The Connecticut Surveyor

Connecticut Association of Land Surveyors
78 Beaver Road, Wethersfield, CT 06109

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CALS Grants $10k in Scholarship Awards to Deserving Students

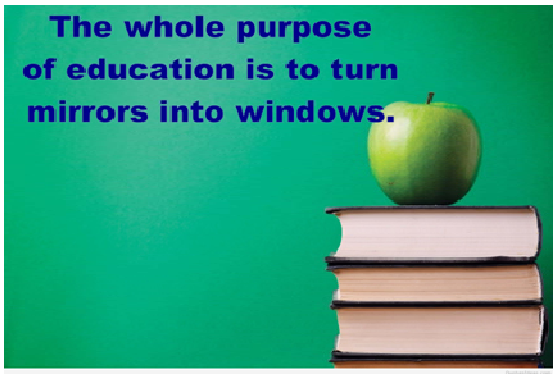
Based upon the recommendation of the Scholarship Committee, the CALS Board of Directors has voted to award four generous scholarships this year, which will hopefully lighten the financial burden for these deserving students.

Melissa Soucie has completed 18 of the 24 credits needed to obtain her MS in Business with a concentration in Geomatics from the University of Maine. She will receive the **William W. Seymour Scholarship** in the amount of $4000. Ms. Soucie was also a scholarship recipient in 2015 and is employed by CALS Firm Member LCR in Cromwell, CT.

Colin Dempsey is entering his second year for an AS Engineering Pathway degree at Housatonic Community College. He will receive the **Harry E. Cole Scholarship** in the amount of $3000. Colin is presently working for Accurate Land Surveying. This is his first Scholarship Award.

Ryan Smith has completed the AS Civil Engineering Technology program at Three Rivers Community College and will be completing his surveying certificate at Three Rivers, this fall. He will receive the **William Berglund Scholarship** in the amount of $2000.
This is Ryan's second scholarship from CALS.

Alesandro Mazzotta will be completing his senior year at Wentworth Institute for a BS Construction Management. His career path is not surveying but he has a strong background in surveying and he does intend to earn his land surveyors license in Connecticut. Alesandro will receive the **Oliver Paquette Scholarship** in the amount of $1000.
This is his third scholarship from CALS.



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Inside this issue:

Florence Italy: A Surveyor's Pilgrimage

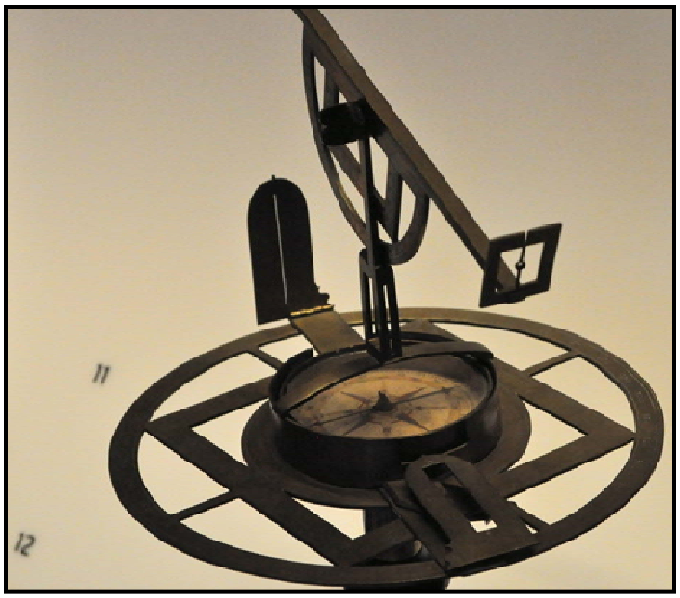
By Jay Doody, PS/PE

Florence, Italy is the cradle of the Renaissance, world center of fine painting, sculpture, architecture and history. One could stay for two weeks and not see everything that is required of the curious visitor. What is a land surveyor to do with only one day to see the finest Florence has to offer? Why, visit with one of the first English theodolites, from 1590, on display at the Galileo Museum in Florence, of course!

Figure 1: English Theodolite 1590

Florence's Galileo Museum contains one of the oldest collections of scientific instruments, maps and globes that have been kept intact from the days of the Medicis in the 15th century. It has been added to by subsequent ruling families and includes the papers and scientific instruments (and telescopes) of Galileo (1564-1642). Galileo can be considered a father of civil engineering due to his creation of machines to measure the physical properties of materials. Looking at his machines, instruments and writings, in the museum's Room VII brought back vivid memories for me of studying statics, dynamics and strength of materials. Galileo created the formula for the parabolic path of cannon balls, which brought the science of artillery to the military in Europe. With the advent of advances in artillery, precise measuring tools to determine and angle and direction of cannon fire led to an array or beautiful brass military surveying instruments for the measurement of vertical and horizontal angles, all on display in Room VI of the museum.

It is in Room V of the Galileo Museum that we find our English theodolite, and many other fine examples of surveying instruments from the late 16th century to the 18th centuries. How did an English surveying instrument find its way to the Medici collection? We must take a look at English history. Robert Dudley, First Earl of Leicester, was the favorite of Queen Elizabeth, until he had an illegitimate son, also called Robert Dudley (1573-1649). Young Robert accompanied his father as commander of the land army at the time of the Spanish Armada in 1588. He then became an English naval commander and led a fleet against the Spanish in the Caribbean Sea in the late 1590s. At this time he was writing about navigation and inventing scientific instruments to aid in navigation. Having made no progress with the King of England over his inheritance, he left England and offered his services to the Dukes of Tuscany in 1606.

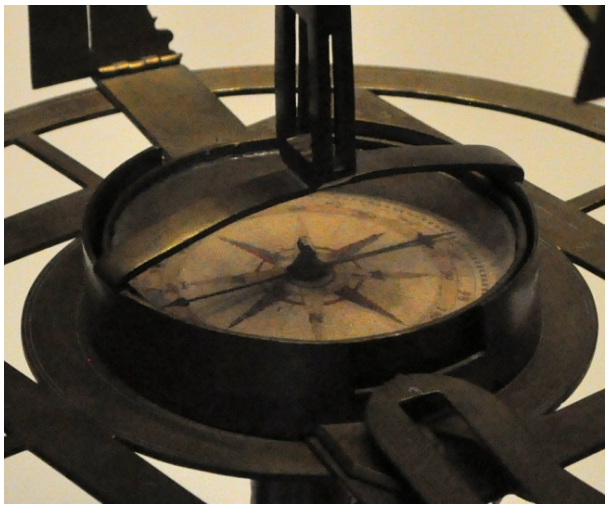


Florence Italy: A Surveyor's Pilgrimage

By Jay Doody, PS/PE

The younger Robert Dudley had a range of expertise in navigation, ship design and building, and engineering. He was put in charge of developing a fleet for the Medicis. He was responsible for designing and building Tuscany's main port and fortifications at Leghorn (now Livorno). He also brought with him his collection of navigational and land surveying instruments from England. As the author of a navigation textbook he wrote of sailing along the great arc as the shortest distance between 2 ports. Upon his death in 1649 he bequeathed his collection of navigation and surveying instruments to the Medicis. This collection has stayed intact since that time and is found in a section of Room V of the museum.

Figure 2: English Theodolite Rear Sight Detail



The first English language mention of the name "theodolite" was in Aaron Rathborne's The Surveyor in Foure Bookes , published in London in 1616. In that book 3 types of land surveying instruments are described; the theodolite, plane table and circumferentor. The surveying compass is not mentioned. The theodolite is distinguished by its ability to measure vertical and horizontal angles. The circumferentor measures only horizontal angles and there are examples shown in this collection, called graphometers. Each instrument had the ability to set a "0" back sight and measure the angle with a second sight. All of the surveying instruments in this collection contain a small (2" needle approximately) magnetic compass to orient to north. The compass was not used to measure angles like the surveyor's compasses in English North America in the 17th century. The 1590 theodolite in Room V, inventory item 240, was built by Augustine Ryther. It has a 9" diameter horizontal circle with degrees marked from 0° to 360°. It is made of brass and has a fitting for placement on a tripod. There a number of examples of tripods and tripod fittings on the military surveying equipment in Room VI from the 16th century, as shown in Figure 6.

Figure 4: German Mathematical Instruments 16th Century

Continued on next page...

Florence Italy: A Surveyor's Pilgrimage

By Jay Doody, PS/PE

Looking at this instrument today we can picture ourselves performing land surveying in 1600. The measurements of horizontal and vertical angles were established. There were instrument makers devoted to land surveying, not just nautical navigation. There were land surveying textbook authors. Distances were measured using rope, wire or wooden poles. Map making and some computations were undertaken to reduce scope distances to their vertical and horizontal components. The work had to be organized to accomplish the mapping mission by professional land surveyors. What was missing in 1600 that we take for granted today? The Günter chain would not be invented for another 20 years. There was no real standard of measurement for distances in surveying. Telescopes for common surveying instruments would not appear for another 200 years. The ability to design and manufacture measuring circles to less than 15 minute precision was very expensive until the development of the vernier over 150 years in the future and the invention of the Ramsden dividing engine in England in 1775. Finally, the use of level bubbles with surveying instrument did not become common in North America until the late 18th century.

Figure 6: Italian Military Surveying Instrument 1557 Tripod Detail

Figure 5: Italian Military Surveying Instrument 1557

If you do not have the time to travel to Florence to see the Galileo Museum, do not worry, it can come to you! On the internet, go to http://www.museogalileo.it/en/explore/virtualmuseum.html

and click on "Visit the Virtual Museum" and you can visit the rooms I mentioned and many more. There is an extensive video index that shows how the surveying and military instruments worked in actual conditions. Please look at the video of the Lancis Surveying Instrument at

http://catalogue.museogalileo.it/multimedia/LancisSurveyingInstrument.html for a demonstration of a complex 16th century military surveying instrument shown in Figures 5 and 6. The Galileo videos alone will garner your children "A"s in their school projects related to Galileo. Enjoy your virtual travels to the Galileo museum and remember one thing. The pizza in Connecticut can be just as good as in Italy, thanks to our Italian immigrant ancestors.

CALS Professional Development

The Evolution of the National Spatial System Seminar, presented by Dan Martin, NGS-NOAA, Friday, September 9, 2016.

Call the CALS office, seating is limited.

A Special thanks goes to the Northwest Proprietors Council that made a generous donation to the CALS Scholarship Fund in memory of Harry E. Cole and William Berglund.

This charitable contribution brings the CALS Scholarship Fund closer to our self-sustaining goal of $200,000.

CALS has applied to New York for Professional Development Credits.

We hope to have approval in place by the annual meeting in November.

CALS Professional Development

EGR 410 BOUNDARY LAW

Online Asynchronous Text Based Course

15 Weeks, 3 Credits, Cost $1,148 +book

Fall Semester Starts August 22, 2016 and Ends December 4, 2016

Charter Oak State College, CT
www.charteroak.edu

Textbook: *Evidence and Procedures for Boundary Location, 6th Ed., Robillard et al*

This course is not an FS review course but an in depth class on boundary law and history in both public lands and metes and bounds states. It has proven helpful in mastering boundary law issues for the FS examination.

Instructor: Jay Doody PLS & PE (CT)
For more information contact Jay Doody at jjdoody@snet.net

CALS Professional Development

On-line Masters Degree in surveying engineering from the University of Maine

- Do you want to continue your education while working and not have to re-locate?
- Do you want to pursue this education at your desired pace?
- Do you want a graduate education that combines surveying and business?
- Do you want a graduate program you can afford?
- The Professional Science Masters Degree in Surveying Engineering is for you!
    1. All Courses Offered ONLINE.
    2. 60% less than standard out-of-state tuition (https://online.umaine.edu/tuition-and-fees/)
    3. Graduate record exam not required
    4. Graduate courses in Adv. Survey Law, Geodesy/GPS, Lidar, UAV mapping, Adv. Adjustment Comps., Geodetic Aspects of the USPLS, and Business
    5. Join 22 current students in the degree program.

More info. found at engineering.umaine.edu/psm

Apply at umaine.edu/graduate/application/login

Questions – email ray.hintz@maine.edu

NASA Recognizes the Importance of Surveyors

Surveyors have always understood how important they and their work are to mankind because it is critical for a civilization that there be a framework upon which development of a society occurs. Of course, in the U.S. and many other countries the protection of property ownership rights is a part of maintaining societal structures.

It is not clear how any development of civilization may occur due to planetary travel, but apparently maintaining integrity and structure in planetary exploration is important to NASA.

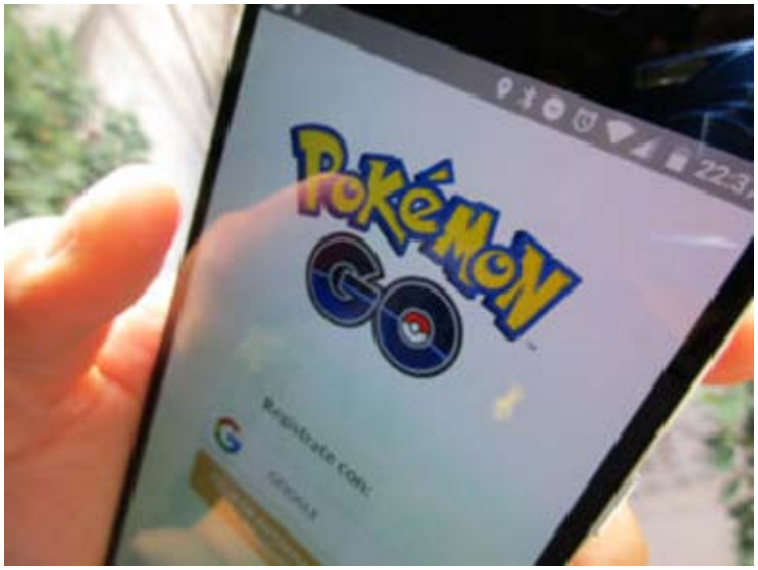
In developing its "Mission to Mars" plan, NASA has identified a few careers that it feels will be needed on Mars. In addition to Miners, Teachers, Farmers and Technicians, they list Surveyors as one the fields needed.

Pokemon Go leads the AR revolution

Six months ago when I claimed that augmented reality was the future of GIS and geospatial services, it was met with a few sniggers. This week has seen the arrival of Pokémon Go, one of the most popular games to hit the mobile phone market, and yes, it is augmented reality and yes, it is geospatial. It could well be the turning point for many geospatial companies.

What is Pokémon Go?

In case you have been hidden in a cave for the last 25 years, Pokémon is a game that first appeared on the Nintendo Gameboy (circa 1995) in which players openly walk around the game world and capture mystical creatures (in a white and red ball), which they then train to fight (other creatures) in battle arenas called "gyms". If their creature (called a Pokémon, but there are hundreds of breeds) wins their battle, then they earn a badge. The aim is to collect all the badges. Simple right?



Since the mid 90s there have been 18 manga books, 19 films and about 17 games …. yes, this thing is HUGE. Pokémon Go is the new generation, and it was inevitable that it would become a geocaching game.

Why is Pokémonn Go perfect for AR?

Let's look at the concept of the game again. The user walks around the globe looking for Pokémon to capture and then train. If this isn't the definition of geocaching then I will eat my shorts (thanks, Bart). Though any thoughts that this game was designed as a geocache promotion are quickly quelled when you realise that the first geocache was made around the millennium (by Dave Ulmer, Oregon).

For years we have struggled to get our children interested in mapping and geography, not realising that this was sitting under our noses the whole time! Ironically, it is all due to an Aprils Fools Day joke in 2014 in which it was claimed that Google had developed an augmented reality app. Niantic saw that this could be a reality and worked with Google; the rest is history.

How does it work?

After logging into the app for the first time, the player creates their avatar. The player can choose the avatar's style, hair, skin and eye color and can choose from a limited number of outfits. Once the avatar is created, it is displayed at the player's current location along with a map of the player's immediate surroundings. Features on the map may include a number of landmarks where Pokémon may be and Pokémon gyms (places where you battle your Pokémon).

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Pokemon Go leads the AR revolution

As players travel the real world, the avatar moves along the game's map. Different Pokémon live in different areas of the world; for example, water-type Pokémon are generally found near water. When a player encounters a Pokémon, they may view it either in augmented reality mode or with a pre-rendered background. AR mode uses the camera and gyroscope on the player's mobile device to display an image of a Pokémon as though it were in the real world. Players can also take pictures, using an in-game camera, of the Pokémon that they encounter both with and without the AR mode activated.

There is a fantastic article on how Google chose the locations for the Pokémon/geocaches here (by Mashable) whereby it explains how safety was the primary concern. Caches were chosen based on open places that had some significance so that players wouldn't be chasing a Pikachu (a type of Pokémon) across a train track..

Why will it change geo things?

Already a wave of companies is looking at how they can use marketing to get a piece of the pie (see this & this). It is evident that people are aware that this is, excuse the pun, a game-changer. It really isn't hard to see that this is going to be popular. So this might well be the turning point for geospatial, AR & VR. If people are comfortable using AR through this game then they will start expecting it for their mapping, bringing back apps like LAYAR with augmented real-world information.

The applications are immense and exciting for the geospatial industry. The ability to overlay real-world issues and information on what the user sees through the camera would be the definitive mapping system. Even if the accuracy isn't that amazing (mobile GPS – think about it) there is the potential to use clever imagery and presentation to overcome most issues. Imagine sending the worst member of your team to site with an AR map with which you could be 90% sure that they would be able to find the correct building compared to using a 2D map, or think about how easy it could be to identify potential points of weakness or contamination around a site by just looking through your device, all set by someone sitting at a desk on the other side of the world.

Of course this is speculation, but consider the rise of VR which is now around us. Soon we will all be fully immersed, watching TV, playing games, and riding roller coasters. 3D GIS has seen a rise over the last few years, too, with many geospatial providers offering 3D add-ons or 3D alternatives. Furthermore, the conferences were rife with talk and demonstration of 3D and VR. Of course, all this innovation is led by CEOs and project managers who have seen their kids playing with some game and are asking that all-important question….

"Why can't our company do that?"

You'd be a fool to think that this is all going to just disappear. The future of geospatial is now; we are seeing the evolution occur in front of our eyes. Just as the late Roger Tomlinson evolved the paper map to digital GIS in the 60s, we are seeing 2D moving to 3D real-world. I am all for it. It will bring new challenges, better accuracy, and more interaction with the user, although I draw the line at Pokemon Go myself.

Article by Nicholas Duggan FRGS Cgeog (GIS)

A Chartered Geographer with more than 15 years experience in GIS, data management, and geospatial innovation, Nicholas has consulted and provided work for most industry sectors such as offshore & onshore renewables, environmental, maritime archaeology, offshore & onshore survey, land management, public rights of way, demography, shipping, and traffic management. Previously employed with one of the UK's largest renewable energy consultancies, Nicholas led teams to deliver projects for clients such as tNational Grid, Eneco, Scottish Power, and Dong. In recent years, Nicholas has made way for his alter-ego (on social media, at least), Dragons8mycat, a voice for growing the geospatial community and pushing the geospatial software providers for better solutions. Nicholas currently works for Garsdale Design Ltd, an Urban Planning,Architect and 3D GIS Consultancy. Follow him on twitter: @dragons8mycat his LinkedIn profile is here: https://uk.linkedin.com/in/dragons8mycat.

The Bulletin Board

Canceled

Take me out to the ballgame!

Thursday, August 25th

Dunkin Donuts Field Gates open at 6:00

Our deepest condolences go to John Fenn, NSPS leader, whose wife Lynn passed away unexpectedly recently.

STOLEN

Topcon GTS 603 Total Station – Serial number 3W0158

Stolen in Manchester, CT the week of June 27-July 1

If you have any information please call Dave Simler at 860-646-6013

CALS now accepts purchases with American Express as well as MasterCard and Visa for your convenience.

The Importance Of Land Surveying In The World We Live In Today

By Kevin Germain

Many individuals may not be aware but the world's second-oldest profession is land surveying. Land survey is simply the art and science of mapping and measuring land. Land survey is vast in scope but truly comes down to people's land boundaries and where they are located. Land surveys are critical for buildings, railroads, skyscrapers, airports and bridges. A prime example of when a land survey is
necessary is when a fence is added to a yard. Without knowing exact boundaries the fence permit will never happen so in this case as in many a land survey is needed.

Boundary surveys are a vital part of the design and construction element of any projects. A boundary survey is conducted to give a precise location to the property that is in question. A land survey professional will come and inspect the topography of the land for many reasons. First the engineering design needs precise land surveying results for the main purpose of designing. A key element in site design is to ensure that the land in question is elevated to prevent building floods.

A title survey helps to facilitate any type of real estate transaction and certifies that a dwelling is built according to the design that was approved. Surveying is needed for so many different activities. For instance in order to dredge a river bottom or other body of water a map (survey) must be taken to pinpoint precise locations to avoid unnecessary complications. Another prime example of how a land survey is beneficial is when mapping out property for public use such as tunnels, roadways, air traffic and air ports, pipes, cabling and railways. A land survey also is necessary when splitting a parcel of land into several smaller lots.

The basics involved in field surveyor's duties include elements involving measuring, mapping and observing the land. A tool known as a total station helps land surveyors. Land surveyors derive elevations of the land using total station along with geometry, angel measurements as well as distances along with GPS that shows intersections from space satellites. A surveyor will report data in a concise manner into the office which will then pass info on to a client. Contractors rarely work directly with a land surveyor yet coordinate plans with office staff.

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The Importance Of Land Surveying In The World We Live In Today

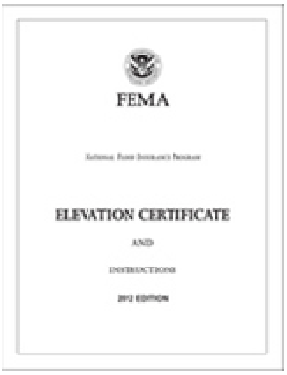
By Kevin Germain

In order to have success as a surveyor basic knowledge regarding zone, building and planning regulations must be know and changes should be kept up on. It is also important to know health policies, wetland regulations and rules regarding general land use. You must be able to apply previous learned techniques together with the latest in technology advances to measure land. It is essential to the success of the land surveyor that their equipment is kept up to date including computers, lasers and satellite technology.

Land surveying is critical in the world we live in today. A professional land surveyor can help to eliminate issues that arise because of land boundaries. They are also the first people to be called in when advances and improvements are being made to public spaces and land we all use regularly. It is important to recognize that only one job of a surveyor is boundary line management the many other hats they were ensure public safety and allow us modern day conveniences such as bridges, roads and airports.

If you have enjoyed this article on land surveying from Kevin Germain Visit http://monumentengineering.com/land_surveying.php today where you will find useful information on land surveying.

FEMA National Flood Insurance Program Elevation Certificate and Instructions



The National Flood Insurance Program (NFIP) Elevation Certificate (EC) (FEMA form 086-0-33) is an administrative tool of the NFIP which is to be used to provide elevation information necessary to ensure compliance with community floodplain management ordinances, to determine the proper insurance premium rate, or support a request for a Letter of Map Amendment (LOMA) or a Letter of Map Amendment based on fill (LOMR-F).

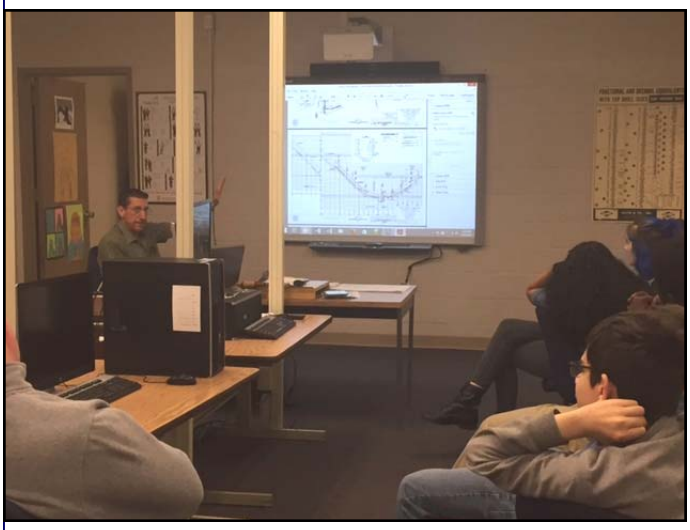
This document is referenced in the NFIP Flood Insurance Manual (Special Certifications Section). This form is fillable and can be completed in either Adobe Acrobat Pro or Adobe Reader and saved.

http://www.fema.gov/media-library/assets/documents/160

CALS member visits with students about computer aided drafting

CALS member James Bernardo, LS recently spent the morning with about 18 students from the Computer-Aided Drafting & Design Technology at Ella. T. Grasso Technical High School, Groton, Connecticut. Mr. Bernardo spent some time demonstrating the robotic survey equipment to gather field data and evidence. He then moved into the classroom. Starting with the raw point data and moving through the final survey mapping, he reviewed several local projects with the students. Mr. Bernardo touched on legal research, site plan design, grading, drainage as well as expert witness disciplines before opening up the floor to questions.

Mr. Bernardo is a 1984 graduate of the technical high schools Machine-Marine Drafting program. “Maybe I can spark an interest in one of these students who may be interested in pursuing a different path with their CAD drafting background” he said. This was his second consecutive year putting on the program for the students. The drafting department head, Thomas Allen, a 1983 graduate of the Technical High School participated, as a senior, in a work-study program at DiCesare-Bentley Engineers in Groton.



DEPARTMENT OF TRANSPORTATION

Encroachment Permit Requirements from the CTDOT

According to Robert Baron, Manager of Surveys for the CTDOT Surveyors (or any construction contractor etc. for that matter) are required to have an Encroachment Permit when working within the State's Highway Right of Ways. They are issued on an annual basis per District. They are either free or maybe now issued at a nominal fee, the issue is liability and safety of the workers and the traveling public so it's not a "survey thing" per se . Please also be aware that your crew should use the proper signing and personal protective gear when working in the ROW (protective cones, Class 2 / 3 vests and ball caps / hard hats as appropriate, truck lighting etc.).

The right of way of a State highway acquired by either fee or line establishment provides space for the pavement, guide rails, drainage facilities, trees, directional and warning signs, public utility poles, wires, conduits, water mains, sidewalks, driveways to adjacent properties, and many other facilities essential to the personal safety, convenience and economic well-being of all our people.

Public welfare and safety make it essential that reasonable regulations shall be exercised by the Transportation Commissioner to control the manner in which any change is made by any person in the structure, layout, drainage or topography of a State highway and its appurtenances. A permit manual (see permit regulations) was issued in the early 1930s after the State "Highway Dept." was first established and it was approved by legislator and published as Regulations on November 1, 1974.

The authority for the regulations is in Section 13b-17, Regulations, Delegations of duties and responsibilities of commission (Encroachment Permit Regulations), Section 13a-143a, Driveway Permits and Section 13a-247, Excavations and Obstructions, all of the Connecticut General Statutes.

When a permit is issued to you to perform a specified activity within the highway right of way, it is granted on the premise that the work will be performed in accordance with the special provisions inserted on the permit form in the manner detailed in the manual, and in conformance with the current issue of the State of Connecticut Department of Transportation Standard Specifications for Roads, Bridges and Incidental Construction, (Form 816), other State regulations, and local town ordinances and as detailed in the Standard Permit Attachments.

Your full cooperation in maintaining our State highway system at a high standard is earnestly requested.

Application for Permit - A standard form of application (PMT-1) which must be filed with the appropriate District Maintenance Director before an encroachment permit is issued.

NOTE: All applications for encroachment permits are issued from a District Special Services Office located in one of the four District offices. Please open the "District Towns" link below and find the corresponding District Office for the subject town.

Encroachment Permit - A standard form (PMT 2B) issued by the District Maintenance Director allowing the use of highway right of way, to a permittee who has met certain qualifications.

Bond - A written obligation which binds the signatory to answer for the debt, default, or miscarriage of the terms of the permit.

Certificate of Insurance - The Department will now accept standard insurance industry Acord Forms.

First Vice President Wayne Zirolli has been busy preparing for the CALS 49th Annual Meeting, that will be held at Saint Clements Castle, on November 4, 2016. Mr. Zirolli was fortunate to secure Donald Wilson, L.S., for the keynote speaker.

President of Land and Boundary Consultants, Inc., Don established his surveying business in 1974 in southeastern New Hampshire, and has been in practice as a land boundary consultant about 40 years. Although he specializes in consulting, Don is both a licensed land surveyor and registered professional forester and has presented seminars on a variety of topics including description interpretation, boundary evidence, surveying law and various aspects of forensic science. Don is a member of and has been active in many surveying, mapping, and forestry organizations. He is past president of both the Maine Society of Land Surveyors and the New Hampshire Land Surveyors Association.

In addition to over 200 technical publications in several disciplines, Don has been involved with the writing of more than 50 books. The 6th editions of Evidence & Procedures for Boundary Location and its companion title, Boundary Control and Legal Principles, both of which he is a co-author, are the leading surveying textbooks . His publication, Interpreting Land Records, is proving to be a favorite among attorneys, title examiners and surveyors. He has written two other boundary-related texts and researched and compiled the subject matter for seven state boundary and surveying law books. Don is a former faculty member of the University of Maine where he taught surveying in the School of Forestry and the Department of Civil Engineering. He is also a former faculty member at the University of New Hampshire where he continues to teach courses for the UNH Professional Development & Training Program. He continues to offer on-line education through Red Vector (www.redvector.com) for surveyors and related professionals. Presently this cooperative is offering eleven separate courses authored by Don with more currently being developed.

Other presentations will include: a professional development seminar presented by Jay Doody and Aaron Rathbone; FEMA Flood Zone Regulations presented by Mark Branse, Esq.; computer computations for technicians, presented by Rachel Dearborn, L.S.; and Instrument Calibration presented by Calvin Weingart, L.S. and Edwin Rhodes, LSIT.

Mark your calendar -
this is going to be a great event!

UAS Mostly Unchained

By Jeff Solomon, Pangaea

The FAA surprised many when it actually came through on its "small UAS regulations by summer" promise on June 21st. The summer was only two days old when the FAA revealed Small Unmanned Aircraft Regulations, Rule 107 which applies to unmanned aircraft (UAS) weighing less than 55 pounds conducting commercial operations. Here's a brief rundown of the important aspects of UAS operations afforded by rule 107.

ATC Permissions

Certain flight operations require traffic control permission prior to operations. According to the FAA: "Operations in Class G airspace are allowed without air traffic control permission. Operations in Class B, C, D and E airspace need ATC approval." *Class G airspace is generally considered uncontrolled airspace, maximum 1,200' AGL; rule 107 limits UAS to a maximum altitude of 400'*. For a larger view of air space categories, see Chapter 14 of the FAA's "Pilot's Handbook of Aeronautical Knowledge."

Remote Pilot in Command Position

The issue of licensing UAS operators has been finalized, and *a pilot's license will not be required*, although it will be accommodated. Rule 107 creates a remote pilot in command position in the form of a "remote pilot airman certificate with a small UAS rating." This certificate can be obtained by passing an aeronautical knowledge test at an FAA-approved knowledge testing center. Operators already holding a part 61 pilot certificate (not a student pilot) can complete a small UAS online training course provided by the FAA as part of their certification. All operators must be at least 16 years old and be screened by the Transportation Security Administration.

A big plus of rule 107 is that *temporary* remote pilot certificates can be issued for UAS operators who currently hold a Part 61 pilot certificate. This would help firms that are already flying missions under Section 333 exemptions to make the smoother transition to the new rules. Temporary certificates are said to be issued immediately upon completion of application, so hopefully this would reduce regulatory-enforced non-productive time.

From a business and operational perspective, not having to obtain a pilot's license is a big win. Many, if not the majority, of land surveying firms would probably not enter the UAS arena if they had to acquire a pilot's license; it's just too much of an investment in time and capital. This augurs well for the widespread implementation of UAS into the geospatial profession.

UAS Mostly Unchained continued...

By Jeff Solomon, Pangaea

Still No BVLOS

Flight operations beyond visual line-of-sight (BVLOS) are still verboten. This is a big concern as it greatly restricts a wide range of applications, including but not limited to UAS operations in transportation, extractive industries like mining and petro, power transmission, utilities, and precision ag.

However, there is some light at the end of the tunnel. Here's a quote directly from the portion of the part 107 summary which delineates operational limitations: "*Most of the restrictions discussed above are waivable if the applicant demonstrates that his or her operation can safely be conducted* under the terms of a certificate of waiver." Before you say "red tape," the FAA informs that it "will make an online portal available to apply for these waivers in the months ahead." An online process should make things smoother.

One red-flag: pay careful attention to the language describing the waivers: "most of the restrictions" are the important words. Does this mean BLVOS could be waived on a regular basis? We shall see, but I do spot an interim workaround. As far as maintaining VLOS: "No operations from a moving vehicle *unless* the operation is over a *sparsely populated area*." (Emphasis added.) In many surveying, mapping, and/or inspection missions over thinly occupied areas, the remote pilot could track the UAS in a vehicle to maintain VLOS and thus compliance with rule 107. This might be a good fix until BLVOS issues are adequately addressed, a topic that MAPPS is diligently working with the FAA on.

Pangaea (pan-jee-uh) is an e-newsletter named after the supercontinent from which our seven continents were formed. For us Pangaea is a unifying icon for converging geospatial technologies: exciting new advances in surveying, GIS, laser scanning, photogrammetry, and hydrographics, UAVs, and more.

As we witness technologies emerge, we cover how they are combining in new ways to yield faster turnarounds, new value-added services, and enhanced performance for those of us in geospatial fields.

Pangaea covers these issues (and more) delivered directly to your inbox twice a month.

August 2016

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15 **Ads for CALS Annual Book are due**	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

SAVE THE DATE - Waddell & Reed's Annual Connecticut River Cruise

Thursday, September 22, 2016

CALS 2017 Annual Reference Book

The Connecticut Association of Land Surveyors is currently preparing the 2017 Annual Reference Book.

This is the best opportunity for your company to have an advertisement placed before the surveying community for the entire year.

Our advertising rates are nominal compared to the impact your ad or professional listing will have year round. To keep your name before the Connecticut Surveying Community, fill out and return the order form below and send it along with your advertisement and payment.

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All ads are due by August 15, 2016

mail to CALS, 78 Beaver Road, Suite 2-J, Wethersfield, CT 06109

PLACE YOUR ORDER TODAY!

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FOR SALE

- Hewlett Packard HP450c Design Jet plotter that I am selling. I can print on 36" paper and mylar rolls and sheets. Both black and white and color. Also comes with stand and paper tray. $600 or best offer.

  Contact Alan Fenrow afenrow@gmail.com

POSITIONS AVAILABLE

Fairfield County

- Immediate Need for multiple positions at a relaxed and friendly land survey firm. Positions include:

- **Entry Level Field Surveyor** (willing to train the right candidate)

- **Experienced Party Chief** with research and AutoCAD abilities.

- **Survey/Field Technicians** to join the Redniss & Mead Team of Land Surveying, Civil Engineering, and Land-Use Planning professionals in a growing firm located in Fairfield County, CT. Candidates should have 3+ years experience in the surveying field and experience in the processing and preparation of all types of surveys, including boundary surveys, topographic surveys and construction layout. Knowledge of AutoCAD and Data Collection is required. Responsibilities include performing fieldwork, processing and mapping of fieldwork, coordination with clients and in-house staff. Work for this position will be on a variety of project types including residential, commercial and institutional. For consideration, please forward your resume to Lawrence W. Posson, PLS, Director of Surveying: L.Posson@rednissmead.com. We are an Equal Opportunity Employer and offer a competitive compensation package including salary, medical benefits, paid vacation, paid holidays, performance bonuses, 401K retirement plan, direct deposit, and a health club membership.

Pereira Engineering, LLC is an established Civil/Environmental/Land Surveying firm located in Shelton, CT and we are looking to fill the following position:

- **Civil Engineer -** experienced in various types of site development projects including residential, commercial, and municipal projects. Responsibilities include the design of site layouts, subdivisions, septic systems, storm and sanitary sewers, storm water management systems, grading, roads, and hydrologic/hydraulic studies. Duties will include preparation of plans, specifications, and calculations as well as coordination with other design professionals and public officials.

  Qualified candidate must have a B.S. in Civil Engineering from an accredited engineering program and must be proficient with AutoCAD Civil 3D and other commonly used design and drainage analysis software. Candidate must be organized, highly-motivated, and detail-oriented.

Pereira Engineering offers a very competitive salary and benefits package including Major Medical Insurance, 401(k) Profit Sharing Plan, Life Insurance including Short-Term Disability and AD&D coverage, paid Vacation, Holidays, Sick Days, Direct Deposit for payroll, and a Health Club membership.
Please email resume and salary requirements to: joe.pereira@pereiraeng.com or fax to: (203) 944-9945.

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Hartford County

- **Party Chief - Bongiovanni Group, Inc.,** located in central CT in its 33rd year as a leader in the Land Surveying Profession, is looking for a Professional/Career orientated person to join our Firm as a **Party Chief**.

  This position requires a minimum of 8 years experience performing all types of Land Surveys and Construction Layout. A full command of Surveying Fundamentals and Computations is essential. Energy, integrity, reliability and interpersonal skills are a must. Preference will be given to qualified candidates with GPS and Robotic experience.

  This position offers exposure to a diverse workload that provides for excellent Professional Development Opportunities.

  Bongiovanni Group, Inc. offers an excellent wage and benefit package. Please send Resume to:
  Alan Bongiovanni, L.S., Bongiovanni Group, Inc., 170 Pane Road, 2nd Floor, Newington, CT 06111,
  or email to al@bgils.com. Phone (860) 666-0134. All inquiries are kept confidential. EOE.

- **Field Surveyor** - Harry E. Cole and Son, an established firm located in Plantsville, Connecticut is seeking a party chief with the following qualifications: -2+ years Instrument Operators and Crew Chiefs, 1-5 year's experience data collector, total station experience required, GPS experience helpful. Pay commensurate with experience. Experience desired but company will train the right person. Must have valid driver's license. - Ability to perform and work as a two or one person crew utilizing robotic total stations and GPS equipment. - Experienced in ALTA/ASCM surveys, boundary surveys, topographic surveys and construction layout on large commercial and residential projects. AutoCAD experience a plus. Please send Resume to:
  Harry E. Cole and Son, PO Box 44, Plantsville, CT 06479 or email to szajac@hecole.com.

- **Land Surveying Technician** – A Surveying and Engineering firm in East Windsor, CT is looking for a full-time survey technician for office and field work. Requirements are proficiency with AutoCad Civil3D and two years of experience. Familiarity with computations, research, GPS , Flood Elevation Certificates and an Associates Degree is desirable. Compensation and benefits commensurate with experience.

  Please reply with a resume and cover letter to lnoble@jrrusso.com.
  We are an affirmative action/equal opportunity employer.

- **Land Survey Manager -** Freeman Companies is a multi-discipline consulting firm in Hartford, CT. We are currently seeking a qualified Licensed Survey Professional(s) to lead our survey staff. Previous project management experience, including project development / marketing is a plus. The qualified candidate will oversee a wide variety of planning, design, and construction surveying projects. Daily responsibilities include working with project managers to ensure effective and timely completion of surveying deliverables, interface with clients, manage daily work activities of party chiefs. Must currently hold a Professional Land Surveying License. Familiarity with Static GPS Survey Technologies, use of Robotic Total Station and familiarity with High Definition Scanning

Pay and benefits commensurate with experience.

Please email resume to jkeen@freemancos.com for consideration.

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Hartford County continued...

Survey Technician - Eversource Energy is seeking a full time Survey Technician, reporting out of the Berlin, CT office. Please follow the link below for details and application instructions.
https://eversource.wd1.myworkdayjobs.com/en-US/ExternalSite/job/Berlin-CT/Survey-Technician_R-001491-1

Middlesex County

- **Instrument Person -** We currently have an opening for an Instrument Person in our Cromwell, CT office. Practical knowledge of land surveying practices is required. Skills in using total stations, GNSS equipment, robotic instruments and data collectors a plus. Applicants should have the ability to travel for work. A high school diploma or equivalent is required. A minimum of three (3) years of survey experience is preferred. OSHA 40 hour training and OSHA construction certificate a plus. All successful applicants will have back ground checks, will be drug tested and will be subject to random testing throughout the year. An Affirmative Action/Equal Opportunity Employer.

- **Party Chief** – We currently have an opening for an Survey Party Chief in our Cromwell, CT office. The Survey Party Chief would be responsible for overseeing a survey field crew on projects ranging from construction stakeout, utility, boundary and topographic survey, right of way surveys. Skills in using total stations, GNSS equipment, robotic instruments and data collectors a requirement. Applicants should have the ability to travel for work. A high school diploma or equivalent is required. OSHA 40 hour training and OSHA construction certificate a plus. The ideal candidate should have 5 or more years of surveying experience in the fields listed above. All successful applicants will have back ground checks, will be drug tested and will be subject to random testing throughout the year. The LRC Group is an Affirmative Action/Equal Opportunity Employer.

Please send resumes to: contact@lrcconsult.com

- **Instrument Person** - AI Engineers, Inc (AI) is a growing and dynamic 160 + person engineering firm specializing in bridge/highway, civil/site engineering, survey, bridge inspection and bridge rating. Our Middletown headquarters is looking for an experienced survey instrument operator to perform a variety of tasks associated with land surveying. Applicant must be responsible, highly motivated, and a detail oriented individual interested in joining our Land Surveying department. Applicant must be able to work in a team environment as a key member of a survey crew assisting in the performance of boundary, topographic, and construction surveys utilizing the latest equipment and surveying technology. The position has opportunity for advancement for a motivated individual willing to grow with the changing skills and technology required of a Land Surveyor. Please send resumes and cover letters to jfeder@aiengineers.com. AA/EOE

Out of State

- **Survey Coordinator** - Eversource Energy is seeking a full time Survey Coordinator, reporting out of the Westwood, Ma office. Please follow the link below for details and application instructions.
https://eversource.wd1.myworkdayjobs.com/en-US/ExternalSite/job/Westwood-MA/Survey-Coordinator_R-001119-4

Looking for Work

- **Rodman**, with instrument operating experience, looking for full-time position in Connecticut.
Call the CALS office for a resume and contact information.

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