rowan County since 1998.

WELCOME NEW LICENSEES

Joseph Agenbroad
Richard Baldwin
Ryan Beltrand
Jarrod Black
Michael Camilly Jr.
Michael Feldbusch
Robert Garner
Amos Glaspy
Chadwick Goodnight
Daniel Greenwald
Jesse Gunnin
George Hart
William Herx
Daniel Hopson
Ross Jones
Joseph Kelly
William Lawrence
Brian Long
David Lukac Jr.
Douglas Magde
Marcus Magers
Joshua Morgan
Jeremiah O'Dean
Joseph Odham
Scott Osterhoudt
David Reynolds
Brendan Welsh
Brian Winters

More Than Meets the Eye

by Christy C. Davis, Executive Director

Surveyors are bright, resourceful, adventuring, bushwhackers, and storytellers. They come from a great oral tradition that will have you laughing or marveling at the feats they have accomplished while mapping our country. Social media makes it possible to learn that there is more than meets the eye for many of your colleagues. Enjoy, as the Tarheel Surveyor highlights members' interests outside of surveying. They may inspire you.

JOSH WHITE

Past President Josh White is a bowhunter. What makes his hobby even more interesting is that he is part of a TV Show. Josh likes to hunt mature whitetail deer and turkeys. He particularly enjoys filming the Full Draw Adventure TV broadcast. When Josh was young, his dad presented him with a little yellow fiberglass, recurve bow. Together, they made his arrows from the hedges surrounding their house. Those self-made arrows led to hunting all kinds of things. Now, he chases big-game with a compound bow.

When asked what he likes most about bowhunting, Josh's poetic perspective was evident. "Witnessing the woods awake, I love the way my heart races as I see the cedar-stained, ivory mass carried from the main beams up to the tall tines which array the crown of a mature buck's approach. His dark feet sink in the soil due to the excessive weight he carries, as his muscles ripple throughout his shoulders, supporting each carefully planned step." He notes that a camera is an essential supporting piece of equipment because it enables him to replay and share his experiences. The emotions continue to live through photos and videos.

What makes Josh successful? Josh said that success for him "is not defined by the harvest, but simply by the time spent in God's creation." He noted that the preparation for the hunt and the thrill of the chase are as important to him as the hunt itself. He loves filming hunts because it allows him to relive the moments again and again. His newest venture is an Outdoor Daily Devotional where hunting and Christ-centered teaching pairs to help others live daily by faith.

What advice would Josh give someone just getting started as a bowhunter? "Enjoy every minute and set your own goals." He said, "A trophy is in the eye of the beholder. A kid's first four-point buck is just as special as a twelve-point buck of my own." Sharing the beauty of God's creation is his ultimate ambition.

CHRIS COLE

Chris Cole is an ultra-marathon trail runner. In his 20's the Leadville 100 became a fascination with Chris. The Leadville Trail 100 Run is an ultramarathon held annually on rugged trails and dirt roads near Leadville, Colorado, through the heart of the Rocky Mountains. The race first ran in 1983. The racecourse climbs and descends 15,600 feet, with elevations ranging from 9,200 to 12,620 feet. He found it fascinating that people could travel that far on foot during one event. Chris loves the rush he gets exploring the trails and woods and pushing himself to the limit. He has also grown very fond of the community of runners, such as Glenn Longhurst who shares the cover with Chris.

He finds his success by measuring personal accomplishments. His goal in each race is simply to cross the finish line and not worry about what place he finishes. When asked if he has any awards or accolades, he humorously replied, "ugly feet, cool belt buckles, and interesting memories."

His advice for a beginner; "buy a good headlamp with extra batteries and listen to your body." He reminds us that "things don't always go how we want them to, but long-distance running requires you to keep moving." That is good advice for all of us.

DOUG YARBOROUGH

Doug Yarborough is a duck-hunter. His interest developed early hunting quail with his dad. Doug had older friends and cousins who joined his dad on hunting and fishing trips. He looked forward to the day that he was old enough to join them. When that time arrived, he had a great mentor and friend. Doug reminisced about his father, "He has since passed away, but I could never repay what he taught me."

When asked what he loves about duck hunting, Doug said, "I love being outside and seeing ducks work decoys and respond to the duck calls. Of course, friends and family add to the experience." Doug finds his success in much the same way as others. "It's the trip itself that makes me feel successful. Discussing what went wrong or what could have gone better. The friendships and memories you make last for a lifetime."

Doug encourages those thinking about taking up the sport by saying, "It's a great way to spend your money." If he could have one piece of equipment, what would it be? "A bigger boat for bigger water."

JERRY CALLICUTT

Jerry Callicutt chooses to mix surveying with mission work. Jerry first became interested in 1976 when he took a three-week mission trip to Central and South America with his pastor. Since then, Jerry or his family spends an average of three weeks a year in a third-world country. He credits surveying for opening doors to make these trips possible.

He loves to use his skills and talents to help others. He has helped stake hospitals, water treatment plants, and other infrastructure that Americans take for granted. Jerry has tried to live his life treating others as he would like to be treated. Jesus, Others, You (JOY) is a deep well that Jerry draws from by setting his priorities in this order. He has received many tokens of appreciation for his work. He is grateful to have made a difference.

If Jerry could purchase one thing to help him, he would buy a total robotic set-up with GPS hardware. This equipment would enable him to do more in a shorter time frame with fewer people on his trips. When asked if he has advice for someone interested in using their talents to serve others, Jerry replied, "Just get involved. There are plenty of opportunities to serve both through church organizations and secular."

JERRY NAVE

President-elect Jerry Nave is a gourmet cook. If anyone follows Jerry on Facebook, your mouth waters and your stomach growls after scrolling his profile. He is quite the gourmet, preparing beautiful French and Italian meals with homemade pasta and fresh ingredients. He always enjoyed cooking and experimenting with recipes, but during his trip to Europe in 2019, he was introduced to fresh European cuisine, and he was hooked.

He says making pasta relaxes him after a hard day teaching at NCA&T. He loves to knead the dough while enjoying a glass of wine. Success to him is experimenting with fresh herbs and ingredients and having the finished product taste delicious.

If someone was just getting started, Jerry advises them to find someone who can show them how to prepare the

pasta. He took a short cooking class from an Italian Chef while in Europe, which helped refine his skills. Jerry also watches YouTube videos to learn new techniques. When asked what equipment he would like to purchase, Jerry replied, "a new attachment for the pasta machine to make pappardelle pasta." Yum. What's for dinner?

MATTHEW CRAWFORD

Matthew Crawford plays bass. He picked up the electric bass at the ripe old age of 59 in a garage band with his son-in-law, Eric Thompson, and another surveying buddy of theirs on drums. They have been playing together for six years, although COVID prevented most of the performances and rehearsals for 2020. Before the recent stay-at-home orders, Matthew was asked to join The Carolina SoulMates, an R&B/Motown/Country band. He hopes they'll be able to play again once the restrictions lift.

His musical interest first began singing bass in church choirs. He could always hear the bass lines in music even before he understood its impact on music. That all changed when he was 13 as he played a 45 record at 78 RPM. The song was "Pictures of Matchstick Men" by Status Quo. The bass line at a higher speed hit him like a brick. A year later, at the beginning of high school, he picked up an electric bass. Matthew said the look and feel of the instrument were incredible. Big, fat, deep, rich-sounding strings had him hooked!

His favorite part of playing is the interaction with other musicians. Matt explains, "It is a unique rush when all the pieces mesh together, and the music flows seamlessly." He jokes that he plays loud enough that he doesn't hear the mistakes. He also notes that playing with those who are more talented is how he improves. Through the years, he learned how to pick up most songs and have fun with them. Figuring out how some of the great musicians make their music challenges his skill and resolve.When he joined the SoulMates last year, he realized the Motown sounds we love are very challenging. As he put it, "They ate my lunch."

His reward comes from the feeling of satisfaction when it sounds great, and that is all he needs. However, Matthew also says that if he could ever play all 28 minutes of "Supper's Ready" by Genesis on a stage in front of 18,000 people, he would die a happy man!

What advice would he give to someone just getting started? "Practice, practice, practice, and play with other musicians. You don't have to be great to have fun, but you can always get better."

CHAD HOWARD

Chad Howard, also a Past President, is a mountain biker. He also loves to use his knowledge of topography and physics to build trails. He spends as much time building and maintaining trails as he does riding on them.

Chad started biking when two friends he worked with talked him into buying a bike to ride with them during lunch. He quickly fell in love with the sport because he found a way to enjoy the outdoors again, and get back in shape after ten years behind a desk. He loves the adrenaline rush he gets with the freeride style. Chad says it is quite addictive.

He finds his success in practice, practice, practice. He rides at least three times per week, and the training enables him to have the muscle memory to complete difficult jumps. In September 2019, Chad participated in his first race. The Beaverdam-New Light Challenge is a 34-mile race, in which he finished second in the Novice Men category.

Chad offered new riders two pieces of advice. First, buy a bike with full suspension. It may be a little more costly, but it eases the impact on your joints and helps you enjoy the ride more. Second, don't be afraid to crash. It is inevitable, so get back on the bike and stick with it.

Where is the Lake Boundary?

by Ken Mills, PLS

Years ago, in January 2000, I was contacted by a lawyer wanting to know if I was interested in surveying a portion of a lake boundary. I said I was, and we set up a meeting to drive out to the site to meet the lawyer's client. A couple of days later, we drove out to Lake Santeetlah, northwest of Robbinsville in Graham County, North Carolina.

We met at a boat dock with the representatives of TAPOCO, Inc., an electric utility company which is part of Alcoa Aluminum. We boarded a pontoon boat and motored around to a point opposite the area in question. According to my hosts, the lake had to have a certain surface area to maintain the operation of the hydroelectric dam. This is a federal requirement. They believed a property owner expanded his lakefront area into the lake, and they wanted to know by how much. They wanted a detailed location and topographic survey of the area from a portion of the lake bottom to the property owner's retaining wall and up into his property. This information was to be tied to the property boundary lines. A boathouse was constructed at the edge of the water with a concrete ramp so a boat could be pulled from the water into the boathouse with a support cart. Something similar to a boat trailer pulling a boat from the water at a boat ramp on a lake or a river.

They were hiring a soil engineer to take soil borings above the retaining wall to determine the location of the original shoreline. I was to locate all the bore holes. I would supply the engineer with a copy of the survey map so he could superimpose his findings on a copy of my map with his data for the court exhibit.

I was taken around to the dam and shown the location of an elevation benchmark set by the National Geodetic Survey. My hosts asked me to use this mark as a base for the elevation at the property because this elevation was used to establish the lake level. The property was about 1.3 miles from the benchmark, as the crow flies. I was then told the dam water was being drained to make room for the spring rains, and the water level would be down far enough to get good elevations on the bottom of the lake in about two weeks. I had to wait for the lawyer to get a court order to allow me to access the property to do the necessary location work. I was as happy as a kid who got his biggest wish for Christmas. This challenging project is exactly why surveying appealed to me when I first entered the profession in 1969.

The next week I drove to the Register of Deeds office in Graham County to search for the deed to the subject property and the neighboring deeds. I also got a copy of the recorded plat referenced in the subject deed. Then, while at the Register of Deeds, I discovered six additional recorded plats of the same property. The same surveyor recorded the original and all of the other six. I spent some time searching for additional deeds to the current owner and could not find any.

Once back at the office, I began plotting the plats on my CAD computer. The lot of the original plat did not close. The next five plats did not close, and in addition, changed one or two of the boundary lines, either bearings or distances or both. The boundary lines along the center of the road did not change except in the last plat. I knew I had my work cut out for me.

Two weeks later, my assistant and I drove to the site to search for corner markers using the composite search map I plotted. We were able to find a number of markers and began the location process. We set a couple of traverse points along the road, before traversing to the lake side of the house. Before doing any location in the subject area, I needed to transfer an elevation from the benchmark to the site.

My mentor in Florida, where I was taught field surveying, explained to me how to use water in a pond or a lake to transfer an elevation from one side to the other. It is a very simple process and saved an entire day's work.

Once back at the property, I tied into our new benchmark and began the final location, taking elevation shots over the required area. This process required two days to complete. While working in this area, the engineer was taking his soil samples, and we located the existing bore holes. The engineer placed wire flags to mark the spot where he would be digging the bore holes. To keep everything in order between his data collecting process and my elevation shots, he labeled each wire flag. When I got a shot at a wire flag I noted the number on the flag which was added to the final survey map.

With the lake level down, we were able to get accurate lake bottom elevations extending 40 feet to 70 feet from the retaining wall. I noted the lake bottom slope was very uniform all the way to the wall.

The engineer used my topographic data to plot cross sections of the existing ground level and the former lake bottom based on his soil borings. From my observations, there was no doubt the landowner built out into the lake.

The original subdivision survey showed the boundary line behind the high water line of the lake. A map recorded later showed the retaining wall at the lot boundary line. The problem I discovered was the boundary line on the map was moved from its original location to a point just in front of the retaining wall. I don't know if the retaining wall was built at the direction of the landowner or if the surveyor staked the wall for the contractor. I think the surveyor should have alerted the land owner to the problem as soon as he discovered what happened.

I didn't get a chance to testify in court. Looking at the current area on Google Earth, the land owner had to remove the retaining wall and the boathouse, replacing them with riprap along the original shore line. From Google Earth it appears he built two floating docks for his boats and a new boat house away from the edge of the water.

Ken Mills became a PLS in 1975. He has been an active member of NCSS, serving three terms as the Western Chapter President. He served as the NCSS President in 1998. Mills co-authored Following in their Footsteps with Otis A. Jones. He has also written for American Surveyor Magazine.

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The Perfection of Reason

by Kristopher M. Kline, PLS

It is easy—and erroneous—to pretend that the only retracement law that land surveyors need to know when interpreting deeds are the Rules of Construction—that is, the general presumptions of monuments over measurements, of measurements over area. These 'priorities' are of great significance in the retracement of deeds, wills and other documents associated with title transfers, but they are subordinate to the foundational principles considered in this article.

The most fundamental concept in deed interpretation is the mandate to determine the intent of the original parties. This premise is stated as a hornbook rule in the North Carolina decision Elliott v. Jefferson: 133 N.C. 207 (1903): *"Hence, all authorities unite in saying that no rule can be invoked, no matter how correct in its general application, that tends to defeat the intention of the grantor. This doctrine is of such universal acceptance as to require but few citations, more to illustrate its extent than to prove its existence."* While this quote speaks of the intent of the grantor, acceptance by the grantee is essential to the validity of any deed.

The 'rules' described above include the Rules of Construction—but as rebuttable rather than conclusive presumptions. Developed and validated by centuries of re-testing by the courts—beginning in Colonial-era England and spreading across the United States—these principles are an excellent example of proper development of the common law, described by Sir William Blackstone as the *"perfection of reason."* This characterization may seem an arrogant assessment of court precedent. Taken in context, Blackstone asserts that common law is not a group of arbitrary rules, but rather the embodiment of the ways that people typically react or respond in certain situations.

One critical corollary of the basic rule is to determine the intent of the parties at the time of the original conveyance. This requires consideration of their mindset and circumstances in order to determine the expressed or shared intent.

S.S.M. Realty v. Boren: 211 N.C. 446 (1937) demonstrates the relationship between Blackstone's theories and contemporary deed interpretation: *"All rules adopted for the construction of deeds tend towards one objective point. They embody what the law, founded on reason and experience, declares to be the best means of arriving at the intention of the parties. The intention, of course, relates to the time when the deed is delivered…"*

This case also highlights the importance of proving the openly stated common intent: *"The mission of the courts is to enforce the contract embodied in the instrument, and the first step in giving effect to the ambiguous agreement is to ascertain under established rules of evidence what the minds of grantor and grantee assented to at the time."* Proper application of this concept requires the surveyor to be familiar with the general history of the area, at least insofar as it affects retracement. Land use professionals who do not follow these rules are more likely to have their work rejected by the courts in the event of dispute.

One area where these principles are particularly applicable is the proper interpretation of early riparian deeds. Colonial-era perceptions of the term 'navigable'—both by laypersons and by the courts—were very different from those typically used today. This variation leads present-day courts into the error of applying modern definitions to agreements made centuries ago.

The Danger of the Dictionary

There is an aura of invincibility associated with dictionaries—particularly with established volumes such as "Websters Third" or "Black's Law Dictionary." While both of these sources are legitimately used by courts nationwide, overreliance on these sources in determining local, colloquial, or industry-specific meanings may be questionable. Some terms used in state or federal statutes will have specific meanings mandated by the legislation itself. When dealing with principles of property law, terms may vary in meaning depending on the subject matter of the dispute.

While technical or legal terms will often send land use

professionals diving for the appropriate dictionary, remember that determining intent is an art that extends beyond looking up definitions of specific words. In Cabell v. Markham: 148 F.2d 737 (1945), Judge Learned Hand of New York had this to say regarding the metrics for determining written intent: *"Of course it is true that the words used, even in their literal sense, are the primary, and ordinarily the most reliable, source of interpreting the meaning of any writing: be it a statute, a contract, or anything else. But it is one of the surest indexes of a mature and developed jurisprudence not to make a fortress out of the dictionary; but to remember that statutes always have some purpose or object to accomplish, whose sympathetic and imaginative discovery is the surest guide to their meaning."*

In re: Ohio Edison Co., 131 NE 3d 906 (2019) is a recent Ohio decision that includes a very "tongue-in-cheek" analysis of the fallacy of overdependence on dictionary definitions: *"Here, PUCO appears to be playing the old dictionary definition matching game. According to the rules of that game, one chooses a single definition or part of a definition. Then one squints at the chosen words in isolation until one's sense of the colloquial use of language is sufficiently dulled, and one concludes that the matter at hand could (just maybe) be covered by that definition. From this, a player of the game leaps to the conclusion that this is what the statute means.*

Instead of playing this game, one should stop and take stock of how the word or words are actually used by ordinary speakers of the English language."

Two additional presumptions are often associated with the definitions of specific words. Those drafting deeds, legislation or other legal documents are presumed to know the significance of the terms used. In apparent contradiction of the previous statement, documents known to have been written by individuals with limited language skills will be interpreted in light of their lack of technical expertise. These two rules must be balanced carefully in cases where deeds were written by landowners or laypersons.

Harmonizing all Deed Elements

When interpreting deeds, land use professionals are required to respect all elements of the document if possible—not only those that are merely more convenient, or those that serve the client's purposes. It is presumed that every word in a written document has meaning, and no term can be rejected based on trivial justifications. This corollary is an extension of the fundamental principle—that all words in a document were included for a reason.

Where two different meanings of a term are possible, the court generally accepts the definition that will reconcile otherwise conflicting terms within the deed. This concept is illustrated in Whitley v. Arenson: 219 N.C. 121 (1941): *"To give meaning to the language used in the entire deed, indicates that the words "her heirs" were used as synonymous with children. This construction would harmonize the whole deed and all its parts and give the language, their heirs and assigns, in other parts of the deed the usual, ordinary and accepted interpretation, that more than one taker was indicated in the deed."*

Land use professionals should "retain the true and reject the false" in the exercise of deed interpretation, but this does not give them free rein to reject any inconvenient parts. Courts require clear evidence that a given element is flawed or false before it may be rejected as such. Surveyors will find that courts are more inclined to support their decisions when they honor all terms in a description, save those proved erroneous.

The four-corners rule is the embodiment of this concept. As stated in the North Carolina decision Wells v. Crumpler: 182 N.C. 350 (1921): *"The entire instrument when taken and considered within its four corners, shows conclusively what the parties meant… the construction must be made on the entire instrument, after looking, as the phrase is, at the four corners of it."*

Lee v. McDonald: 230 N.C. 517 (1949) reinforces this message: *"The intent of a grantor in a deed, like that of a testator in a will, must be gathered from its four corners…"*

"Modern Surveys" and Intent

Many rulings demonstrate the dangers of assuming a legal difference between so-called "Modern Surveys" and those performed long ago. In fact, it is easy to demonstrate that every survey is 'Modern' when it is performed.

In 1878, the Michigan court had harsh words for "modern surveyors" who ignored established common law principles and de-stabilized established neighborhoods with the false belief in the primacy of mathematics. In Diehl v. Zanger: 39 Mich. 601 (1878), the court condemns *"the disordering achievements of some modern survey..."*

In his concurring opinion, Justice Thomas Cooley belittles a supposedly competent surveyor who concludes that all lines and lot corner markers in a subdivision are incorrect: *"...When an officer proposes thus dogmatically to unsettle the landmarks of a whole community, it becomes of the highest importance to know what has been the basis of his opinion. The record in this case fails to give any explanation, but the reasonable inference is that the surveyor has reached his conclusion by first satisfying himself what was the initial point of Mr. Campau's survey, and then proceeding to survey out the plat anew with that as his starting point...."*

Despite some recent 'urban legend' to the contrary, subdivision ordinances do not supersede established rules of retracement. Neither GPS, LIDAR, nor other contemporary technology justifies rejection of established legal principles. Misguided assumptions that modern equipment, standards of practice or regulations somehow defeat the established rules discussed above will likewise fail.

Kristopher M. Kline is a surveyor, author, instructor and consultant living near Asheville, North Carolina. President of 2Point, Inc., he can be reached at kristopherkline1@gmail.com. More information on Kline's continuing education courses and books can be found at www.2Point.net. Kline also presents seminars each year in Tennessee and North Carolina, d.b.a. Surveyors Educational Seminars. Information on classes presented by Kline and by Donald A. Wilson may be found at www.surveyorsed.com.

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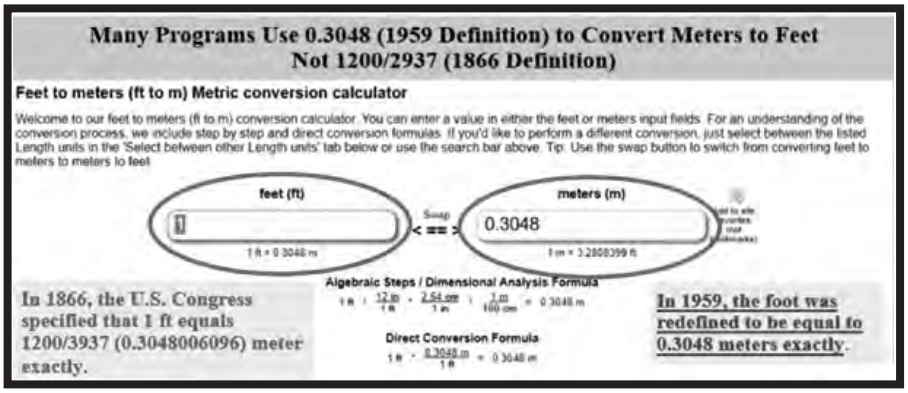
Deprecation of the United States (U.S.) Survey Foot – What Does it Mean to NC Surveyors?

by David B. Zilkoski

The National Institute of Standards and Technology (NIST) and National Geodetic Survey (NGS) have announced the depreciation of the United States (U.S.) survey foot to resolve problems due to the simultaneous use of two nearly identical versions of the foot. In the October 5, 2020, Federal Register Notice (https://www.govinfo.gov/content/pkg/FR-2020-10-05/pdf/2020-21902.pdf), NIST and the NGS, National Ocean Service (NOS), National Oceanic and Atmospheric Administration (NOAA), stated that they had taken collaborative action to provide national uniformity in the measurement of length. The notice announced the final decision to deprecate the use of the "U.S. survey foot" on December 31, 2022. The majority of State surveying agencies currently use the U.S. survey foot. That being said, South Carolina uses the international foot while North Carolina uses the U.S. survey foot. North Carolina and South Carolina surveyors have been handling these differences for decades; so, why did NIST and NGS feel that it was necessary to depreciate the U.S. survey foot. Here's a little history that's important to understand their decision.



Since 1893, the meter has been the legal definition of the foot in the United States. In 1866, the U.S. Congress specified that 1 ft equals 1200/3937 meter exactly (1 foot approximately equals 0.3048006 meters). In 1959, the foot was redefined to equal 0.3048 meters precisely. This change supported the U.S. industry and international trade and is denoted as the "international foot." However, a "temporary" exception was allowed for geodetic surveying to continue to use the previous definition of the foot (that is, the U.S. survey foot). What is really important about this exception was that it was a temporary exception. It was granted with the following mandate: the U.S. survey foot would be replaced with the international foot after the next readjustment of the U.S. geodetic control network. The temporary exception expired after NGS readjusted the U.S. geodetic network with the completion of the North American Datum of 1983 (NAD 83) in 1986.

NGS has videos and webinars on the depreciation of the U.S. survey foot. I would encourage everyone to better understand why NIST and NGS feel the need to depreciate the U.S. survey foot (https://www.ngs.noaa.gov/corbin/class_description/NGS_Survey_Foot/, https://www.ngs.noaa.gov/web/science_edu/presentations_library/files/us_survey_ft_webinar_2019-12-12.pptx, and https://www.ngs.noaa.gov/web/science_edu/webinar_series/fate-of-us-survey-foot.shtml).

Examples of Errors and Costs

The Federal register included comments from users that provided examples of errors and cost due to the U.S. survey foot and international foot misuse. Here's a couple of examples from the notice.

> "I am employed by a commercial contractor working on a government project in which there was confusion about three years ago when a simulation program noticeably deviated from real

data because one used survey feet and the other used international feet. The time lost to track down the deviation was significant."

"A roadway alignment is surveyed in international feet using a low distortion projection and laid onto a global image under the assumption the survey is the U.S. foot definition. Locally all alignment points fit well vs. record distance and bearings. However, when cast onto the global image map, the roadway alignment is 12 feet north and 45 feet east of the roadway on the image. The roadway construction plans that use global aerial images as a background cannot be completed until the surveyed line work is in coincidence with the global image."

Why Select December 31, 2022?

The Federal Register provides the following statement on the selection of the date, December 31, 2022.

"The date of December 31, 2022, was selected to accompany the modernization of the National Spatial Reference System (NSRS) by NOAA's National Geodetic Survey (NGS). The reason for associating the deprecation of the U.S. survey foot with the modernization of the NSRS is that the biggest impact of the uniform adoption of the international foot will be for users of the NSRS, due to very large coordinate values currently given in U.S. survey feet in many areas of the U.S."

Does the Delay in the Modernization of the NSRS Affect the Date of Deprecation?

The federal register notice states the following: "Despite the possibility of delay of the modernization of the NSRS beyond 2022, the planned date of December 31, 2022, *for deprecation of the U.S. survey foot will not change and is independent from the NSRS modernization timeline.* A benefit of retaining the original date for the deprecation of the U.S. survey foot is that it will ensure that it will occur prior to the rollout of the modernized NSRS."

What Does the Deprecation Mean to Users of NGS Products?

The federal register notice states the following: *"The difference in timelines will have no effect on users of the existing NSRS, because NGS will continue to support the U.S. survey foot for components of the NSRS where it is used now and in the past.* In other words, to minimize disruption in the use of U.S. survey foot for existing NSRS coordinate systems, the change will apply only to the modernized NSRS."

Frequently Asked Questions (FAQ)

Finally, users can find a list of frequently asked questions FAQ at the following website: https://www.nist.gov/pml/us-surveyfoot/frequently-asked-questions-faqs .

U.S. Survey Foot: Frequently Asked Questions (FAQs)
(https://www.nist.gov/pml/us-surveyfoot/frequently-asked-questions-faqs)

Explore the answers to commonly asked questions.

Q. Why is this change being made?
Q. Who has the authority to define units of measure in the United States?
Q. How does such a small discrepancy between unit definitions cause serious problems in surveying and engineering?
Q. What types of errors and costs occur because of this problem?
Q. What are the anticipated benefits of this change?
Q. Why is it important to make this change now?
Q. What actions should stakeholders take to prepare for the upcoming change?
Q. What steps will occur during the deprecation process?
Q. What will happen to the U.S. survey foot after December 31, 2022?
Q. Will the previous U.S. survey foot unit conversion factors be maintained?
Q. How can I learn more about this topic?
Q. Who should I contact if I have additional questions?

In conclusion, here are the answers to three questions asked by many surveyors:

- Has the retirement of the U.S. survey foot been delayed until the new 2022 reference frames have been officially adopted?

  No, despite the possibility of delay of the modernization of the NSRS beyond 2022, the planned date of December 31, 2022, for deprecation of the U.S. survey foot will not change and is independent from the NSRS modernization timeline.

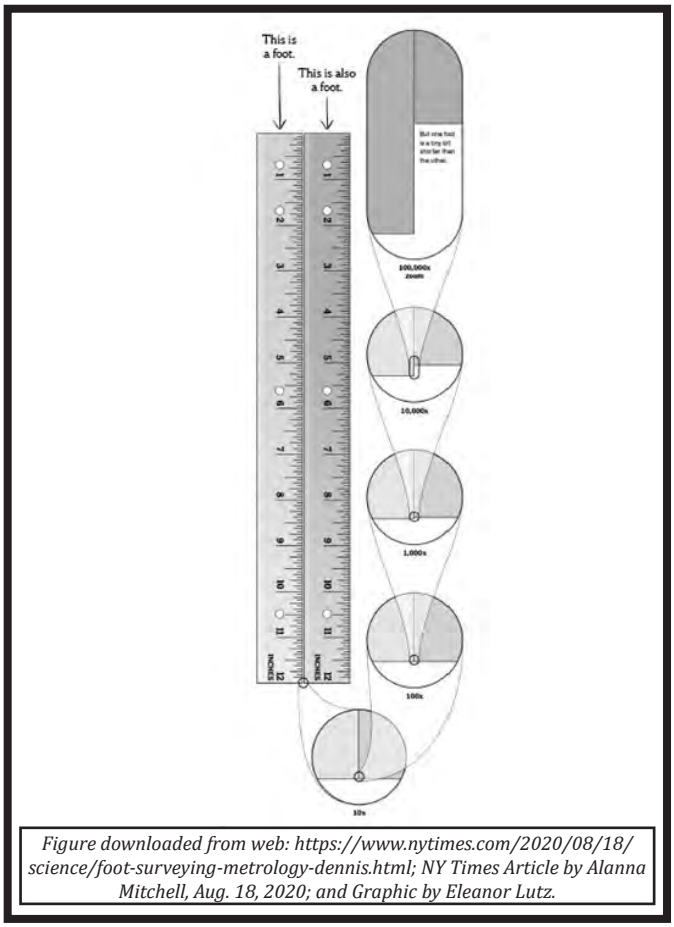


Figure downloaded from web: https://www.nytimes.com/2020/08/18/science/foot-surveying-metrology-dennis.html; NY Times Article by Alanna Mitchell, Aug. 18, 2020; and Graphic by Eleanor Lutz.

- If the U.S. survey foot is retired at the end of 2022, does everyone need to start using the international foot when using NAD83(2011) and NAVD88 in NC?

  No, NGS will continue to support the U.S. survey foot for components of the NSRS where it is used now and in the past.

- Will NGS online tools continue to support the U.S. survey foot when using NAD83 (any realization) and NAVD88 and NGVD29 after the U.S. survey foot is retired?

  Yes, NGS will continue to support the U.S. survey foot for components of the NSRS where it is used now and in the past.

I want to leave you with one final thought:

If you want to improve, you have to be willing to change, and if you want to continue to meet future positioning requirements you need to continually change.

Winston Churchill said it better, "*To improve is to change; to be perfect is to change often.*"

David B. Zilkoski served as Director, National Geodetic Survey, from 2005 - 2009 and was the Project Manager of the New Adjustment of the North American Vertical Datum of 1988. He currently works as a geodetic consultant on NGS' modernization of the National Spatial Reference System. He is Chair of North Carolina Geodetic Survey Advisory Committee and a member of the North Carolina 2022 Reference Frame Working Group.

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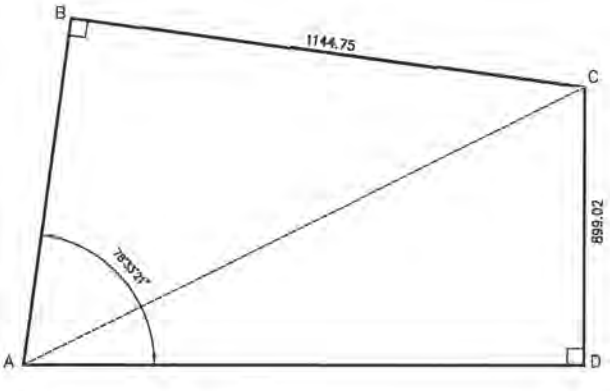
KNOWN: DISTANCE BC = 1144.75

DISTANCE CD = 899.02

ANGLE BAD = 78°33'21"



FIND:

Distance AB = _____

Distance AD = _____

Distance AC = _____

Required Answered Format

Distances: Nearest Hundredth

Looking for the solution? It's on our website at www.ncsurveyors.com or scan this QR Code.

MEMBER PROFILE

Ronald T. Frederick

Wife
Laurie

Children
Sophie 8, Caden 6

Favorite Movie
The Outlaw Josey Wales

Favorite Food
Steak

Place of employment and title:
McAdams, Survey Group Manager

What was your childhood ambition?
Artist

What was your most recent purchase?
Van and ATVs for the kids

What was your first job?
Tractor driver in a tobacco field.

What is your favorite surveying equipment?
VRS GPS unit

What project are you most proud of?
North Hills, North Hills East and Brier Creek

Ron Frederick is one of the most unusual surveyors you will ever meet. Along with his quick sarcastic wit, compassionate heart, and fierce loyalty to the McAdams firm, Ron is a Professional Licensed Surveyor without legs! He is featured in this edition because he agreed to use his photo for a painting commissioned by the State of Virginia, where they hope to illustrate the profession's growing diversity. During the conversation making plans to photograph Ron, it became evident that everyone would enjoy knowing a little more about him.

Ron has worked for McAdams for over 16 years. He loves his job and his company. When asked to describe his daily tasks, he answered, "managing people." Project management is where many surveyors find themselves after being successful for years in the field. Ron is no exception.

He was born without legs but wore prosthetics from age three until he was thirty. He said wearing prosthetics was the hardest thing he has ever done, much harder than life in a wheelchair. The wheelchair does not stop him from going to a job site when necessary. When asked if he still works in the field, he quipped, "I work in the field; I just don't go in the woods anymore."

The Americans with Disabilities Act (ADA) was signed into law on July 26, 1990, by George H. W. Bush. Businesses had to become fully compliant by 1992. Ron received his license in 2007, which meant that he accrued his experience during the early years implementing the ADA. Accommodating a surveyor in a wheelchair while they got their experience requirement for licensure certainly had its challenges.

He first applied for a position with Landmark in 1994 after graduating from Wake Technical Community College with an AAS in Architectural Technology. While there, he performed mapping on planimetric and GIS maps using Microstation. This knowledge led to a career change, and he went to work for Derward Baker, PLS and NCSS Past President.

Ron knew he would need field experience to become fully licensed. Derward Baker, John Pickens, Jerry Davis, and Miles McCall all invested in Ron to make sure he got the experience he needed to become licensed. Ron is very appreciative of these men who gave him a chance and mentored him along the way.

At first, he worked in the field with prosthetics, but when he left those behind at age thirty, Ron worked on ALTA surveys from parking lots and even remembers going into the field

a couple of times in his wheelchair. Once licensed, he used his talents more efficiently to prepare plats and use what he believes is his strongest skillset, project management.

As a commendation to his fellow surveyors, Ron claims he has never felt disrespected by another licensed professional. Instead, it is sometimes hard to convince the technicians that he understands surveying, although he has limited experience in the field. Ron's colleague, Jim Armstrong, also with McAdams, said, "Despite Ron's limited field experience, he knows more about how to actually survey than many others because of his precise attention to detail as he traces the previous surveyors' footsteps through original documentation." Armstrong also said, "Ron is unique because he has had to overcome difficulties his entire life. He holds himself to a higher standard because he didn't get second chances." According to Armstrong, "He holds others to those same standards, which isn't always popular."

Now Ron tries to give back by serving on the Advisory Board for Engineering and Geomatics at Wake Technical Community College, advising educators on the profession's needs, current trends, and technological developments. He also finds time to speak with students regarding workplace expectations. When asked for one piece of wisdom to share with a young surveyor just starting his career, Ron opined, "Learn all you can from the people who have been there before you. Remember that we never stop learning new things about surveying."

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