

THE STANDARD



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Alabama Board of Licensure for Professional Engineers and Land Surveyors

P.O. Box 304451 | Montgomery, Alabama 36130-4451 | www.bels.alabama.gov



BOARD INFORMATION

- BELS is comprised of nine members representing the professions of engineering and land surveying and two selected to represent the general public at large.
- All members are vetted by specific nominating committees. The committees submit a list of three names to the Governor who will make the appointment.
- Board meetings are held every two months beginning in January and are open to the public.

THE STANDARD is a publication of the Alabama Board of Licensure for Professional Engineers and Land Surveyors. Digital editions will be posted on our website and linked on our social media pages. To subscribe, email griffin.pritchard@bels.alabama.gov

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Improving the Presentation

“To every thing there is a season, and a time ...”

Checking your inboxes this January day, you might have noticed a new look to the quarterly BELS Bulletin; a new title too. **THE STANDARD** is the latest in the Board of Licensure’s drive to be a better resource to our stakeholders – whether they be established professionals, new licensees with their certificates hanging crisp and bright in their offices or the public picking up a copy off the outreach table.

So why the change? As you may have noticed with our On Demand video presentations one of the key outreach goals is to better provide learning opportunities to the members of our licensee community and it’s worked as the quartet of videos have been viewed a combined 2,300 times.

The change from the typical newsletter to more of a magazine format is another evolution. We are continually looking for opportunities to bring information and present it in a way that is informative, exciting and eye-catching.

Also, the new presentation and format allows us to showcase and celebrate the accomplishments of our licensees. The over-arching goal, for the past five years, has been the way the Board of Licensure is presented. Oftentimes, state agencies are thought of as fine-collecting Big Brother-types. We don’t want to be that. Our desire is to be viewed as more of a resource available to all members of our community.

It seems that we have been able to do that in some aspects. But this is still a young drive, I’m excited to see how far things have change 10 years into the future.



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- **NEED A SPEAKER?**
We cover a myriad of PDH / CEU topics:
 - Ethics
 - Case Studies
 - The Investigative Process

Please contact Public Information Specialist Griffin Pritchard to make your request. He can be reached via email at: griffin.pritchard@bels.alabama.gov.

our MISSION

The Alabama Board of Licensure for Professional Engineers and Land Surveyors was established by legislative action in 1935. Its charter is to protect the public by helping to safeguard life, health, and property, and to promote the public welfare by providing for the licensing and regulation of persons in the practices of engineering and land surveying. This purpose is achieved through the establishment of minimum qualifications for entry into the professions of engineering and land surveying, through the adoption of rules defining and delineating unlawful or unethical conduct, and through discipline for those individuals or entities who violate the applicable laws or rules.

COMMUNITY NEWS



AUBURN UNIVERSITY: THE RHYTHM OF THE ROAD

South Donahue Drive in Auburn (Alabama) has been recently dubbed War Eagle Drive thanks to a group of engineers and a little creativity.

Auburn Engineering Alum Tim Arnold - with help from students from the Samuel Ginn College of Engineering - had the idea to put the third musical roadway in America on Auburn's campus.

Essentially, "reverse engineering the physics of sound", Arnold used a mixture of speed and material to create a section of roadway that plays the first seven bars of the Auburn Fight Song: War Eagle.

"The concept is kind of complex and simple at the same time," Arnold said. "I hope it puts Auburn in that Cult Americana of other roads."



UNIVERSITY OF ALABAMA: RETHINKING THE REDLIGHTS

A team of engineers from the University of Alabama are working to reconfigure a piece of technology that has been somewhat the same since the Industrial Revolution.

"We've reached a point in a lot of places in America where we can't build more roads, so we need to operate them more efficiently," Dr. Alex Hainen, a civil and traffic engineering researcher at UA said in a press release.

Today, there are roughly more than 650,000 traffic lights in the USA and in some places expanding the roadways aren't an option. Research began in 2014 at one light in Tuscaloosa and spread to 85 intersections by 2017. The data collected and programs created help certain roadways better handle traffic flow.

ENFORCEMENT ACTION

Forrest Gregory / Accel Fire Protection

An investigation determined Mr. Gregory and Accel Fire Protection submitted plans to an Approving Authority for permitting regarding a fire suppression system to be installed for a Church project in September 2018. He was advised by the approving authority that fire suppression system design plans must bear the signature and professional seal of a licensed professional engineer, however he installed the fire suppression system without meeting the requirements.

Mr. Gregory agreed to a consent order that required him to pay the Board \$445 for the cost of the investigation, to pay a \$4,000 civil penalty to the State of Alabama General Fund, to cease and desist the offering of engineering services until his firm obtains a certificate of authorization for engineering, and the consent order and final order would be a public record

COMMUNITY NEWS



UAB: MPAD GAINS SCHOLARSHIP DOLLARS

When looking at the different engineering disciplines Materials Processing and Applications Development (MPAD) is on the rise.

And to help address this influx of interest, UAB's MPAD Center has created new hands-on research and learning internships and scholarships thanks to a hearty donation from American Cast Iron Pipe Co.

American renewed its annual gift of \$36,000 for student scholarships (totaling \$216,000) over the next six years and then added an additional renewable gift of \$19,000 (\$114,000 over the next six years).

MPAD, according to a press release, is UAB's hub for metals casting, foundry education, advanced engineered plastics and composites design, analysis, processing, manufacturing and product development and is utilized by students from multiple engineering disciplines ranging from mechanical to biomedical.



TIPS TO BEING A BETTER COMMUNICATOR: WATCH HOW YOUR BODY TALKS

In communicating (be it with employees, employers and groups at large) one thing immediately noticed by the audience more than the words being spoken aloud are the words being communicated by the speaker's body. According to the content team at By The Minds: "body language is the unspoken element of communication that we use to reveal our true feelings and emotions." Think of the way you hold your body when having a difficult or tense conversation with a fellow staffer. Are your arms folded in front of the body; facial expressions tense, eyes downcast?

Those are all signs of a disengaged conversational participant. No matter the words being said the engagement and, to an extent, the actual amount of listening occurring is at a minimum.

According to both BTM and Forbes, there are different approaches to engagement and active participation in the conversation.

They both agree - for the most part - that the main goal in any situation is to appear relaxed and comfortable. By putting yourself in a relaxed, but confident posture - open stance, hands by your hips - of assurity your body is communicating multiple things; the most important being interest and engagement; to your staff, your audience or whomever is receiving the message. Also don't discredit the value of a quality, firm handshake and quality eye contact. Eye Contact is tricky though, it can quickly transform from sincerity and comfort to a staring match in an instant. Just remember: blink naturally.



THE ENGINEERS OF THE FUTURE

By Griffin Pritchard |
BELS Public Information Specialist

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2040 Projected Top Jobs

- 1 Augmented Reality Engineer / Curator
- 2 Automation Engineer / Handler
- 3 Civil Engineer
- 4 Structural Engineer
- 5 Drone Engineer / Pilot / Drone Traffic Controller
- 6 Electrical Engineers
- 7 Software Developer / Engineer
- 8 Cloud Engineer / Facilitator

Information according to
Yahoo & Forbes

Engineers have always had an interesting relationship with the world around them. Neil de Grasse Tyson – famed scientist, physicist and burgeoning stand-up comedian – said: “All the STEM fields are stoked when you dream big ... “ and that’s what engineers do: They dream big. They also have the innate ability to create. From the Founding Fathers to Elon Musk, if something was available the engineers went to work to create. How do you think we got the universal remote?

Steve Wozniak was healing from a plane crash and couldn’t change the channel.

But, putting levity aside for a moment, the required skills and knowledge-base to be an engineer hasn’t changed through the generations. They still possess that curious mind that look to drive innovation or protect the planet or even better design their hometown’s highways and byways.

Yet the tools used to reach that finished product have evolved greatly throughout the centuries.

To accommodate this modernization, and ultimately futurization, of the engineering profession along with a commitment to uphold the “obligation of the Engineer,” they must also commit to a lifetime of learning.

“I used to tell students it doesn’t matter what we teach you because it will be obsolete when you graduate; so go out and have a good time,” former Stanford University Dean James Plummer said during his keynote speech at IEEE’s Spirit of Innovation conference in 2017. “Careers are becoming global and unpredictable. Lifelong learning is essential. The half-life of engineering knowledge is now three to five years.”

Three to five years in a generational perspective is three to five iPhone advances as new versions seem to release annually. But change that rapid opens the door for a larger collective of ideas, backgrounds and skillsets.

Chad Jackson – a tech writer for the website lifecycleinsights.com – suggests that at this point in the profession “many non-engineering stakeholders are involved in development and design. Design decisions are necessarily more democratic when taking company-wide considerations into account.”

So how do the roles change? At the fore, the engineer’s role seems to have moved beyond simple form and function. Traditionally engineers – no matter the discipline – created materials to facilitate a function, assume a form or fit a situation. But this isn’t as easy as form it, fit it and forget it. There is a level of personal accountability assumed

by the engineer.

As a byproduct of that professional responsibility, professional licensing boards began to take a greater role in society as they were created to vet and certify professionals were competent within a minimum set of technical standards. Also, professional licensing boards can investigate and enforce adherence to those technical standards.

Jackson: “Few engineers have the deep expertise in mechanical, electrical, and software disciplines necessary to make design decisions autonomously.”

Think of the operating systems in a car: In 1984 the chief OS in an automobile was the human behind the wheel steering and controlling the speed in which the structure matriculated down the highway.

Global Positioning Duties fell to the person in the passenger seat utilizing either a bound atlas or a state map which required a second set of instructions and an additional mechanical engineering degree to fold it back into the original rectangular shape.

But, like the interstate during a holiday weekend, things move rapidly.

We are now 36 years removed from that basic 1984 automobile with separate systems and completely dependent upon the human element. Automobiles in 2020 and beyond will have the power to transport the human inside from a predetermined Place A to a predetermined Place B using myriad of connected systems.

Automobiles – according to AARP and HumanizingTech – will be able to locate, diagnose and schedule their own maintenance. Also – as the voice-operated-tech trend continues to grow – cars will be able to ultimately find their own parking space.

“Alexa – Find a parking place.”

The car responds: “Finding parking place.”

Hands’ free the car parks itself.

The owner gets out and walks away.

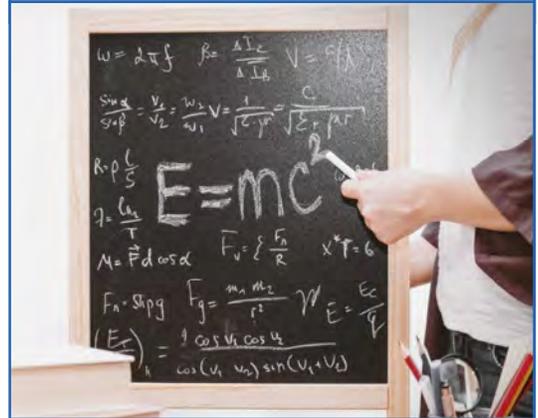
Car powers down.

Again, from Jackson: “Lead engineers work with specialized engineers to look at design alternatives and their associated impacts, as well as heading efforts to collaborate and build consensus. The result is a group think approach, rather than placing responsibility and accountability on any one engineer.”

This need for constant innovation and customization is customer driven. Demand is driving this need for integrated product design.

With this need for instant gratification and the desire to have the newest, shiniest product roll off the assembly line can have an “undermining effect” on the engineers and the design process.

EACH ONE TEACH ONE



4 WAYS TO EASILY ENGAGE THE NEXT GENERATION OF ENGINEERS

While Professional Engineers and Professional Land Surveyors must be committed to a lifetime of learning to stay at the top of their craft, they also have the unique opportunity to shape their profession's future. One of the key ways to accommodate the charge of molding that next generation is to get involved with area schools as today's students are finding different types of STEM Competitions to test their knowledge.

Beyond that, DiscoverE points out four different ways to better engage those engineers and land surveyors of the future:

1. Talk about your profession: Most kids aren't really sure what PE's and PLS's actually do. Teach them, and don't let them just make assumptions about your chosen career.
2. Do hands-on activities: Students often learn by doing and with a hands-on take to demonstrating the profession.
3. Focus on the output: Rather than course requirements and GPA's, focus on the reward of seeing a project from start to finish.
4. Connect with the class: Research shows that when professionals are able to connect their work with helping people, students tend to gain more interest.



65% 

of the Post-Millennial Generation (iGen) will work in a job environment that does not even exist yet.

Paraphrasing Jackson: “...the increasingly complex and customized designs demanded by customers and shortened design cycles, which means engineers don’t have the time to fully explore design possibilities and must spend their time dealing with the different errors.”

Some engineers have adopted LEAN Principles (created by Toyota, LEAN’s principals are: 1. Identify Value; 2. Map the Value Stream; 3. Create Flow; 4. Establish Pull; 5. Seek Perfection, according to the American Society of Mechanical Engineers) as a way to improve their workflow, but find it adding additional time to the process.

Mark Crawford of ASME writes: “The goal of LEAN is to eliminate waste – the non-value-added components in any process... When done correctly LEAN can create huge improvements in efficiency, cycle time, productivity, material costs and scrap, leading to lower cost and improved competitiveness.”

Sunkist engineer Alex Paradiang sums it up: “Engineers sometimes have a difficult time seeing the bigger picture. They really want to design something cool but can sometimes lose site of the user’s real need.”

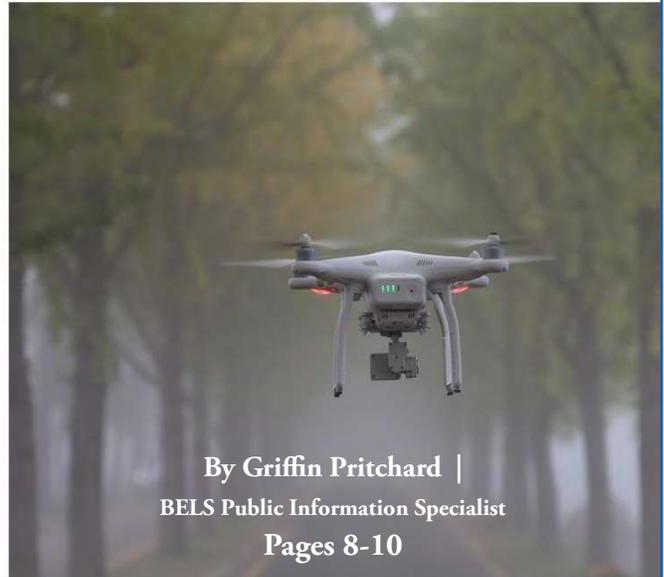
Think of this as the second Industrial Revolution.



According to AARP and websites following tech trends, cars will be able to locate, self-diagnose and schedule their own maintenance in the coming years. Also, a rise in the use of voice-operated will continue to become common features in line with heated seats and power steering. Ultimately, cars will be able to find their own parking spaces.

TECHNOLOGY TAKES FLIGHT

HEAVENLY MAPPING



Author Frank Willis wrote in POINT OF BEGINNING that “during the past 50 years, surveying and engineering measurement technology has made five quantum leaps: the electronic distance meter, total station, GPS, robotic total station and the laser scanner. Unmanned aircraft systems will be the sixth quantum leap in technology.”

And he’s correct. Walk through the exhibitor hall of any Professional Land Surveyor conference. What was once tucked away as the cool, new thing to play with drones have now moved to a place of prominence as the number, styles and technological capabilities have grown exponentially from year to year to year.

“Technology has affected land surveying tremendously within the span of a career,” wrote Joseph Breighner, BELS PLS Board Member and Executive Vice President at Schoel Engineering. “In the field we have gone from taking arc measurements with a theodolite and linear measurements with a steel tape (a chain), to electronic distance measurements to electronic total stations to global positioning systems to robotic total stations.”

To throw in a Jerry Seinfeld reference: “What’s the deal with surveyors using drones?”

POINT OF BEGINNING, in May 2019, did a great job of answering that question: “Many people think that photos and videos are the only useful things that can come out of a drone program, but that isn’t true. Drone technology today is capable of enormous amounts of topographic and planimetric data using off-the-shelf hardware. Anyone who is only getting pictures and videos out of their drone is not utilizing technology to the fullest.”

Linda Duffy, in a December 2 article for the GeoPointData website, wrote: “Drones provide value as an additional ‘tool in the toolbox’ rather than as a total replacement for terrestrial platforms.”

She goes on to add that they “offer advantages in certain situations, and there are numerous mapping activities that can

RULER CHANGE



UNITED STATES GO INTERNATIONAL WITH 'FOOT' MEASUREMENT

From elementary school to trade school, it's taught that one foot equals 12 whole inches. For Land Surveyors across the United States, that's about to change.

According to an ABC News article published Dec. 14, 2019, the U.S. foot is about to get the boot.

Quoting the article: "The difference between them (the U.S. foot-measure and the International foot-measure) is so tiny that you can't see it with the naked eye on a 12-inch ruler. But over big distances it matters. So, to reduce the chance for errors and confusion, the federal government has announced it's finally giving the boot to the survey foot."

So what does this really mean? The example given in the article essentially says that using the International Foot, the U.S. is 28 feet wider.

In the late 1800s the U.S. Government defined a foot as 1,200 hundred meters divided by 3,937 which calculates to .3048006. The International Foot was established in the 1930s and made the distance simpler at .3048 meters.

So there's that.

Also: why the discourse over the distance?

Referring back to the article: "The change started in 1959, when the federal government mandated that everyone use the International Foot but allowed surveyors to keep to the old U.S. Survey Foot for a while."

That broad span of "for a while" turned into more than 60 years with a deadline of 2022, according to NOAA and the National Institute of Standards and Technology.

Surveyors in approximately 40 of these United States use the U.S. Survey Foot. The rest have crossed the troubled waters and are using the International Foot.

According to NOAA rep Michael Dennis: "We have chaos."

Documented chaos actually, as (according to the ABC News article) projects in California, Oregon and Washington state have been stymied by the difference in measurement.

be accomplished with drones to improve efficiency, performance and profitability."

So, what's the benefit?

The answer is simple: mobility.

When the Unmanned Aerial Vehicles (the professional name of drones) take to the heavens, what type are they?

"There are basically two types of UAV's being used in the survey profession today; the fixed wing and the rotary wing," Breighner wrote. "As with all tools, there are advantages and disadvantages to each, with some firms using both. The fixed wing is well-suited for larger, rural, open sites with space for takeoff and landing. The rotary wing works well in urban setting with limited takeoff and landing areas and is typically better suited for smaller sites, although capable of mapping large areas. Both types commonly use aerial photogrammetry technology with onboard mounted cameras and GPS for realtime positioning."

When having to survey terrain that's not conducive to foot traffic, it becomes advantageous to look toward the sky. Drones make it no longer necessary for people to physically access and measure points in difficult-to-reach locations. Also, as they further morph into flying computers with rotary blades, the operating systems loaded into the drones capture and calculate data much faster utilizing a shorter timeframe.

Depending on the operating program, drones calculate and provide information in real time to the crew on the ground. In one pass, the drone can produce different readings: 2D and 3D Orthomosaics, 3D modeling, thermal mapping, LiDAR Point Clouds and Multispectral mapping.

Orthomosaic, also known as orthophotography, is an aerial image of an area composed of multiple photographs stitched together using photogrammetry which has been scaled and geographically corrected for accuracy.

"We are seeing some firms using 3D laser scanning to collect data for as-built drawings, or models on existing building for use in remodeling, retrofits and/or building additions," Breighner wrote. It's common for the surveyor incorporate several technologies to perform a single project. He may use GPS to set site control, shoot topo and possibly locate property corners, the conventional total station or robotic total station to shoot topo, run property lines and/or locate site improvements and the UAV to map an area of the site suitable for that technology.

But, with each advance in technology there are setbacks. Tree canopies and substantial ground vegetation growth can sometimes hinder the capabilities of the drones.

Breighner: "However, we are beginning to see LiDAR units mounted on some rotary wing UAV's that have the capability of

penetrating tree canopy and ground vegetation and with proper filtering with the software, get a good ground surface. With all the different informational maps, how accurate is the aerial survey going to be? The answer to that depends on the project.”

Logan Campbell, CEO of Aerotas which provides drone data processing services for land surveyors, wrote in the Fall issue of CALIFORNIA SURVEYOR: “point clouds from drones are an incredibly rich and valuable source of data...”

He warns they are also often misused.

“These are technology tools that require considerable training and experience to be competent in its use,” Breighner wrote. “Where we once had multiple crews that could be sent to most any type project, we now have crews that specialize in the usage of certain technologies.”

In the Surveying with Drones article (enterprise.com) the question is: “How accurate are drone surveys?”

That’s a question asked of any new technology before it is integrated into the workflow of any business.

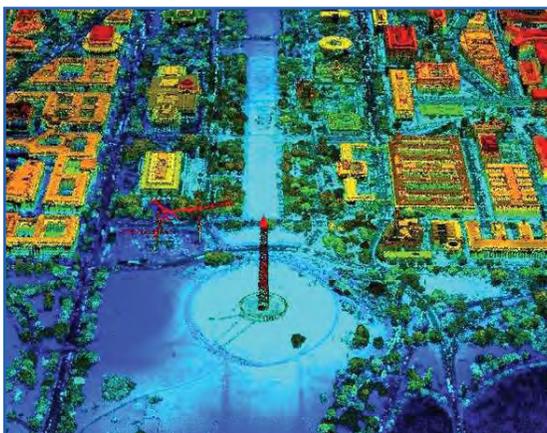
Surveying drones can produce surveys with different degrees of accuracy, depending on the project.

In an independent study conducted by DroneDeploy, the DJI Phantom achieved a 2 cm vertical accuracy and a 1.20 cm relative horizontal accuracy.

However, if the area to be mapped is covered with tall grass that’s considerably dense, bare-earth mapping may be quite difficult because the “bare earth” isn’t visible. But, there are always workarounds such as mapping the top of the grassy area.

“Where drafting and computations were once done manually, there is now third-party software that can balance field traverses, close-boundary surveys, compute areas and volumes, create DTMs for topography, processing field collected data, reducing office clean-up time on maps to annotating plans and maps,” Breighner wrote.

But it doesn’t hurt for surveyors to still do their own calculations. Because, no matter the scenario, the math still matters.



Pictured is a LiDAR image of Washington D.C. photographed using a mapping drone.

FIRE EDUCATION



RESIDENTIAL SPRINKLER SYSTEMS MUST BE ENGINEER DESIGNED

As residential sprinkler requirements become part of new home construction, efforts are being made to better help the engineers designing the systems and the plumbers installing them.

The Alabama Fire College in conjunction with the Alabama Fire Marshall’s Office and the National Fire Sprinkler Association will host a class beginning Feb. 10 in Tuscaloosa.

Paraphrasing Fire Marshall Scott Pilgreen from a 2019 BELS BULLETIN article: “The Master Plumber will sit through the class ... between 32-40 hours ... then will be tested. Upon passages, the plumber will earn a certificate which will be filed with Pilgreen’s office.”

The Master Plumber must be professionally licensed as a Fire Protection Sprinkler Contractor II in the State of Alabama. Industry representatives from Lubrizol and Uponor will be involved in the training, which lead to factory certifications for the installation of the piping materials.

Pilgreen added that it won’t just be plumbers taking the class, but members of his staff: “for them to have the same understanding of what they are supposed to investigate and check when they go on a site.”

The residential sprinkler systems are closed systems and must be designed by a professional engineer. Given that, the State Fire Marshall’s office worked hand-in-hand with representatives from the Board of Licensure (along with other like agencies) to help shape the class and the governing rules.



As technology continues to advance, we find that the professional increasingly has more resources available at his/her disposal. This could not be truer than for the engineer and land surveyor. Technological advances in many areas of practice have affected the profession significantly in recent years. One of these technological advances is the Geographic Information System (GIS). Although GIS has been available for some time, it has been in these recent years that the acronym GIS has become familiar by professional disciplines as well as a cross-section of the general public. Now that we as professionals are becoming familiar with the use of GIS, we are continually learning various ways it can be included in project workflows. Furthermore, as professionals in the engineering and land surveying disciplines, we need to understand what a GIS Database is, sources of information, who are some GIS users and what are some GIS limitations.

WHAT IS A GEOGRAPHIC INFORMATION SYSTEM:

In short, a Geographic Information System (GIS) is a framework for gathering, managing and analyzing data. The GIS is rooted in the science of Geography. A GIS integrates many types of data such as aerial photography, property information that includes deed records, parcel identification numbers, boundary dimensions, acreages, zoning information, flood plain information, public utility data, roads and road information, topographic data, public and

private property improvements. It gives the user the ability to analyze the spatial location of fixed objects on the surface and subsurface of the earth and organize these objects into layers of information that can be visualized using maps and 3-dimensional scenes. What are sources for the GIS Database:

- County Probate Office: property records such as deeds, subdivision map books, and property ownership data
- County Tax Assessors Office and Board of Revenue & Equalization: Tax records, tax valuation, parcel identification numbers (PIN)
- Zoning and Board of Equalization: zoning classification
- Utility Providers: Water and Sewer Boards, Gas, Power, Communication, Fiber and Cable provider maps
- Road and Transportation Departments: road and maintenance information, culvert and drainage data
- Flood Plain Managers: flood zone information
- Third Party Consultants: aerial photography, orthographic photo's (photograph to scale), planimetric data on roads, buildings, visible utility appurtenances (i.e. fire hydrants, manholes, meter vaults, valves, utility poles, etc.), topographic information (contours)

WHO IS USING GIS:

There is a cross-section of the public using GIS. The property developer studying a site for potential development (property ownership, corporate city limit information, property zoning, site topography, utility services, site access, flood zone information). The engineer, as the basis of a preliminary study, plan or layout. The land surveyor, as a

source for gathering property information. The architect, real estate professional, mortgage companies, title company, homeowners, outdoor enthusiast. The list is endless. I was recently walking an acreage tract with a real estate broker in a rural county of the state. As we were walking the property, the agent opens an app with his iPhone and we are immediately geo-referenced to the site with an aerial image visible, along with property lines, parcel identification numbers, road and creek names and topography. This information was all layered onto a base map accessed through the county GIS database. As we walked the property, we could visually see where we were on the property as well as having access to other attributes associated with the county GIS.

GIS LIMITATIONS:

A Geographic Information System can be a powerful tool. However, as with all tools, there are limitations. As the name states, a Geographic “INFORMATION” System, an information tool. As previously stated, there are many sources used to populate a GIS database. At times, the information source is less than reliable, and in some cases, the information used is the only source of information available. Examples of error sources could be poor aerial imagery or scale issues with aerial imagery, poorly prepared tax maps and/or scale issues, subdivision maps, poorly written deeds or errors in deeds, deeds prepared without the benefit of a property survey, outdated and/or incomplete utility information, poor topography (especially in dense vegetation), data input error. As with all technology requiring data input, garbage in/garbage out.

As public GIS databases are becoming ever-more populated with layers of information, the accuracy of the dataset should be known by the user before relying on the information. Location of utilities shown in GIS databases should not be relied on for design or construction. Parcel lines shown on GIS sites should not be mistaken for boundary surveys or used in writing deeds for land conveyance. Contours should be considered as approximate until field verification is performed. Real property is constantly being bought and sold with records being continuously updated and should be verified by the user. GIS is a great information source for project due diligence but should not be solely relied upon for construction or a survey and/or design project.

Many of us enjoy access to GIS as a resource for research and due diligence on projects. As mapping processes continue to improve the information used to populate the database will improve and Geographic Information Systems will continue to improve. As the user, it's our responsibility to understand if the data we use, whether GIS, or any source of information is suitable for its intended purpose, the key to a successful project.

SHARE WITH US YOUR STORIES



OUR STAKEHOLDERS WILL DRIVE SECTIONS OF THE STANDARD

In updating BELS' publications, we hope to better feature members of our licensee community. Please send Griffin Pritchard (griffin.pritchard@bels.alabama.gov) photos of you or your staff depicting what you do on the job: out in the field surveying, at your desk reviewing plans or celebrating a work-related accomplishment or award. Photos will be compiled and used in upcoming issues of THE STANDARD and at the end of the year in the annual report.

Pictured are examples of what we are looking for: (top) Griffin Pritchard driving into Mobile (middle) along one of the state's more scenic roadways. Tony Manary working with a student as part of a career day and (bottom) companies gather to celebrate during the 2019 Engineering Hall of Fame banquet.

UNDERSTANDING THE CODE

QUALIFICATION-BASED SELECTION (330-X-14.05(F)) ADMINISTRATIVE CODE

The engineer or land surveyor shall not participate in or implement procurement practices (bid submittals) which do not first determine the qualifications of the engineer or land surveyor having submitted a statement of qualifications and performance data, and having first been judged as the qualified individual or firm to provide the services required for the proposed project, may proceed to negotiate a contract with a client and establish compensation or fees for the required service.

THE QBS LAW QUICKLY EXPLAINED

One of the more misunderstood parts of BELS Law and Administrative Code is the portion regarding Qualification-Based Selection (QBS); the application thereof and the situations where it's not required. Above shows the language as it's written in Chapter 330-X-14 of the Administrative Code.

For some people, reading through the legalese is easy and the guidance is crystal clear. For others, there has to be an English-language alternative citing practical / real-world examples to serve as guideposts for when to apply QBS.

Following the July 2018 law change, the application for Professional Land Surveyors is straightforward: (paraphrasing) "if the survey is boundary only, on private property and not to be used as the basis for engineering work," then QBS does not apply. Now if the survey being conducted is for engineering, or is an ALTA, then QBS will apply.

For those applicable surveyors and for all the engineers licensed to do work in Alabama, QBS must be followed in terms of job selection.

Initially, there should be no considerations of fee until a party is chosen. The client - when putting out the initial proposal - will make the selection based upon the prior work performed (essentially, the resumes) by the interested individuals / firms. From there they are ranked by the client and fee negotiations between the client and the top candidate will begin. If the two parties fail to come to an agreement, then it is within the client's right to end negotiations and move on to the next party.

A client cannot negotiate fees with more than one party at a time and there must be an understanding that, upon selection, they are not part of a competitive bidding situation. If questions still remain, don't hesitate to call the BELS office at 334-242-5568 and speak with our special investigators.



CA RENEWALS WITHOUT PENALTY ENDS JAN. 31, 2020

While the period for individuals to renew their Professional Licenses without incurring the \$250 penalty has come and gone, those looking to renew their Certificates of Authorization are still within the window that ends January 31.

The cost to renew a Certificate of Authorization is \$100 during the ongoing renewal period.

Beginning Feb. 1, the cost to renew and restore an expired CA goes up to \$350 (\$100 renewal fee plus the \$250 reinstatement fee).

In Alabama firms practicing, or offering to practice, engineering or land surveying are required to have a Certificate of Authorization and are renewed (without penalty) annually in January.

Information regarding online renewals of individual licenses CA's can be found on our website: www.bels.alabama.gov.

SAYING GOODBYE

A. Frazier Christy | 1945-2019



The family of engineers and land surveyors lost an elder statesman Dec. 20 when Arthur Frazier Christy breathed his last.

Christy - who graduated from Auburn University in 1968 - was initially licensed as a Professional Engineer in 1974 and then as a Professional Land Surveyor in 1976.

He was a veteran of the U.S. Navy, serving as an Engineering Officer and later as a volunteer with the Seabees as part of the Naval Construction Battalion. After returning to Alabama and working with Rust Engineering, then Paragon and finally Hatch Mott McDonald, Christy retired in 2012 and formed the E&LS Group with an eye cast toward the smaller engineering

and surveying projects.

With a career spanning multiple decades, Christy earned multiple honors: an inductee in the Alabama Engineering Hall of Fame, an ASCE and ACEC Fellow and a national board member and a 2013 appointment to BELS. In his five years on the board, Christy was a part of many changes that affected the way licensees conduct business in the State of Alabama including making renewals a biennial affair and aiding in the creation of Act 550-2018.

His final BELS project was the quartet of videos focusing on the Standards of Practice for Surveying Alabama that have been viewed by surveyors from throughout the country.



“FOLLOWING HIS FATHER’S FOOTSTEPS”

Former Board Member, and long-time Professional Land Surveyor, Michael Arnold passed away Nov. 30, 2019, at the age of 75.

Arnold was appointed by Gov. Bob Riley and served five years beginning in 2008. Prior to his Board of Licensure appointment, he was a leader and active member of the Alabama Society of Professional Land Surveyors.

Arnold, according to his obituary, “followed in the footsteps of his father and his grandfather” before him as part of the Fairhope Title Survey business for many years as well as a lifelong resident of Fairhope (Alabama).

He is survived by his wife Linda J. Arnold, his children and numerous grandchildren.

Arnold’s life was celebrated December 4 at the chapel of Wolfe-Bayview Funeral Home in Fairhope.



While there are a myriad opportunities for professionals, both engineers and land surveyors to interact with that next generation - one of the more unique ways is to be a volunteer judge as part of the Future City Competition held annually in Huntsville at the U.S. Space and Rocket Center. The top team from the Huntsville-based competition will advance to represent the Southern Region in Washington D.C. later in the year.

Thirty years ago DiscoverE the first-of-its kind nationwide call to ask engineers to visit students in K–12 classrooms. DiscoverE data suggests that these efforts are working: 84 percent of educators said a visit from an engineer or other technical profession helps students learn about engineering careers. But there's more work to do.

DiscoverE also reports that 74 percent of teachers said that their students do not have many opportunities to meet an engineer or technical professional.

NCEES is preparing to participate in two important events to connect children with professional engineers and surveyors. In 2020, DiscoverE Engineers Week will be held February 16–22, and National Surveyors Week will follow March 15–21. Platforms like these need people to inspire.

The ability to give every student engineering and surveying experiences depends on volunteers like you.

Pioneers of progress DiscoverE Engineers Week is a time to celebrate engineers making a difference in our world, to increase public awareness about the need for engineers, and to bring engineering to life for children, educators, and parents.

As part of our 2020 centennial celebration, NCEES is the premier sponsor for the Future City Competition. NCEES is also sponsoring the Best Land Surveying Practices special award at the regional and national competitions. NCEES is organizing volunteer judges for these awards at regional competitions in January and at the national finals, which will be held February 17–19 in Washington, D.C.

NCEES is also supporting Discover Engineering Family Day, which will be held February 15 at the National Building Museum in Washington, D.C. We will have two engaging hands-on activities that promote engineering and surveying.

Both are accessible and fun for all ages.

The 2020 EWeek theme is Pioneers of Progress. Engineers are certainly that. We need to lend a hand to celebrate the contributions of engineering to our society and bring out the engineer in every child. DiscoverE.org has information on outreach opportunities and hands-on activities and resources that you can download. DiscoverE's Ultimate How To Guide for Volunteers breaks down how to organize a classroom visit, what to say, and how to lead activities. These resources make it easy to get involved and promote the profession.

OUTREACH UPDATE



Throughout 2019, BELS outreach traveled to several events throughout the state and brought information to different facets of our community.

Bob Herbert (top) BELS Chief Investigator leads a discussion during the COAA event in Orange Beach. Bruce Thornell (bottom) BELS Special Investigator sets up at the Alabama Sheriff's Association conference in Gulf Shores. Griffin Pritchard (right) BELS Public Information Specialist leads a discussion during the ASCE event in Mobile.



Outreach in 2019 took on a broader focus as the staff traveled to new places and presented to new groups. Overall, BELS staff traveled to 50 events throughout the state and met with groups ranging from the general public to engineers licensed throughout the Southeast to members of the public safety and law enforcement communities.

Special Investigators Bob Herbert and Bruce Thornell and Public Information Specialist Griffin Pritchard, took turns interacting with the more than 19,000 members of our community in different capacities: in front of the crowd, behind the table or in one-on-one situations and communicated with nearly 8,000 members of our stakeholder community.

Throughout the year, an emphasis was put on being out of the office and amongst the community as a way to interact with the community and discuss the issues effecting them.

Of the issues discussed: the law change, QBS and the requirements for renewal topped the list. As we move into 2020, BELS Outreach efforts are set to take a different direction. The goal during the next 11 months (starting with a trip to Auburn University in February) is to market to students on the collegiate and high school level and help guide them toward professional licensure.



SPOTLIGHT ON SURVEYORS

The National Society of Professional Surveyors sponsors National Surveyors Week to recognize and promote the surveying profession through education, media, and public service. Resources and outreach opportunities are available through NSPS. The NSPS National Surveyors Week Volunteer Kit can help you organize and promote surveying activities. The kit focuses on Surveyors Week, but it also includes information on year-round outreach opportunities, including helping Scouts earn the surveying merit badge.

As leaders in the professions, we have a responsibility to spark excitement for engineering and surveying in our youth. We do this by showing them that engineers and surveyors are innovators, creators, and protectors. Take advantage of these outreach opportunities and show your community how these professions are making peoples' lives safer and better.

(Reprinted with permission from the December 2019 edition of NCEES Licensure Exchange.)

NEW LICENSEES

• PE LICENSEES

STEPHEN JOHN CHERNETSKI
EMAD BADIEE
RAY JOHN ANDERSON
PRESTON CLAY CAMPBELL
ARTHUR ALEXANDER CATE
VICTORIA CURTO
SCOTT MARC DAVIS
RICHARD ALAN DETHLEFS
THOMAS DALE DUNCAN
MARCUS NAIL EWARD
CARLOS LEONEL HERNANDEZ
GARCIA
M R HASAN
ANDREAS RUDOLF HAUN
KEITH ALLEN ISNER
TRAVIS STENSBY
MELISSA MONE STROUD
AMANDA MARIE TAYLOR
ANDREW BARRY TUTEN
DAVIA ANN GERNAND

DANIEL GENE PAIST
KEITH M. PRZECLAWSKI
MATTHEW SCOTT REUTHER
SUDEEP SHRESTHA
STEVEN TAYLOR TALUSKIE
JOSEPH M. JERAY
DARREN KEITH JOHNSON
BRUCE WAYNE KING
BENJAMIN A. LILLY
GARY DEAN NICHOLS
KOSTA J. PAPPAS
JORDAN DANIEL-ARTHUR
PHILLIPS
STEVEN EMERY QUALLS
TROY TURLEY
ONUR USMEN
WAYNE RALPH WASSER
RODNEY WOTHERSPOON
COLLINS
DANIEL DOUGLAS DEHON
CHRISTA VANT HUL DEVRIES

SHERRI HARVEY
RAYMOND BUREN HERNDON
CHARLES W. KELLY
TAHIR MALIK
STANLEY EDWARD RAISPIS
BRANDON THOMAS RAYMOND
TONI MICHELLE CORNELIUS
JEFFREY ALAN DEAL
BRYCE DONALD GOOD
BALAKRISHNAN KANDOTH
JUSTIN LEE LEITHAUSER
SEAN JAMES MCGLUMPHY
ANDREW GAROT PORTER
MICAH JOHN SCOTT

• PLS LICENSEES

TYLER MERRIT BIUS
CAMERON SCOTT LOWE
CHRISTOPHER DREW PESNELL
MICHAEL P. BLANCHARD



Congratulations!



THE LAST LOOK



***If you can't be in awe of Mother Nature,
then something's wrong with you.***

Alex Trebek / *Television Gameshow Host*