



The Connecticut Surveyor



National Surveyors Week, March 18-24, 2018, offered all of us an opportunity to stake our claim as the experts in mapping points on the Earth.

Remember that we are following in the footsteps of our forebears, Washington, Jefferson, Lincoln and so many others. Share your knowledge with others and make a difference.

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THE WHITE HOUSE
WASHINGTON

March 19, 2018

I send greetings to those celebrating National Surveyors Week.

Across America, professional surveyors fulfill an important role in the growth of our economy, the development of our infrastructure, and the daily functions of life. As someone who spent a career working with many highly trained and dedicated surveyors in the construction industry, I have great respect for the crucial work they do each and every day.

This week, our Nation honors the contributions and accomplishments of professional surveyors throughout American history, and we thank these hardworking men and women for their vision and dedication to the future of American greatness.

Melania joins me in sending our best wishes for a memorable week.

A handwritten signature in black ink, appearing to read "Donald Trump". The signature is stylized and written in a cursive-like font.

President's Forum

Thoughts About CALS

Email - Kathy @ctsurveyors.org

Phone - 860-563-1990



The 2018 Legislature is now in session. CALS is monitoring several bills that may have an effect on land surveying.

- **Senate Bill 193** - AN ACT CONCERNING REVISIONS TO DEPARTMENT OF CONSUMER PROTECTION STATUS
Among many things, this bill initially removed the requirement that ownership of an engineering, land surveying and architect firm was limited to those entities that are licensed. CALS testified in opposition to the bill and following the Public Hearing met with DCP and negotiated a modification that corporate ownership of companies providing design professional services would require at least 66% ownership by a licensed professional.
- **House Bill 5320** - AN ACT CONCERNING OCCUPATIONAL LICENSING AND BUILDING TRADES
"Shell" bill with no language.
- **House Bill 5321** - AN ACT CONCERNING CONSUMER PROTECTION
This is just a "shell" bill now with no language. It is being passed out of a committee for future language if necessary.
- **House Bill 5541** - AN ACT CONCERNING THE LIABILITY OF LAND SURVEYORS
To require an owner of land who has requested a survey of his or her land to provide not less than seven days' advance written notice to any person whose land is to be entered upon to perform the survey.
- **House Bill 5570** - AN ACT CONCERNING ACTIONS AGAINST ARCHITECTS, PROFESSIONAL ENGINEERS AND LAND SURVEYORS.
To extend the time for initiating an action against an architect, professional engineer and land surveyors (1) based on the discovery of a latent deficiency, or (2) when a written warranty, guarantee or tolling agreement provides for a longer period of time. There will be a public hearing on this bill March 28, 2018.

Longtime Seymour land surveyor puts away maps and journals and retires

Taken, with permission from the New Haven Register
By Jean Falbo-Sosnovich

From helping grow greener grass at Yale Bowl's football field to staking out more than 1,000 acres of Birmingham Utilities water company land, local land surveyor Michael H. Horbal has made his mark on the Valley and beyond for nearly 50 years.

Mention Horbal's name to any planning, zoning or land use official in the Valley, and they'll agree the longtime businessman is the epitome of professionalism.

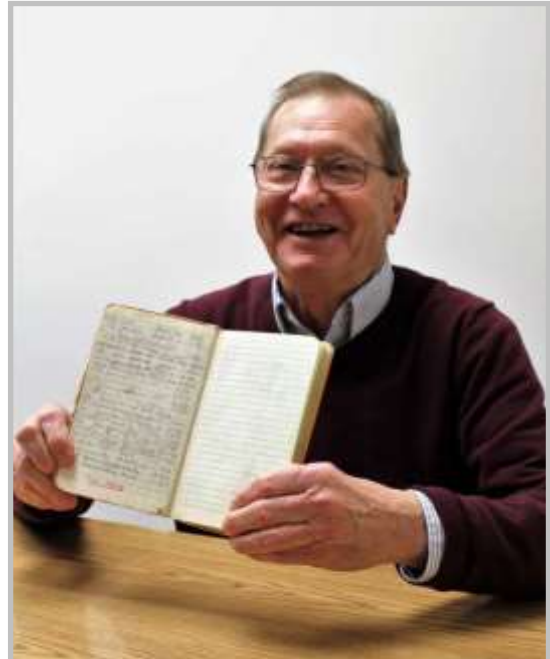
Horbal, 74, flanked by the signature green door at his brick office building at 52 Main St. — which is named for his wife and longtime secretary Marion — recently decided to put away his field journals, maps and surveying equipment and retire.

"Mike is the definition of professionalism, full complete and accurate proposals were always submitted along with a formal presentation of each project," said Ansonia Planning and Zoning Commission Chairman Jared Heon. "Mike represented his clients well with a solid work ethic and quality product that most others can only strive to achieve. His dedication and skill has led to the successful completion of many projects in Ansonia, ultimately improving the quality of life for its residents."

Oxford's Inland Wetlands Enforcement Officer Andrew Ferrillo echoed similar sentiments. "When I think of Mike, I think top-shelf, A-1 job on everything single project he has worked on for us in Oxford and throughout the Valley," said Ferrillo. "His work is impeccable."

Seymour Engineer Donald Smith Jr. has worked with Horbal on various projects for 30 years. "Mike always did his homework and was always very precise," Smith said. "He helped get a lot of Valley projects and developments approved and created a lasting legacy here."

Horbal left his mark on many Valley and area projects, from major subdivisions like Rolling Hills Acres in Seymour and the town's first assisted living facility, Smithfield Gardens to improvements at the Ansonia Nature Center, construction of Ansonia's first Boys and Girls Club, taxiway improvements at Sikorsky Aircraft and Sacred Heart University's business school. And he can't even remember how many Dunkin Donuts' he's worked on. Horbal has also been an active volunteer in town.



Michael Horbal, L.S.

Continued on page 5...

Longtime Seymour land surveyor puts away maps and journals and retires

Taken, with permission from the New Haven Register
By Jean Falbo-Sosnovich

One of Horbal's more memorable projects happened in the 1960s prior to him opening his own business here in 1976. He was summoned to Yale Bowl where officials were disappointed with the grass on the football field. Horbal said a foot of earth was removed and mixed with 20 tons of Speedy Dry to help level the playing surface. Horbal had to ensure the end zones, 50 yard line and more remained intact. Grass was imported from Sweden and planted on the new surface and within six weeks, Horbal said the grass grew greener and better than ever.



Mike Horbal, L.S. shown here with his partner Jesse Judson, L.S., also a CALS member



"I can't drive by there without thinking of that and smiling," Horbal quipped.

In business nearly half a century, Horbal said he's seen lots of changes in the industry, including stricter compliance. He used to log all his notes and measurements in a paper field journal, but technology digitized the way land is surveyed and marked. Drafting used to be done by hand on plastic maps, but all that's computerized, too, Horbal said.

Horbal's legacy will be carried on by his longtime employee, Jesse T. Judson, as Horbal & Judson Land Surveyors & Associates continues to live on downtown.

"Mike has a very good reputation in the Valley and beyond, and I'm excited to carry that on," Judson said.

As for Horbal, the avid fisherman and history buff, can't wait to spend time with his three grown children, nine grandkids and traveling with his wife.



CALS Welcomes New Sustaining Member Stronghold Insurance & Financial Services

Greg LaBaw, Principal of Stronghold Insurance is excited to introduce our members to a national association program that sponsors medical, dental, vision, accident and life insurance plans. This company is called Elevate to Wellness. This organization originally started by offering wellness programs to their member companies. Then later they started offering life, dental, vision and other ancillary plans. Eventually they started to offer medical plans too. Member companies can use these plans for their employees if they are competitive options with their present plans. The medical benefits are offered through using either a Blue Cross or CIGNA national network. There are several plan options, and summaries of the five plans available. Please note that Blue Cross program is only available if you have 5 or more enrolled employees. The plans are on a calendar year basis. The benefits are completely voluntary, so if you have found a better option for your firm, that is great. You may save thousands of dollars!

A link to see various plans and rates will be available on the CALS website in the near future.

Any questions about the program should be directed to Gregory LaBaw 203-925-1639 ext. 102 or email glabaw@strongholdinsurance.com.

Deepest Condolences to the family of CALS Charter Member



CALS Charter Member John A. Bear

John A. Bear, 86, of East Hampton, CT, quietly passed away shortly after midnight on Friday, December 22, 2017. He was born on February 12, 1931 in Presque Isle, ME and was the youngest child of Edith (Dustow) and Mitchell Bear. His upbringing instilled those most valued qualities of integrity, honesty, modesty, service to country and, most importantly, love of family.

John was a devoted and loving husband to his wife, Lenora (Ferrigno) Bear, for 62 years. Besides his wife, he is survived by his four children and their spouses, Carolyn and Robert McEvitt, Christine and Brian Hurt, John Jr. and Susan Bear and Mark and Victoria Bear. He also leaves nine grandchildren, Melinda Hurt, Andrea Hurt, Patrick Hurt, John Jr. Bear, Emily Bear, Andrew Bear, Michael Bear, Peter Bear and Janay Bear and one great-grandchild, Makenzie Hurt. He dedicated his life to providing for and protecting his family.

John was a retired civil engineer for the state of Connecticut as well as spent his time as a private land surveyor. He enjoyed working on various projects around the house whether they involved home maintenance or machinery. He especially loved his music and would spend time every night playing his guitar or giving music lessons to youngsters. John was a member of the Walter K. Bauer Band as well as provided music in the past for folk Masses at St. Patrick's in East Hampton and St. John Fisher in Marlborough. John also enjoyed coaching little league baseball while his sons were growing up.

John A. Bear was a good man. He took a sincere interest in everything and everyone. He was one of the gentlest souls that God placed on this earth. His life was straightforward and genuine.

He has achieved success who has lived well, laughed often and loved much.

Bessy Anderson Stanley

CALS 2018 Golf Outing



Tee off :10:00 am

Date: 06/21/18

Registration begins at 8:30 with a continental breakfast & photos.

Tee off time is 10:00.
A grilled item and chips will be included at the lunch gazebo.

A full dinner buffet will follow with award presentations.

**Portland Golf Course
169 Bartlett Street
Portland, CT 06480
860-342-6107**

\$155 per person

CALS 2018 Golf Outing



CALS Golf Outing Registration Form June 21, 2018

Name _____

Other Players in my group

Phone _____

Email _____

MasterCard or Visa # _____

Expiration Date _____

Signature _____

Total enclosed at \$155 per person \$ _____

Note - PGC does not have a driving range. You can use the driving range one mile away at Portland West, 105 Gospel Lane, Portland, CT.



Portland Golf Course
169 Bartlett Street
Portland, CT 06480
860-342-6107
www.portlandgolfcourse.com

CALS Events



- Thursday, May 3rd - CALS General Membership Meeting, Sheraton Hotel, Rocky Hill, CT. Keith Fuller, from Smith Brothers USA, will give a presentation on “5 Must Have Contract Clauses.” Don’t miss this opportunity to meet with and discuss options for your business. (see page 19)

- Thursday, June 21st - CALS Golf Outing, Portland Golf Course. You deserve a break and so do your employees. Come out to the country and spend some relaxing time with your friends and associates.



- Thursday, July 26th - Hartford Yard Goats Game. Last year was a great time for all who attended. Call the CALS office to reserve your tickets early so that we can all sit together!
Tickets are \$10 each which includes a \$2 credit per ticket to go toward food or souvenirs.



- Friday, November 2nd - CALS 51st Annual Meeting, Sheraton Hotel, Rocky Hill, CT. Nothing can top the great celebration that we had last year but we sure are going to try!





Take me out to the ballgame!

CALS Summer Outing

Thursday, July 26, 2018

Dunkin Donuts Park

1214 Main Street, Hartford, CT 06103

Gates open at 6:00 pm. Game begins at 7:05 pm

CALS has reserved a group of tickets so that we can all sit together and enjoy the game.

Bring your family and friends for a great evening out this summer.

Tickets are only \$10 each with a \$2 credit per ticket to go toward food or souvenirs.

CALS Summer Outing - Hartford Yard Goats -Thursday, July 26, 2018

Name _____

Company _____

Email _____ Phone _____

Please Reserve _____ Tickets @ \$10 each. Total Enclosed \$ _____

Credit Card Number _____ Exp. Date _____

Signature _____



Mail to The Connecticut Association of Land Surveyors
78 Beaver Road, Suite 2-J, Wethersfield, CT 06109

CALS has reserved 25 seats in the left field grandstand. Last year they sold out very quickly and we were not all able to sit together. This is a GREAT FAMILY evening. Get your order in TODAY!

Professional Development



The Northeast Arc Users Group (NEARC) presents a one-day GIS Conference on May 8, 2018, at the University of Connecticut.

Professional registration is \$65 before and \$75 after April 9th. Student registration is \$35/\$45 before/after April 9th.

For more details:

<http://www.northeastarc.org/spring-nearc.html>

Mark Goetz, GISP
GIS Director
mgoetz@ctmetro.org

CALS Seminar -

- **How to do Coordinate Geometry in a Spreadsheet**

Presented by Kevin Franklin,, L.S. Kevin Nelson and Professor Thomas Meyer
Friday, June 22, 2018

Using Excel, in such a workshop we could demonstrate everyday functions such as:

- Unit conversions and unpacking DMS format to DD
- HD and VD and grid reductions for sideshots
- Collimation corrections for a traverse set of angles
- Azimuth inversing and Compass Rule tables
- Level run reductions

Look for a brochure in the near future.



Southern Connecticut State University Civil Engineering Students Looking for Summer Work & Careers

Jay Doody has announced that his GPS class is getting ready to go to work for the right CALS business owner this summer or beyond.

Let me know what you are looking for and in what town your office is located, and he will pass the information along to those students who live in your geographical area.

Reply to Jay Doody at doodyj@ccsu.edu

Times Have Changed



When the automobile economy looked so different
Charging an electric car in 1905



Charging an electric car in 2018.

Reminisce of an Old Surveyor, Part III - Other Equipment

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

This is the third and last article on surveying equipment and procedures that are now relegated to history. I have been surveying for around half a century. I started before electronic distance measuring was common. Transits and steel tapes were the prevailing equipment found in a survey firm. Metal detectors were rare. As a result, I have had experience with surveying equipment that will never be used again by the modern surveyor.

My two previous articles have discussed taping, the compass, and the transit. I shall now delve into other procedures and equipment known and used in historical surveys of which I often took part.

Plane Table – In the early mapping surveys I often participated in, we used the plane table and alidade to prepare a site map and topographic map while in the field. In the days before computers, the plane table was an excellent tool to prepare an accurate map in a hasty manner. I have been told that almost all the soil maps prepared in the 1920s and 1930s were done using the plane table and alidade. I had not made my debut on the surveying field at this time so I have no first-hand knowledge of the accuracy of this information.

The plane table was a large board, the dimensions of which I can no longer remember. It was the size of a typical drawing board that engineering and surveying students once had to purchase when studying in their major. This board was mounted on a tripod. The board came with the tripod mounting ring fastened to the underside of the board. The mounting ring was of a size that was equivalent to the transit mounting ring. The board, once mounted on the tripod, was set up at waist level. There was no attempt to plumb this over a known station though I suppose there were situations when this should be done. It was possible to do so.

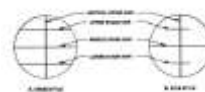
A large sheet of paper was fastened to lay flat on the top of this board using tape or tacks. The alidade was then placed on the board, atop the paper. I suppose an alidade could be described as a transit scope fastened to a flat scale – the scope being above and parallel to the long length of the scale. Somewhere on the scale was a bubble that was used to level the drafting board or plane table.

With the plane table leveled, a long shanked pin was inserted through the paper into the board. The represented the observer's position. The mapping of the area could now begin.

The rodman, armed with a stadia board, would hold the stadia board at a point to be located by the person at the plane table. Using the stadia hairs apparent when viewing through the scope in the alidade, the distance from the alidade to the stadia board would be determined. On the plane table, the scaled distance would be measured from the long-shanked pin along the edge of the alidade where a point would be marked and labeled on the paper. The orientation of the scale's edge on the alidade being the same direction as the scope is pointing. This procedure was repeated numerous times until the surveyor was satisfied the paper fastened to the plane table was complete with the information necessary for the map being produced on the plane table.

Elevations could be obtained by the simple expediency of setting the alidade level using a scope bubble for this purpose. Most alidades had a plate and Vernier to read a vertical angle that would allow the elevation to be determined by trigonometry. Many alidades had what is known as a Beaman scale that would allow calculations without having to look up trig values. I will omit discussing the Beaman scale and how it was used. In truth, I would be rather rusty in remembering how to use it after more than four decades without practice.

The end result is that the survey crew returned to the office with a completed map of the area often including contour lines. The only consistent fault I found with the plane table was the fact that survey work on a hot summer day using a graphite pencil often left the map sheet covered with smudges.



Stadia Board – I have mentioned the stadia board when speaking of using the plane table. The stadia board can be visualized as a level rod with much larger graduations. The stadia board was somewhat wider than a level rod in order to accommodate the larger graduations. The larger graduations allowed for seeing the rod at longer distances.

Reminisce of an Old Surveyor, Part III - Other Equipment

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

I suppose reading stadia distances is a lost art. It was a rather simple procedure unless there was trig involved. The difference in the rod readings between the upper stadia wire or hair and lower stadia hair was obtained and multiplied by 100 giving the distance in feet, assuming the stadia board was so marked in feet and decimal parts of a foot. I will confess to reading the stadia rod at ranges that I could only read half of the stadia rod – that is using only the center wire and top wire or bottom wire. In such cases the interval between the middle and upper or lower stadia hair was multiplied by two before multiplying by 100.

In theory if the stadia rod could be read to the nearest 0.01 of a foot, the horizontal distance could be calculated to the nearest foot. Conversely, if the instrument operator made an error reading of 0.01 of a foot, the horizontal distance would be in error by a foot. This precision was acceptable for most mapping projects.

I will say that I met more than one old surveyor that laid off subdivision lots using stadia to the annoyance of the modern surveyor who finds the distances between corner monuments varying by as much as two feet with no consistency in the error that would allow a dependable deficiency or an overage to be applied when retracing the lot boundaries. Perhaps I have solved a mystery involving some old subdivisions and corners found.

Heliotrope – I will comment briefly about the heliotrope though its use in private practice was very limited. The heliotrope was an elongated target, fasted to a tripod, and plumbed over a point. The heliotrope I used was composed of two rings along the elongated board with a mirror at the end farthest from the instrument observing the heliotrope. One heliotrope I used actually had two mirrors that allowed the sun's light to be bounced from the sun using the first mirror of the heliotrope to the mirror in the back of the heliotrope that then reflected the sun's beam through the two rings to the observer. The double mirrors was required if the sun was behind the heliotrope as it was pointed toward the instrument. The rings in the heliotrope were aimed at an observer standing behind an instrument that was being used to measure angles. The mirror at the rear was adjusted to reflect the sunlight down

through the rings toward the instrument operator producing a bright light for the observer to aim upon. Given the sun's apparent movement, the person at the heliotrope had to continuously adjust the mirror. I was always impressed that when standing at the instrument, I could see the bright light reflected by mirror on the heliotrope for up to 30 miles away in some cases.

Subtense Bar – I suppose the subtense bar I used from time to time was more common than a heliotrope in private practice but not by much. The subtense bar appears as a much shortened level rod rotated from the vertical to be horizontal or roughly parallel to the ground. The subtense bar was mounted in its center on to the top of a tripod. The tripod was centered over a traverse station or control point. From one end of the bar to the other was a known distance. The subtense bar that I used had a sight tube in the center. The bar was rotated about the tripod top until the sight tube was centered on the instrument operator. This would put the length of the subtense bar perpendicular to a line between the subtense bar and instrument. The instrument operator would measure the angle between the ends of the subtense bar. Using trigonometry, the distance between the instrument and subtense bar could be calculated. The accuracy of the distance was a direct function of the accuracy in measuring the angle. The subtense bar was a very useful tool in measuring those distances that could not be taped. I would often use the subtense bar in measuring distances across water bodies. I also used it from time to time when I did not have an extra person to help me tape the distance.



Plumb Bob – I will repeat my statement from my first article and say that I don't believe a plumb bob can be found among the equipment of the modern surveyor. The plumb bob was necessary for taping. It was necessary to hang the plumb bob under the tripod in order to place the instrument over the point, there being no optical plummets on survey equipment at the time. Finally, the plumb bob was required to give back sights and fore sights over marks and monuments in the field. I have heard of more than one employer that docked the pay of an employee that forgot to bring their plumb bob to the field.

Reminisce of an Old Surveyor, Part III - Other Equipment

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

The use of the plumb bob would seem rather easy but it was not. Consider my previous explanation on the use of the plumb bob when taping. Hanging the plumb bob under the tripod to allow the instrument to be centered over a mark required the person to have mastered the art of a slip knot. A slip knot allowed the plumb bob to be raised or lowered depending on the adjustment of the tripod legs and how close over the mark was necessary to aim the point of the plumb bob. To use other than a slip knot caused a knot to be left in the string. A knot in a plumb bob string was a crime commiserate with wanton destruction of property.

The person had to be adept at wrapping the string around the head of the plumb bob. The wrapped string was fastened in such a manner that a tug at the string's end would unwind the string without leaving a knot. Many surveyors purchased gammon reels that alleviated this task.

Leroy Set – I will depart from surveying equipment in this one instance to speak of the LeRoy set. While it may not be classified as surveying equipment, almost every surveying firm had a LeRoy set unless the firm had a person gifted with beautiful handwriting.

The LeRoy set was a lettering set using lettering templates and a scribe. The scribe had three arms. One arm went into a long slot on the lettering template. A second arm went to a pin that followed the indent of the letter or number in the lettering template. The third arm held a pen that would ink the letter or number on the paper, mylar, or vellum. The letter templates came in different sizes, fonts, and styles. I spent many hours using a Leroy set. Probably a quarter of that time was spent getting the ink to flow smoothly out of the pen. I may have exaggerated this time a little. Getting ink to flow was an art that usually involved ink on the tongue and lips not to mention scattered across the vellum or mylar. This reminds me that another quarter of the time was spent removing ink that did flow out of the pen but in the wrong location or too copiously on locations without enough pounce. Enough said on that topic as it brings back many frustrating moments.

Chain – I will admit to only using a chain one time. I would be perceived as really ancient had I admitted to frequent use of the chain – so I won't do so. For those surveyors that have never seen a surveyor's chain, the surveyor's chain does not appear like the chain an individual would find in a hardware store. The links in the surveyor's chain are approximately 7.92 inches. Each link is a length of wire with a loop at each end of the wire shank that connects to a ring loop that connects to the loop on another similar link for the chain. A four rod chain will have four brass tags with one to four fingers. One finger is found at the one rod length along the chain. Two fingers are found at the two rod length and so on. When measuring, a surveyor would count the number of rods plus the number of links to the object measured – although many a rural surveyors simply gave the number of rods and perhaps half rods without bothering to count individual links.



While there is sag in a steel tape, it hardly compares to the large sag found when holding the chain above the ground. Furthermore, every loop in that damn chain seemed to catch and clog with sticks, grass, mud, and other debris gathered when dragging the chain along the ground. To further agitate the temperament of the user – in one case being me - the debris would somehow snag and hold two link loops together thereby doubling the chain back upon itself involving some length of the chain. If there is a log with some small appendage sticking from the log you can count on the link loop snagging that appendage. There were always some vegetation protruding from the ground that would snag the chain. Links soon stretched or even broke. Of course, these problems were all relayed to me since I can't be that old to have personally experienced the agitation caused by measuring with the chain.

Dip Needle – Metal detectors were around since World War II but their widespread use in surveying firms seemed to occur in the mid to late 1970s. Surveying without a metal detector resulted in many pin cushion corners since an existing pin or pipe that was buried to mark the corner was not always found before a new monument was set.

Reminisce of an Old Surveyor, Part III - Other Equipment

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

One trick that I often employed before owning a metal detector was to hold a compass and slowly float the compass just above the ground and look for twitches in the compass needle. This technique allowed me to find many metal corners that were just below the ground surface. In the 1960s up to the widespread use of metal detectors, dip needles were commonly used to find the buried metal corners. Dip needles were composed of a box with a long, looped strap. The box contained a magnetized needle. The box had a window allowing observation of the needle.

Using the long strap to allow the surveyor to stand up, the box was hovered over the ground while the needle was observed. The sensitive, magnetized needle dipped when influenced by nearby metal. By this means, the surveyor could discover if there was a metal pin, pipe, or bar below the ground surface. The dip needle was not as sensitive to buried metal as modern metal detectors. I don't believe I ever found a pin or pipe that was buried more than half a foot below the ground surface using a dip needle.

EDME – Early electronic distance measuring equipment, known as an EDME or EDM, using shortened initials, were a separate item of equipment from the transit or theodolite. Often the operator would have to remove the angle measuring equipment and mount the EDM directly on the tripod. Later, the EDM and angle measuring equipment were configured so the EDM was mounted on the standards of the angle measuring instrument.

The first EDM I used was a tellurometer or cubic tape. A tellurometer was set up on both stations and pointed toward the other station using a null needle to find the optimum pointing. Each tellurometer would determine the distance between the opposing tellurometers. The two distances were averaged. The tellurometer used microwaves to determine a distance. You could switch between speaking to the other operator and measuring a distance. Distances were calculated using a paper form that I shall mention again with the next item of distance measuring equipment.



Later I used a Hewlett Packard laser EDM. With this instrument, you knew you were pointing at the reflector because you would see a bright red light as the laser light was reflected back to the instrument. That probably did not do my eyes any good. Not that standing in the path of microwaves was healthy.

Both items of equipment, the tellurometer and laser EDM, required a needle be nulled, numbers read, frequencies shifted, and an entire sheet of a paper form employed were various readings were made, entered, and manipulated. I believe the form was published by an IRS agent who first invented the 1040 long form.

Temperature and atmospheric corrections had to be hand calculated. Prism corrections were applied to every measurement of the laser EDM. It was a complicated and time consuming process to determine a distance. Yet, it was far faster and more accurate than obtaining long distances by taping.

If my memory serves me, the Guppy was the first instrument I possessed that gave a distance directly without a lot of data entry on to a form and intermediate calculations. I will not further describe this popular EDM. After the Guppy, the angle measuring and distance measuring were combined into one instrument known as the total station.

These early EDMs were powered by twelve volt batteries. I often used the battery in my car or hauled around a heavy twelve volt battery to power the EDMs. To save weight I later used a motorcycle, 12 volt battery. If my memory serves me correctly, the batteries never seemed to last an entire day. They seemed to always be drained at the farthest point from the road.

I will end discussing the early EDMs with the statement that the horizontal distance always had to be calculated using the zenith or vertical angle. If the EDM was mounted on the standards of the angle measuring equipment, the offset had to be taken into account. Long distances often required numerous prisms stacked upon each other in order to get sufficient light reflected back to the EDM to effectuate a measurement.

Reminisce of an Old Surveyor, Part III - Other Equipment

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

GPS – I suppose someone seeing this heading will exclaim that the GPS is not an old piece of equipment relegated to history. If you had seen the GPS equipment I first used, you would admit it was historical and that equipment is relegated to history.

The historical GPS equipment was large and cumbersome. Several twelve-volt car batteries were often required to operate the equipment and obtain sufficient satellite data. The GPS receiver could not be used at any time of the day or for that matter any day of the week. There were not sufficient satellite constellations to allow for 24-7 operation of the GPS. Depending on the satellite constellation configuration for that day, data could only be collected during a limited time window. I often occupied a station in the darkest hours of the night in order to comply with a pre-determined window of opportunity for receiving satellite data. I met more than one police officer that was very suspicious of my activities.

Spending hours on a station to obtain sufficient data was common. In fact, multiple observation windows (think days) of observation were often required. In the earliest GPS, the timing of when the GPS was to be turned on was important. When I speak of timing, I mean down to the odd minute.

Now I ask, does this GPS I have just explained remind you of what a person now uses as they run around with that light weight GPS receiver on a prism pole, collecting numerous locations in a day?

Other Equipment: My colleague, Carlton Brown, has written several articles about slide rules and early calculation machines so I shall not mention those. I will say that when I first started surveying there were no calculators. I used logarithm tables and had to look up trig functions in a book. Unless you have tried to look up log and trig values in a book of tables, you have no idea of the errors that often resulted from trying to interpolate values using the tables in the book

I have no doubt there were other items of equipment used by historical surveyors that I have not mentioned for the simple reason that I have never used the equipment or forgotten I used the equipment when writing this reminisce. Forgetting is easier and more common as I get older. I am sure surveyors of my age can add their thoughts and should do so before we pass into history.



Surveyors

TRIVIA

C H A L L E N G E

The Connecticut Geodetic Survey (CTGS) began operations in 1933. The office was located on Prospect Street in New Haven. There are presently about 8,000 CTGS control stations throughout our state. **In what town and location is CTGS Monument # 1 located?**

See answer on page 25...

CALS General Membership Meeting

May 3, 2018 - Sheraton Hotel

100 Capital Boulevard, Rocky Hill, CT 06067

Cocktails & Registration 5:30pm, Dinner 6:30 pm



Keith Fuller, MBA, CIC

Keith Fuller, Commercial Lines Risk Advisor for CALS Sustaining Member Smith Brothers Insurance will give a very important presentation on contract clauses.

*Your firm's survival in the marketplace may depend as much on effective risk management as anything else. A key ingredient in managing risk is having the right professional services contract in place. A strongly worded, legally enforceable, written contract can spell the difference between a great project with a client who's likely to work with you again and a project you wish you had never agreed to take on. **The presentation will focus on critical contract clauses that every contract should have and what they mean to you as a business owner and the impact to your business.** We'll cover contract clauses that are a deal maker, clauses that are a deal breaker and what language will make your contract uninsurable.*

CALS 2018 General Membership Meeting Registration Form

Name _____

Company _____ email _____ phone _____

Meal Selection: (1) Chicken Picatta or (2) Prime Rib of Beef. Please circle your meal choice .

All meals include, salad, entrée, coffee/tea and chocolate mousse pie for dessert. \$55 per person

Total \$ _____

Credit card number _____ Expiration Date _____

Signature _____

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

April

2018



Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1 Easter Sun day April Fools Day	2	3	4	5	6	7 World Health Day
8	9 GIS Conference at UCONN	10	11	12 Holocaust Remembrance Day	13	14
15	16	17 Taxes are Due	18	19	20 Registration for CALS GMM is Due	21
22 Earth Day	23	24	25 Administrative Professionals Day	26 CAL S BOD Meeting	27	28
29	30	<p>If you have not paid your 2018 Membership Dues, they are now past due. Please send in payment to avoid being dropped and losing your option to become a retired or life member in the future.</p>				

Classified Ads



Fairfield County

- **Licensed Land Surveyor** - S.E. Minor & Company, based in Greenwich, CT seeks to hire a full time CT licensed land surveyor. Experience with all phases of land development is essential. Needs to be able to communicate effectively with survey and engineering staff, clients, municipal review boards and other design professionals. Requires ability to work independently and with a team, assist in establishing project budgets, schedules, and meet established deadlines. Minimum 6 years relevant experience; L.S. required. Requires excellent verbal and written communication skills as well as proficiency in the use of AutoCAD and related software.

Competitive salary commensurate with experience; health and 401k benefits package offered. Candidates should email resumes to: resumes@seminor.com.

Surveyors and Field Technicians, Build your future with us!

Join the Redniss & Mead Team of Land Use Specialists in our firm located in **Fairfield County, CT**. With a strong commitment to our core values of Quality, Integrity, Service and Respect, Redniss & Mead prides itself on a work environment where you learn from and collaborate with an experienced team of civil engineers, land surveyors and planners. You will be part of a culture that encourages work-life balance, career growth and personal development. We are currently in search of both **entry level and experienced candidates** to join our team to support a busy workload.

- **Surveyor** candidates should have experience in the processing and preparation of all types of surveys, including boundary surveys, topographic surveys and construction layout. Knowledge of AutoCAD is required. Responsibilities include: performing fieldwork, processing and mapping of fieldwork, coordination with clients and in-house teams of surveyors, engineers and planners.
- **Field Technician** candidates should have an education background in a field related to land surveying and some relative work experience (data collection experience is beneficial). The position entails instrument operation, collecting and uploading survey data, maintaining field equipment, conducting deed research and frequently meeting with the Project Surveyor team.

For both positions, the candidate will have the opportunity to work on a variety of project types including residential, commercial and institutional. For consideration, please apply via LinkedIn or forward your resume to: Lawrence W. Posson, PLS, Director of Surveying: L.Posson@rednissmead.com. *We are an Equal Opportunity Employer and offer competitive compensation and an excellent benefits package including merit-based bonuses, medical/dental/vision, paid time off, life and disability insurance, 401K retirement plan, family/medical/military leave, health club membership and financial support for professional licensing, certification and membership fees. Visit our website at www.rednissmead.com.*

-
- **Connecticut Licensed Land Surveyor** to perform land record research, field work, office computations and drafting. CAD experience a must with newer versions of Autocad. This is a full-time position.

Contact Paul at Brautigam Land Surveyors, P.C. 203-270-7810.
Or send resume to Surveyor@BrautigamLand.com.

Classified Ads

Fairfield County continued...

- **Survey Technician/Party Chief** - Arcamone Land Surveyors LLC located in Norwalk, CT is looking to hire a full or part time CT surveyor. Responsibilities include performing land title search, zoning location surveys, property surveys, topographic surveys, construction layout and staking and elevation certificates. Knowledge of AutoCAD and data collection in processing and preparation of all surveys is required. Ideal candidate should have a minimum of 6 years field experience. Robotic/GPS experience a plus. A valid driver's license with a clean driving record is required. Arcamone Land Surveyors offers a competitive salary, paid vacation, paid holiday and health club benefit.
Please submit resume to Wayne Arcamone P.L.S./Owner at wayne@arcamonesurveyors.com.

Hartford County

- **Party Chief** - Martin Surveying Associates, LLC, a growing firm located in Berlin, Connecticut is seeking a party chief with the following qualifications:
 - 5+ years of experience in the role of a Party Chief.
 - Ability to perform and work as a one-person crew utilizing robotic total stations and GPS equipment.
 - Experienced in ALTA/NSPS Surveys, boundary surveys, topographic surveys and construction layout on large commercial projects. AutoCAD experience a plus.

Please send Resume to: Martin Surveying Associates, LLC, 321 Ellis Street, New Britain, CT 06051
martinsurveying148@yahoo.com

- **Surveyor Party Chief** - J.R. Russo & Associates, LLC, is a growing civil engineering and land surveying firm in East Windsor, Connecticut providing land surveying and site engineering services in both Connecticut and Massachusetts. Our comfortable atmosphere and excellent benefits have enabled us to retain an experienced workforce, many with over 20 years of service. we have an opportunity for a dependable and motivated full-time Survey Party Chief to join our survey team.

The successful candidate will have 6 years of experience in land, boundary and topographic surveying and construction layout. Experience with robotics, GPS and Leica equipment is a plus. Valid driver's license and clean driving record a must.

We offer a competitive salary, medical and dental insurance, paid personal time off, paid holidays and retirement plan. Please submit your resume to Inoble@jrrusso.com.

Classified Ads

Hartford County continued...

Anchor Engineering Services, Inc., a multi-discipline Engineering, Surveying and Environmental firm working on a wide and varied list of projects, has two openings for qualified, motivated people. Anchor Engineering Services, Inc. provides land surveying services throughout Connecticut and western MA on a wide variety of projects including, subdivisions, bridges, railroads, utilities, boundary surveys, ALTA surveys and many others. These are great opportunities for career development:

- **Survey Instrument Operator / Field Technician:** 1+ years exp. Data collector, GPS, total station exp. required.
- **Survey Crew Chief:** 5+ years exp. Data collector, GPS, total station exp. require, CAD experience helpful.

Pay commensurate with experience. Benefits including health/dental insurance, 401(k) plan and vacation. Please send resume to: Anchor Engineering Services, Inc., 41 Sequin Drive, Glastonbury, CT 06033. careers@anchorengr.com EEO/AA

Land Surveyor - Senior CAD Manager—MCA is looking for a candidate with a broad range of experience and skills necessary to support multiple field crews.

Computations, title research analysis, property-boundary determination, preparation of stakeout and QA/QC for projects ranging from ALTA/ACSM, boundary and topographic surveys, and cross sections are among the expertise required. High quality work and attention to details are essential qualities for the position.

At least five years of experience is required. Must be proficient with AutoCAD. Knowledge of MicroStation is a plus. Professional License is not required but will be considered a plus.

Martinez Couch & Associates, LLC (MCA) is a growing Land Surveying, Civil Engineering and Environmental Consulting firm based in Rocky Hill, CT. MCA offers a competitive salary and benefits package including paid vacation, medical insurance, 401(K) retirement plan, life insurance, Short-Term Disability and Long Term Disability as well as a professional working environment with opportunity for professional growth and advancement.

Litchfield County

- **Licensed Land Surveyor** - Civil 1, a civil engineering, planning, consulting and land surveying firm, located in Woodbury, CT, seeks to hire a professional land surveyor (PLS) with 5+ years of experience. Qualified individual will lead the land surveying department in researching land records, conducting field work, utilizing state-of-the-art Robotic/GPS instruments, survey calculations, construction stakeout, overseeing the operation and maintenance of survey equipment, and communicating with the project team. This position requires a self-starter who is proficient using AutoCAD Civil 3D and GPS/RTK; has prior experience as a crew chief; is able to read and interpret construction plans; and can operate survey equipment, including but not limited to robotic total stations, GSP survey equipment, data collectors and automatic level. The candidate must hold a valid driver's license with a clean record. Civil 1 offers a salary commensurate with experience, paid vacation and holidays, and a competitive benefit package.

Please submit resume to Alice Jones, Office Manager at alice@civil1.com.

Classified Ads - Hartford County continued...

Middlesex County

- **Survey Project Manager** - BL Companies, an ENR Top 500 Architectural, Engineering, Environmental and Land Surveying Consulting Firm has an exciting career opportunity immediately available for a Survey Project Manager to join the firm's growing survey division in its Meriden, Connecticut office. The selected candidate will have at least 8 years' experience and will be responsible for managing the successful delivery of survey projects. The position includes the preparation of proposals, estimating project costs, managing project budgets, resource planning, and client contact. Excellent verbal and written communication skills along with organizational skills are required for this position. Professional license is not required but desirable. This individual will work closely with BL's Survey Management team and will participate in overall operations of the department. The candidate will also participate in BL's leadership development programs and will have a unique opportunity to make a broad and significant contribution to BL's growth while advancing their leadership skills.

BL Companies offers an excellent benefits package and fosters a growth-oriented work environment. Please send resume to: Human Resources, BL Companies, 355 Research Parkway, Meriden, CT 06450, via fax to 203-630-2615 or e-mail resumes@blcompanies.com. EOE. Visit our website at www.blcompanies.com. An Employee Owned Company.

New Haven County

Career Opportunity - Godfrey-Hoffman Associates, LLC & Hodge, LLC are small survey/civil firms with our headquarters in North Haven, CT and a satellite office in Farmington CT. Since 1924 & 1925 respectively GHA & Hodge have provided Connecticut with superior service and integrity in the land surveying & civil engineering arena.

- **Civil Engineer, Project Manager:** Small multi-discipline firm looking for self-motivated, energetic engineer to fill this full-time permanent position. Duties to include, residential & commercial site planning, subdivision design, storm water management and onsite sewage disposal system design. Must possess excellent written and verbal skills as well as be experienced with AutoCAD, and the public approval process required. Minimum 5 years' experience. PE license preferred but not required.

Career oriented individual willing to work on projects from initial concept, thru design and construction. Some night commission meetings will be required.

This position offers exposure to a diverse workload that provides for excellent professional development with a future. Come join a great team at Godfrey-Hoffman and Hodge.

All inquiries will be kept completely confidential. Respond to ahoffman@godfreyhoffman.com

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- **Survey/Field Technician** needed for a small civil/land surveying firm in Meriden. Candidate must have a min 2 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 industrial. For consideration, please forward your resume to Scott Poryanda at scott@cce95.com or call the office 203-639-8636.

Classified Ads

New Haven County continued...

- **Civil Engineering Technician** needed for a small civil/land surveying firm in Meriden. Candidate must have a min 2 years experience in the civil engineering field. Knowledge of AutoCAD is required. Some responsibilities will include the designing of subdivisions, septic systems, plot plans, and commercial projects. If you are looking to expand your experience, please forward your resume to Scott at scott@cce95.com or call the office 203-639-8636.

Connecticut/New Hampshire/Rhode Island

- GM2 Associates, Inc., an established comprehensive engineering design and construction firm is seeking to hire **Massachusetts Licensed Land Surveyor** for a full-time position. Required experience includes the ability to operate survey equipment, GPS, Total Station, and perform field and office work, including AutoCAD; Carlson experience preferred. Some travel will be required. Visit <https://gm2inc.com/careers/> to submit your resume. Please, no phone calls. GM2 Associates, Inc. is a CT based EOE providing services throughout the northeast via its CT, NH and RI locations.

Southern Connecticut State University Civil Engineering Students Looking for Summer Work & Careers

Jay Doody has announced that his GPS class is getting ready to go to work for the right CALS business owner this summer or beyond.

Let me know what you are looking for and in what town your office is located, and he will pass the information along to those students who live in your geographical area.

Reply to Jay Doody at doodyj@ccsu.edu



TRIVIA ANSWER

A: CTGS #1 is located in the Town of Hamden and is located at the corner of Dixwell and Whitney Avenues (In front of the Town Hall). It was set in 1936.



PLEASE SUPPORT YOUR SUSTAINING MEMBERS

<p>A CUT ABOVE AERIAL IMAGING Aerial Photogrammetry Services Dennis Carbo - 860-212-8559 www.dcarbophoto.com Dcarbo@mac.com</p>	<p>FENNER & ESLER AGENCY Professional Liability for Engineers & Surveyors Timothy P. Esler - 201-262-1200 www.fenner-esler.com tpesler@gmail.com</p>	<p>STRONGHOLD INSURANCE & FINANCIAL SERVICES Discount Health Insurance Greg LaBaw - 203-925-1639 ext. 102 www.strongholdinsurance.com glabaw@strongholdinsurance.com</p>
<p>BERNTSEN INTERLATIONAL IMAGING Survey Markers & Monuments Kari Campbell - 800-356-7388 www.berntsen.com Kcampbell@berntsen.com</p>	<p>GEOMAPS INTERNATIONAL Aerial Photogrammetry Services William Crawbuck - 516-827-9100 www.geomapsintl.com billc@geomapsintl.com</p>	<p>SUPERIOR INSTRUMENT Surveying Instruments & Supplies a full-line Topcon Dealer Pay O'Malley - 888-852-7377 www.superiorinstrument.com pomalley@superiornetwork.com</p>
<p>CARLSON SOFTWARE Surveying Software Jim Carlson - 703-627-3055 www.carlsonsw.com jcarlson@carlsonsw.com</p>	<p>GOLDEN AERIAL SURVEYS Aerial Photogrammetry Services Rick Markey - 203-426-3322 www.goldenaerialsurveys.com rmarkey@gassurveys.com</p>	<p>TOPCON SOLUTIONS STORE Surveying Instruments & Supplies Paul Morin - 860-388-9008 www.topconsolutions.com pmorin@topconsolutions.com</p>
<p>COL EAST INTERNATIONAL, LTD Aerial Photogrammetry Services Mark Thaisz - 800-359-8676 www.col-east.net mthaisz@col-east.com</p>	<p>KEYSTONE PRECISION INSTRUMENTS Surveying Instruments & Supplies Eric Bieler - 860-558-5700 www.keypre.com ebieler@keypre.com</p>	<p>WADDELL & REED Financial Services Matthew Peak - 860-432-8111 www.wadell.com peak@wradvisors.com</p>
<p>DESIGN PRODUCTS, CO. Engineering Equipment & Supplies Tim Lagosh - 860-666-8573 www.designproductscompany.com tim@dpct.com</p>	<p>MAINE TECHNICAL SOURCE Surveying Instruments & Supplies Mike Gage - 800-322-5003 www.mainetechnicalsource.com mgage@mainetechnical.com</p>	<p>WAYPOINT TECHNOLOGY GROUP, LLC Professional Positioning Services Greg Hunt - 518-438-6293 www.waypointtech.com ghunt@waypointtech.com</p>
<p>EASTERN TOPOGRAPHICS Aerial Photogrammetry Services Sharon Copp - 603-569-2400 www.e-topo.com scopp@e-topo.com</p>	<p>REYNOLDS STRATEGY GROUP Counselors at Law Kevin Reynolds - 860-308-2388 www.rsgllc.com kreynolds@rsgllc.com</p>	<p>WPS USA Multi-disciplinary Engineering Services Ted Covill - 508-248-1970 www.wspgroup.com ted.covill@wspgroup.com</p>
	<p>SMITH BROTHERS INSURANCE Insurance Center Scott Smith - 860-430-3287 www.SmithBrothersUSA.com ssmith@smithbrothersusa.com</p>	

April is National Volunteer Month



Volunteers don't get paid, not
because they're worthless,
but because they're priceless.

Sherry Anderson

Connecticut Association of Land Surveyors
78 Beaver Road Suite 2-J, Wethersfield, CT 6109
Phone: 860/563/1990 Fax: 860/529/9700
Website: www.ctsurveyors.org
email: kathy@ctsurveyors.org
