



Central Valley Chapter - California Land Surveyors Association
www.californiacentralvalleysurveyors.org

THE Central Valley Chapter PRISM

Volume 4, Issue 5

September 2014

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Up
Coming
Meetings!

Date: September 24, 2014

Time: 6:00 p.m.

Location: Perko's @ 901 North Carpenter Road, Modesto

Speaker: Jay Kay Seymour, RLS, PLS, LLS - CLSA President-Elect

Topic: CLSA - Past - Present - Future - Come Share the Vision

Date: October 22, 2014

Time: 6:00 p.m.

Location: Perko's @ 901 North Carpenter Road, Modesto

Speaker: Gary Ochsner

Topic: Engineering Supply Company

Announcements

Fresno State University Announces

It's 54th Annual Geomatics Engineering Conference is February 20 & 21, 2015 in Clovis. Contact Marco Castaneda at neda209@mail.fresnostate.edu for more information.

CLSA/NALS Annual Conference

Is set for March 21-25, 2015, at the Silver Legacy Resort and Casino in Reno, Nevada
[Check State CLSA for more information](#)

NCEES 2014 PS Exam is set for October 24, 2014

Registration for the October PS Exam will be open from June 16, and closes at 3:00 p.m. eastern time on August 28, 2014. [Click here for more information](#)

FEMA Has New Service Center

A series of major changes, including a complete site redesign, have taken effect on the MSC. **All flood hazard products are now available free of charge**, and the former products catalog has been replaced with an integrated Search All Products feature that allows you to find and download all products for a geographic area. The new Service Center can be found at <https://msc.fema.gov/portal>

Tami begins term as NCEES Western Zone Vice-President

Patrick Tami, P.L.S., recently received his commission as NCEES Western Zone vice president at the 93rd NCEES annual meeting, held August 20-23 in Seattle, Washington. He was elected to the position by delegates from the Western Zone during their interim meeting in May 2014. As vice president, Tami will serve on the NCEES board of directors and as the zone's administrative officer through 2016.

Classes, Training, and Continuing Education

Mark Your Calendars

CAD Masters - AutoCAD Level I (3-Day Course)

September 15-17, Sacramento
 Sept. 29-Oct. 1, Walnut Creek
 October 14-16, 2014, Sacramento
 October 27-29, 2014 Walnut Creek
 November 24-26, Walnut Creek
 December 8-10, 2014, Sacramento
 December 22-24, 2014 Walnut Creek [Register here](#)

CAD Masters - AutoCAD Level II (2-Day Course)

September 29-30, 2014, Sacramento
 October 20-21, 2014, Walnut Creek
 November 17-18, 2014, Sacramento
 December 3-4, 2014, Walnut Creek
 December 22-23, 2014, Sacramento [Register here](#)

CAD Masters - AutoCAD Level III

October 17, 2014, Walnut Creek
 December 11, 2014, Sacramento [Register here](#)

CAD Masters - AutoCAD Civil 3D Intro (3-Day Course)

September 22-24, 2014, Walnut Creek
 October 6-8, 2014, Sacramento
 October 22-23, 2014, Walnut Creek

CAD Masters - AutoCAD Civil 3D Intro, cont.

November 3-5, 2014, Sacramento
 November 17-19, 2014, Walnut Creek
 December 1-3, 2014, Sacramento
 December 15-17, 2014, Walnut Creek
 December 29-31, 2014, Sacramento [Register here](#)

ESRI - Introduction to GIS (2-Day Course)

Multiple Dates, Online [Register here](#)

Fresno State University

54th Annual Geomatics Engineering Conference
 February 20-21, 2015, Clovis
 Contact Marco Castaneda @ neda209@mail.fresnostate.edu for more information

CLSA/NALS Annual Conference

March 21-25, 2015, Silver Legacy, Reno, Nevada
[Check State CLSA for more information](#)

If you have information about a training or class, please submit to: editor@californiacentralvalleysurveyors.org

Thoughts from the Editor



It was the morning of August 25th. I had just started to clear out my pile of permit requests that had come in over the weekend. It was just a typical Monday morning, or so I thought. It was about 8:30am when I received the message that a good friend had passed. He lost his long battle with cancer at 6am that morning. My friend and mentor, Wayne Sutton was 72. He had a great many friends, and too many colleagues that respected him to count. I guess when you contribute to a profession for as long as he had, it's bound to happen.

Wayne G. Sutton became a licensed Land Surveyor for the State of California in 1971, earning him L.S. 3863. He worked for Stanislaus County until 1986 when he retired and started his own surveying firm. Wayne came back to work for the County in 2011 where he was the County Surveyor until 2013. He was one of only two U.S. BLM Mineral Surveyors in California, and one of only 40 left in the United States. He was a licensed pilot, and had traveled to more countries than I have read about. He had a passion to pass on his wealth of knowledge. All you had to do was ask him a question surveying, or minerals, or just about any thing else. You would see his eyes light up and out came the encyclopedia in his head. I feel that if you knew him, then you were better for it. I just hope that everyone strives to be a little bit more like Wayne Sutton. Good bye my dear friend, you will be missed.

If you would like to comment on this topic or suggest another, please submit it to:

editor@californiacentralvalleysurveyors.org

State News

On Fire (The Yosemite Rim Fire)

By Julien Clifford

A remote outpost gets a call from headquarters a thousand miles away—they need to scramble. A Piper Super-Cheyenne is sitting on the runway fueled and ready to go, equipped with computer hardware and a custom thermal infrared sensor. The aircraft's twin turbines whine in anticipation. The time is 4:30 p.m. in southern California, and a mountain is on fire.

From 25,000 feet, the plume from the August 2013 California fire (referred to in the national press as the Rim Fire) is clearly visible on the ground below. The cabin of the Piper hums with the drone of the propellers and the excitement of the crew. Speeding high above the raging inferno below, the aircraft is a symphony of technologies working together to deliver mission-critical information as quickly as possible.

Nestled in the forward unpressurized sensor bay of the aircraft, the Spot-HAWK 4K camera incorporating technology unique to the company Range and Bearing, watches calmly over the fire and relays information to the crew. Though the data is being gathered thousands of feet above the fire, all of the information is being relayed in real time, a thousand miles away, to Range and Bearing's international reconnaissance office.

Rolling Their Own

Thermal imagery is the technology that allows heat to be visualized. By using the infrared (IR) spectrum of electromagnetic radiation imperceptible to the human eye, specialized sensors are able to produce images of emitted heat energy. This allows sensors to detect spectral signatures through obstacles such as haze and smoke, which is particularly useful for forest fires, as hot spots can be easily and rapidly identified and the boundary of the fire is revealed by the heat radiated from the ground.

Range and Bearing first considered existing commercial thermal imaging sensors, but the available options didn't meet the specification for the types of work the company wanted to perform. An initial sensor they bought from a vendor had a field of view of 5 to 20 degrees; this wasn't wide enough, so it was time for an upgrade.

Starting with a forward-looking infrared sensor from a trusted Swiss company, Range and Bearing then developed their own thermal imaging system from scratch with a 120-degree field of view with several thousand more IR pixels. The equipment is custom-designed in CAD and custom-machined by the company's research and development office.

Once the images are obtained, they need to be positioned. There were existing technologies that allowed rectification through ortho-rectification of a limited number of points, but that wasn't good enough, says Range and Bearing's president and CEO, Doug Campbell. "We wanted every pixel."

As the sensor flies over the fire, it generates an orthomosaic in real time, giving information not only of heat but position as well. The company has applied their software expertise to author custom computer programs for positioning the information employing an inertial navigation system integrated with GPS. Accuracy meets or exceeds that of popular mapping solutions such as Google Maps and Bing Maps, which is more than adequate for fire operations.

The turn-key Spot-HAWK 4K Airborne Wildfire Intelligence System can cover 70 square miles per minute from the air. Their sensor is a fully supported solution that delivers a constantly updated fire boundary in real-time to officials on the ground, as well as to the U.S. federal government's National Interagency Fire Center's Enhanced Geospatial Portal via the cloud.

Such an intense inflow of information also requires powerful programs to handle it, and again, as Doug states, "There just wasn't any software that did what we needed to do." As an innovator, the solution is an obvious one: create your own.

Flying the Rim

At the Range and Bearing headquarters, mission control, the small icon of an airplane inches its way across the screen, each new movement filling in swaths of the multicolored polygon underneath. This is the nerve center of the whole operation; live data readings are beamed in from the field crew in California via software engineered to handle large sets of data. While the aircraft is flying in any remote location, employees in the office are able to tap into the live feed of data, providing updates on data every few minutes.

Every bit of information about the aircraft is also fed to mission control. When the sensor

RIM FIRE RAP SHEET

Location

Central Sierra Nevada region, California

Fire Start Date

August 17, 2013

Acres Burned

257,314 (402 square miles)

Residences Destroyed

11

Commercial Property Destroyed

3

Outbuildings Destroyed

98

Injuries

10

Fire Cause

Illegal campfire

Cost To Date

\$127,350 million

(Source: inciweb.nwcg.gov/incident/3660/)

Continued on page 10

CAD Tips & Tweaks



Building a Route Alignment

By Landon Blake, PLS

Introduction

In the last installment of CAD Tips and Tweaks we wrote a function that returns a text value that indicates what side of the alignment a station offset pair is on. Then we did some initial planning for AutoLISP structure to store route alignment information. In this article we will implement some of the code to build our route alignment structure and we will define a function that allows us to get the entity handle when the user selects a polyline entity in the drawing.

Building our Route Alignment Structure

In our last article we decided the final data structure for our route alignment would contain the following elements:

1. A unique identifier.
2. A user friendly alignment name.
3. A station value for the first node in the polyline that represents the alignment geometry.
4. A short description of the alignment.
5. A handle for the polyline entity that represents the alignment geometry.

We'll make the unique identity an whole number (int) value. We'll store the station value as a number with a decimal point (float or real).

Let's define a function that will build our data structure when passed all the correct elements:

```
(defun surveyos_route_alignment_create ( id name station description handle / )(list id name station description handle))
```

Our new function simply creates a list of all the elements that make up our route alignment data structure. (We'll modify this function again to directly store the alignment geometry in a future article, but this simple function works for now.)

Now we want to define a function that will provide us with the handle of the polyline entity when it is selected by the user. We'll use function when we eventually build a graphical dialog that allows the user to define a new route alignment by selecting an existing 2D polyline entity. Once we have the handle stored in our route alignment data structure, we can use it to find the polyline entity in the drawing. That allows our code to extract the alignment geometry data from the polyline, or to update the alignment geometry data when the polyline has been changed by the user.

Here is our function to get the handle of a polyline selected by the user:

```
(defun surveyos_get_entity_handle ( / myhandle )(setq myhandle (cdr (assoc 5 (entget (nth 0 (entsel))))))
```

What does our function do? Let's look at its parts.

The *entsel* function prompts the user to select a CAD entity and returns a list with the primary elements of the entity.

The *nth* function returns a specific element from a list. The second argument passed to the *nth* function is the position of the element in the list we want to obtain. The second element is the list containing the element.

Therefore, the following code in our function: (nth 0 (entsel) ...returns the first element of the entity selected by the user.

This first element is always the name of the entity in the AutoCAD drawing database. (This name can change in each new drawing, which is why we need to get the handle of the entity instead. It is always the same.)

CAD Tips & Tweaks: Building a Route Alignment..., *cont. from page 4*

1. The *entget* function returns a list of ALL the entity elements when passed an entity name. (In AutoLISP this list of entity elements is called an "ent list" or "entity list".) We use the *entget* function in our code to obtain the complete entity list for the polyline selected by the user.
2. The *cdr* and *assoc* functions are used to access elements of a list. We use both of these functions in our code to obtain the entity handle from the entity list we obtained using the *entget* function.

The final part of our code is used to store the handle with the *setq* function.

Let's review the actions we take in our function to get the handle of the polyline selected by the user. (These actions are executed in sequence by our function.)

1. The *entsel* function is used to prompt the user to select an entity in the drawing.
2. The *nth* function is used to obtain the entity name from the list returned by the *entsel* function.
3. The *entget* function is passed the entity name and returns the complete entity list for the entity selected by the user.
4. The *assoc* and *cdr* functions are used to obtain the handle from the complete entity list returned by the *entget* function.
5. The *setq* function is used to store the entity handle.

Note: The function we defined can be used to obtain the handle for any drawing entity, not just polylines. We'll probably want to tweak this function in the future to only work for 2D polyline entities.

Sneak Peek

In our next installment of CAD Tips and Tweaks we will design a few utility functions that work with 2D polylines. Then we'll apply the utility functions to help us extract and calculate the alignment geometry from the 2D polyline when we are creating our route alignment data structure.



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Customer Service & Satisfaction Is Our Number 1 Goal

National News

Two Nifty Programs That Will Make Your HP35s Calculator "Cry and Sing"

By Jason E. Foose, PS

I often think of this line when it comes to programming HP calculators. I've seen many a person "skin that smoke wagon" for no other reason than their fingers only go up to ten. HP RPN calculators are one of the most powerful and oft overlooked tools that a surveyor can employ. The HPS 35s is comfortable, compact, readable, and approved for the NCEES tests. The HP 35s is a great calculator for keystroke programming. "Keystroke" is the HP equivalent to Microsoft's "macro". The 35s has a good chunk of memory and up to 800 accessible storage registers.

Enough of the good features, let's focus on the bad! Where is the rectangular/polar conversion key? WHERE IS THE RECTANGULAR/POLAR CONVERSION KEY? WHERE IS THE RECTANGULAR/POLAR CONVERSION KEY? WHERE IN THE HECK IS THE... okay, I've made my point. HP forgot that Surveyors really enjoy the value of the traditional rectangular/polar conversion logic included on HP calculators for the past 30+ years. The good news is that rectangular/polar conversions on the 35s are performed through a display setting when

viewing complex numbers. Oh by the way, when I say "good news" I mean get ready to hear something nuttier than squirrel droppings. This "new" display logic is a loser, plain and simple (if you're a grumpy old surveyor). However, HP's redemption lies in their effort to distribute two short programs that overcome this deficiency. I've slightly modified the listing that HP provides via their website. The good folks at the HP Museum of Calculators are credited with developing the programs. I too assign credit to the "Museum" folks and note that my listings are simple modifications to their outstanding work.

Let's start with some basic information about how the 35s works. There is a "run" mode, which is the normal everyday "punch-the-keys-and-get-an-answer" mode. Then there is "program" mode. This mode enables the 35s to write and store a series of keystrokes for future use. It's like a macro in Microsoft Excel. To access program mode simply press the blue shift (right arrow shift) and the R/S key (most upper left key). You'll notice "PRGM" is written in blue on the bottom of the R/S key. To escape from program mode simply do the same blue shift and R/S sequence. You can also hit the "C" clear key as well. You label a program with a "letter" label. The red alpha labels are located on the lower right area of certain keys. You are limited to 26 labeled programs A-Z. To run a program hit the XEQ key followed by your desired alpha label key. You'll notice that several program lines are contained in quotation marks. These lines are actually equations. You must hit the EQN key to initiate the equation and the enter key to exit the equation. REGX, REGY, REGZ, REGZ are available in program mode by hitting the roll down key then using the left/right grey arrows to select. The listings are presented as you will see them in the display with the exception of the quotation marks. Refer to the user's guide or go to HP's support site and download the pdf found at

YOU ARE INVITED!



The Geomatics Engineering Program at Fresno State University cordially invites you, your colleagues, friends and family to the
54th Annual Geomatics Engineering Conference

February 20th and 21st 2015

Clovis Veteran Memorial, Clovis, California.

The conference will have a variety of activities for you to enjoy including:

Zombie auction, Live auction, Bulldog Race, Banquet, Scholarship Commemoration, Panel Discussion

Presentations by great speakers such as Gary Kent and Michael Pallamary.

This is a student-run conference and with your presence you will be supporting the Geomatics Engineering Program and its students. The student are working hard to make this event enjoyable and fun, please come support us.

Price and more information about this event will be announced soon. Stay tuned.

If you have any questions, comments or if you would like to be added to our mailing list please feel free to email us:

Marco Castaneda – Conference Chair
neda209@mail.fresnostate.edu
Luz Garcia- Conference Co-Chair
luz931@mail.fresnostate.edu

The Geomatics Engineering Program at Fresno State is a non-profit organization. Donations, scholarships, auction items, or any other help are welcomed and appreciated.

Come to support, come to have fun, ADOPT A BULLDOG!

Continued on Page 9

It's In There

Legislation and Regulation News and Updates

The Board for Professional Engineers, Land Surveyors, and Geologists (Board) continually strives to track, introduce, pursue, add, amend, or repeal statutes and regulations in an effort to positively impact the professions we license and regulate. Below is a list of recently approved regulation changes that affect the professions the Board licenses.

Applicant Fingerprinting - Adding Sections 420.1 and 3021.1 to Title 16 of California Code of Regulations.

Approved by the Office of Administrative Law and endorsed by the Secretary of State's Office on November 6, 2013. Effective on January 1, 2014.

Examination Subversion - Amending Sections 442 and 3035 of Title 16 of California Code of Regulations. Approved by the Office of Administrative Law and endorsed by the Secretary of State's Office on October 17, 2013. Effective on January 1, 2014.

Seal, Signature, and Address Change - Amending Sections 411, 412, 3008, and 3009 of Title 16 of California Code of Regulations. Approved by the Office of Administrative Law and endorsed by the Secretary of State's Office on November 18, 2013. Effective on January 1, 2014.

Code of Professional Conduct - Amending Sections 475, 476, and 3065 of Title 16 of the California Code of Regulations. Approved by the Office of Administrative Law and endorsed by the Secretary of State's Office on January 17, 2014. Effective on April 1, 2014.

Criteria for Rehabilitation and Disciplinary Orders - Amending Sections 419, 3061, and 3064 of Title 16 of the California Code of Regulations. Approved by the Office of Administrative Law and endorsed by the Secretary of State's Office on June 16, 2014. Effective on October 1, 2014.

Documents pertaining to the regulation changes, including the Final Statement of Reasons, Std. 400 form stamped/endorsed by the Secretary of State's Office, and Order of Adoption, can be found on the Board's website at www.bpelsg.ca.gov/about_us/rulemaking.shtml.

Excerpt taken from BPELSG Summer 2014 Bulletin, Volume 1, Number 1, Issue 39

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PICTURE OF THE ISSUE



Stanislaus County
Survey Crew
June 2013

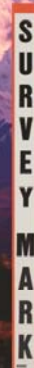
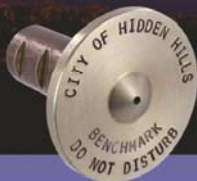
Originally posted on
Google Maps
Moorehead Road @
Draper Road

(Pictured from left to right
Scotty Atchinson, Chad
Johnson, Wayne Sutton,
Larry Fontana)

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Two Nifty Programs..., *cont. from [page 6](#)*

the link listed below for examples of the actual key strokes. The user's guide has a listing of all keystrokes in appendix "G". Feel free to email any questions to rls43185@gmail.com

What do the programs do?

Polar enables you to enter a northing (y-register) and an easting (x-register) and convert them to an azimuth and a distance. The steps are as follows:

1. Type your easting.
2. Hit the enter key.
3. Type your northing.
4. Hit the XEQ key and the () key for "P".
5. Hit the enter key to run the program.

The azimuth will be displayed in decimal degrees in the y-register and the distance will be displayed in the x-register. Rectangular enables you to enter an azimuth and distance and convert them to easting and northing. Type your azimuth in decimal degrees.

1. Hit the enter key.
2. Type your distance
3. Hit the XEQ key and the 7 key for "R".
4. Hit the enter key to run the program.

The easting will be displayed in the y-register and the northing will be displayed in the x-register. Remember you are working with Cartesian coordinate system and HP's special azimuth circle of +/- 180°. If you find that your answers appear "almost right" then double check these two items as likely culprits. You may find your northing and easting are reversed or your azimuth is negative or rotated 90°.

Sample Data

Convert rectangular coordinates to polar values

Note: set display to fix 4 for angles but be realistic about your distance precisions!

500 [ENTER] 100 [XEQ] [P] [ENTER] should yield the result of:

Y: 78.6901 (azimuth-dd) X: 509.9020 (distance)

600[ENTER] 200 [+/-] [XEQ] [P] [ENTER] should yield the result of:

Y: 108.4349 X: 632.4555

300 [+/-] [ENTER] 300 [+/-] [XEQ] [P] [ENTER] should yield the result of:

Y: -135.0000 X: 424.2641

Convert polar values to rectangular coordinates

30 [ENTER] 250 [ENTER] [XEQ] [R] [ENTER] should yield the result of:

Y: 125.0000 (northing) X: 216.5064 (easting)

135 [ENTER] 200 [ENTER] [XEQ] [R] [ENTER] should yield the result of:

Y: 141.0000 X: -141.0000

Note: HP Azimuth starts with 0° as east of the equivalent 90° in earth based units. Positive angles represent counterclockwise rotation north of the equatorial zero whereas negative angles represent clockwise rotation south of the equatorial zero to 180° or west.

On Fire..., cont. from [page 3](#)

modes are changed, the flight path updates, as well as special dynamics about the data such as how it has changed over the flight time, allowing the analyst to provide such information as how fast the fire itself is moving. This is of prime importance for making safety-of-life decisions.

A local command center can be exceptionally mobile as well. If the fire happens on short notice, a complete wildfire operation can be set up with laptops in a coffee shop, with people in the airplane providing data while the ground analyzes it and provides intelligence. Communication is key.

On the front lines of the fire, the experience of the firefighters is different. The “fog of war” surrounds them, the air thick with smoke and the mission complex and urgent. As the heat begins to spread, the area contained by the fire is changing, requiring firefighters to be light on their feet. Every bit of intelligence is crucial, and there is a watchful eye thousands of feet above, guided by a room of experts thousands of miles away, helping map decisive paths through the smoke. Visual communication is very important to keep firefighters safe.

Data collection of this nature is extremely time-dependent, and many measures are taken in order to guarantee the quickest delivery. Custom software written by Range and Bearing generates mission plans for the new jobs, and a close relationship with Air Traffic Control is a necessity in order to get their complex flight plans approved.

Because the aircraft is doing, as Doug puts it, “wacky stuff” such as running parallel lines in the same area for hours on end, the process to get a flight plan approved is critical. A delay of an hour will mean that the company is not meeting its planned response time, so the process to get into the air needs to be as streamlined as possible.

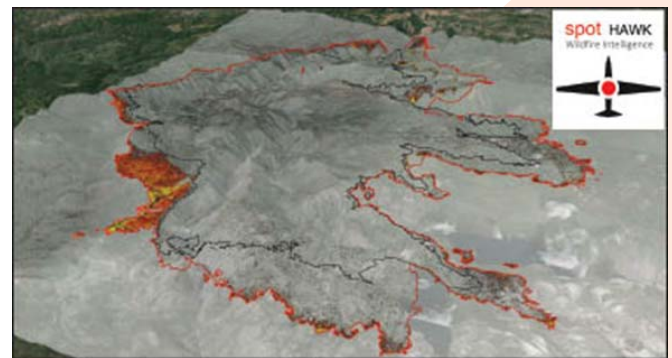
Plotting the Course Ahead

This specific type of rapid data collection and dissemination is an emerging and unique field, so convincing old clients that this technology can help them is sometimes a challenge. Building relationships is a critical component to success. Doug says, “After every fire season, we work closely with our clients to make sure they are happy. We are always striving to improve our business,” working to improve performance based on feedback from the fire season.

People who use the company’s solutions data are happy to extol its virtues. Paul Doherty, technical lead for the Esri Disaster Response Program, is on the front lines of real-time data technology. Consistently working to provide new ways in which the public can be better informed about natural disasters, he explains, “Mapping wildfire and search and rescue incidents needs to be real-time in order to save lives. What [they’re doing] makes the flaming front of a fire visible on interactive maps that can be used by analysts, decision-makers, and public information officers.”

Sam Lanier, the CEO of FireWhat Inc., agrees. “Live data is changing the way people interact with information.” Paul adds, “This isn’t just cool tech—it could save lives!”

Doug Campbell hasn’t stopped thinking about innovation. The ability to provide real-time remote sensing analysis has deep implications in many fields. An example of the potential for expanded services came to mind while flying a wildfire near the coast; the company was able to image a warm water plume from a nearby power plant. These types of ancillary discoveries provide a peek into the many applications of this new technology. “We are always looking to expand, through both vertical markets and private enterprises.”



This 3D shot looks southwest over the Rim Fire across 180 square miles of burned and actively burning area.

*Reprinted with the permission of Professional Surveyor Magazine
Aerial Mapping — Spring 2014*



CLSA EDUCATION FOUNDATION

Land Surveying Photo Gallery



California Land Surveyors Association Education Foundation would like to thank Bryant Sturgess for generously donating his collection of historic images.

The proceeds from the photos sold on this website will be used to fund scholarships for land surveying students.

Classifieds

O'Dell Engineering is looking for Party Chief (Modesto and Pleasanton Offices)

Applicant will lead a The successful applicant will work under the direction of the survey manager leading a 2 person survey crew and work independently as a single man survey crew using GPS or robotic total stations. Party Chiefs are supplied a company truck and are required to maintain a clean driving record. Our projects are located throughout the Central Valley and Bay Area. Your assignments will include construction staking, boundary surveying, and topographic surveying. Projects include very large scale municipal projects (California High Speed Rail), large scale master planned land development projects, 3D laser scanning, high precision monitoring, on-call surveying for municipalities, and small residential and commercial developments. This position may be staffed from the Modesto or Pleasanton Office.

For more information go to www.odellengineering.com/employment.html

The California Department of Transportation is Recruiting for Transportation Surveyor

- o Work on world class projects
- o Opportunities exist throughout California
- o Receive excellent health, dental, vision and retirement benefits
- o Enjoy paid vacation and holidays

Minimum Qualifications

Graduation from a four-year curriculum in surveying, surveying engineering, or surveying geomatics accredited by the Accreditation Board for Engineering Technology. (Registration as a "Senior" in such a curriculum will admit an applicant to the competition, but applicants must produce evidence of graduation before being considered eligible for appointment.)

(Possession of a valid certificate as a Land Surveyor in Training issued or accepted by the California Board of Registration for Professional Engineers and Land Surveyors or possession of a valid certificate as an Engineer in Training accepted by the California Board of Registration for Professional Engineers and Land Surveyors in lieu of a certificate as a Land Surveyor in Training may be substituted for the required education.)

For more information regarding how to take this online exam to be eligible for this exciting career opportunity, please refer to the link at: <https://jobs.ca.gov/Bulletin/Bulletin/Index?examCD=3PB60>

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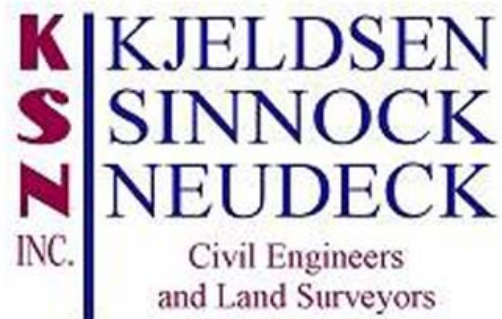
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