



SURVEYOR

CALIFORNIA

ISSUE #191
SPRING 2020



Photo by Landon Blake
"Highway 88" shot 11/11/2015
with a Cann EOS 70D

GET SPECIAL DISCOUNTS at Office DEPOT with your CLSA Membership

The program includes:

- Savings of up to 70% on commonly used items
- FREE next-business-day delivery
- Thousands of products in stock
- Unparalleled expertise
- Ultimate shopping convenience by phone, fax or online
- The latest in office technology
- Office Supplies, Furniture and More!

**OFFICE DEPOT
IS YOUR
ONE STOP SHOP!**

**CALL CLSA
at 916-239-4083
FOR MORE INFO**

**Office
DEPOT** *Taking Care of Business*

CLSA 2020 BOARD OF DIRECTORS

STATE OFFICERS

Keith W. Spencer, *President*
Robert M. McMillan, *President-Elect*
Warren D. Smith, *Secretary*
Kevin R. Hills, *Treasurer*
Annette M. Hovorka, *Immediate Past President*
Kim Oreno, *Executive Director*

DIRECTORS

Bakersfield Chapter

Kristie M. Achee

Cascade Chapter

Joan E. Carr • Nathan D. Sellers

Central Coast Chapter

Edward Reading • Rochelle M. Vierra

Central Valley Chapter

Landon Blake • Tristan Higgins

Channel Islands Chapter

Seth M. Doherty • Joseph Waltz

Desert Chapter

Douglas E. Redlin • David L. Weddle

East Bay Chapter

Steve J. Martin • Steve M. Mendenhall • Alan Mikuni

Gold Country Chapter

Dirk J. de Valk

Humboldt Chapter

Michael D. Pulley

Los Angeles Chapter

Steve M. Hennessee • Christopher M. Jones
Robert S. Rogers • Richard M. Snedaker

Marin Chapter

Tracy W. Park

Monterey Bay Chapter

Lynn A. Kovach • Tim D. Martin

Orange County Chapter

Alan Brooks • Daryl Christian • Patrick D. Earl
Chu Man Kow • Jonathan Maddox • Elliot A. Medina
Joseph A. Padilla • Trevor D. Rice • David E. Woolley

Riverside / San Bernardino Chapter

John S. Hernandez • Bill Rohal

Sacramento Chapter

Nathan Buchholz • Jimmy L. Byrum

San Diego Chapter

Paul E. Goebel • Rafi Yousif Hanna • Allen R.A. Turner

San Francisco Chapter

Eli W. French

San Joaquin Valley Chapter

Kevin W. Nehring

Santa Clara / San Mateo Chapter

John V. Koroyan • Paul W. Lamoreaux • Jay F. Wright

Sonoma Chapter

Michael R. Jones • Michael Mueller

CLSA CENTRAL OFFICE

Jennifer Blevins, CMP,
Director of Management Services

Kim Oreno, Executive Director

John Berkowitz, Publications Director

Michael Cochran, Webmaster

Stephanie Schoen, Special Projects

Tricia Schrum, CPA, Accountant

Natalie Sinclair, Meeting Planner

Central Office

2520 Venture Oaks Way, Suite 150
Sacramento, CA 95833
916-239-4083 • 916-924-7323 fax
cls@californiasurveyors.org
www.californiasurveyors.org

California Surveyor Editors

Paul Mabry – Editor
paul@landsurveylaw.com

David Kendall – Associate Editor
dzsipo@gmail.com

California Surveyor Designer

John Berkowitz
john@caladmanagement.com

Advertising

Commercial advertising is accepted by The California Surveyor. Advertising rates and information can be obtained on the CLSA website at www.californiasurveyors.org/calsurv.html, or by contacting Kim Oreno at kim@californiasurveyors.org or 916-239-4083. Circulation: 2,000.

Editorial Material

All articles, reports, letters, and other contributions are accepted and will be considered for publication regardless of the author's affiliation with the California Land Surveyors Association, Inc. Contributions should be e-mailed to Paul Mabry at paulhmabry@gmail.com.

Material Deadline Dates

Spring: March 1

Fall: September 1

Articles, reports, letters, etc., received after the above mentioned date will be considered for the next edition.

Opinions expressed by the editor or individual writers are not necessarily endorsed by the California Land Surveyors Association Officers or its Board of Directors. Original articles may be reprinted with due credit given to the source and written notification to the California Land Surveyors Association, unless otherwise noted.



PRINTED ON
RECYCLED PAPER



PRINTED WITH
SOY INK



SURVEYOR CALIFORNIA

ISSUE #191
SPRING 2020



COLUMNS

President's Message – Keith W. Spencer	2
Editor's Message – Paul Mabry	3
Legislative Report – Michael Belote	4
Central Office Report – Kim Oreno	5



FEATURES

San Francisco Gets More Than It Bargained For: New High Precision Network Changes Everything.....	6
Five Ways to Use Smart Maps in COVID-19 Response.....	12
The Business Ethics Field Guide – An Interview with the Experts	17
Independent Contractor Status Change	23
Block Boundaries By Curb Splits – When, Why, and How	27
Pioneer Surveyor – Frontier Lawyer: The Personal Narrative of O.W. Williams 1877-1902.....	32
CLSA Membership Application.....	35
Sustaining Members.....	37

VISION 2020 FOCUS ON THE FUTURE

APLS-CLSA-NALS Tri-State Conference
August 21-25, 2020 » Luxor Hotel » Las Vegas, NV

The California Surveyor is a bi-annual publication of the California Land Surveyors Association, Inc. and is published as a service to the land surveying profession of California. It is mailed to all members of the California Land Surveyors Association, Inc. The California Surveyor is an open forum for all Surveyors, with an editorial policy predicated on the preamble to the Articles of Incorporation of the California Land Surveyors Association, Inc. and its stated aims and objectives, which read:

Recognizing that the true merit of a profession is determined by the value of its services to society, the California Land Surveyors Association does hereby dedicate itself to the promotion and protection of the profession of land surveying as a social and economic influence vital to the welfare of society, community, and state.

The purpose of this organization is to promote the common good and welfare of its members in their activities in the profession of land surveying, to promote and maintain the highest possible standards of professional ethics and practices, to promote professional uniformity, to promote public faith and dependence in Land Surveyors and their work.



PRESIDENT'S MESSAGE

Keith W. Spencer
CLSA 2020 President

Things are Moving Fast

I must admit that this is not my first attempt at this column. I have scrapped the first several versions as being out of date and/or irrelevant before I reach the end of my message. I had expected to be writing about the Las Vegas conference and spending time with all of you. That did not happen. But, we are putting together a new conference for you scheduled for Aug 21-25, 2020. This is obviously a dynamic and unpredictable process with ever changing variables. We have two excellent management companies working together to pull this off. I have worked with both Executive Directors – several years with each of them respectively. I have complete confidence in their abilities and am confident they will come through with the best possible outcome for us. And, the Joint Conference Committee is made up of experienced and knowledgeable representatives from each state. We are in good hands.

A few weeks ago, I was among the first to be directed by the Governor to self-quarantine, having met at least three of the quarantine triggers (but after two, why keep track). With that, it took a very short time for my employer to approve telecommuting and I have since been kept very busy. Among my duties are providing training for our not yet licensed staff. In my search for training

materials to recommend to my staff, I discovered once again the benefits of the California Land Surveyors Association online resources. If you or your co-workers find yourself looking for resources during slow times, remember that CLSA has an archive of webinars available in the members-only portion of our website. Also for those looking for study materials for the FS, PS and state-specific exams, we have copies of many years of past exams and our exam guide. While these were from before the current computer-based exams, they do still provide a place to find references and excellent study materials. Now would also be a good time to join our voluntary professional development program and update your training record.

For our Chapters, social distancing does not mean we should be cancelling our meetings. Instead, use the available programs like Cisco WebEx, GoToMeeting, TeamViewer, Skype, Zoom and many others. The Board of Directors has already successfully transitioned to two virtual meetings annually. Follow our lead, use this opportunity to involve a different audience. Experiment with different time slots, bring in the speakers that you could not ordinarily invite to a live meeting. There are many advantages to including virtual

meetings as part of your chapter activities. Use this time as an opportunity to work the bugs out. You might find that this will expand your audience.

Above all, Safety First! You have seen these many times. Take care of yourself and protect those you contact.

- ★ Stay home if you can and avoid any non-essential travel.
- ★ Avoid social gatherings of more than 10 people.
- ★ Practice social distancing by keeping at least 6 feet away from others.
- ★ Stay connected with loved ones through video and phone calls, texts and social media.
- ★ Avoid close contact with people who are sick.
- ★ Wash your hands often with soap and water for at least 20 seconds, especially after being in a public place, or after blowing your nose, coughing or sneezing. If soap and water are not readily available, use a hand sanitizer with at least 60% alcohol.
- ★ Avoid touching your eyes, nose and mouth with unwashed hands.

- ★ Clean and disinfect surfaces daily and high-touch surfaces frequently throughout the day. High-touch surfaces include phones, remote controls, counters, tabletops, doorknobs, bathroom fixtures, toilets, keyboards, tablets and bedside tables.
- ★ Cover your coughs and sneezes. Use a tissue to cover your nose and mouth, throw used tissues in a lined trash can. If a tissue isn't available, cough or sneeze into your elbow.
- ★ Cover your face with a mask when in public. Even a cloth bandana helps protect others.
- ★ Wash your hands.
- ★ Wash your hands.
- ★ Wash your hands. 🍷





EDITOR'S MESSAGE

Paul Mabry
California Surveyor Editor

We Will Overcome

As we adjust to a new pace of life during a pandemic, not all things about it are bad. I am spending a lot more time with my kids. And with my kids' schedule comes the need for periodic breaks and some planned outdoor exercise. So overall, I'd say I am healthier now than I was before when I was free to sit at my desk all day. Similarly some professional matters are being pushed to accommodate the need for social distancing. For example, prior to the coronavirus, only about half the states allowed for any form of remote online notarizing services. That is changing as real estate closings are pushed back and delayed for lack of in-person notary services. Predictions I've seen show up to a 15% reduction in real estate closings. I predict that remote on-line notary services will soon become common place. Similarly, many county recorders do not allow for electronic recording services and again, this shortfall is clearly evident in this time of crisis. Progress in either of these areas will benefit surveyors and their clients involved in land use matters and land transactions.

The judicial system is also struggling to adapt after adopting unprecedented "holiday" schedules. Our overtaxed superior courts have essentially reduced their services to absolute minimums, but this comes at a

tremendous social cost. Writs and quiet title actions, actions that sometimes involve surveyors, may in the future need to take a backseat to a backlog of more pressing criminal, probate and family law matters. Whether court appearances by "Zoom" will become commonplace in the future is tough to tell. Courts have long allowed telephonic appearances on routine civil matters, but these are disfavored for any matter of complexity

since much of our human communication comes through seeing and not just hearing. My local bar association is hosting a web cast this week with the local civil bench to discuss just these concerns.

And epidemiologists are harnessing the power of geospatial intelligence in new ways to track, understand and predict the outcomes of the pandemic. ESRI, located in Redlands, California

has hired Dr. Este Geraghty as Chief Medical Officer to facilitate and leverage the ArcGIS online platform and dashboards that many counties and states are now using to aid in their public health responses. If you haven't seen these before, look online at the "Johns Hopkins dashboard." It is an impressive and sobering example. Mapping has come a long way! Gone are the days of the paper atlas. I expect this crisis to only accelerate the trends we've all noticed towards increased remote sensing, automated data processing and complex modeling. These are pioneering times for surveyors willing to step into new roles. I invite you to share some of your stories with us all via the forum at www.californiasurveyors.org.

Finally, we must not forget our roles in assisting each other and our neighbors. This crisis affects people in disproportionate ways. Reach out and keep tabs on each other. Some of us will contract the virus and hardly notice it, while others of us may become seriously ill. Similarly, some of us will experience a dramatic reduction in business while others find their work booming. Whatever the economic impacts, we will weather this storm better together. Together as a profession, together as a community and together as neighbors. We WILL overcome! 🌐

— Welcome New Members! —

- | | | |
|------------------|--------------------|-------------------|
| Karim Ahmed | Birk Ellis | Robert Muollo |
| Sarah Allegra | Corey Evans | James Nicolau IV |
| Oliver Anderson | Paul Fisher | James Odudu |
| Ruben Aparicio | Adam Forth | Osbaldo Ortiz |
| David Baumann | Alexander Frantz | Todd Overton |
| Felise Bloodgood | James Gerard | Justin Pendley |
| David Brent | Felipe Gonzalez | John Reisig |
| Justin Brogan | Russell Gulke | Ethan Remington |
| Kyle Calhoun | Cory Haukka | Don Renz |
| Mary Cassidy | Jaci Heredia | Michael Rosell |
| Brittany Chen | Christopher Hermiz | Anthony Sanders |
| Loran Chick | Henry Hoang | Nicholas Sine |
| Steve Cho | Timothy Hughes | Tony Tamayo |
| Derek Clark | Jason Keblesh | Justin Thomas |
| Geoffrey Cox | Heather Keenan | Jarrad Truman |
| Eric Cyphers | Garrett Knodel | Antonio Valdez |
| Samuel Dinh | Andrew Labine | Miguel Villasenor |
| James Douglas | Maximillian Lebl | Anthony Vu |
| Mark Duffner | Luis Lechuga | Jason Wolf |
| Alan Eder | Richard Moshier | Wissam Zalzali |



LEGISLATIVE REPORT



Michael Belote
CLSA Legislative Advocate

Capital Under a COVID Cloud

Ask any self-respecting junior high student about civics, and they will describe the three branches of government as the executive, legislative and judicial. Obviously, the civics texts cannot account for world-wide pandemics. When on approximately March 17 the California legislature declared a joint Assembly-Senate recess until April 13, California effectively went to a two-branch system, or perhaps one and a half, since court operations have been dramatically curtailed. As of this writing, although the legislature is due back in Sacramento on April 13, that date seems highly unrealistic. Most observers predict no return until at least May 1.

Interestingly, the California legislature operates under only two hard and fast state constitutional requirements: adoption of a budget for the upcoming fiscal year by June 15, and adjournment of the two-year legislative session by midnight, August 31 of even numbered years, like this one. Every other legislative “deadline” is self-imposed, and may be modified or waived by the legislature. At this point it is a certainty that various legislative deadlines will require modification.

A simple example illustrates the point. Upon reaching the deadline for introducing new

bills for 2020 on February 21, approximately 2300 new bills were introduced for the year. Each bill must be “in print” under the state constitution for 30 days before it may be heard in a policy committee. This means that most bills were ineligible to be heard in committees from roughly February 20 to March 20. The period for all of these bills to be heard in their first committees is roughly March 20 to May 1. This is precisely the period when the legislature is in joint recess this year. Obviously, a May 1 committee deadline will not work.

Although it is mostly conjecture at this point, it is increasingly likely that legislators will be told to reduce their bill packages to only the most essential items for this year. One could easily imagine that the essential subjects for legislating would include COVID-related items, housing and homelessness, perhaps AB 5 issues, and simple “consent” items with no opposition. The longer the legislature is gone from Sacramento, the more the bill loads must be pared back, it appears. The vast majority of bills could be put off until next year, and California would survive just fine, thank you!

The impact of the joint recess on the adoption of the state budget is going to be enormous. In a typical year, the Governor introduces his

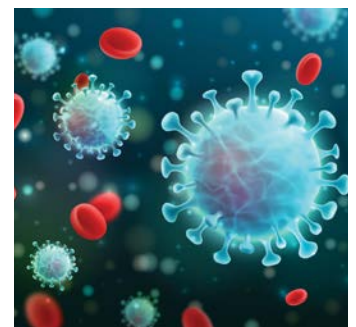
budget for the next fiscal year early in January, and then updates his budget plan in early May, with a document known as the “May Revise.” The May revision allows the Governor to update his plan based upon tax receipts from the April filing deadline. But since the tax filing deadlines have now been extended until July 15, California will have little concrete data on which to adopt a budget by the June 15 constitutional deadline. Almost certainly the state will have to adopt some pro-forma budget based upon the current fiscal year, and then modify the budget in August with a series of “trailer bills.” Already state finance leaders are using phrases like “hunkering down,” and adopting a “workload budget,” which appears to be code for scaling down lofty budget goals.

Thankfully the state has amassed a “rainy day fund” in excess of \$20 billion, because as stock market declines lead to lower capital gains and therefore less income tax revenue, California will need to utilize the surplus.

Another ancillary effect of the stay at home order is on the initiative process. Not surprisingly, all signature-gathering activities ceased upon the issuance of the statewide order. Signatures must be submitted to county elections officials by approximately the end of April. This means that

only those proponents who had gathered large numbers of signatures prior to the order will qualify for the November ballot. The “Uber-Lyft” initiative, for example, recently turned in one million signatures, far above the legal requirement of 632,000 valid signatures, so that measure is very likely to qualify. One “split roll” property tax proposal has already qualified, but the same proponents were in circulation on a second proposal, which they deemed more likely to pass, and that second proposal may now be in jeopardy.

All in all, this will be a time of tremendous upheaval, perhaps for months or years to come, and the California legislature is no exception. CLSA is the sponsor of SB 1057 (Jones), which proposes a series of changes to the licensing law, the Subdivision Map Act, and the qualification-based selection statutes in the Government Code. We will learn shortly about the fate of this and about 2,300 other bills! 🌟





CENTRAL OFFICE REPORT



Kim Oreno
CLSA Executive Director

Stay Connected

Hi everyone. I hope this issue of the *California Surveyor* magazine finds you healthy and safe. The CLSA Headquarters staff started working from home on Friday, March 20, 2020 but CLSA operations are proceeding as normal: this magazine is still being published, phone calls and e-mails are still being answered, sales orders are still being filled, committee work is still being done and we are here to help you through this uncertain and uncharted territory. By the time you receive this magazine, the Board of Directors will have held their quarterly Board meeting, virtually, on April 25, 2020.

We had originally planned to hold the 2020 joint conference with the Arizona Professional Land Surveyors and Nevada Association of Land Surveyors in March but the joint conference committee voted to postpone the conference to August 21-25, 2020. The conference will still be held at the Luxor in Las Vegas. Most of the speakers and vendors have been confirmed for these new dates and we are moving forward, planning a great conference for everyone. If you are available, please plan to attend. Visit www.plseducation.org to register.

As always, please feel free to contact headquarters with suggestions on ways that CLSA can provide additional benefits

of your membership. The true value of this association comes from the collaboration between its members. We are here to facilitate and assist so please let us know what we can be doing for you.

Top 4 Ways to Stay Connected to CLSA During the COVID-19 Outbreak

1. Pay Your 2020 Membership Dues. The deadline to renew your membership without the reinstatement fee is June 30, 2020. Don't miss out on important member benefits including a subscription to the magazine you're reading right now! Other benefits include free access to CLSA's webinar library, your listing on CLSA's "Find a Surveyor" database for consumers and access to CLSA's Professional Development Program. Use the PD program to track your continuing education hours and when you do that, you'll receive a logo next to your name in "Find a Surveyor." We can also send you a jpg file of that logo that you can add to your business cards, website and e-mail signature.
2. Did you know that CLSA hosts a free, online forum? Signing up for a forum account is quick and easy. The forum is a great tool that you can use to stay connected to your fellow

surveyors while maintaining social distance. There is a link to the forum on the home page of the CLSA website.

3. Volunteer to present a webinar to your fellow CLSA members. Are you an expert in a subject area that your colleagues will benefit from? With the postponement of the conference, surveyors would appreciate the opportunity to brush up on their skills, learn something new and connect with other surveying professionals. Please e-mail clsa@californiasurveyors.org with your webinar proposal.
4. Donate to the CLSA Education Foundation. In January 2020, the Education Foundation Board of Directors met and distributed almost \$50,000 in scholarships to students. Donations to the Education Foundation are a valuable way to give back to the next generation of surveyors. We've received the following thank you notes recently:

"It has been an honor to attend CLSA conferences and be the recipient of CLSA scholarships throughout my years in the Geomatics Engineering program and CSU Fresno. I want to thank you so much for your generosity through this time. It has made a big impact on my heart and mind. I will be

graduating this semester and plan to continue giving back to the Geomatics program as I make my way in my career. Thank you again for all you do and stay safe."

"I am writing to express my sincere gratitude and thanks for your generous \$1,000 CLSA Education Foundation Scholarship. I was very happy and appreciative to learn that I was selected as one of the recipients for this year's scholarship. The financial assistance you provided will be of great help to me in paying my educational expenses and will help lighten my financial burden which allows me to focus more on the most important aspect of school, learning. Your generosity has reminded me to always help others and give back to the community."

"By awarding me the CLSA Scouting Merit Badge scholarship, you have lightened my financial burden which allows me a good transition from my education into my career. Your generosity has inspired me to help others and give back to the community. I hope one day I will be able to help students achieve their goals just as you have helped me. Thank you again for your generous support." 🙏

An aerial photograph of San Francisco, California, featuring the Golden Gate Bridge and the city's dense urban grid. The image is overlaid with a prominent red geometric pattern consisting of several thick, intersecting lines that form a series of triangles and polygons across the scene. The sky is a clear, deep blue.

San Francisco Gets More Than It Bargained For:

New High Precision Network Changes Everything

By Angus W. Stocking



San Francisco's new high precision network has revolutionized city and county infrastructure and unified mapping across government agencies.

When Bruce Storrs first accepted his job as San Francisco City and County Surveyor 14 years ago, he was well aware of the challenges. "The first thing I thought was, 'If there's a seismic event, and I get a call from the Director of Public Works asking where things are now so we can rebuild, how am I going to answer that?'"

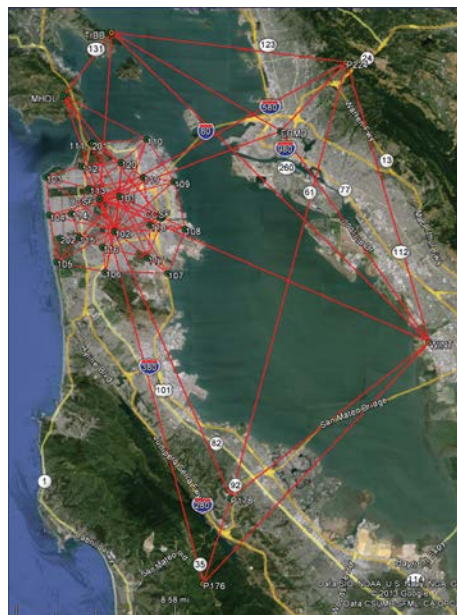


His response turned out to be a new high precision network (HPN), based on 20 monuments spread strategically throughout the City and County of San Francisco, together with a new low distortion grid projection, CCSF-CS13, specially crafted for the region.

'I Want It Done Right'



Bruce Storrs, San Francisco City and County surveyor, set out in 2012 to create a comprehensive, accurate and cohesive horizontal and vertical coordinate system.



An overview of the San Francisco City and County 2013 regional network and CCSF high precision network.

The project really got started in 2012, when Michael R. McGee, PLS, head of Santa Barbara based McGee Surveying Consulting, was recommended to Storrs as an expert in setting up GPS networks in cities. "That was great news," Storrs says, "because I knew McGee! We went to school together at CSU Fresno, and it was great to rekindle our friendship. Fortunately, he was also the right choice for this project – I've never seen a network for a city that is

continued on page 8



more rigorous or better supported than what we have here.”

McGee had completed similar projects in Santa Barbara, Stockton, Santa Monica, and Los Angeles, and had also established larger scale control networks for 927 miles of California coastline and 2,500 square miles of China Lake Naval Weapons Center. But even with all McGee’s experience, the CCSF Geodetic Network was something of a magnum opus.

“Every project is different, depending on the resources and equipment available,” McGee explains. “I work with the client to establish just how precise a network they’re after, how much they want to spend, and how they want to maintain it. Then I come up with a project design that works.”

In the case of San Francisco, McGee’s brief was simple in concept. “I want it done right,” Storrs said, asking only for 20 monuments. (By contrast, McGee had established 130 control points in Santa Monica, and 400 in Los Angeles.)

But in light of their potential importance in the wake of an earthquake, the 20 points in San Francisco needed to be special. To accurately track movement of an entire major city-county, the points had to be especially precise, and to be useful when they were needed most, they had to be both quickly and easily accessible. For McGee, it was a major professional challenge that would take years to complete.

For Storrs, it was more of a political and bureaucratic challenge. “I had the luxury of answering only to the director of public works here, and budget was available from a fund that had been building up since 2005 and from subdivision applications that support all the boundary surveying in the city,” he explains. “That was fortunate – explaining the benefits to the Board of Supervisors would have been difficult, because this is a highly technical project and the payoff was not immediate. It helped that McGee was very frugal, and he was our only outside consultant on this – we did all the field work with our own staff. That meant we didn’t have to cut corners.”



Five primary loops, A-E, form the backbone of a 72-mile network.

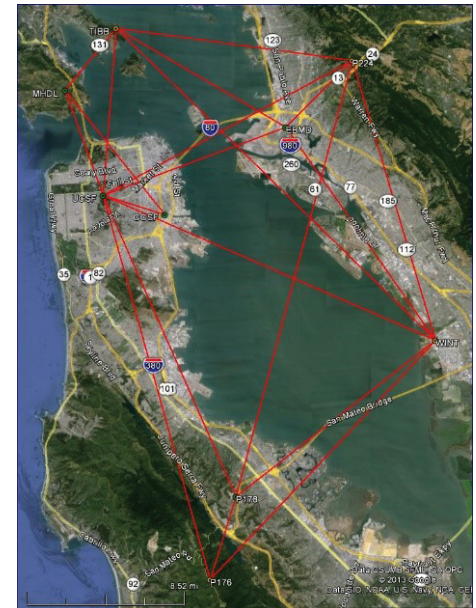
McGee put standards for monumentation and field work in place that were exceptionally rigorous and paid attention to technical and human factors throughout the project. With the help of Bill Hurdle, a southern California surveyor, McGee even designed a custom projection for the project. The City & County of San Francisco Coordinate System (CCSF-CS13) is a low distortion grid projection system designed for CCSF to be nearly a ground coordinate system. The City varies from sea level to approximately 1,000 feet in elevation. To minimize the distortion between ground and grid, the projection surface was positioned at the most common ground height in the County taken at an ellipsoid height of 44.50 meters (146.0 feet).

Meanwhile, Storrs supported him on the bureaucratic end, allowing McGee and city staff to do their best work and create an absolute jewel of a network and an amazing foundation for infrastructure work in the notoriously unstable Bay Area. “It was an honor to work with such committed public employees whose dedication and contribution to the success of this project made all the difference,” McGee says.

Best Ever Municipal HPN?

It wasn’t as if San Francisco was starting from scratch. The area is densely packed with high order control points based on NAD83 and benchmarks based on NAVD88 as well as a previously used Old City Datum. Work on the new HPN began with recovery of many of these points by means of high precision leveling and a GNSS survey,

performed with Leica Viva GS15 receivers. The NAD83(2011) Epoch 2010.00 datum and reference frame were recovered by relying on four CORS that bracket the county. The NAVD88 datum was recovered based on 35 NGS benchmarks.



To test the leveling, the network was partially constrained to NAVD88 on HPN on the north and east edges of the city and points were classified at 1 mm and 5 mm.

In his survey report for the City & County of San Francisco 2013 Leveling Network, McGee notes, “This survey included a ‘Prime’ City benchmark monument known by the NGS as HT0781 which is a chiseled triangle in the top of a granite step located on the NW corner of Townsend Street & 2nd Street,” and, “The NAVD88 height of the ‘Prime’ City Benchmark determined in 2002 is identical to the height of 7.158 meters determined by the CCSF 2013 Leveling Survey.”

Thirty-five benchmarks eventually served as the basis for establishing a conversion factor from the previous city datum and as a basis for recovering the NAVD88 datum in the city.

Actual work on the HPN began in January 2013 with a high precision vertical control network based on differential leveling within the City and County of San Francisco. The work was a model of best practices

continued on page 9



for urban leveling work. “We did 72 miles of leveling, the most precise in all the years of survey work here,” says Storrs. All leveling was performed with a Leica DNA10 electronic digital level and a pair of Leica GKNL4 fiberglass bar code rods. The DNA10 was calibrated by Leica Geosystems prior to the survey and a level collimation test (peg test) was performed prior to each field day of operation.



The 2013 regional network recovered the NAD83 (2011) & IGS08 (2005) datums based on 4 CORS: TIBB, P224, WINT and P176.

From January to October, a three-person crew surveyed 22 loops that included all 20 points in the HPN. Average closure for the 22 loops was 3 mm (0.01’), and 20 of the loops closed within NGS First Order, Class I standards. One notable procedure was monthly calibration of the fiberglass rods, and rod seams (see SIDEBAR #1).



Before starting the field campaign, the crews had to verify they understood their assignments, procedures, receiver operation, and communication protocols.

The GNSS survey work began in July 2013 based on 20 new monuments set in ideal locations that satisfied a rigorous set of criteria established by McGee (see SIDEBAR #2). All GNSS work for the city network was done over five days featuring consistently temperate, overcast weather, using four Leica GS15 GNSS receivers. The city network contained 83 vectors averaging 4.3 km (2.7 mi.) in length. Each point was occupied four times for 45 minutes, with a minimum of six GPS satellites and six GLONASS satellites observed, and up to 21 total satellites observed. The 1D and 2D residuals averaged 0.003 meters (0.01 feet). The regional network contained 57 total vectors averaging 20 km (12 mi.) in length, and each vector represented three 24-hour

continued on page 10

SIDEBAR #2

Placing Precision Points

The actual location of high precision points is obviously a critical factor, especially in dense urban areas. Since all 20 points in the new CCSG Geodetic Network needed to be precisely survey-able, stable and recoverable long term, and easily accessible for routine work in the wake of a seismic event, demanding guidelines for point placement were established. Criteria for GNSS site suitability included:

- Clear horizon above 15 degrees
- Avoid sources of multipath like buildings (50’ minimum), water surfaces and signs
- Avoid nearby radio frequency sources and microwave paths
- Unlikely to be disturbed for many years
- Safe during occupations, with adjacent parking
- 24-hour unhindered accessibility
- Sited on stable geology not situated on a side hill or otherwise on large concrete structures ☺

SIDEBAR #1

Calibrating Fiberglass Rod Seams

In the Summer 2013 issue of *California Surveyor*, Michael McGee, PLS, and Robert Reese, PLS, published their method for calibrating fiberglass rod seams, along with a calibration form that was used by McGee and field staff during the high precision leveling runs for the CCSF Geodetic Network. The article, Seam Errors on a Digital Bar Code Level Rod, asked, “So you got your new bar code digital level to do that first order work your new client requested. Nice. And you bought the three section rods, understandably, because the one-piece invar rods are so darned expensive and a little difficult to carry around. How good is the rod reading value at the top? Is it really 4 meters? Or is it 3.999 meters? Or worse, you really don’t know?”

The recommended three-reading calibration method is straightforward:

- Set up an area (concrete steps make a pretty good test site) with stable, well-defined benchmarks, approximately 2-3 feet difference in elevation.
- Set up the level so it sees the bottom section of the rod on both benchmarks.
- First reading: Read the rod’s bottom section on Benchmark “A”. Read the rod’s bottom section on Benchmark “B”. The difference between the rod readings is the apparent true difference between “A” and “B” (H1).

- Second and third readings: For the second reading, set up the level so it sees the rod’s middle section on “A” and bottom section on “B”. Likewise, for the third reading, set up the level so it sees the rod’s top section on “A” and mid section on “B”. The difference between readings H1, H2, and H3 can be used to calculate rod seam errors between bottom, middle, and top sections. Accounting for these errors avoids accumulated inaccuracies in long level runs.

Notably, this procedure and form was used successfully on the city-wide leveling project in the City and County of San Francisco. ☺



observations staggered every other day. The 1D and 2D residuals averaged 0.002 meters. Since the Bay Area is crossed by multiple fault lines, McGee’s observation protocols were switched up from day to day during the five-day campaign to provide redundancy and to account for independent movement of the four CORS utilizing the NGS HTDP model.

After extensive processing, results were excellent, meeting the NGS specifications per the report at the 95% level of confidence as follows:

- Local Horizontal Accuracy Classification is 5 mm
- Local Ellipsoid Height Acc. Classification is 5 mm
- Network Horizontal Accuracy Classification is 1 cm
- Network Ellipsoid Height Acc. Classification is 1 cm

Throughout the project, McGee paid attention to the human factor. For example, not only were project-specific observation and daily work protocols established, they were practiced in prior training, and all field staff were tested to demonstrate their knowledge and competence in the procedures.

Publication, Verification and Acceptance

The majority of this network design and fieldwork was completed in 2013, and the results were published on a recorded map (along with the new projection, CCSF-CS13) in early 2014. The new high precision network is now officially known as the City & County of San Francisco 2013 High Precision Network, or CCSF-HPN.



Survey results were published on a recorded map along with the new projection, CCSF-CS13, in early 2014.

In March 2018, the CCSF-HPN was independently resurveyed and extended with the same care and effort that went into the original survey. “We reproduced the original survey fieldwork with different receivers and personnel, occupying all the original points and establishing eight new control points,” says McGee. “Basically, we completed an independent re-survey of the entire network.”

Results were remarkable; precision of the new survey was so good that original results were confirmed at the level of 3 millimeters on average across the network. Except for the southwest corner of the city (nearest to the San Andreas Fault), the original points were in the same relationship to each other. “In other words, you could drop the 2018 network on to the 2013 network and the points match 1-6 millimeters (0.00-0.02 feet) 2D,” McGee explains. “We determined the network had moved N 33° W 15.5 centimeters (0.51 feet) – that’s how much San Francisco City-County moves in 4.64 years, or 3.3 centimeters (0.11 feet) per year. What’s important is that it moved as a block, no rotation or stretching.” It’s believed to be the most precise measurement ever obtained of a California county’s seismic movements.

Since 2013, the CCSF-HPN has become widely used in the city and county, and CCSF-CS13 has been adopted and made available on major platforms like ESRI and Autodesk. “It’s taken on a life of its own,” says Storrs. “Every major new subdivision – that’s 60 or so now – is tied in. And because we do the field work for most other agencies, like public utilities and transportation authorities, we’re also extending this high precision network to many more monuments throughout the city – a couple hundred already, and up to several thousand on our six to seven major thoroughfares.”

This new precision has also been extended to San Francisco County boundaries; using the new Leica GS18T GNSS RTN rover – billed as the world’s fastest – the City staff resurveyed the 6-mile San Francisco-San Mateo County Line much more efficiently and precisely than any previous resurvey.

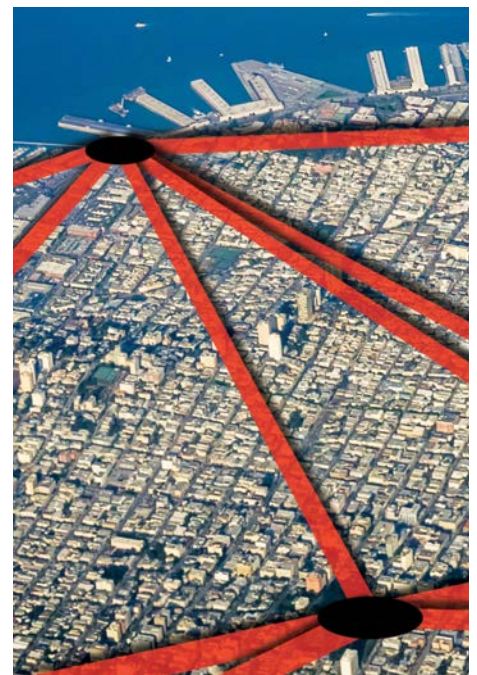
In fact, the county line had not been re-surveyed since 1898.

Designed and surveyed with extraordinary care and skill, the City and County of San Francisco’s Geodetic Network may well be the most sophisticated and precise regional high-precision network yet created. And it’s doing far more than simply serving as a baseline for rebuilding after a seismic event or even the “Big One” that every Bay Area resident dreads.

“It’s revolutionized infrastructure in the city,” Storrs explains. “It’s become the coordinate system that unifies public safety, utilities, police, parcel mapping, you name it. Everything is coming together on this phenomenally precise network, and there’s very little grid-to-ground difference (0.01 feet per 1000 feet) in the new projection so we can survey across the city with virtually no adjustments. It’s so much more than I anticipated.”



Angus W. Stocking is a former licensed land surveyor who has been writing about infrastructure since 2002. To learn more about the CCSF Geodetic Network, visit <http://sfpublicworks.org/ccsf-geodetic-network>.





VISIT US AND...

- Check out the latest gear
- Buy the supplies you need
- Service your Leica Geosystems gear
- Rent equipment for your next project
- Talk to the experts



SERVICE

RENTAL

TRAINING



Call or visit one of our **nationwide** locations today.

Five Ways to Use Smart Maps in COVID-19 Response

By Este Geraghty

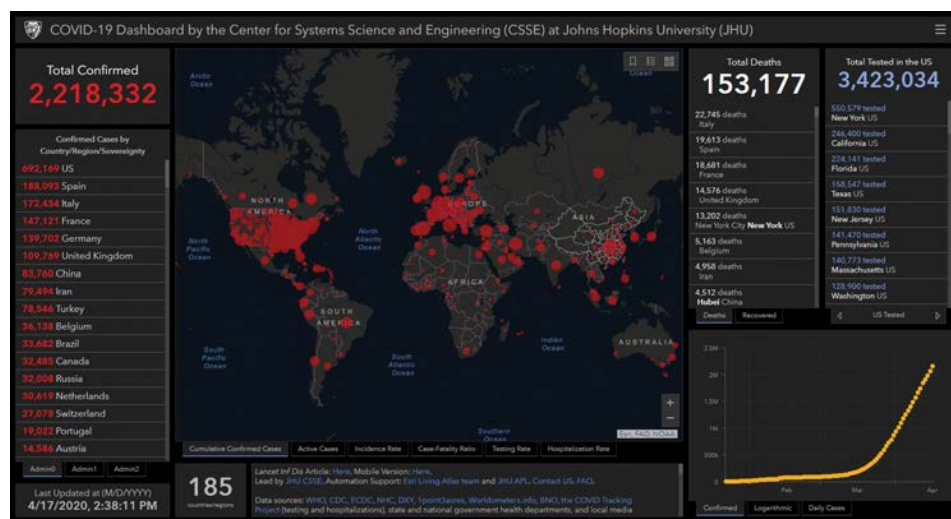
Although the COVID-19 pandemic is global in scope, every affected location has its own unique needs and capacity to fight outbreak. While national governments, federal agencies, and private companies can and should lead large scale efforts to manage the pandemic, the success of any plan requires local knowledge and action.

County surveyors and geographic information systems (GIS) professionals are uniquely positioned to provide this kind of localized expertise, for the simple reason that nobody understands how to document their communities' geography better.

Here are five proactive steps county surveyors and GIS technicians can take to begin to understand and help mitigate the impact of COVID-19.

1. Map the Cases

As any public health professional can attest, the crucial first step in fighting the spread of infection is getting a holistic picture of what is happening – and what has already happened – on the ground. The term “big picture” means a thorough understanding of a situation, but for public health emergencies it can take on a literal meaning as well. Maps are critical tools in mounting the required response.



<https://systems.jhu.edu/>

By looking at maps of confirmed cases, deaths, recoveries, and active cases, public health officials can see where services are most needed. The popular COVID-19 map maintained by the Center for Systems Science and Engineering at Johns Hopkins University, clearly illustrates the value of such visualizations. The map displays confirmed cases, fatalities, and recoveries in an accessible format, providing a wealth of information about the pandemic on a global level. But the data is mostly grouped by nations, with some US state and county-level information. Maps that focus on COVID-19's impact on municipalities have additional value since they can support local policies and decisions.

2. Map the Spread

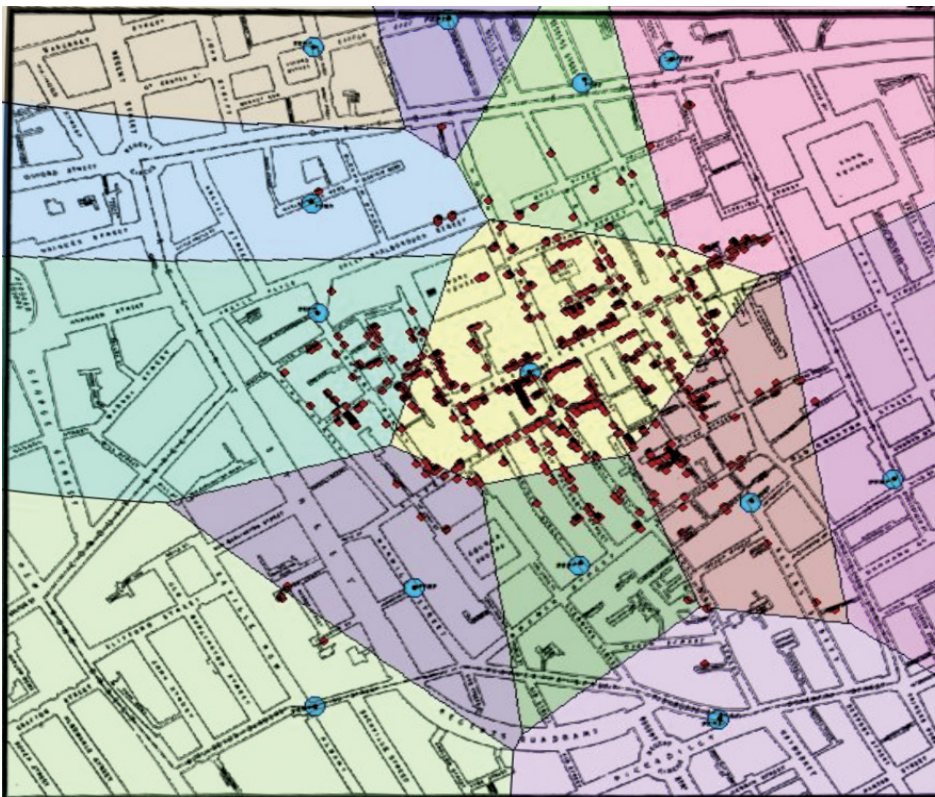
Maps are generally thought of as place-based records. An acknowledgement of the relationship between health and place dates back to the writings of Hippocrates in 400 BC. Putting maps to use in the service of understanding the spread of a disease was most famously accomplished in the mid-19th century when English physician, Dr. John Snow, mapped the spread of cholera in London (see maps, page 13).

To help understand the progress of an epidemic, it is just as important to merge spatial data with temporal information.

continued on page 13



John Snow was able to collect roughly 600 death reports and mapped them in correlation to the pumps in the area. The map appeared similar to this.



John Snow created regions around each of the 13 pumps. Their boundaries defined the area that was closest to each pump relative to all other pumps. These are called Thiessen Polygons.

www.arcgis.com/apps/MapSeries/index.html?appid=3b7b69c040e64afe88ea8e577e71829a

A GIS map can depict changes in various forms of data in a location over time. This makes it a potent weapon for seeing and understanding an ongoing, and in some ways invisible threat.

By using a GIS dashboard to monitor the hourly or daily case distribution over time and geography, officials can note patterns and predict future spread. On the local level, these visualizations can literally be a matter of life and death. Data layers that depict, for example, transportation networks, traffic patterns, or places where people are likely to congregate – such as parks or shopping malls – help officials understand the likely surge of future infections.

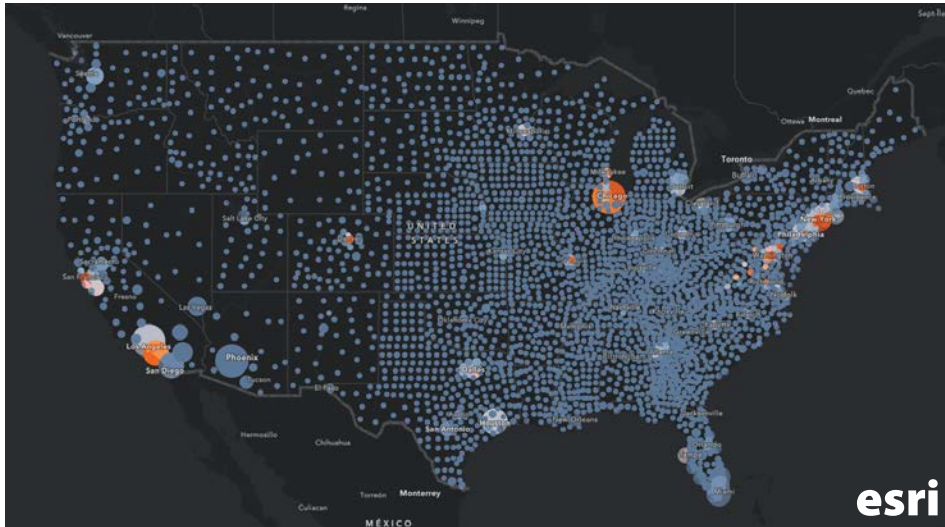
Responders can also leverage sophisticated developments in GIS and big data. Human mobility data, gathered from anonymized cell phone signals, is helping officials understand to what degree people in a given region are sheltering in place. This information helps predict the statistical likelihood of virus transmission – and, in a broader sense, helps draw conclusions about the efficacy of shelter-in-place rules.

3. Map Vulnerable Populations

Although COVID-19 threatens everyone, it disproportionately affects the elderly and those with underlying health conditions. Surveyors can play a crucial role by mapping social vulnerability, age, and other factors to help monitor the at-risk groups and regions in their communities. Potentially at-risk populations can be identified based on additional factors such as income levels and healthcare coverage as well as environmental or contextual factors like population and housing density.

Esri recently visualized age and social vulnerability in the context of the current outbreak. Maps show higher risk populations by geography, along with the CDC's Social Vulnerability Index, a collection of 15 variables that represent external stresses on health. Even so, the most vulnerable can often be less visible

continued on page 14



Areas in orange on this map show the top 40 US counties with a high daytime population and high numbers of travelers and seniors.

www.esri.com/about/newsroom/blog/reveal-finding-the-most-vulnerable-among-us/

and difficult to quantify on a meaningful scale. This is why it's so critical to view and analyze this data at a local level to ensure that key populations and places are represented. Examples include nursing homes, and people experiencing homelessness and their encampments and shelters. Without the local approach, individual people and communal places could be conflated with other groups or imprecise locations (in the case of the homeless). Accurate data is crucial during a time of global emergency.

When public health officials can visualize relevant demographic information using GIS, they can better determine where to deploy healthcare and emergency response resources, and in what way.

4. Map Capacity

Once vulnerable populations are on the map, and local patterns of infection have been noted, a city or county must be in a position to administer care amid heightened demand. The more data health officials have, the better they can formulate a response strategy. A GIS map with locally relevant data is one of the best tools for crafting one.

Dashboard maps can show points of interest such as hospitals with spare beds, grocery stores with essential goods, pharmacies, and the strategic national stockpile with supplies of personal protective equipment (PPE), ventilators, and medicines. These resources allow

municipalities to better understand their current overall capacity to respond to COVID-19 infections and make quick adjustments to scale up as needed.

5. Communicate With Maps

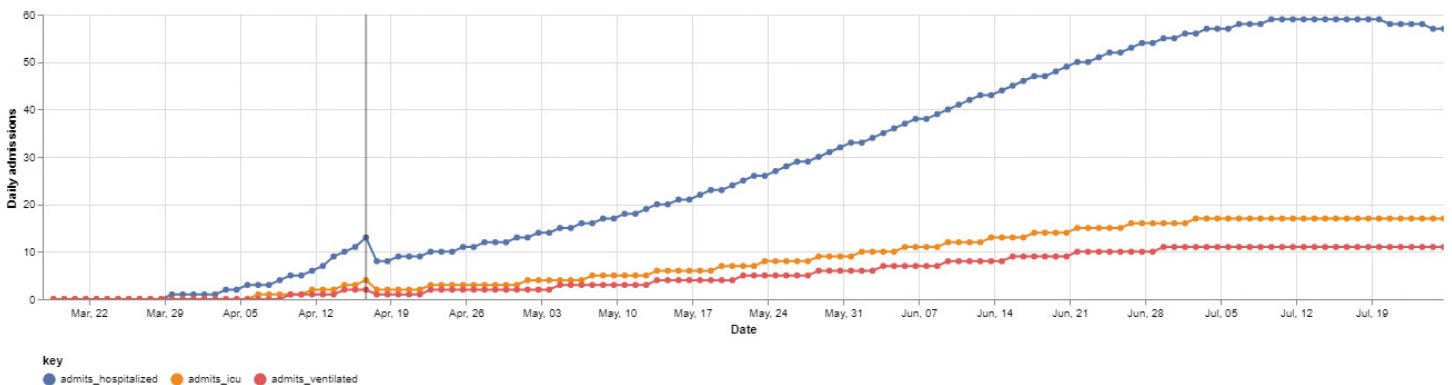
Responding to an emergency, particularly one as prolonged as the current pandemic, requires managing many moving parts. Seamless communication is key – especially when trying to organize responders, volunteers, and entire communities. Everyone, including leaders, stakeholders, partners, and residents, needs a common source of easily understandable information.

Maps are a clear way to communicate complex data to people at many different levels of expertise. This is because maps can convey information in the context of location. In any community, a GIS dashboard provides a “common operational picture.” Dashboards provide a landing place for disparate information needed by government, medical staff, and residents. Interactive web maps, dashboard apps, and story maps provide engaging information that can be immediately absorbed now, and carefully analyzed later.

Where to Start

By combining these five steps, surveyors and GIS professionals can help create a granular picture of a locality and its

continued on page 15



New Admissions: Projected number of daily COVID-19 admissions. This tool was developed by Predictive Healthcare at Penn Medicine to assist hospitals and public health officials with hospital capacity planning.

<https://www.esri.com/about/newsroom/blog/models-maps-explore-covid-19-surges-capacity/>



Mapping COVID-19 – continued from page 14

capacity to respond. Esri provides much of the essential data to create that picture and help formulate a response. Check the Esri COVID-19 GIS Hub site for resources and insights at <https://coronavirus-resources.esri.com>.



Este Geraghty

Este Geraghty, MD, MS, MPH, GISP is the Chief Medical Officer and Health Solutions Director at Esri where she leads business development for the Health and Human Services sector. She was formerly the Deputy Director

of the Center for Health Statistics and Informatics with the California Department of Public Health where she led the state vital records and public health informatics programs.



Search by Country, Territory, or Area



Covid-19 Response Fund

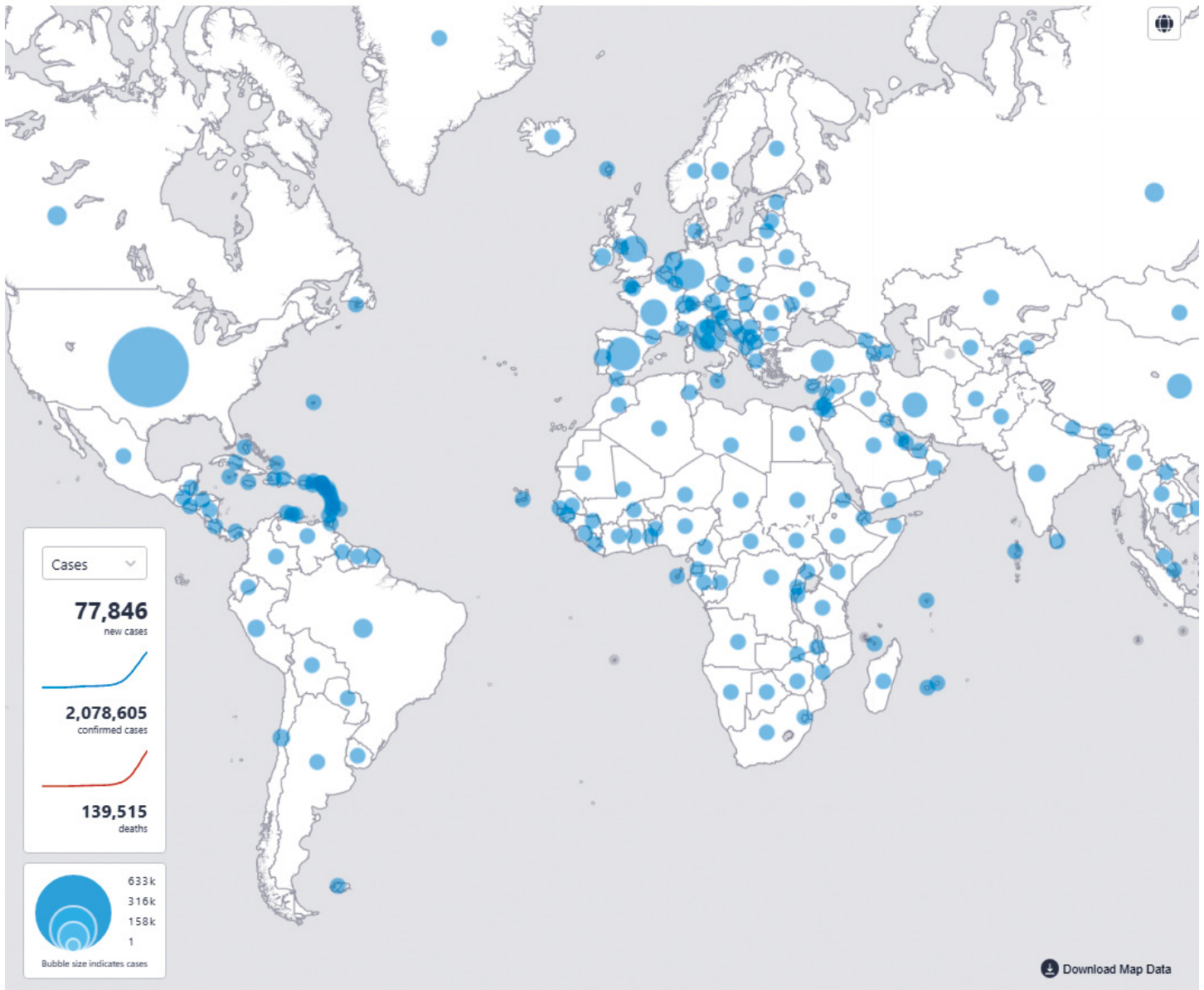
Donate

Coronavirus (COVID-19)

Last updated: 2020/4/16, 1:50am CEST

Overview

Explorer



Source: World Health Organization

Globally, as of 2:00am CEST, 17 April 2020, there have been **2,078,605 confirmed cases** of COVID-19, including **139,515 deaths**, reported to WHO.

VISION

2020

FOCUS ON THE FUTURE

APLS-CLSA-NALS Tri-State Conference



August 21-25, 2020
Luxor Hotel
Las Vegas, NV

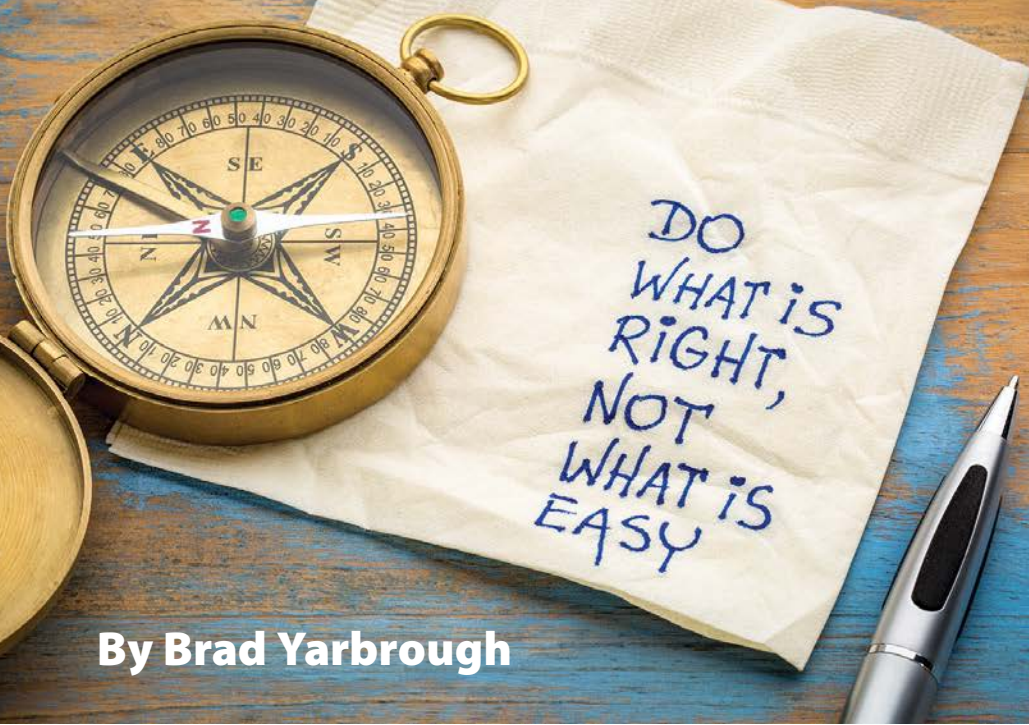
FEATURED SPEAKERS:

KEYNOTE SPEAKER:
Gavin Schrock, xyHt Editor
Gary Kent
John Stahl



SILENT & LIVE AUCTIONS EXHIBIT & VENDOR DEMOS

Registration Information: PLSeducation.org
conference@PLSeducation.org | 888.944.3510 | 707.548.4406 Fax



The Business Ethics Field Guide

An Interview with the Experts

By Brad Yarbrough

EDITOR'S PREFACE: This is the prologue to a series of thirteen articles centered on ethics in business. These articles were originally produced for and published serially by the International Right of Way Association beginning in the November/December, 2018 issue of *Right of Way*. The similarities in ethical challenges faced by professional land surveyors and professional landmen or right of way agents makes this series well suited for the California surveyor.

Business has often been compared to a jungle and for the most part, I have to agree. After all, many of us have experienced the fear of being lost amid towering career threats and feeling trapped by the overgrowth of unsolvable situations. We want to make the right decision and do the right thing, but we need help doing it. And if my 40 years of business and leadership experience has proven anything, it is that the journey does not get easier. So instead of hoping for less problems, it seems wiser to gain additional skills in order to overcome them. As Socrates once said, "The only true wisdom is in knowing you know nothing." You may be wondering who exactly can help you become better prepared to face these dilemmas in business. Who are the experts? Well, it is my privilege to introduce three individuals that have majored in the study of ethics. Brad Agle, Aaron Miller and Bill O'Rourke have co-authored the highly acclaimed book, *The Business Ethics Field Guide*. I met Brad and Bill in Oklahoma City a few months ago while attending a meeting of the Oklahoma Ethics Business Consortium. Their presentation was marvelous and showed a mastery of the subject. Not only did they autograph my book, they inscribed an increased passion for ethics in my life. These are experts. *The Business Ethics Field Guide* is the best I've

read on the subject and serves as a superb guide for making ethical decisions in "the wilderness." It distills our everyday ethical challenges into 13 common dilemmas with real life examples and insightful solutions. It teaches the vital skills we need to make ethical decisions and find choices that are not only right for each of us, but for those around us as well.

Each of these 13 ethical dilemmas will be featured in upcoming articles written by Brad, Aaron and Bill. I'm launching this series with an interview to introduce you to these outstanding individuals and whet your appetite to read the articles that will follow in the months to come.

1 What led you to become experts on the subject of ethics?

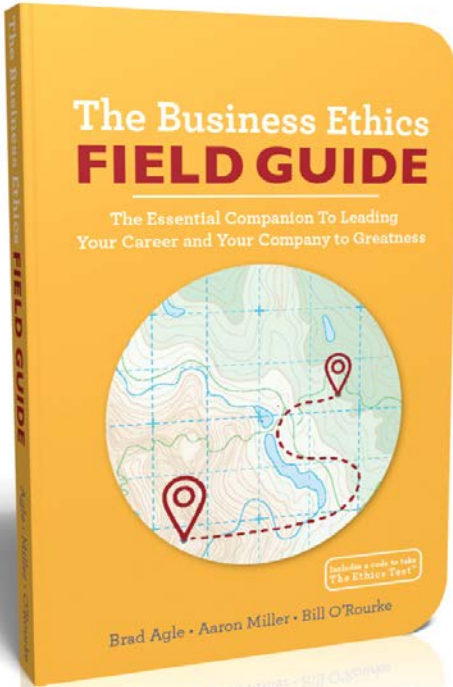
BILL O'ROURKE – When Brad Agle invited me to come to his Business Ethics class at the University of Pittsburgh to discuss ethical situations, I had been with Alcoa, Inc. for over 30 years and I had come across quite a number of ethical dilemmas. I soon realized that students could benefit from learning about my experiences, so I have documented hundreds of real ethical situations that I have faced and I routinely speak about them with university students, corporations and other organizations. My

exposure with Brad Agle and Aaron Miller has helped me to appreciate the rationale for making decisions, the importance of integrity as an organizational value, the importance of fact gathering and the need to act fast when faced with an ethical dilemma.

AARON MILLER – I started out as a practicing attorney, but I found my way into academia as an adjunct professor teaching business ethics and nonprofit law & finance. Teaching was so enjoyable that when I had the chance to teach full-time, I jumped at it. So, I would say that my expertise comes from 12 years of teaching ethics, coupled with my prior background as a lawyer. Though I'm primarily a teaching professor, I've been lucky enough to be involved in research as well – the most important being the five years of research and writing that went into *The Business Ethics Field Guide*. (Reading hundreds of real ethical dilemmas and their outcomes would help anyone develop greater expertise.) This is a subject that fills me with curiosity, passion and excitement for all that's yet to be discovered.

BRAD AGLE – I began a PhD program in Business, Government and Society at the

continued on page 18



University of Washington in 1988, and one of the primary emphases of this program was business ethics. After completing my PhD and two years of working on CEO leadership at a CEO Institute, I began my professorial career at the University of Pittsburgh in 1992, where I taught business ethics and was the inaugural director of the David Berg Center for Ethics and Leadership. I've been involved in research, teaching, writing, speaking and consulting on business ethics for 30 years, the last nine of which have been at Brigham Young University. I'm a big believer in an individual's ability make a difference in the world, and I'm trying my best to lift the institution of business to become an even greater positive force in society.

2 Your pursuit of the subject led to co-authoring *The Business Ethics Field Guide* in 2016. Can you explain the title?

BILL – Life can be tough. Sometimes we need help to traverse the challenges we face. There are guidebooks that tell us how to survive the various categories of challenges we might encounter in the wilderness, such as getting lost, having an encounter with a dangerous animal and how to treat injuries. Sometimes, the challenges we face in life are similar to those wilderness challenges. Research

conducted by Brad Agle and Aaron Miller over the years allowed them to identify 13 categories of business ethics issues. Each category is addressed in the book in a manner that the reader will understand when they face that issue. It then provides advice on how best to deal with that situation. In this way, the book serves as a helpful “field guide” and reference for individuals when they encounter an ethical dilemma in their life.

3 The foreword was written by Paul O’Neill, former U.S. Treasury Secretary and Alcoa CEO. He said, “...ethical behavior, for leaders, is more than avoiding clear wrongs.” Can you elaborate on that statement?

BILL – I reported to Paul O’Neill when he was the CEO of Alcoa and he was the most enlightened leader I have ever known. When Paul came to Alcoa in 1987, he established a vision: Alcoa aspires to be the best company in the world. He wanted every function, every individual and every product to be the best. He complimented that vision with a set of articulated values, which began with integrity. By practicing integrity, you challenge others to do more

than expected, to perform far beyond the legal compliance requirements and make the world a better place. I believe that’s what Paul meant by saying that ethical behavior is more than avoiding clear wrongs.

AARON – Very compelling research points to the idea that leadership and ethics are inseparable. Put another way, there’s no aspect of leadership without ethical importance. Joanne Ciulla, a top academic in the study of leadership as well as ethics, has incredible insights in the connection. She says, “Leadership is not a person or a position. It is a complex moral relationship between people based on trust, obligation, commitment, emotion, and a shared vision of the good.” In the end, no one can be a good leader without also making ethical choices.

4 In the book, you identify 13 Ethical Challenges we each face in business. How did you define these?

BRAD – I’ve taught executive MBA students for the past 18 years in Pittsburgh, Sao Paulo, Prague and Salt Lake City. My

continued on page 19



BRAD AGLE (left) is the George W. Romney Endowed Professor and Professor of Ethics and Leadership in the Marriott School of Management at Brigham Young University. He has provided leadership training to dozens of organizations including Alcoa, US Steel and the Marine Corps. **BILL O’ROURKE** (middle) retired from Alcoa where he held a number of leadership positions including President of Alcoa-Russia from 2005-2008. He taught MBA students Strategy, Leading Change and Ethics in the School of Business at Duquesne University. **AARON MILLER** (right) is a professor in the Marriott School of Management where he teaches business ethics. Prior to his current role, he practiced law in areas including small business, nonprofit, taxation and corporate governance.



students’ first assignment is to write up an ethical dilemma they’ve faced in their career. I’ve now read close to 2,000 of these dilemmas. In doing so, I began to notice patterns – certain “types” of ethical issues would come up again and again. While the specifics would be different, the fundamental challenge being faced fit a common pattern. There is a type of research designed to detect different “types” called textual or qualitative analysis. We conducted research using my students’ dilemmas until we had identified the fundamental dilemmas they faced. This was a collaborative process among Aaron, myself and other researchers at BYU.

5 Why should I be ethical?

AARON – There’s a multitude of reasons to be ethical (trustworthy relationships, peace of mind, leadership opportunities, etc.). Even biological evidence points to fairness and honesty being important to human beings. In the end, every argument in favor of bad ethics usually has to rely on us abandoning the very things that make us people, namely love, purpose and connection. There is an idea that bad ethics can give us a competitive edge, but that takes a short-sighted view about what winning really means and about what matters in the end. For example, a massive, multi-decade Harvard study identified meaningful, reliable relationships as the single strongest predictor of human happiness. It’s impossible to get those through unethical behavior, no matter what edge you think it gives your career.

BRAD – Part of being ethical is realizing that it will not always be to your personal benefit. Because ethics is about how we treat others, most of our greatest ethical heroes are those who have sacrificed for others. Meanwhile, my experience is that those who are dedicated to living ethically in their professions are universally happy and oftentimes highly successful.

BILL – There is also the undeniable cost of wrongdoing. Unethical behavior will have a cost to you and your business. In the long run, those who make the wrong choices end up paying for them in terms

of fines, imprisonment, loss of sales and profits and damage to their reputation.

6 Do you find that most people want to do the right thing?

BILL – Beyond avoiding costs of wrongdoing, there is a desire by most people to act properly and to be ethical. In fact, most people who have made poor ethical choices wish they could have the opportunity to do it again and choose differently. It’s hard to put a value on personal harmony but it is clear that losing your personal integrity matters significantly.

AARON – I believe most people want to do the right thing. I also believe most of us have gaps in our skills and abilities that help us accomplish the right thing. Good ethics is more than just having good intentions. That’s why we wrote our book! Our hope is to give people the tools they need to do the right thing.

BRAD – The vast majority of the people I’ve met want to do the right thing. However, there are a lot of forces pushing us toward less than ethical behavior. Ethical decision-making is a very complex process involving our values, intellect and emotions, as well as our group, organizational and cultural influences. Unfortunately, just wanting to do the right thing isn’t enough.

7 Can you expand on the dilemma between doing what’s right versus doing what’s easy?

BILL – Our book addresses moments when values conflict. These situations are particularly difficult because they don’t lend themselves to the typical framework of right verses wrong. Note that our book does not provide insights on theft, assault, or other crimes that are clearly wrong; there’s no dilemma involved. Instead we deal with situations where an individual must choose between two highly prized values. For example, is it better to honor a promise to keep information confidential or to reveal that information in order to protect a supplier or your employees?

continued on page 20

13 ETHICAL DILEMMAS

Upcoming articles in this series will take a closer look at each dilemma.

- 1 STANDING UP TO POWER**
Someone in power is asking you to do something unethical.
- 2 MADE A PROMISE**
Conflicting commitments force you to choose.
- 3 INTERVENTION**
You see something wrong. How do you proceed?
- 4 CONFLICTS OF INTEREST**
Multiple roles put you at cross purposes.
- 5 SUSPICIONS WITHOUT ENOUGH EVIDENCE**
You believe something is going on, but you’re not sure.
- 6 PLAYING DIRTY**
Achieving justice but by doing something unethical.
- 7 SKIRTING THE RULES**
Bending a rule for a better outcome.
- 8 DISSEMBLANCE**
Misrepresenting the truth for better outcome.
- 9 LOYALTY**
Giving up ethical stance to protect valued relationship.
- 10 SACRIFICING PERSONAL VALUES**
Living ethically might put burden on others.
- 11 UNFAIR ADVANTAGE**
When opportunity exists to wield an unfair upper hand.
- 12 REPAIR**
When you are responsible for a mistake.
- 13 SHOWING MERCY**
You could grant forgiveness, but you don’t know if you should.



We recognize that these “right vs. right” decisions are common in life and we attempt to provide the reader with a framework for addressing those situations. What we also hope to drive is a desire for individuals to choose more right over right. If something is found that does not belong to them, a good leader knows that they cannot take it. Excellent leaders take steps necessary to get the item into the hands of the rightful owner. A good leader of a manufacturing plant that has a toxic spill reports the spill to the government authorities as required. An excellent leader takes the steps necessary to clean the spill, notify affected persons, get them necessary medical attention and take steps to assure that the spill never occurs again. When crafting an organizational culture, the leader has an obligation to set the tone. Push your organization to strive to achieve the best outcome possible, often far beyond compliance. Then, support those who choose to do “more right” and recognize their efforts.

8 Many media-covered, corporate scandals can be traced to unethical behavior. In addition to a damaged reputation, what are other costs of doing unethical business?

BILL – It seems that we hear about these scandals regularly. A recent example of corporate misbehavior is the Wells Fargo situation. The company devised an incentive in which employees were rewarded for opening more accounts. As a result, bank employees began opening accounts for customers, often without even telling the customers they were doing so. However, I believe that it is the reaction to these events that will determine future success or failure. Once a company has lost the trust of its customers, it is difficult to get back. Wells Fargo took their situation seriously. The CEO was fired and about 700 employees who intentionally deceived their customers were fired. Four directors on their Board were released for not

exercising appropriate oversight of the situation. Ethics training was expanded. The values were reinforced and Wells Fargo publicly admitted their mistake. Their new advertising campaign notes that although Wells Fargo is an old company, they have been re-founded in 2018. It seems that most customers believe that Wells Fargo has seriously addressed the situation. Another point to be made is that although we read about these corporate ethical failures, we don’t read about the tens of thousands of companies and millions of business leaders who are working hard every day to make the right ethical decisions. I believe that the vast majority of businesses and their leaders are driven to do what’s right. So, keep that in mind whenever you read about those caught doing wrong – there are a lot more doing right.

AARON – To add to Bill’s insights, I would also emphasize that we live in an age

continued on page 21

Berntsen[®]
Marking the Infrastructure of the World™

Custom Survey Markers & Monuments • Signs & Witness Posts • Flagging & Targets • Nails & Washers

Our legacy is your legacy.

800.356.7388 | berntsen.com



where it's harder than ever to get away with bad behavior. Smartphones with cameras are everywhere. Social media can spread news of a scandal in seconds. When you consider how hard it is to build a reputation for ethics and how quickly it can be destroyed, ethical leadership has never involved higher stakes!

9 Can a person learn ethical decision-making skills and master them?

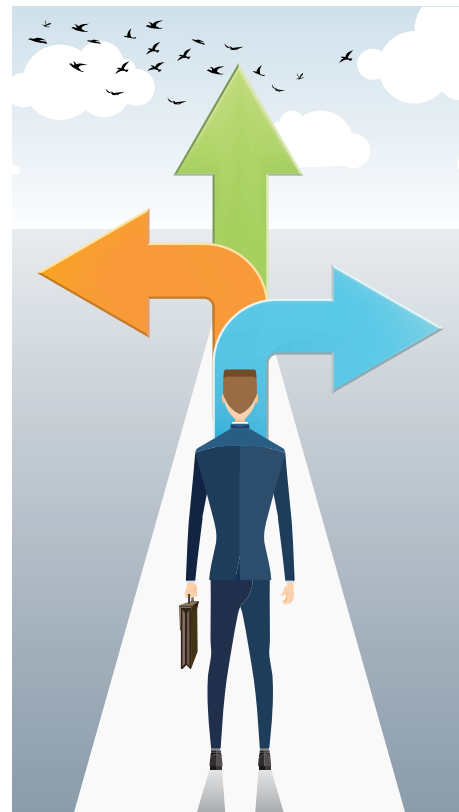
BILL – Definitely. Ethics is not merely a matter of good intentions. Ethical behavior can be a result of thoughtful application of ethical skills. These ethical skills are especially necessary for effective leadership. You need more than a love of nature to lead people on a journey through the wilderness. You need the experience and skills of a wilderness guide. In the same sense, wanting to be ethical falls short of actual ability to guide others through ethically precarious terrain.

AARON – Years of experience in teaching ethics proves to me that these are skills and they can be mastered. I have so many stories about students who come back years later to tell me about how they used skills they learned to navigate some devilishly tricky ethical territory. These are not the kind of problems you resolve with good intentions alone.

BRAD – No question. In fact, one of the most enjoyable aspects of my job is meeting individuals who are truly ethical experts. When I meet them, they jump out at me like great athletes to a talented sports scout. Bill O'Rourke was one of the first ones I got to know well. It was immediately apparent to me that he was a highly skilled ethical leader. Learning from him has been one of my greatest professional advantages and personal blessings.

10 The IRWA has placed an emphasis on the subject of ethics throughout its history. What is your opinion on the role a professional association can have in ethically-shaping its industry?

BILL – Professional associations can play a very important role. The association is often the face of the profession. Their communications, conferences and membership activities allow the profession to define itself, to portray the qualities of its members and to shape the culture of the profession. The association can play a role in reinforcing the values of its members through reward and recognition programs, touting the positive actions and values of its members. The association can also serve to police itself by communicating when the values and mission of the association are not being followed. The association and their leaders help to build pride in its members that is typically based on strong values beginning with integrity.



AARON – The truth is that people just don't talk enough about ethics and values at work. This is where professional associations can fill an otherwise dangerous vacuum. When people develop camaraderie and mutual respect in a profession, they can also set high ethical standards for each other. It means something to be a member of IRWA, and that has a lot to do with the ethics consistently reinforced and expected of each other.

BRAD – The actions of leaders can have profound effects on those in the organization. Aaron is absolutely correct that people don't talk about ethics at work nearly enough. In fact, one of the recommendations of the U.S. Sentencing Commission (which developed some best ethics practices for organizations) is to spend time identifying the types of ethical issues prevalent for the organization, and then do training on those ethical issues. Professional associations are in the best position to understand the types of ethical issues most prevalent for their practitioners and to provide training on those issues.

11 Right of Way Magazine will feature one of the 13 challenges in each of its upcoming issues. How excited are you to be a part of this effort?

BILL – We are very excited to be a part of this initiative. Our desire is to help others be better able to navigate through the ethical perils in life. Having the opportunity to reach so many of your readers on a regular basis gives us a unique opportunity to achieve our goal. We appreciate the opportunity.

AARON – This is such an honor! We want nothing more than to empower good people, and this opportunity is exactly that.

BRAD – We're thrilled that your professional association is interested in our work and in helping your members develop into the type of ethical leaders we all hope to be. We know that we are all beneficiaries of the work of your members. We anticipate that you will all find the journey to be interesting, exciting and ultimately useful. Thanks for joining us on this mission to make the world a better place for all of us. ☺



Brad Yarbrough

Brad Yarbrough is the Owner and CEO of Pilgrim Land Services, a right of way services company in Oklahoma City. With over 35 years experience in oil and gas, he has clients nationwide and an extensive network of landmen and agents.

ALLEN
Instruments & Supplies

STAY PRECISE.

PROVIDING INNOVATIVE
SOLUTIONS FOR SURVEYING,
ENGINEERING, MINING,
CONSTRUCTION AND GIS.



AllenInstruments.com | 800-272-0180

SCOTTSDALE | ANAHEIM | VENTURA | ESCONDIDO

Independent Contractor Status Change



By Kendall MacRostie

Land surveyors have historically relied on numerous specialized employees to deliver their work product to clients. Unlike architects or engineers who generally worked with few or no junior employees, land surveyors often employed three, four or five necessary employees for every professional land surveyor. Measurement Analysts, Field Crews and Survey Chiefs are just a few typical classifications unknown to other allied professionals. Some of these job classes are office staff while others primarily work outside. With this diversity of inside and outside work staff, surveyors relied heavily on highly trained technical staff. Particularly in the case of field personnel, a surveyor might reasonably presume that one or more of his staffing needs could be met by independent contractors. Indeed in some states, it is reputed regular practice to hire one or more independent field crews or office staff as independent contractors – at least seasonally.

While independent contractors may sound appealing to reduce peak work demands or otherwise supplement staff during seasonal cycles of work, this practice may create liabilities for the employer, especially after recent laws. I'll explain how the traditional test for whether independent

contractor status has changed and narrowed options for would be contractors.

I) The Traditional Test for Independent Contractors

Since the early 1990s, the test for determining whether a worker was an independent contractor came down to control. Though the California court system came up with many factors when determining this issue, the main factors in contention were whether the paying party had control over the worker's equipment, work hours, methods of performing the job, and rate of pay.

The more control the paying party had over these factors, the more likely the courts would determine that the worker was an employee. If a paying party had the worker use the paying party's equipment, required the worker to perform duties at certain hours, and paid the worker at regular intervals rather than at the end of a job, the worker would probably be considered an employee.

On the other hand, if the worker had more independence in deciding how to complete a job, worked for multiple employers using similar skills and received

no benefits besides pay, he or she would be considered an independent contractor.

This system was used in California for decades, and it gave workers more flexibility to work on multiple projects with different businesses at the same time. Business owners liked it because they did not have to provide benefits, and they could hire individuals for specific projects when help was necessary.

II) Recent Developments: Dynamex

Last year, a court decision was upheld that completely changed the dynamics of independent contractor classification. Rather than using the traditional control test, the California courts adopted a new "ABC" test that has been used by other states.

While control is still a factor when determining independent contractor status, the big change that has caused many employers a headache is part (B) of the test. This part requires that "the worker performs work that is outside the usual course of the hiring entity's business." In other words, if the hiring entity's way of generating

continued on page 24



revenue is related to the work the worker performs for the hiring entity, the worker cannot be an independent contractor.

Some examples could illustrate this point. The simplest one is truck drivers and shipping companies. The entire purpose of a shipping company is to deliver goods from one area to another for payment. The entire purpose of a truck driver's job is to use his or her truck to deliver goods from one area to another for a shipping company. Hence, truck drivers cannot be independent contractors under this test.

The performing work outside the usual course of business standard can have wide application. Another real life example is a casino regularly paying a band to perform songs on certain nights of the week. While most people would argue that the casino's main way of generating any kind of revenue would be through gambling, the court held that the casino's revenue structure involved entertainment as well. Therefore, the band that performed only once or twice a week was considered an employee.

III) The Impact of Dynamex

The *Dynamex* decision has had a significant impact on businesses all across California for several reasons. First and foremost, it changed the classification of thousands of workers across California. One day, businesses had correctly labeled workers as independent contractors and were only responsible with providing pay after a job was finished. The next day, those independent contractors became employees and businesses were suddenly required to provide those individuals with

insurance, paid and unpaid time off, and other benefits that had not been factored in to the company's budget.

The other primary impact this case had on California businesses was that it would be applied retroactively. In other words, the ABC test would be considered the applicable law for as long as independent contractor laws existed in California. Rules regarding time limitations to file lawsuits would still apply, but this would mean that businesses could face liability for not providing employee benefits for up to three years prior to *Dynamex* being passed. This has created problems for many businesses, but the California legislature attempted to resolve some of these issues by passing AB-5.

IV) AB-5

Assembly Bill 5, or AB-5, was signed into law on September 18 of 2019, and was applied starting January 1, 2020.

A simple explanation is that, under AB-5, the ABC test will be applied to all workers unless an exception is listed in the Unemployment Code, a specific Wage Order, or in AB-5 itself. If an exception does apply, the old California test for determining independent contractors, with an emphasis on business control over the worker, will be used.

That being said, AB-5 is a very lengthy section of the California Labor Code with a lot of technical language to sift through. In addition, it is unclear when and under what circumstances the listed exceptions will apply.

For example, engineers and architects are listed as two of the exceptions to the ABC test. However, the engineer or architect must be "practicing" in the profession for which he or she has an active license. Based on applications of similar laws, there will be questions of what it means to practice in a profession, for what percentage of the day the individual must be practicing his or her profession, and whether a certain engineering degree is required for a specific job. Nothing is certain at this point, so it is best to proceed with caution.

V) Recommendations Going Forward

Due to the technical requirements of AB-5 and the turmoil created by *Dynamex*, the best recommendation at this point is to speak with an attorney or HR professional if you have any individuals working for you that are labeled as independent contractors. If you are caught violating any of California's employment laws, you can be liable for back pay, not providing benefits, and subject to an investigation by a state government agency.

It is certainly possible that an exception to the ABC test can apply to your business, but performing that analysis on your own may prove to be a critical mistake. In these situations where there are lots of significant changes in the law, input from a trained professional is a prudent option. 🌐

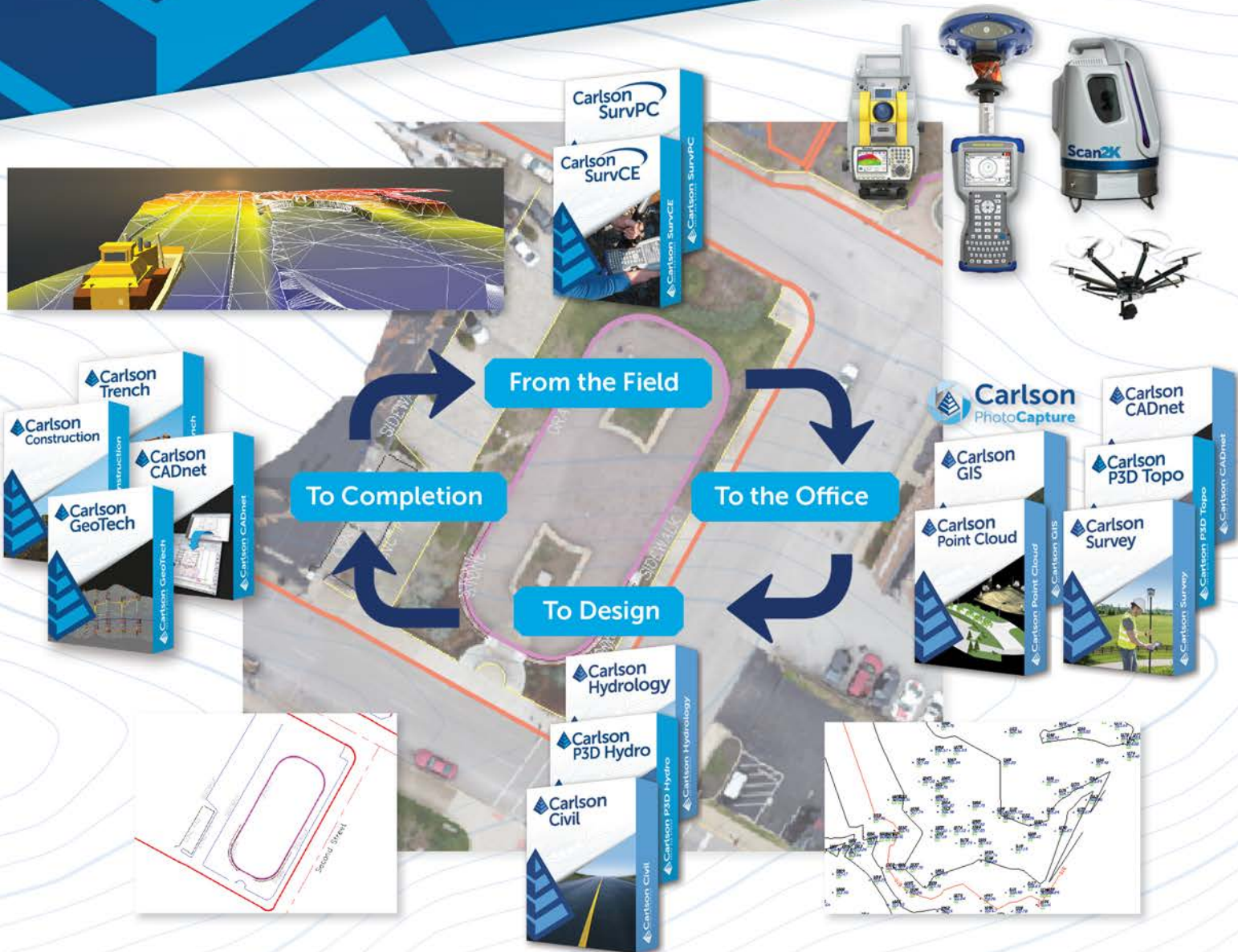


Kendall MacRostie is Chief Lawyer Advocate at Legalucy. At Legalucy, we have created an interactive pre lawyer assistant that empowers small business owners to spot issues, take action, and stay safe. Small business owners

Kendall MacRostie

can navigate through a platform we have created and spot issues that may affect their business at various stages of growth. After spotting the issues, the small business owner can take action by choosing from a list of attorneys to perform a service. By empowering business owners, it is our intention to help them minimize lawsuits, fines, and government investigations and focus on growing businesses that they love.

For every stage in the project, CARLSON HAS YOU COVERED



FLEXIBLE FINANCING | 90-DAY SOFTWARE LICENSES | DEFERRED PAYMENTS

CONTACT LUIS ROJAS OR YOUR LOCAL CARLSON RESELLER FOR MORE INFORMATION AND A DEMO

Luis Rojas ■ Regional Sales Director
lrojas@carlsonsw.com ■ 859-568-8429
Carlson Software, Inc. ■ www.carlsonsw.com



PURE SURVEYING

Innovation that puts the human side
of surveying first.

From self-leveling GNSS antennas to scanning robotic total stations
to manual total stations, you will find innovation at all levels.

www.Pure-Surveying.com



Northern California

daniel.speziale@leica-geosystems.com | 831-287-4933

Southern California

jason.paris@leicaus.com | 831-247-1881

PART OF
HEXAGON

Leica
Geosystems

Block Boundaries By Curb Splits – When, Why, and How

By Landon Blake

EDITOR'S NOTE: Every block in every city has its own eccentricities requiring case by case analysis. In this article Mr. Blake describes a nuanced formula for establishing a block boundary based on historic establishment of physical occupation for cases when prior surveyor establishment is not readily apparent. I would like to emphasize the instruction he gives in step 3 of the 'How' section: "...conflicting evidence should be shown on your survey map. You should also explain why you rejected that conflicting evidence as part of your boundary resolution."

— DK

A few years ago I performed an ALTA/ACSM land title survey for a parcel in an old part of Redwood City, California. The land description for the subject parcel was metes and bounds and was based on the framework of lots in the block shown on an old subdivision map (See Diagram #1). The subject parcel had been previously resurveyed, but there was a lack of evidence of original monuments. The prior surveyor had held the tax assessor plat dimensions for the block. He then used

these dimensions to define the block, and as a result, the shape of the subject parcel. Was his decision the right decision, or was there a better way?

I've often held that tax assessor maps are cartoons drawn for taxation and I believe that land surveyors shouldn't use them as primary evidence in a boundary resolution. What alternative was there in the retracement of the block in Redwood City?

In this article, I will consider using curb splits to define block boundaries in an old subdivision. This article will cover four main points:

- 1) Define "curb splits" as they relate to resolving parcel boundaries.
- 2) Describe the circumstances under which it may be appropriate to establish block boundaries by curb splits.
- 3) Explain why using curb splits may be an appropriate as part of the boundary resolution.
- 4) Describe a practical 5-step process for implementing curb splits in a boundary survey.



Curb Splits – a Definition

The definition of the term "curb splits" for the purposes of this article:

Curb Splits: The process by which a land surveyor measures the location of physical street curbs or other public

continued on page 28



improvements around a rectangular block in an urban area and then uses the location of those curbs or improvements to determine the limits of the occupied street right-of-way and thereby the corresponding common boundaries of the block and lots.

Curb Splits – When

When it may be appropriate to use curb splits as part of a boundary resolution:

There are four (4) main factors to consider when determining when it is appropriate to recreate block boundaries by curb splits.

Factor #1: The first factor is the history of the subject parcel being retraced in a boundary survey. A professional land surveyor will need to answer the following questions about the subject parcel:

- a) Is the subject parcel based, at least in part, on whole lots or portions of lots, from a subdivision? (Does the chain-of-title for your parcel include simultaneously created parcels?) (For example: Diagram #1 shows a subject parcel that is composed of the southwesterly two lots and a portion of the most southeasterly lot of the subject block. The land description for this subject parcel might read something like this: "All of Lot 5, Lot 6 and Lot 12 of Block 10, excepting therefrom the northeasterly 20 feet of Lot 12.")
- b) Does the original survey treat all lots in your subject block the same, or could it be that some of the lots were intended to get all excess and shortage in the block?
- c) Is your block wholly contained in the interior of the subdivision, or does your block abut an external boundary of the subdivision? Could this external boundary of the subdivision be controlled by monuments not set on the controlling subdivision?
- d) Is it likely that street improvements were created based on the boundaries of the blocks in the original subdivision?

e) If the street improvements have been replaced, repaired, or modified (which is likely in older subdivisions), how might this work have changed the location of the improvements in relationship to the original block boundaries?

f) Have other land surveyors working in your subdivision previously used curb splits to establish the boundaries of your subject block or adjacent blocks?

Factor #2: The second factor is the presence and location of original subdivision monuments. It is critical to determine the location of original subdivision monuments that mark the corners of lots (or the block) in your subject block. **According to principles of United States common law, if found, these original subdivision monuments will control the location of subdivision lines.** Consider the following questions about original subdivision monuments before using curb splits:

- a) Were monuments set on the corners of my subject block on the controlling subdivision map?
- b) Were monuments set on the corners of lots related to my subject parcel on the controlling subdivision map?
- c) What type of monuments were set during the original survey? Were these monuments likely to have survived to the current day?
- d) What survey methods were likely to have been used to set the monuments during the original survey? How closely would I expect the actual location of these monuments today to match the record measurements shown on the controlling subdivision map?
- e) If monuments were set during the original survey, where will I search for them on my survey?

Factor #3: The third factor is the location and quality of retracement monuments in the controlling subdivision. It is very

likely that other land surveys have been done since the time of the original survey. A land surveyor should consider each of the following questions about each of the prior retracement surveys and their monuments:

- a) When was the retracement survey performed? What survey methods were commonly used at that time? How closely would I expect the actual location of the retracement monuments set in this survey to match the measurements on the controlling subdivision map or the retracement survey itself?
- b) Identify the land surveyor who completed the retracement survey. What can be learned about the typical quality of that surveyor's work?
- c) Were monuments set on the corners of my subject block on the retracement survey?
- d) Were monuments set on the corners of lots related to my subject parcel on the retracement survey?
- e) What type of monuments were set during the retracement survey? Were these monuments likely to have survived to the present day?
- f) How did the retracement survey resolve the block and lot boundaries that are related to my subject parcel? Did the surveyor simply hold record measurements, or did he or she properly use proration. If the surveyor used proration, what was used to control that proration? Did the surveyor find original subdivision monuments, did the surveyor use other retracement monuments, did the surveyor split curbs, or did the surveyor use some combination of the preceding? Do I agree with the correctness of the retracing surveyor's methods?

Factor #4: The fourth factor is the quality of the physical evidence of occupation

continued on page 29

SURV-KAP®

No Boundaries On Customer Service



MONUMENTS, MARKERS, CAPS & ACCESSORIES

ORDER NOW: 800-445-5320 • SURV-KAP.COM



Curb Splits – continued from page 28

marking the boundaries of the block. This is important because, if a land surveyor decides to use curb splits as part of a boundary resolution, the surveyor is essentially treating the evidence of occupation as a monument. To do this, a surveyor must understand the type of physical occupation and the quality of the correlation with the block boundaries. The surveyor needs also to understand any impact right-of-way dedications or street improvement projects that took place after the original subdivision may have on the relationship of the physical occupation to the block boundary. Address the following questions about the physical evidence of occupation around the subject block:

- 1) What type of physical occupation surrounds the block? Are there curbs, sidewalks, and right-of-way fences?

- 2) Does the same type of occupation surround each side of the block?
- 3) If the block is surrounded by fences or paved streets, but not by curbs and sidewalk, how reliably can I reconstruct a set of lines from the occupation? (Does the fence wander all over the place, or is it in a fairly straight line?)
- 4) Has the physical occupation been moved since it was constructed? (Fences can slide down hillsides or be moved by land owners. Tree roots can displace concrete curbs.)
- 5) How will I measure the locations of physical occupation? What type of instrument will I use? Where will I collect points? How far from my subject block will I need to survey physical occupation?

Curb Splits – Why

In what situations might physical occupation be the best evidence of a block boundary? A land surveyor may choose recreation of block boundaries by curb splits as part of their boundary retracement when:

- 1) The record distances in the controlling subdivision map may not result in a good retracement of the original intended block boundaries. This can occur when the record distances are very hard to read on an old map, or when the values are legible but result in large mathematical closure errors.
- 2) Retracement that relies on proportioning from far away original subdivision monuments may

continued on page 30



result in unacceptable distortions to the boundaries of the subject block. Although, in theory, original subdivision monuments control proportioning, if a surveyor reaches out four, five, six or seven blocks between original subdivision monuments, she or he might be introducing large unintended errors. (You can look at Diagram #1 for an example of this. If I held the two found original monuments located two blocks northeast of the subject block and extended the line they form as the basis of the north boundary of my subject block, I could have a very poor fit. This is because the two found original monuments are far from the subject block and located very close to each other.)

3) The physical occupation may be the best available evidence of the original block boundaries. This is especially true when no original subdivision monuments were set on the controlling subdivision map, or when the monuments set were temporary in nature (for example: wooden stakes), or where the improvements can be dated back near in time to the original subdivision.

Curb Splits – How

Once a professional surveyor determines that curb splits may be an appropriate part of a boundary retracement survey, how does he or she recreate block boundaries by curb splits? The process below outlines 5 steps and each step is essential.

Step #1: Carefully analyze the related land records:

This step relates to several of the questions addressed previously. This includes analyzing the equal/unequal treatment of subject parcels in irregular blocks and looking at the history of right-of-way dedications on adjacent streets. Refer to Diagram #1 for an example of this. It is apparent that an additional strip of right-of-way was taken for the street on the northeast side of the block from the southeasterly four lots in the block. This

Curb Splits and Unwritten Rights to Real Property

At times, a land surveyor may be asked to survey evidence of unwritten rights to real property that have been acquired. For example: The survey of lines of possession as part of an ALTA/NSPS Land Title Survey. Or, a land surveyor might be asked by a land attorney to survey lines of possession as part of a quiet title action. It is important to note that this article about recreating block boundaries by curb splits isn't addressing the need to validate or establish unwritten rights to real

property. Unwritten rights are acquired when it is known (or strongly suspected) that lines of physical occupation don't correspond with lines of ownership based on the title documents. When using curb splits as defined herein, a land surveyor is attempting to prove quite the opposite: That lines of physical occupation are the best remaining evidence of the original location of lines of ownership based on the paper title rooted in the controlling land subdivision map. ☉

strip was taken after the time of the original subdivision.

Step #2: Think about the kink:

A surveyor shouldn't presume that occupation along street rights-of-way in a subdivision will follow perfectly straight lines. They almost certainly will not. A "kink point" is any point of intersection introduced into an otherwise straight line. At times, a surveyor will need to survey occupation at least a couple of blocks away from the subject block to determine if there are actual "kink points" based on the location of street improvements on the ground, but not shown on the original subdivision map. A surveyor must carefully consider when and where to place those kink points on a retracement survey. Remember, the decision will impact not just the resolution of the boundaries of the subject block and lots, but potentially the resolution of other blocks in the subdivision at a future time.

Step #3: Search for, measure and document both supporting and conflicting evidence:

Don't simply search for and survey evidence that supports a preferred boundary resolution. A professional surveyor needs to search for and survey evidence that might conflict with her or his resolution as well. This may include:

- a) Retracement monuments of other surveyors that don't fit the preferred boundary resolution.

- b) Distant original subdivision monuments that don't fit the preferred boundary resolution.

- c) Segments of physical occupation (on the subject block or neighboring blocks) that don't fit the preferred boundary resolution.

The professional surveyor is responsible to show conflicting evidence on the survey map. The surveyor should also explain why certain evidence was rejected or weighted less when that conflicting evidence as part of your boundary resolution is not readily understood on the face of the map.

Step #4: Perform your curb split calculations:

Carefully perform your curb split measurement calculations to determine the block boundaries. This procedure entails the following:

- a) Use measurements of physical occupation on each side of the block to determine street right-of-way centerlines.
- b) Offset the right-of-way centerlines the official street widths to create right-of-way sidelines.
- c) Use the intersecting right-of-way sidelines to form the subject block boundaries.

continued on page 31



Curb Splits and Supporting Evidence

What types of supporting evidence should a surveyor collect in the field if she or he is going to consider establishing block boundaries by curb splits? I recommend a retracing surveyor seriously consider including the following two items in such a field survey campaign:

- 1) The location of evidence of lines of occupation along interior lot boundaries. These could be fences, walls, or the edges of buildings.
- 2) The location of retracement survey monuments in the subject block, especially if these were based on original subdivision monuments that are now destroyed or based on a previous surveyor's curb split. 📍

Step #5: Explain and show your curb splits on your boundary survey map:

Don't leave retracing surveyors to scratching their heads when they review the map. If a professional surveyor decides to split curbs, then that surveyor should explain why it was done and how it was done. Consider including the following elements on such a survey map:

- a) A note or survey narrative on your map that explains why the surveyor decided to use curb splits to establish the subject block boundaries.
- b) A note or legend to identify the type of physical evidence of occupation that was surveyed on each side of the subject block. Avoid the use of obscure or colloquial terminology unless an explanation of such term is provided.
- c) An explanation of how the block boundaries established by curb splits correlate to the record measurements of the block on the original subdivision map and any retracement surveys in your block.
- d) An explanation of how the retracement survey may impact other lots in the subject block or the boundaries of neighboring blocks.
- e) An explanation of right-of-way dedication history if the street right-of-way has been changed since the time of the original subdivision. This is especially important if the subsequent right-of-way dedications weren't always equal in width on each side of the original right-of-way centerline or if they only impacted a portion of parcels in the block.
- f) An explanation or depiction of the distances from the evidence of physical occupation you surveyed to the calculated street right-of-way centerlines and sidelines on your survey. Refer to Diagram #2.

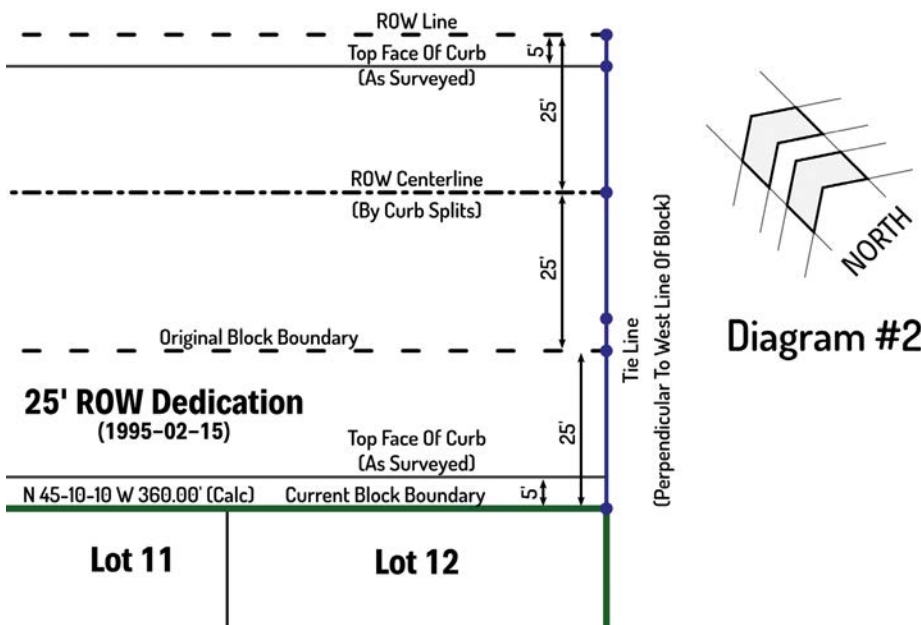
Conclusion

When working in older parts of California towns and cities, especially in subdivisions where no monuments were set during the original survey, a professional surveyor may resort to curb splits as a valid method of establishing block boundaries. In this article, I've defined the term "curb splits." And, I've described the circumstances under which it may be appropriate to establish block boundaries by curb splits. I then explained why it may be a good idea to use curb splits as part of the boundary resolution. Finally, I described a practical 5-step process for implementing curb splits in a boundary retracement survey. 📍



Landon Blake

Landon is a licensed land surveyor in California and Nevada. He is also a Certified Federal Surveyor and a Certified Remote Pilot. Landon is the co-owner of Redefined Horizons, a land surveying and land planning business operating in Central California.





Pioneer Surveyor – Frontier Lawyer

The Personal Narrative of O.W. Williams 1877-1902

Copyright 1968; Library of
Congress Catalog Card #66-19508

Book Review
By Phil Danskin, PLS

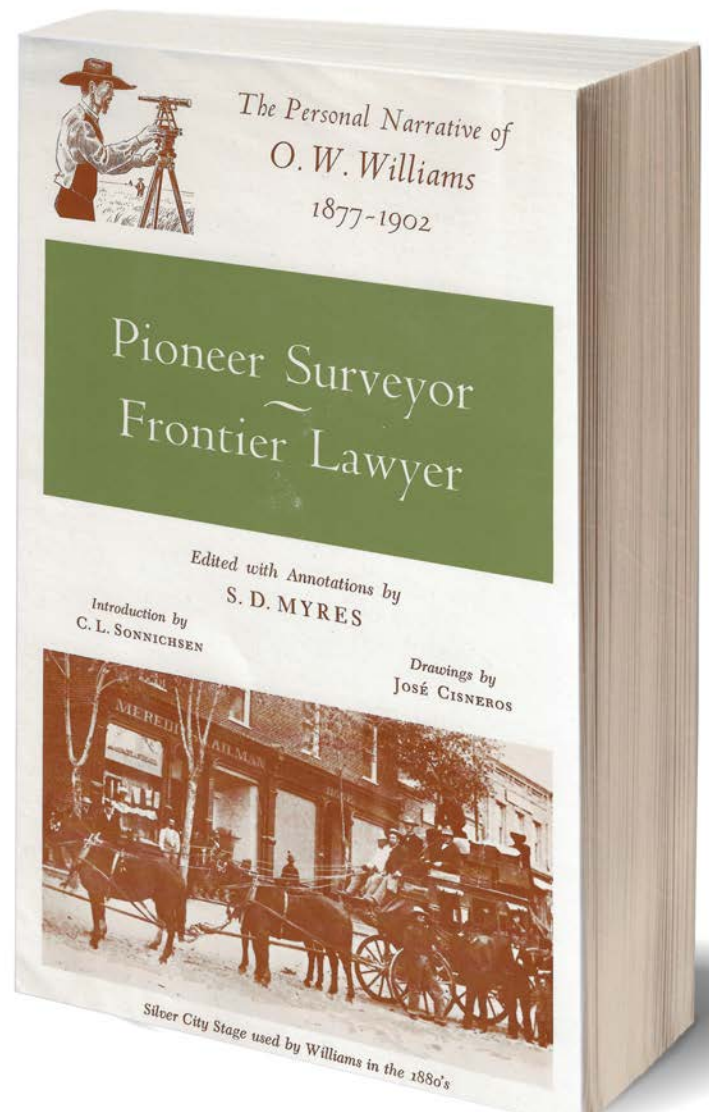
Last Thanksgiving, my wife and I drove to San Antonio, Texas to visit our daughter. Yes, drove! It was beautiful, but a long drive to say the least.

Along the way, we took a break in Fort Stockton, Texas and visited the Annie Riggs museum. Amongst many historical artifacts was a section that caught my eye. On display was an old WYE level, a short biography of O.W. Williams and the book "Pioneer Surveyor-Frontier Lawyer." This being "oil country" there was also a large exhibit showing a cross-section map (side view) of the local valley denoting various oil well sites and their depths and labeling the strata. Although the book is long out of print, I was intrigued and obtained a second-hand copy on which I base this review.

Oscar Waldo Williams, a Harvard law graduate, was raised in Carthage, Illinois. After the Civil War his parents sent him to Christian University (now Culver-Stockton College) in Canton, Missouri. In part no doubt due to the religious focus and teachings at Christian University, Williams subsequently demonstrated high moral values in his life and professional practice. After two years, he transferred to Bethany College in West Virginia where he failed in Chemistry but found success in Civil Engineering. This engineering education provided the foundation for his later work as a land surveyor.

Then, in 1871 he was employed for the summer as a Civil Engineer by the Mississippi Valley and Western Railroad Company, probably where he gained his practical experience in surveying. Finding few job prospects back in Carthage, he enrolled in Harvard Law School in 1873, initially attaining high marks in Real Property as well as Torts and Criminal Law. However, after second year he washed out of Harvard. Not to be deterred, he persevered and passed the bar in Chicago in 1876. Although he might have entered into a lucrative Chicago practice,

continued on page 33





due to health problems, doctors suggested he relocate to an arid climate. He likely had tuberculosis, but in any event, he moved to Dallas, Texas where he soon discovered he was unable to practice law at all owing to the many lawyers already there.



O. W. WILLIAMS

from a photograph of 1879

Taking up his fallback career, he used his engineering knowledge and became a Surveyor over public domain lands initially as a “transitman” on a six-person surveying party. From the Texas Plains to Kanas City, Chicago and Carthage, Mr. Williams worked in surveying, mapping and land law – anything related to the sale of lands opening up in the west. It was during his surveying that he kept journals of his travels on the frontier. His writings are replete with fascinating survey and mining stories of the Wild West. The book as published is merely a compilation of his extant writings. It is a shame that much of his work was lost over the years and never published. However, the work that survives is singularly valued by historians for its contribution to accurately describing frontier life in the 1870s and thereafter.

Later in life there was an oil boom near Fort Stockton, Texas where he found he could ply his knowledge of law for the oil industry. He worked as a deputy county



OLD COURTHOUSE, SILVER CITY

Williams worked here as deputy district clerk. Also, the case of Oasis Mine v. Last Chance Mine was decided in this building. It stood on the site of the present courthouse.

surveyor, land agent and later, an elected county judge, a position he held off and on over the years. His tenure as surveyor, lawyer and judge in the Big Bend country included many notable adventures worth reading. He resided for the remainder of his life in Ft. Stockton. He died in 1946 at age 93.

An example of Williams’ narrative style is read in this account of a buffalo encounter he had while surveying in 1878:

We ran our line of meander down the creek on the north side – two chainmen and two flagmen afoot – while I carried the transit from station to station on a gentle horse – wise to frontier life, as we soon learned. We had come some six or eight miles down the watercourse when, as I was setting up my instrument, the flagman asked if I had not heard a peculiar sound. I stopped my work to listen and caught a faint throbbing sound of somewhat irregular cadence such as I had heard two years before, when twenty miles away from Niagara Falls. It came from the north, and looking in that direction, we could make out what seemed to be a low-lying cloud sweeping down on us quite rapidly.

It was late July, so it could hardly be a norther. There was nothing in its appearance to lead us to suspect it might be a rain cloud. We were for a moment at a loss to account for it. Then we caught sight of dark objects showing up on the ground-front of the grayish white cloud and then dropping back from sight everywhere along its width from the eastern sky to the western horizon. Almost at once the cry went up, “Buffaloes! A stampede!” Immediately, we began to prepare to meet the storm. Looking back, we saw our wagon and

our ambulance (passenger wagon) about half a mile away, apparently being lined up to meet the charge with the smallest possible front, but too far away for us to join them in time. So we prepared our little party to face the stampede on our own ground.

We stood in single file, facing the oncoming herd. Our transit was set up in the middle of the file, with the last man holding the reins of my saddle horse. With the only rifle in the party, naturally I was at the head of the file, in order to split the passing animals by the firing of the gun if they did not divide to either side on catching sight of us. There was no greater danger at the head of the file than at its foot; for once broken at the head, immediately the whole line would go down. It seemed to me inevitable that the mere sight of us would divide the herd; however, I might have been wrong on that point.

We were not long in getting set for the rush of the buffaloes. But we were barely ready, when they were on us with a swirl of dust and a thunder of hoofs – yet so far as I could judge, they were absolutely mute. The front line was thickly packed shoulder to shoulder, and the eyes of the animals were cast back as if trying to see something behind them. When I realized this attitude of the buffaloes, I began firing the gun – although they must have been one hundred feet away because it began to look as if they might run over us without seeing us.



REMNANTS OF BUFFALO HERD

On Goodnight Ranch, Williams saw the last herds on the High Plains and was caught in, and survived, the last buffalo stampede.

The shot had no effect; I do not think the sound of the gun was heard by the animals. I concluded that we could not split them by sight; so I commenced to shoot as rapidly as possible, but without effect until they were a distance of about thirty or thirty-five feet. At this point I saw some of the animals in front of me begin to push their neighbors to one side or the other to make an opening in that crowded front line. That opening must have been about twelve feet wide when the front line passed us, although it seemed to me that I could touch a buffalo on either side with the point of my gun.

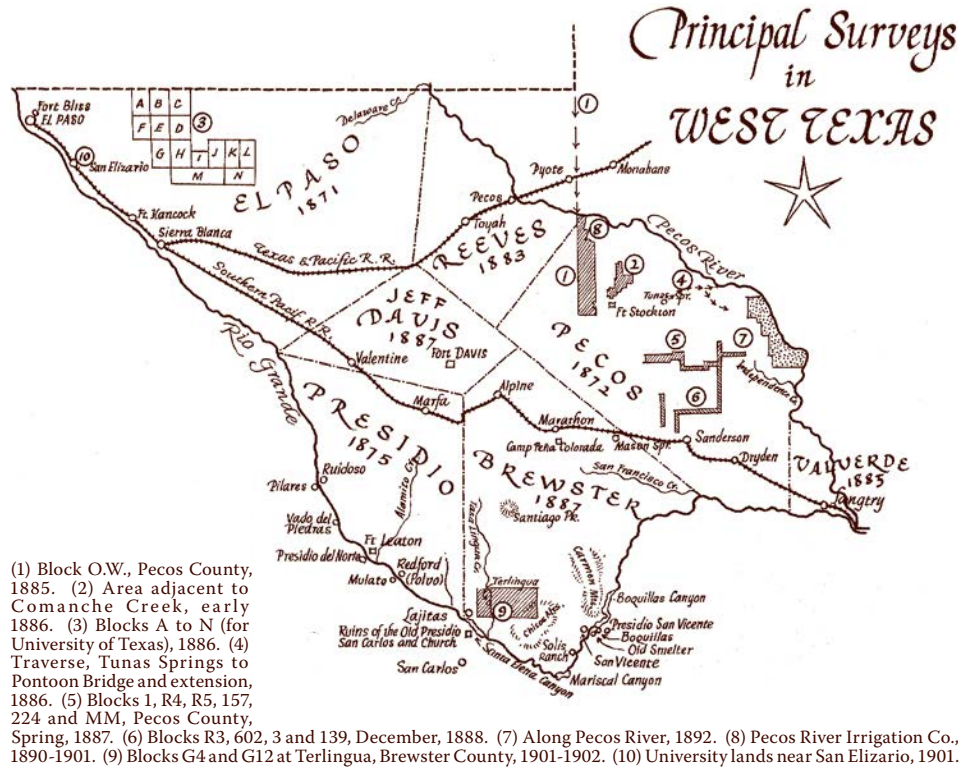
continued on page 34





Sadly, many of Williams' journals have been lost. But this "collection" discovered by historians and relatives, is packed within the pages of the book. Although most of his journals were written in Texas, New Mexico and Arizona, his writings describe the hardships common to surveyors in the late 1800s. From threat of bandits, Indian encounters and mining conflicts to escapes from being hunted, O.W. Williams has memorable stories that may make any surveyor jealous ... or relieved, that he or she lives today and not a hundred and fifty years ago.

As enjoyable reading a book as Huck Finn of our younger days, a true adventure. 🍷

REVIEWER'S NOTE: I was able to find this out-of-print book when I visited my on-line book source, Abe Books. Few copies were available and I assume there are slim pick'ns for this book since it belongs in every surveyor's library.



 **Santiago Canyon College**
SURVEY/MAPPING SCIENCES PROGRAM



Winner of a 2017 NCEES Surveying Education Award
 Excellent preparation for FS, PS and LS exams

WE OFFER:

- Affordable classes with certified instructors
- Survey/Mapping certificate and degree programs
- Computer labs equipped with GPS, ESRI-GIS and AutoDesk software
- Total Stations and GPS for field exercises
- Online and evening classes
- Career training for new surveyors

714.628.4883 • scollege.edu/survey

8045 E. Chapman Ave. • Orange, CA 92869

MANAGE YOUR RISK
 Insurance Products for the Professional Land Surveyor
 From Vista International

- ✓ Professional Liability
- ✓ Office Package (Property, General Liability, Equipment)
- ✓ Business Auto
- ✓ Workers Compensation
- ✓ Personal Insurance

CLSA MEMBER DISCOUNT
 Vista International Insurance Brokers is the only authorized insurance broker for California Land Surveyors Association

Vista Affinity Group Services
 1318 Redwood Way, Suite 250
 Petaluma, Ca 94954
 Call (707) 796-7180 or (800) 819-8808
www.vistainternational.com
 License No. 0E08576





CALIFORNIA LAND SURVEYORS ASSOCIATION

Membership Application

2520 Venture Oaks Way, Suite 150 | Sacramento, CA 95833

Phone: (916) 239-4083 | Fax: (916) 924-7323

Corporate **\$240**

Shall have a valid California Professional Land Surveyor or Photogrammetric license.

CE Corporate **\$240**

Any California registered Civil Engineer who is authorized to practice land surveying pursuant to Article 3, Section 8731 of the PLS Act, and must be actively practicing land surveying.

Affiliate **\$120**

Any person who, in their profession or vocation, relies upon the fundamentals of land surveying. Has no voting rights.

Associate **\$120**

Any person who holds a valid certificate as a Land Surveyor in Training. Has no voting rights.

Out-of-State **\$120**

Any person who resides in a state other than California, who is a member of the other state's Association, and meets the requirements of a Regular Corporate Member. Has no voting rights.

Student **\$24**

A student enrolled in a college or university actively pursuing a surveying education. Has no voting rights.

Sustaining **\$480**

Any individual, company, or corporation who, by their interest in the land surveying profession, is desirous of supporting the purposes and objectives of this corporation. Has no voting rights.

First time members must pay a \$25 entrance fee, lapsed members must pay a \$15 reinstatement fee. First year dues are pro-rated from the month of application.

Member ID First Name Last Name License Number

Home Mailing Address City/State Zip

E-mail Phone Chapter

Company, University, or Firm Public or Private

Company Address City/State Zip

Company Telephone Company Fax

Payment Information

Please complete this form and fax or mail it with payment to the address above.
If paying with a credit card, DO NOT E-MAIL this form. Instead, fax the form to (916) 924-7323.
CLSA estimates that 22% of your total dues is allocated to lobbying and not deductible for income tax purposes as ordinary and necessary expenses. Contributions to CLSA Education Foundation are deductible as charitable contributions.

Method of Payment: Visa MasterCard AmEx Check Number: _____

Name on Card: _____ Last 4 Digits of Card: _____

Billing Address: _____

Signature: _____

Full Credit Card #: _____ Expiration Date: _____ CVV#: _____

Want to support the CLSA in ways other than sponsorships or exhibiting for your company? Sign up to be a Sustaining Member. A sustaining member can be any individual, company or corporation, who has an interest in the land surveying profession and would like to support our purpose and objectives. Your membership will help fuel our educational workshops and enable our members to receive better resources, faster. Your membership will give you a listing on our website, and a business card ad in our magazine the *California Surveyor*.

Member ID First Name Last Name License Number

Home Mailing Address City, State Zip

Email Telephone Chapter

Company, University or Firm Public or Private

Company Mailing Address City, State Zip

Company Telephone Fax

Payment Information Please complete this form and return it with payment to the address above. Please fax this form if paying with a Credit Card				
Method of Payment:	Visa	MasterCard	AmEx	Check Number:
Card Number:				Expiration Date:
Name on Card:				
Billing Address:				
City, State Zip:				Signature:
CLSA estimates that 22% of your total dues are allocated to lobbying and are not deductible for income tax purposes as ordinary and necessary business expense. Contributions of CLSA EF are deductible as charitable contributions				



SUSTAINING MEMBERS

SUSTAINING MEMBERSHIP

Membership in the California Land Surveyors Association, Inc. as a Sustaining Member is open to any individual, company, or corporation who, by their interest in the land surveying profession, is desirous of supporting the purposes and objectives of this Association. For information regarding Sustaining Membership, contact:

CLSA Central Office

2520 Venture Oaks Way, Suite 150 • Sacramento, CA 95833
 916-239-4083 • 916-924-7323 Fax • clsacaliforniasurveyors.org

<p style="text-align: center;">ALLEN Instruments & Supplies</p> <p>Dan McMahon Geospatial Sales Representative</p> <p>760.271.4681 dan@alleninst.com</p> <p style="text-align: right;">714.238.3434 OFFICE 2940 E La Palma Ave., Ste F Anaheim, CA 92806 alleninstruments.com</p>	<p>Berntsen Custom Identification Products</p> <p>Trevor Dobrygoski Marketing Coordinator</p> <p>Berntsen International, Inc. PO Box 8670 Madison, WI 53708-8670 tdobrygoski@berntsen.com www.berntsen.com/cls-members</p> <p>Tel. (608) 249-8549 Fax (608) 249-9794 Tel. (800) 356-7388 Fax (800) 249-9794</p> <p style="text-align: center;">Marking the Infrastructure of the World.</p>	<p>SALES • RENTALS • SERVICE • TRAINING</p> <p style="text-align: center;">CALIFORNIA SURVEYING DRAFTING SUPPLY</p> <p style="text-align: center;">SACRAMENTO • DUBLIN • FRESNO • LAS VEGAS LOS ANGELES • SAN DIEGO</p> <p style="text-align: center;">800.243.1414 • www.csdsinc.com</p>
<p> LEJA SURVEYING CORP.</p> <p style="text-align: center;">Land Surveying & Mapping • Court Diagrams Legal Descriptions</p> <p style="text-align: center;">Steve Leja P.L.S. 5933</p> <p style="text-align: center;">Telephone (909) 797-3043 Cell (909) 709-6861 • Fax (909) 797-3876 13642 Highland Oaks Dr. • Yucaipa, CA 92399</p>		<p style="text-align: center;">MERIDIAN SURVEYING ENGINEERING, INC.</p>
<p> Seafloor</p> <p style="text-align: center;">Manufacturer of the HydroLife-TM & Sonarmite-BT Hydrographic Survey Systems Sales • Rentals</p> <p style="text-align: center;">Call (530) 677-1019 or visit Seafloorsystems.com 3941 Park Drive, Suite 20-218, El Dorado Hills, CA 95762</p>	<p>SURV-KAP®</p> <p style="text-align: center;"> THE LANDMARK NAME IN SURVEY PRODUCTS</p> <p style="text-align: center;">John G. Baffert President</p> <p style="text-align: center;">520-622-6011 1-800-445-5320 FAX: 520-792-2030 www.surv-kap.com</p> <p style="text-align: center;">P.O. Box 27367 • Tucson, AZ 85726 • 3225 E. 47th Street • 85713</p>	<p style="text-align: center;"> TAIT RISING TO THE CHALLENGE</p>



Knowledge | Accountability | Convenience | Value

Receive online Certified Training with the CSDS Geospatial Academy (GSA)

Our new online academy provides quarterly **Trimble Business Center** basic-intermediate training, along with regularly scheduled **Special Focus Courses (SFCs)** for Trimble and other geospatial hardware and software applications throughout the year.

Gain the maximum value from your investment in Trimble geospatial instrumentation and software from the convenience of your web browser or smart device & earn CSDS Certified Training certificates with each course you complete. A great investment for geospatial professionals and organizations seeking continual education, regularly scheduled technical onboarding and the assurance that you or your crews are getting the most out of your geospatial hardware and software.

With the CSDS GSA, you'll also receive automatic enrollment in our **Priority Support & Maintenance** plan:

- A guaranteed 2-hour response time from our Technical Support team
- Google Meet/Facetime Support
- Troubleshooting and assistance with analyzing your project and data files
- 50% Discount on Premium & Guest-Led Special Focus Courses
- **Discounts on annual software maintenance**

The GSA costs **\$995 per student, per year**. Tiered pricing is available for multiple students and enterprise organizations.

Contact our training and support team today for more information:
training@csdsinc.com



(833) SOS-CSDS (767-2737)

Sacramento | Dublin | Fresno

www.csdsinc.com • solutions@csdsinc.com

Supporting productivity through innovative technology since 1986™



**CALIFORNIA SURVEYING
& DRAFTING SUPPLY**