

# BELS BULLETIN

## 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 swift and effective discipline for those individuals or entities who violate the applicable laws or rules.

## our CONTACTS

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Suite 382  
Montgomery, Alabama 36104

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7:30—4:30  
Telephone Numbers  
Toll free: 866-461-7640  
In State: 334-242-5568

[www.BELS.ALABAMA.gov](http://www.BELS.ALABAMA.gov)



ALABAMA BOARD OF  
LICENSURE FOR PROFESSIONAL  
ENGINEERS AND LAND  
SURVEYORS



BELS Secretary Liz Hyde poses for a photo at her office in Birmingham. Hyde is the first female BELS member.

## Hyde makes Board history

*BELS first female mixes love of math with want to succeed*

By Griffin Pritchard |  
Public Information Specialist

- Appointed to BELS April 2014 to replace Gerald Wilbanks. In her first year, was named secretary to finish out that fiscal year. During the 2015-2016 fiscal year, Hyde was elected by BELS to remain as secretary.
- Currently serves as President of Hyde Engineering in Birmingham, Alabama and is the current president of the UAB Advisory Council. She was nominated for appointment after her work with the Institute of Electrical and Electronic Engineers.
- In her career, Hyde has worked for the Corps of Engineers and the Department of Defense.

Liz Hyde knows she's sitting in rarefied air as both the first and only female member of the Alabama Board of Licensure for Professional Engineers and Land Surveyors. Appointed April 2014, she replaced then-board member Gerald Wilbanks.

"First of all, this is a big responsibility. I feel like everyone's opinion of women in engineering is resting on my shoulders," Hyde, who is now halfway into her five-year appointment, said.

"I'm okay with that. It's kind of been that way my whole career. Other engineers now will call me and ask for my perspective on things. It's nice because they realize that you are in the thick of things and are part of the discussions going on during those board meetings."

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*our* **BOARD**



Marc Barter, PE  
Chair



Frazier Christy,  
PLS & PE / Vice Chair



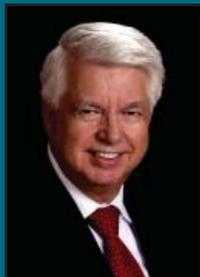
Liz Hyde, PE  
Secretary



Richard Grace,  
PE & PLS



Nathan Johnson,  
PLS & PE



Randall Whorton, PE



Charles Willis, PE

# HYDE

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Hyde moved into the secretary position when Marc Barter and Frazier Christy moved into their respective Chair and Vice Chair positions following the departure of Chair Earl Foust.

After ending 2014-2015 as an appointed secretary, BELS voted for Hyde to retain the position for the 2015-2016 fiscal year.

Hyde, who currently serves as president of Hyde Engineering (located at 3120 8th Ave. South in Birmingham), knew from an early age arithmetic would be a key component in her future endeavors.

“I was very good at math in school and engineering seemed to be the most appropriate career for someone that was very good at math,” Hyde said. “I actually flipped through the encyclopedia and said ‘which engineering looks like the most fun?’ That was the one I wanted to do.”

She chose electrical and, after graduating Minor High and later the University of Alabama at Birmingham, began putting her future plans into action.

“I played with dolls (as a child) but I really liked to build things,” Hyde said. “I wanted to create something. Build a house out of these things for my Barbies or build a racetrack for my cars.”

Originally, Hyde planned to work for a utility company.

“That was my goal. Then I met my future husband,” Hyde said.

“He was in the Air Force and I knew we were going to move around the country.”

During that time, Hyde worked for the Corp of Engineers and the Department of Defense before working for a consulting engineer in California where she became licensed as a professional engineer.

“That seemed to be the direction I was going to be in and we moved back to Alabama to work for a consulting engineer in Alabama,” Hyde said. “I decided that I’d love to open my own business and do this on my own.”

Enter Hyde as the proprietor of Hyde Engineering. That was the first mark she made in a male-dominated industry.

When a position on the Alabama Board of Licensure for Professional Engineers and Land Surveys opened, Hyde’s name was offered David Conner as a potential appointment.

“Dr. (David) Conner, who is on the nominating committee representing IEEE (Institute of Electrical and Electronics Engineering), and the chair of the engineering department at UAB.”

“So he knew me and had known me for some time since I graduated from there,” Hyde, who currently serves as President of the UAB Advisory Council, said. “He knew that BELS really wanted to try to diversify and have different types of people. I think that when the position came open and were looking for someone from electrical, he approached me to let me know they were going to nominate me.”

In accepting the nomination and appointment by Gov. Robert Bentley, Hyde became the first female chosen to BELS dating back to its founding in 1935.

However, her appointment sometimes brings with it a sense of melancholy.

“It’s kind of sad that in 2014 I was the first woman to be appointed to BELS,” Hyde said. “It’s a little disappointing in a way that it took so long. It’s interesting though; One of my side projects, and things I want to see improved, is women still make up such a low percentage of engineering students. It’s not a lot higher than when I was in college. I would love to see that change.”

# BELS MEMBER FORUM

## Continuing education aids in growth

Obtaining 15 Professional Development Hours (PDH) can oftentimes seem burdensome to engineers working in the Corporate environment. I am often asked what is the benefit for the engineer or the Corporation not engaged in consulting work?

The most common response I provide is that PDH benefits accrue as the engineer stays current with the most recent technological advances.

I work in the mineral industry and our biggest performance driver is cost control and cost reduction, both at the unit level and in aggregate.

Recent advances in technology have allowed my company to both increase production and lower operating costs.

I learned about advances in process equipment and utilization at seminars and meetings I was motivated to attend by the professional development hour requirement. It is all too easy to become "too busy" to stop and take the time to learn about recent advances in our respective areas of expertise. Too much complacency can result in being left behind knowledge-wise.

Requiring and encouraging employees to receive their PDH's also broadens the technical base for the entire organization when coupled with a culture of sharing information.

A common tool is the Lunch and Learn where employees are asked to provide updates to their co-workers on a regular basis in an informal setting.



*Charles Willis*

PE

- Has served BELS since 2012 when he was appointed to replace William Ulrich, Jr. Willis's term will expire in April 2017.
- Currently serves as president and general manager of Black Warrior Methane Corp., (located in Brookwood, Alabama) and has been employed there since 2002.
- He has also served as chairman of the Coalbed Methane Association of Alabama, the International Coalbed Methane Symposium and the Society of Petroleum Engineers along with being a multi-published author.

This spreads the awareness of new ideas and trends.

New techniques can also be applied to reduce Capital costs.

An excellent example is new technology that reduced investment requirements for drilling shale wells.

This has allowed enormous increases in oil and gas production and lowered costs to the consumer and reliance on imported energy.

These technologies have been applied industry-wide through seminars and short courses and have had an enormous impact on the U.S. energy mix.

In summary, obtaining Professional Development Hours helps the engineer stay competitive and relevant in rapidly changing environments.

PDH's increase the value of the Corporation.

## our TRAVELS



Auburn University mascot Aubie strikes a pose with BELS Public Information Officer Griffin Pritchard during the first day of the AAPGMI Conference in April.

The event was held in Auburn and hosted by the Auburn University Hotel. Throughout the summer months, BELS will be traveling to various events throughout the southeast.



BELS, for the first time, attended the annual League of Municipalities Conference in Huntsville. The event allowed representatives from BELS to spread our message to a new set of ears as the League of Municipalities featured a mixture of elected officials from throughout the state.

It was a good opportunity to explain who we are and what we do.

In June, BELS will attend the ASPE/MSPE meeting in Mississippi and then will attend the Code Officials Association of Alabama meeting in Fairhope.

## ENFORCEMENT ACTIONS

### 2013-37-B, 2013-42-B, 2014-12-B, 2015-11-B Richard Clayton Borden, PE/PLS # 13402 Case 2013-37-B

Mr. Borden placed his signature and professional engineer seal on design drawings dated 5/31/13 that were submitted to, and rejected by, the City of Fairhope, Alabama.

A Board Technical Advisor reviewed the design drawings and provided a report that stated the overall quality of the design set was poor, and it appeared that a specific set of floor plans and elevations were combined with a set of standard details to produce the package.

### Case 2013-42-B

Mr. Borden placed his signature and professional engineer seal on design drawings dated 7/29/13.

A Board Technical Advisor reviewed the drawings and provided a report that stated the details included on the design drawings contain duplications of drawings prepared by another engineer, and the calculations submitted as evidence of the structural design were grossly inadequate to justify the structural design of the residence.

### Case 2014-12-B

Mr. Borden placed his signature on an elevation certificate dated 12/10/13 that was submitted to the City of Gulf Shores, Alabama, but was rejected because it was inaccurate, and would have allowed a homeowner to enclose an area below the Base Flood Elevation.

A Board Technical Advisor reviewed the document and determined that Mr. Borden made an error in measurement, or used the wrong datum, when preparing the elevation certificate.

### Case 2015-11-B

Mr. Borden's firm performed land surveying services of property belonging to an individual without his authorization, and left a written note on his property that stated a lien would be placed on the property if he did not pay for the surveying services.

Mr. Borden agreed to a consent order in reference to the four complaints that required the following conditions:

- On March 31, 2016 his professional engineer license and his professional land surveyor license were suspended for four years, (with that suspension stayed). During this stayed suspension period he may continue to practice engineering and land surveying, and compliance with the terms of the consent order will cause the stayed suspension period to automatically cease at the end of the specified time period.
- He must pay BELS a fine of ten thousand dollars (\$10,000), and investigation costs of two thousand, two hundred and twenty-five dollars (\$2,225). The monetary amount of the fine and Board costs is payable in eight payments, and the first payment of one thousand five hundred and twenty-nine dollars (\$1,529) has been submitted.
- He must provide a monthly list of the engineering and land surveying projects he performs to BELS for a period of two years beginning May 15, 2016. BELS will select projects on the list for review, and he will be required to submit all documentation re-

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**our IDENTITY**

BELS is comprised of seven members (five professional engineers and two professional land surveyors) each appointed by the Governor to serve a five-year term.

BELS reviews applications, offers national licensing examinations, develops and administers the state-specific licensing exam, licenses qualified applicants and regulates the professional practice of licensees throughout the state. BELS has the power to discipline those individuals who are not licensed in the state but who are performing engineering and or land surveying in the State.

**our FAQs**



**Q** — My corporation, LLC or LLP, is changing its name. What documentation must we submit?

**A** — Complete the Certificate of Authorization application (found on our website) with the amended block checked and submit to BELS office within 30 days of the change. There is no charge to amend your CA. You will also need to contact the Secretary of State's office to change your company name.

**Q** — How do I verify experience if my supervisor is deceased?

**A** — If your supervisor dies before you make application, you can get another licensed individual in the company to verify your experience. If there is no one inside the company that is licensed or a graduate engineer if engineering experience or graduate land surveyor if land surveying experience that can be reviewed as substantially equivalent, you can get a licensed individual outside the company who is knowledgeable of your experience. You would also be required to specify how this person has knowledge and how often they have reviewed your work.

**ENFORCEMENT ACTION**

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- lated to those projects to BELS.
- He will establish office procedures that insure clients and potential clients are provided a document that outlines the scope of services of the work he will perform and the work that will be performed under his direct supervision.
- He will allow Board staff to inspect his office records during his firm's normal business hours.
- He will complete the three professional development hour course (Incident at Morales) sponsored by the Murdough Center for Engineering Professionalism at Texas Tech University within six months of March 31, 2016, and the course cannot be used to meet the pdh requirements for license renewal.
- The Consent Order and Final Order will become public record.

November 11, 2014 that contained errors. A Board Technical Advisor reviewed the survey he performed and provided a report that noted the following violations of the standards of practice for surveying: (1) no reference bearing was shown, (2) no bearings or angles were shown, (3) no dimensions between the fences and the property lines were shown, (4) did not locate or set permanent monuments at all property corner and, (5) did not show angles or bearings on the plat.

Mr. Varnon agreed to a consent order that required the following conditions:

He must pay a \$2,000 fine to BELS, effective March 31, 2016 his license is suspended for 2 years (with that suspension stayed), he must provide BELS upon request a list of the surveying jobs he performed within a one month period during the stayed suspension period, survey(s) will be selected from that list for review of compliance with the standards of practice, and the Consent Order and Final Order will become public record.

**Case 2015-51-B  
W. M. Varnon, PLS 9324**

Mr. Varnon placed his professional surveyor seal on a survey dated



The above graph shows the number of complaints filed against Professional Engineers over a five-year span, beginning in 2011.

## our WEBSITE



BELS website ([www.bels.alabama.gov](http://www.bels.alabama.gov)) can serve as a resource for anyone looking to garner information about our licensees, law or trends within the engineering and land surveying industries.

This information includes, name, addresses, types of licenses and their number, license status and an indication of whether or not they have had any formal/disciplinary action taken against them. The information is provided for use amongst individuals looking to hire a Professional Engineer, Professional Land Surveyor or someone currently listed as an Intern. BELS does not release social security numbers, dates of birth, telephone numbers, or email addresses. BELS also cannot recommend professionals or businesses.

Under Alabama Open Records Law, public record requests may be made of BELS. The records, or information, sought should provide enough detail for our agency to adequately respond. Requests should be addressed to the attention of Griffin Pritchard ([griffin.pritchard@bels.alabama.gov](mailto:griffin.pritchard@bels.alabama.gov)).

## our MEETINGS



The Alabama Board of Licensure for PE & PLS have scheduled meetings for the remainder of the 2015- 2016 fiscal year.

BELS conducted their June meeting on the first and second of the month. They will next meet in July (13-14). Agenda items must be turned into BELS office no later than July 1.

# A quick guide to sealing

By Rick Huett |

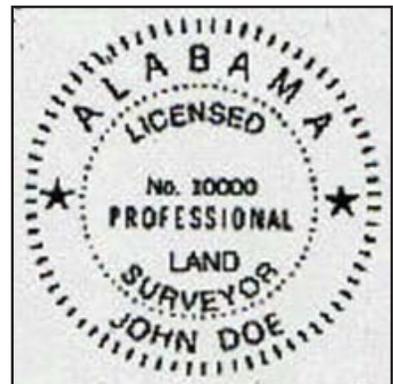
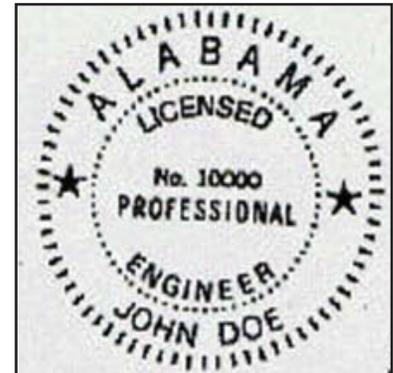
Assistant Executive Director

Each Professional Engineer and Professional Land Surveyor should, upon licensure, obtain a seal of the design authorized by the Alabama Board of Licensure for Professional Engineers and Land Surveyors (BELS). Whenever the seal is applied, the document must also be signed and dated by the licensee thereby certifying that he or she is competent in the subject matter and is responsible for the work product.

The Frequently Asked Questions (FAQ) section on the BELS website provides answers to common questions regarding seals.

The following can also serve as a quick reference to the BELS rules regarding the placement of seals on work products:

- Each design sheet for engineering practice and each map, plat or chart sheets for land surveying practice, shall be signed, sealed, and dated by the licensee who prepared the documents or under whose responsible charge the documents were prepared.
- When multiple sheets of **reports** or **specifications** are bound together in a volume, the licensee that prepared the volume, or was in responsible charge, may sign, seal, and date only the title or index sheet, provided that the title sheet clearly identifies all of the other sheets comprising the bound volume.
- Any sheet contained



in the volume that was prepared by, or under the responsible charge of another licensee, must be signed, sealed, and dated by that licensee.

- Letters containing engineering or surveying recommendations should be signed and sealed on the signature page.
- The seal, signature, and date must be placed on all final specifications, land surveys, reports, plats, drawings, plans, design information, and calculations whenever presented to a client or any public or governmental agency.
- Two or more licensees can sign and seal the same sheet provided it is designated by a note under the seal as to the specific subject matter for

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## our ANNOUNCEMENTS



BELS conducts a random audit of the Professional Development Hours (PDH) reported on license renewals for compliance with the continuing education requirements. If selected for audit, the individual will receive notice from BELS requesting documentation of the courses reported to have been completed. The documents should be (1) a log showing the type of activity claimed, sponsoring organization, location, duration, instructor or speaker's name and PDH credits earned; (2) attendance verification records in the form of completion certificates showing PDH credits earned. For additional information, visit BELS online and download the "Continuing Education" document found under the Hot Topics tab.

# What makes a professional

## *Professionalism means more than a license*

By Regina Dinger |  
BELS Executive Director

I believe that if you ask 30 individuals that question (what does it mean to be a professional) you would get 30 different responses. The answers are going to be varied due to personal perceptions, age, where you were raised, your individual interaction with those who call themselves professionals and many more factors too many to cite here.

Individuals may receive licenses that identify that they are a licensed professional (readers can fill in the blank with a profession of their choice).

The one thing that I know, from the 20 years I have served as the Executive Director for BELS, the receiving of that wall certificate is not what makes you a professional.

In my opinion, it's how you approach your practice and your ethics first and foremost determine professionalism. The Code of Ethics, contained in our Administrative Rules, outlines how you are supposed to practice. As with all individuals, our licensees will read that Code of Ethics and have their own interpretation of what they mean using those filters referenced earlier.

There will be those who will always be on the "right" side of the fence. There will be those who may think they are walking on the "right" side but

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## SEAL

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- which each is responsible.
- Any revision to a document containing the seal and signature of a licensee shall be described and dated.
  - If the revisions are not done by the original licensee, the revisions must also be signed and sealed by the licensee in responsible charge of those revisions.
- The original seal and signature must not be removed.
- Working drawings that consist of sketches, reports, or are in whole or in part intended to communicate work to be performed, or intended to be used in specific proposals and/or becomes a part of defining the scope of a contract for work, must be sealed, signed, and dated.
- Work products that are considered preliminary, and are not final documents, must be so identified.
- They do not have to be sealed, signed and dated, but must contain a statement in large bold letters to the effect **"PRELIMINARY, NOT FOR CONSTRUCTION, RECORDING PURPOSES OR IMPLEMENTATION."**
- A computer generated seal or facsimile is acceptable only when the signature of the professional engineer or professional land surveyor and the date the document was signed are on or adjacent to the computer generated or facsimile seal.
- A digital signature may be used in lieu of a handwritten signature.
- The seal and signature shall be placed **on all** original copy, tracings, or other reproducible documents so that the seal and signature will be reproduced when copies are made.

our FUTURE



Auburn University has joined 25 other research universities across the United States and Canada as the newest members of the Center for the Integration of Research, Teaching and Learning (or CIRTL) a national initiative to increase the number and diversity of graduates in the STEM fields.

Auburn joins the network as the university surpasses the midpoint of its five-year strategic plan in which advancing Auburn's intellectual community – while strengthening research and scholarship efforts – remain key commitments. As a CIRTL member, the institution will develop local learning communities to promote effective research-based teaching and mentoring techniques for STEM graduate students.

"Findings from the Wisconsin Center for Education Research's Longitudinal Study of Future STEM Scholars confirms that the integration of teaching and research enhances graduate student preparation for faculty roles," said Diane Boyd, director of the Biggio Center for the Enhancement of Teaching and Learning and CIRTL team administrative co-leader. "By amplifying their success as early career-faculty members, we are improving student learning in STEM."

Auburn's proposed local learning communities will advance faculty careers and prepare STEM graduate students in several interrelated ways. In tandem with the larger CIRTL network, Auburn's local learning communities will accomplish the following:

- Strengthen Auburn's ability to compete for NIH and NSF funding as it provides a structure for including broader impacts in proposals that demonstrate Auburn's commitment to graduate student preparation and faculty success.
- Provide mentoring networks for faculty to supplement their individual support of graduate students, improving graduate students' preparation as successful grant collaborators.
- Support effective and efficient teaching for faculty and graduate students, resulting in better learning outcomes in the classroom

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A national committee has been formed to address the drop-off within the land surveying profession.

## NCEES debates, addresses future of Land Surveying

By Frazier Christy |  
BELS Vice Chair

*NCEES, BELS form task forces focused on improving outreach and value*

- The Land Surveyor's Creed reminds those in the industry to safeguard life, health and property and to promote the public welfare.
- The NCEES Task Force, led by former BELS Chair Dr. Daniel Turner, has requested National Council take the lead and fund a 25-member focus group to consider and recommend additional outreach opportunities to promote the value of a surveying license.
- The NCEES Task Force also recommended that NCEES Member Boards develop a database for State Specific Exams that can be shared by states with common knowledge requirements.
- An ASPLS sub-committee met to discuss the definition of surveying.

What is the future of land surveying? This is a very good question and one that is hotly debated on many fronts.

So much that NCEES (National Council of Examiners for Engineering and Surveying) and Boards of Licensure (BOL) established Task Forces to attempt to answer this very difficult question.

It can be looked at from either a professional standpoint or a civic standpoint.

I realize that this issue, from a professional standpoint, is very important to all practicing land surveyors.

However, our Licensure Law and the *Surveyor's Creed*, as published by Alabama Society of Professional Land Surveyors, both point us to "safeguard life, health, and property, and to promote the public welfare ..." and "... service and protection of the public."

Our Creed even restates the same phrase used in our law: "safeguard

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**AUBURN****From Page 8**

with less perceived effort.

- Distinguish our STEM graduate students from others entering the job market. The Auburn CIRTl program will allow graduate students and faculty access to resources to implement Teaching-as-Research projects in state-of-the-art EASL classrooms in the Mell Classroom building opening Fall 2017.

George Flowers, dean of the Graduate School and chair of Auburn's CIRTl team, applauded the invitation to join the network. "Membership in the CIRTl network clearly demonstrates Auburn's commitment to and concern for graduate student professional preparation, faculty development and student success," said Flowers.

Invitations to participate in Auburn University's local learning communities will be extended to the College of Sciences and Mathematics, the Samuel Ginn College of Engineering, the College of Agriculture, the School of Kinesiology, the School of Forestry and Wildlife Sciences and selected programs in the natural and social sciences housed in the College of Human Sciences, the College of Education and the College of Liberal Arts with the aim of including all STEM doctoral programs.



A team of University of Alabama students is proving that drones are no longer just for the military.

Because they are small and can be flown autonomously, drones, also known as unmanned aerial vehicles, are an inexpensive way to conduct aerial surveillance. In recent years they have proved to be useful in various fields like agriculture, police work and emergency response. As drones become more viable, universities are finding ways to incorporate drone research in engineering curricula. At UA, Dylan Quick, from Trussville, Alabama, took notice of the trend and decided it was time to bring a UAV team to campus.

Although he is a senior in mechanical engineering, Quick said he has always had an interest in airplanes. His interest in building a UAV began as a hobby. Eventually he found some friends who shared his interest and together

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**TASK FORCE****From Page 8**

life, health, property, and welfare.”

Therefore, the goal is to bring to light the issues from a civic prospective.

Thus exposing the need for NCEES to create a “Future of Surveying Task Force.”

Our past BELS member and chair, Dr. Daniel Turner, played a key role in the creation of the Task Force. To date, the Task Force has done the following:

1. Requested NCEES take the lead and fund up to a 25-member focus group to consider and recommend additional outreach opportunities to promote the value of a surveying license.
2. Recommended NCEES to set up a national surveying education award. This was approved and is underway. It allows NCEES to award up to a total of \$125,000 annually to no more than ten (10) institutions of higher learning teaching programs that lead to the licensure of Professional Land Surveyors.
3. Recommended that the NCEES Member Boards develop a database for State Specific Exams that can be shared by States with common knowledge requirements.

BELS has also developed a Task Force that has met twice to discuss the Future of Land Surveying within the state.

After the ASPLS conference in 2015 held at Orange Beach the committee met and began the task of working through the items that came out of the conference open discussions.

The items were:

- Current revisions to the law
- Definition of surveying with or without aerial gang and GIS
- State specific exam
- Do surveyor's want to be regulated?
- Decreasing numbers
- Public image
- Education
- Tiered licensure – boundary - other surveys - drainage
- QBS
- Recording of surveys

After these meetings and a sub-task force committee meeting we have addressed:

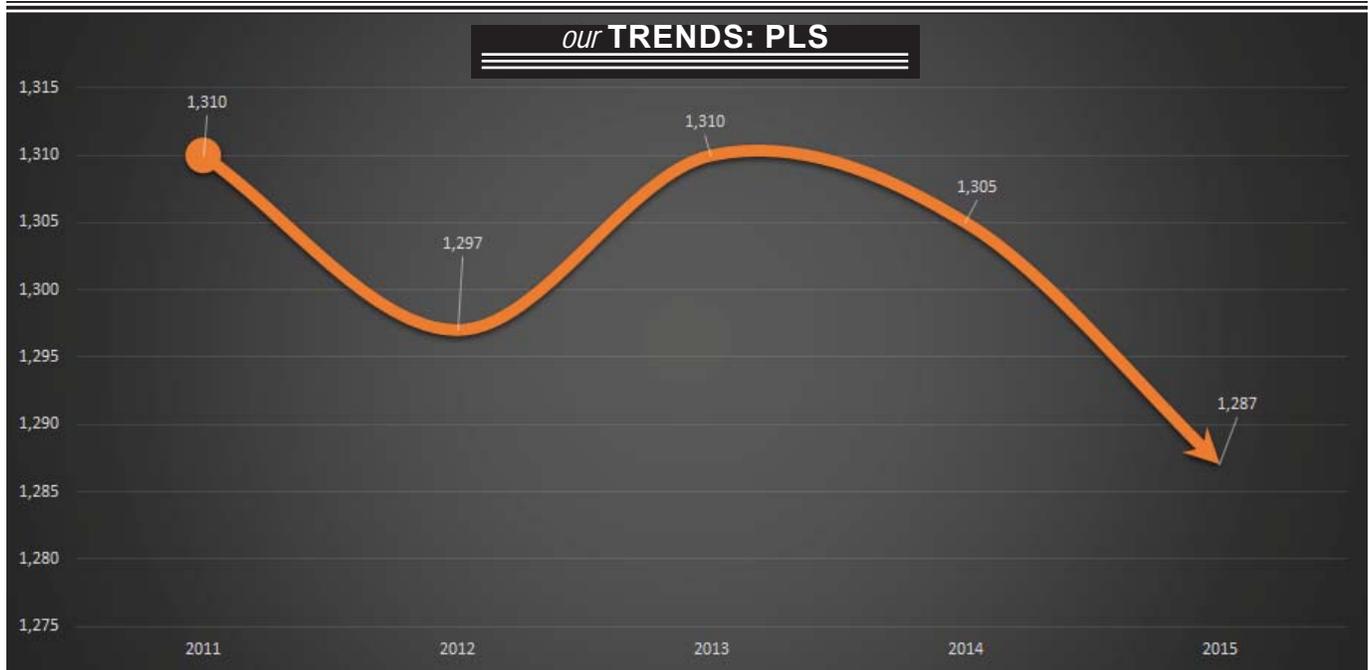
- The definition of surveying and added it to the proposed law changes,
- Are at the 90 percent level of having a secure, on-line Alabama State Specific Exam, and
- Developed a first draft of QBS and how it should effect surveyors

After two meetings one item has been checked off the list, one almost checked off and investigating a solution for a third item.

However, before this Task Force gets too proud of the progress, we have added a new item. There is another open forum scheduled for the 2016 ASPLS meeting at Orange Beach at the end of June.

Any new issues will be added to the Task Force list if requested by ASPLS.

Should you have an issue you want to add to the list, please send an email to frazier@eandlsg.com.



Since 2009 (1,302 licensed Professional Land Surveyors), the profession within the State of Alabama has seen a series of highs and lows. Currently, 1,287 are licensed with BELS.

## ALABAMA

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they formed a team called Tuska UAV.

"This is what I really wanted to do," he said. "We didn't have [a UAV team,] so I started one."

Of course, the process of starting Tuska UAV was not quite that simple. For starters, the team's members had no idea what they wanted to do with the drone once it was finished. Unlike most student engineering teams that operate on campus, Tuska UAV is not affiliated with a senior design project or a national competition.

From the beginning, the team has struggled to find a student design competition for UAVs. After giving it some thought, the team's members decided they would continue to build the vehicle and decide on a competition later. The students hope to join the Society of Automotive Engineer's Aero Design Series contest eventually, Quick said.

"We wanted to have the camera set up on the plane and we wanted to put it in auto-pilot, but many of the competitions don't allow that and the other competitions that did were too far away or too expensive for us to join," Quick said. "In the future we'd love to participate in the SAE aero competition, but we want to get our first vehicle finished before we go forward."

The team now consists of about 20 members. Together, they built their own tools and equipment using Quick's apartment as a workspace in the spring of 2014. Quick spent about six months building a Computer Numerical Control router that would cut

and carve pieces for the plane he designed using CAD software on his computer. The next year, the team was able to find a faculty advisor, Dr. Eben Broadbent, assistant professor of geography at the University, who provided the students with a work space in Biology Hall.

"Currently, [the team] is a way to learn and get familiar with the systems," said Kara Parks, a junior in mechanical engineering from Maryland who heads Tuska UAV's airframe team. "All of us have learned a lot about manufacturing and aerodynamics. It's a way to use what we've learned in class."

After designing their UAV, the students divided into sub-teams.

The airframe team was tasked with designing the structure of the UAV, the manufacturing team cut and built the materials for the plane, the avionics and surveillance team handled the vehicle's electronics and its radio system and the resources support team searched for sponsorship opportunities.

Now that the vehicle is nearly finished, the team just has to figure out what to do with it. After watching a video about the EF4 tornado that struck Tuscaloosa in 2011, Jamie Moon, a junior in mechanical engineering from Arlington, Tennessee, who serves as vice president of the team, realized that their vehicle could potentially be useful for emergency responders.

It can be difficult for first responders to maneuver around debris left by a natural disaster.

Helicopters are an option in such cases, but the noise they cause can be a hindrance for finding survivors.

The team hopes their vehicle might be a helpful alternative. Once the initial plane is finished, team members plan to continue producing more planes they could potentially send to police departments and other emergency organizations. Until then, Quick said, the team has a lot more work to do.

"I think it'd be a good idea to take a step back and review [the vehicle] after we've flown it, see what we did wrong and what we can do better next time," Quick said.

Although he will be graduating in December, the team members plan to continue forward. Moon will take his place as president and continue working with Parks and the team's underclassmen who have actively participated in the construction of their first UAV.

Parks predicts that, with the help of an additional adviser, they could begin preparing a concept design to enter the SAE Aero Design competition in 2017.

"For the continuance of the club, I think it would be helpful to bring in an additional adviser," Parks said. "The competition we're looking at also has the idea for using [the drone] for humanitarian purposes and disaster relief, so it aligns well with what we already do. We want to use our planes and use our engineering skills to help people."

# BELS MEMBER FORUM

## CBT brings testing into 21st century

In an earlier article I mentioned that NCEES has developed a “Future of Surveying Task Force”. They have recommended to NCEES that the Member Boards develop a database for State Specific Exams that can be shared by States with common knowledge requirements and be taken “online” to correspond to Computer Based Testing (CBT). Well Alabama has taken this one step further. We are 99% there.

While in Williamsburg, Virginia, at the NCEES annual meeting last spring we met with the surveying contingencies from Mississippi and Florida.

We all pretty much surveyed from the same instructions and have many common points, technically and legally, when it comes to surveying.

Our initial thought was to set up a data base of common technical questions for all three states and then have three separated data bases for the infrequent legal issues.

An individual could then apply to one or more of the States to sit for the SSE, take the technical section and then take the necessary legal sections.

We were planning on doing this all online, therefore, eliminating the need to travel to each Board office and sit for three separate exams.

The online cost were not bad but there were other issues like: where the test could be proctored; who would pay those costs and how often could the exam be taken.

BELS Executive Assistant, Bonnie Kelly, did us one better by using a resource we already have in the office.

She has developed a process where by an individual, once signed up for the exam, will be sent an email about how to log into a secured password protected area on BELS’s website.



*Frazier Christy*

PLS & PE / Vice Chair

- Christy was appointed to BELS April 2013, replacing C. Michael Arnold. His term will expire April 2018.
- He currently serves as the managing partner of the Engineering & Land Surveying Group (E & LS Group) LLC. and is licensed both as a Professional Land Surveyor and a Professional Engineer.
- Christy is a Life Fellow of the American Society of Civil Engineers and in February was inducted into the Alabama Engineering Hall of Fame.

This allows for the exam applicant not to incur travel costs.

The exam applicant will also be required to use their computer along with a webcam.

By using the webcam, the exam applicant is checked for security, requiring proof of ID that they are the exam applicant, that they are alone and the room where they are located is suitable and they have only the allowed items in their possession.

At that point the proctor will load the exam to the applicant’s screen.

The information on the applicant’s computer will be locked except for the required functions to complete the exam.

Applicants will have two windows opened on their computer, one with questions and one with the answer sheet. Once the applicant has passed the security check, test time will start.

The applicant has two hours to take the exam.

Once the answer sheet is submitted, the applicant will no longer have access to the exam.

Should the time expire prior to the applicant

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Changes in testing for the exam moves the test online giving the test-taker immediate results. The process still needs verification.

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completing the exam, the applicant will no longer have access to the exam and the answer sheet can be transmitted for grading.

Any state can also do this so they sort of have the problem solved.

We still need to verify the process.

We are planning on asking several current licensees to volunteer to take a non-survey test exam of about five questions.

The questions will be something in the order of:

1. **What is 5 plus 3?**
  - a. 9
  - b. 6
  - c. 12
  - d. None of the above

Those that would like to participate in this painless process, please contact Bonnie Kelly at the BELS office or by email at [Bonnie.Kelly@bels.alabama.gov](mailto:Bonnie.Kelly@bels.alabama.gov).

In the near future, an option is being explored using actual testing software that would allow the exam applicant to go online to a designated website, log in and take the exam and the results are immediate.

## PROFESSIONAL

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really are not. There will be those who decide to straddle the fence (not a good idea). And even a few who don't care what is mandated and always seem to be on the "wrong" side of the fence. Where on that fence line do your professional ethics put you? One aspect of responsibility that seems to come up frequently is direct supervision. How much involvement does the licensee need to have to feel they are responsible for that product and, as such, place their seal and signature to that product whether it be a design drawing, a boundary survey or professional report.

Recent events that the BELS has been involved in would tend to lead some to jump to the conclusion that the "professionals" are not taking the responsibility that they should. Companies are openly brokering professional services via the Internet. Major engineering projects are being sent off shore with no supervision of the work. Professionals cannot answer simple questions about a product that contains their seal and signature.

Design drawings are being submitted to building officials for approval where there is not any design reflected but contain statements that the design will be in accordance with "XYZ" standard. I would ask you: Are you, as a professional, really performing your role when you allow any of the above events to occur?

My answer is a firm NO.

The reason BELS was created almost 80 years ago was to ensure that the engineering and land surveying done in Alabama is done by competent individuals. The purpose of the Board then and now is to protect the health, safety and welfare of our citizens. As a professional engineer or professional land surveyor, it is your responsibility to practice in only those areas in which you are competent. The subtitle of this is also that you don't professionally supervise others in areas in which you are not competent. If you couldn't create the design/plat/etc. on your own in a competent manner then why do you think that you can supervise a technician to do the work?

This is my challenge to you. Think about why you decided to go into the field you did and how proud you were when you received notification that all those exams were passed and that you would soon be getting that wall certificate.

Now look at your practice.

Are you still proud?

Are you taking shortcuts?

Are you relying on someone else to do the work and you taking the credit?

Do you know of someone else walking the "wrong" side of the fence? We can only investigate what we become aware of. Significant efforts are currently underway that will be covered in detail in our next edition. I ask that if you become aware of problems that you let us know. Take PRIDE in the engineering and land surveying professions.

You deserve it.

*BELS Bulletin 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](mailto:griffin.pritchard@bels.alabama.gov)*