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CLSA

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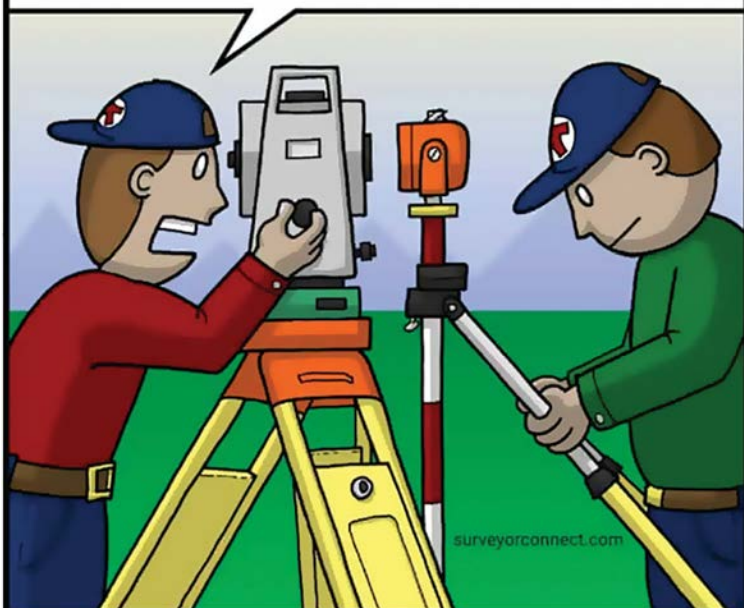
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The *California Surveyor* is a bi-annual publication of the **California Land Surveyors Association, Inc.** and is published as a service to the land surveying profession of California. It is mailed to all members of the **California Land Surveyors 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

Warren D. Smith, LS
CLSA 2022 President

What a whirlwind of a year! Our annual conference was well attended, as it was co-hosted by four state associations and the Western Federation of Professional Surveyors. A highlight for me was playing a role in the Mock Trial, which emphasized the importance of speaking with the “old timer” about a subdivider’s intent.

National Surveyors Week included being recognized with resolutions passed in the Assembly and the Senate, with members applauding surveyors’ representatives in the Gallery. Again, for me, a highlight was having our county Board of Supervisors adopt a resolution and greeting our local land surveyors.

CLSA’s joining NSPS included a gathering of California’s Young Surveyors Network members camping out on Mt. Diablo and being treated to a tour of the initial point and some hands-on experience with vintage surveyor equipment displayed by the Mt. Diablo Historical Society. I was also able to attend the Nevada YSN campout in the Eastern Sierra, where Polaris shots were taken, and a lecture about the Von Schmidt state line was presented.

A Final Point ceremony was held for Steve Parrish who, characteristically, bucked the trend and set his own monument with family and colleagues in attendance. I was able to present Steve with CLSA’s Dorothy Calegari Distinguished Service award.

San Francisco was the site for the WestFed meeting this summer, and I was interviewed for the NSPS Surveyor Says podcast by Tim Burch, Executive Director about a plethora of California topics.

Cal Poly Pomona held its Geomatics conference, and the CLSA Executive Committee conducted a panel on upcoming issues. County Surveyors also participated with a separate panel.

Our November Board of Directors meeting adopted the 2023 budget and determined the continued membership with NSPS. The annual industry survey results were presented at a webinar in October, reflecting trends.

I would like to extend my heartfelt gratitude and tremendous respect to all the chapters, committee members, and Directors who – on a voluntary basis – contribute to the advancement of our profession and tackle various issues as they arise.

Our conference in 2023 will be held in Reno in conjunction with the Nevada Association of Land Surveyors. Hope to see you there! 🍷

Warren D. Smith, LS
CLSA 2022 President

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EDITOR'S MESSAGE

Joseph Waltz, PLS
California Surveyor Editor

See You in Reno!

We have a really great issue here for you this time, with some exciting articles. Laurie Pearce Price has graciously agreed to publish her Capstone project writeup, which includes finding an important corner for all of us Californians. The series of

school articles continues with a writeup from Cuyamaca College, as well as continuing the ethics articles, "From the Archives," and a "Your Other Left" comic.

Steve Martin has written up a great discussion of the deprecation of the US survey

foot, and Jed Gibson has a fascinating project writeup.

I hope you enjoy this issue. It will be my last as editor, so I hope you have gotten as much from the recent issues as I have. I wish you members and the future editing team the best. ☺

//
***Strive to preserve
your heart in peace;
let no event of this
world disturb it.***

//
— St. John of the Cross.





LEGISLATIVE REPORT

Michael Belote, Esq.
CLSA Legislative Advocate

New Session, New Faces, New Leaders

The 2023-2024 two-year session of the California Legislature commenced on Monday, December 5, 2022 following the November general elections. All members of the Senate and Assembly were sworn into office by new Chief Justice of California Patricia Guerrero. The day is largely ceremonial, with corsages, boutonnieres, and family present. There are glad tidings all around, with promises to work together!

The real business of the Legislature begins in January, when the Senate and Assembly return to Sacramento after the holidays. This year, the session recommenced on Wednesday, January 4, 2023. In terms of what has not changed from last session, the big one is the continued dominance of Democrats in the Legislature and statewide constitutional offices. Whatever “red wave” may or may not have occurred nationally, here in California Democrats actually increased their majorities in each house of the Legislature. In the 80-member Assembly, Democrats now hold 62 seats, with Republicans at 18, for a (super)majority of 77.5%. The supermajority is even stronger in the state Senate, where the ratio of Democrats to Republicans is now 32-8, or 80%.

Continuing that theme, Democrats won every statewide constitutional office in November. The last Republican to win statewide office in California was Arnold Schwarzenegger in 2006. That anomalous result really only occurred because Mr. Schwarzenegger was elected in an extremely rare recall election on the Governor.

While the Democratic supermajority has not changed heading into 2023, other elements of the Legislature certainly have. For example, the November elections saw 31 new faces in the combined Senate and Assembly. The number of newcomers resulted from both term limits, and good old-fashioned pandemic burnout. A significant number of 2022 legislators who could have run for reelection in November under the term limits law simply chose not to, as legislating during the pandemic was remote and hard.

In the November general elections in 2024, we expect another one-third of the Legislature to turn over. This means that in a two-year period, nearly two-thirds of the Legislature will be brand new. Some voters will see this as good news, of course, and in a way it is, but it also means that CLSA and similar groups will

have to orient a large number of elected officials on who CLSA is and what our issues are.

Next, the 2023-2024 two-year session will see important changes in legislative leadership. On December 5 after the swearing-in, the Assembly reelected Anthony Rendon from Lakewood as Speaker. For the first time in memory, however, the Assembly also elected the next Speaker to follow Mr. Rendon. Now known as the “Speaker-Designee,” Robert Rivas from Hollister in San Benito County was elected to replace Speaker Rendon after June 30 of this year. This latest chapter follows up on a very acrimonious speakership battle between Messrs. Rendon and Rivas last year. Assuming this direction holds up in the coming months, will the mid-year switch of speakers signal a change in direction of the Assembly? Interestingly, Mr. Rendon has served as speaker longer than anyone in California history other than Willie Brown.

In the Senate, President pro Tem Toni Atkins from San Diego is termed out of office at the end of 2024 herself. For purposes of continuity, it would seem very likely that the Senate will elect a leader to replace Senator Atkins sometime well in advance of the end of next year. Will the

choice be as contentious as the Assembly, and will the choice signal a new direction for the Senate?

Finally, 2023 will bring a new budget reality. This year the state is enjoying the results of a \$97.5 billion surplus in the current budget year, based almost entirely on an historic run in the stock market. Now, the stock market seems to be in a “correction,” which may mature into a “recession,” and state leaders are anticipating a budget deficit of approximately \$24-26 billion. How do things go from boom to bust so quickly? The answer is simple: California is a hugely income tax-dependent state, and as the stock market corrects, capital gains from stock sales go down. This matters, as the top 1% of California income tax payers account for nearly half the income taxes in our state.

In other words, lots of change in Sacramento this year. In the next two months, approximately 2500 new pieces of legislation will be introduced for 2023. The CLSA Legislative Committee, ably chaired by Ian Wilson, is ready to react to the dozens of new bills likely to affect CLSA in some manner. ☺



CENTRAL OFFICE REPORT



Kim Oreno, CAE
CLSA Executive Director

Greetings, CLSA Members!

As we move into the new year, we want to take a moment to reflect on the many accomplishments we achieved in 2022. We hosted successful webinars and continued providing valuable resources to our members. We look forward to continuing to serve our community in 2023.

We are excited to see you at the upcoming CLSA/NALS Joint Conference, which will take place from March 25-29, 2023 at the Silver Legacy in Reno, NV. This conference is a collaboration between the California Land Surveyors Association and the Nevada Association of Land

Surveyors. It promises to be a valuable opportunity for professional development and networking.

The conference will feature a diverse range of speakers and sessions, covering topics such as the latest technology, best practices, and updates from county surveyors. In addition, there will be opportunities to connect with other surveyors as well as with vendors who offer products and services relevant to the profession.

We encourage all of our members to attend the conference and to take advantage of the many

benefits that this event has to offer. Whether you are a seasoned surveyor or just starting out in the field, this conference will provide valuable insights and connections that can help you advance your career. We look forward to seeing you there!

We also want to take a moment to remind all members that it is time to renew your membership with CLSA. As a member, you have access to a wide range of benefits, including NSPS membership, access to the members only section of the website, free webinars and webinar recordings, discounts on items in the CLSA Store

and your subscription to the *California Surveyor* magazine. Renewing your membership also helps support the important work that our organization does, including promoting the profession of surveying and advocating for the interests of our members.

We value each and every one of our members, and we are committed to supporting you in your professional development and advancement. We encourage you to renew your membership today and to take advantage of all the benefits that membership in the California Land Surveyors Association has to offer. 🌟

— Welcome New Members! —

- | | | | | | |
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NOTE:

This article served as the author's capstone project for her 2022 Bachelor's Degree in Land Surveying from Great Basin College.

She presented it to her SUR 495 class on May 12, 2022 and graduated on May 19.

This is part one of three

The Conundrum of California's Northeast Corner: History, Legal Challenges, and Retracement

Laurie Pearce Price, LSIT

"[P]erhaps no greater stresses have been created in California's history than with the establishment of the State's northeast border."
— (Reed 1998, 41)

PROBLEM STATEMENT

From 1863 until 1872, three land surveys were conducted that located the intersection of the 42nd parallel of north latitude and the 120th meridian of longitude west from Greenwich; these surveys placed the northeastern corner of California in three significantly different places, ranging from just over one mile to more than three miles apart. After 130 years of vacillating between contention and peaceable co-existence, California and Nevada took the controversy over their shared boundary to the United States Supreme Court in 1977. Following a lengthy investigation of the surveys in question, the Court issued its final decision in 1982 locating the northeastern boundary along the 120th meridian west of Greenwich, and the oblique southeasterly boundary to the Colorado River in a definitive ruling (*California v. Nevada*, 456 U.S. 867 1982). When such discrepancies occur on a

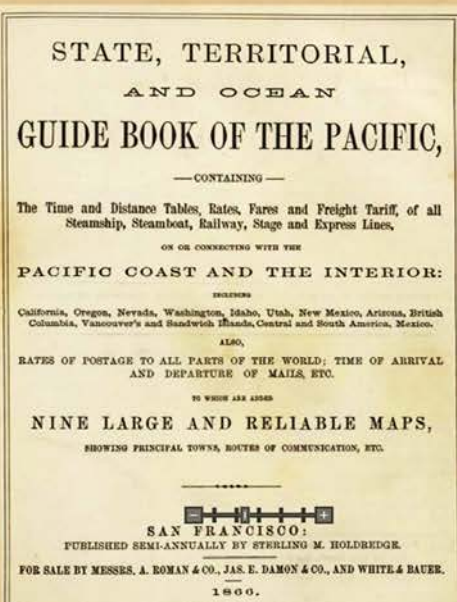
monumented corner of such significance, fundamental questions arise for a student of land surveying:

- How did the establishment of the corner of a State in three different places occur?
- What are the project management implications retracing of such significant boundary lines and corner monuments?

LITERATURE REVIEW

Why was California's land description, based solely on the lines of longitude and latitude as the boundary lines for the state, so problematic? The answer is found in the discrepancies involved in measuring 42° North latitude and 120° West longitude. Longitude, the lines running

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north and south in Great Circles around the globe, was more difficult to measure than latitude with astronomical survey instruments. The measurement relies on accurate chronological time in determining the angle between the Greenwich Meridian and the observer’s location; an error of one second of timing could lead to staking that point on the Earth up to one-quarter of a mile off (Wilusz 2002, 662). The methods and instrumentation that land surveyors used, as well as the terrain they encountered in the northeastern corner of the State, affected their ability to gauge longitude.

A variety of historians and surveyors have written about the methods and challenges facing government surveyors in the 1800s, and about the history of the difficulties in locating the northeastern corner of California, in particular. The origins of the confusion lie in the establishment of the State of California. The northern and southern boundaries of California were carved out of Mexico’s holdings after the end of the Mexican-American War in 1848 by the Treaty of Guadalupe-Hidalgo (Reed 1998, 43). In a stroke of excellent timing, gold was discovered along the American River the same year, and emigrants began flooding the West.

By 1850, California had fast-tracked itself to statehood, skipping the usual Western step of becoming a Territory first (Wilusz 2002, 2). The delegates to the 1849 Constitutional Convention struggled with the sheer size of the nascent state, whether and how to subdivide it, and in their haste, settled on following the natural divisions of the sea to the west and the mountains to the east. When Congress approved California for statehood in 1850, in response to the demands of the Gold Rush, the legislative body hastily accepted the new state boundary, with the northeastern line described as follows:

“...commencing at the point of intersection of the 42nd degree of north latitude with the 120th degree of longitude west from Greenwich [England] and running south on the line of said 120th degree of west longitude until it intersects the 39th degree of west latitude.” (Wilusz 2002, 2)

The 1849 California Constitutional Convention was in such a hurry to establish statehood, however, that it did not require a survey or physical monuments on the ground to mark the new state’s boundaries, leaving people living near the 120th meridian in doubt as to their jurisdiction of residence. Voters living in the mining camps in the Aurora region near present-day Bridgeport, California, for example, cast ballots in elections on both sides of the state line in 1863 to make sure their votes counted somewhere. (Wilusz 2002, Part I)

In March 1861 when the Nevada Territory was formed out of the western portion of the Utah Territory, the Nevada legislature set its western boundary as “the dividing ridge separating the waters of Carson Valley from those that flow into the Pacific” – i.e., the crest of the Sierra Nevada mountains (Hulse 1980, 87; Temple 2018). This designation would mean that California would have to cede several hundred square miles of land (and thousands of taxpayers) along its eastern boundary, which the State was not willing to do. Nevada achieved statehood in October 1864. The following map shows the area under question, shaded gray.



Map of the “disputed area” east of the Sierra Nevada mountains claimed by both California and the Nevada Territory between 1861 and 1864 (WP:NFFCC#4), Fair use, <https://en.wikipedia.org/w/index.php?curid=62428213>

Several events arose along this area in question and precipitated the surveys that this project investigates, starting with a conflict that erupted in Lake County (later known as Roop County) in the Nevada

Territory and Plumas County, California, both of which claimed Honey Lake Valley (now in Lassen County, California). Isaac Roop, who had been the Governor of the Provisional Nevada Territory from 1859 to 1861 and joined the new Territorial Senate in 1862, supported the Nevada border extending to the Sierra Nevada mountains. The dispute culminated in the “Sagebrush War” of 1863 in Susanville, in which the Plumas County sheriff led a 100-man posse to lay siege to Senator Roop’s cabin, injuring one man. In an article in *Nevada Surveyor*, Robert Temple (2018) depicts the skirmish as a brief tussle, ending with a round of drinks at the town saloon and an agreement to turn the dispute over to the Governors of the Nevada Territory and California to resolve.

This project explores original surveys and retracement surveys, including historical contexts, methods, and justifications for holding the three respective corner monuments:

Year	Commissioning Body	Purpose	Lead Surveyor
1863	State of California & Territory of Nevada	Portion of Eastern Boundary from Lake Bigler (Tahoe) north to the 42 nd Parallel	John F. Kidder, Engineer in Charge
1868	US General Land Office (GLO)	Portion of California-Oregon boundary	Daniel G. Major, U.S. Astronomer and Surveyor
1870	GLO	Eastern boundary of T47&48N, R16&17E (N.E. Corner of State)	John C. Partridge, Deputy Surveyor
1872	GLO	Eastern boundary of the State of California ... that portion of the 120 th degree of Longitude West from Greenwich, lying between the 42 nd and 39 th degree of North Latitude	Allexey W. Von Schmidt, U.S. Astronomer and Surveyor
1879	GLO	Subdivision of T48N R17E	William Minto, Deputy Surveyor

The Cadastral Survey Records office of the California State Office of the Bureau of Land Management (BLM) emailed PDF files of the available maps and field notes for the surveys and retracements of the northeast corner. I was able to download field notes for surveys from the Oregon and Nevada BLM Land Records offices. I will refer to each survey as it relates to the methods

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and results of my investigation. Other sources include articles by James Hulse, Paul Pace, Gregory Reed, and John Wilusz, as well as Francois Uzes’s descriptions of the procedural considerations of the surveys.

Field notes and map documents provide the record of the work that each surveyor executed on the ground as ordered by the commissioning government body directing the survey. Therefore, another primary source of information was the 1855 version (and 1864 and 1871 reprints with additional clarifications) of the *Manual of Surveying Instructions* that served to guide all three survey parties in their field procedures; the official title of the guide is *Instructions to the Surveyors General of Public Lands of the United States for those Surveying Districts Established Since the Year 1850; Containing, also, a Manual of Instructions to Regulate the Field Operations of Deputy Surveyors* (henceforth referred to as the *Manual*).

The existence of new States and Territories of the still-growing United States depended on the monumentation of corners; defining geographical boundaries could be no more fundamental in the establishment of these new political spaces. The *Manual* did not explicitly mention the establishment of state boundary corners, but it did give the instructions for the marking of corner boundaries. These instructions are relevant to the corner monuments that Kidder, Major, and Von Schmidt (and Partridge and Minto in their retracements) set in the years following the publication of the *Manual* and the 1864 and 1871 updates. As my research shows, Kidder set a hasty stone monument in 1863 in order to retreat to his camp and avoid interaction with local Paiute Indians; five years later, Major built a seven foot-high stone mound topped with a scribed post and stone, with calls for three blazed bearing trees, two “large rocks,” and the top of Bidwell Mountain; and in 1872, Von Schmidt erected a similarly enormous monument of stones and a post with calls to bearing trees and the far-off sight of the same mountain top.

It is worthwhile to examine the instructions under which each worked, i.e. the *Manual*, in order to frame the variety of ways



in which each surveyor set his own monument. In terms of establishing corner boundaries, the *Manual* explained that

... the faithful execution of this portion of a surveyor’s duty is a matter of the utmost importance. After a true coursing, and most exact measurements, the corner boundary is the consummation of the work, for which all the previous pains and expenditures have been incurred. If, therefore, the corner boundary be not perpetuated in a permanent and workmanlike manner, the great aim of the surveying service will not have been attained. (1855, p. 5)

For areas “where stone abounds the corner boundary will be a small monument of stones along side [sic] of a single marked stone for a township corner, and a single stone for all other corners” (1855, p. 6). It makes sense that the monument to the corner of three States would be significantly more pronounced than this “small monument of stones.” More specific instructions for monumentation with stones include the following:

Where it is deemed best to use STONES for boundaries, in lieu of posts, you may, at any corner, insert endwise into the ground, to the depth of 7 or 8 inches, a stone, the number of cubic inches in which shall not be less than the number contained in a stone 14 inches long, 12 inches wide, and 3 inches thick – equal to 504 cubic inches – the edges of which

must be set north and south, on north and south lines, and east and west, on east and west lines; the dimensions of each stone to be given in the field notes at the time of establishing the corner. The kind of stone should also be stated. (1855, p. 9)

The 1864 and 1871 versions of the *Manual* amended the size specifications for corner monuments. Rather than “14 inches long, 12 inches wide, and 3 inches thick” (1855), “corner stones fourteen inches long, or more, and less than eighteen inches in length ... should be set two-thirds of their length into the ground” (1871, p. 8). This broadening of specifications will explain some of the discrepancies among the monuments that were discovered in this investigation.

The *Manual* also included instructions for choosing and marking bearing trees, which both Major and Von Schmidt note in their field notes, but which Kidder did not mention in his report to the California Surveyor-General in 1863. Bearing trees would serve as evidence marking the position of corner monuments:

From such post or tree the courses must be taken and the distances measured to two or more adjacent trees in opposite directions, as nearly as may be, and these are called ‘bearing trees’ ... At all township corners, and at all section corners, on range or township lines, four

continued on page 10



bearing trees are to be ... distinguished by a smooth blaze, with a notch at its lower end, facing the corner, and in the blaze to be marked the number of the range, township, and section ... The letters B. T. (bearing tree) are also to be marked upon a smaller blaze directly under the large one, and as near the ground as practicable. (1855, 8)

The best account of the earliest corner monumentation is found in the annual report to the California Surveyor-General in 1863 by John Kidder, the engineer in charge of the crew jointly commissioned by California's Surveyor-General J.H. Houghton and the Nevada Territory's counterpart Butler Ives to execute this survey. The main objective of this project was simply to identify the 120th meridian west from Greenwich and then the oblique line southeast from the angle point in Lake Tahoe to the Colorado River. While no field notes or plat were available as primary sources, Houghton's and Kidder's reports narrate this party's instructions, procedures, and experiences in marking the eastern boundary of California (Houghton 1863; Kidder 1863). I also relied on articles by James Hulse, Gregory Reed, and John Wilusz detailing this early survey, as well as Francois Uzes's descriptions of the procedural considerations of all three corner surveys.

While the 1863 Kidder boundary survey would have relied on 1855 Instructions, the later surveys that I consider in this project would have looked to the supplements published in 1864 (Major in 1868 and Partridge in 1870) and 1871 (Von Schmidt in 1872 and Minto in 1879). The 1864 reprint of the Manual reaffirmed that the 1855 reference, as well as any special instructions from the Surveyor General of the United States, "shall be taken and deemed a part of every contract for surveying the public lands of the United States" in light of the 1862 Act of Congress meant "to reduce the expenses of the survey and sale of the public lands in the United States," (1864, 3). By the 1864 reprint, it had become a widespread practice for deputy surveyors to "take contracts for more surveying than they could perform in person, and then employ one or more compassmen with

their auxiliaries to do the work" (1871, 4) prompting the following castigation by the U.S. GLO Commissioner:

"That there be no misunderstanding upon this point, you are hereby instructed not to enter into a contract with any one deputy for a greater amount of surveying than it may be reasonably expected he will execute in one season, under his own immediate and personal direction, with one surveying party only." (1871, 3)

The amended *Manual* also attempted to remedy the human resources issue of surveyors getting their crews started before Congress had allocated the funds for their projects:

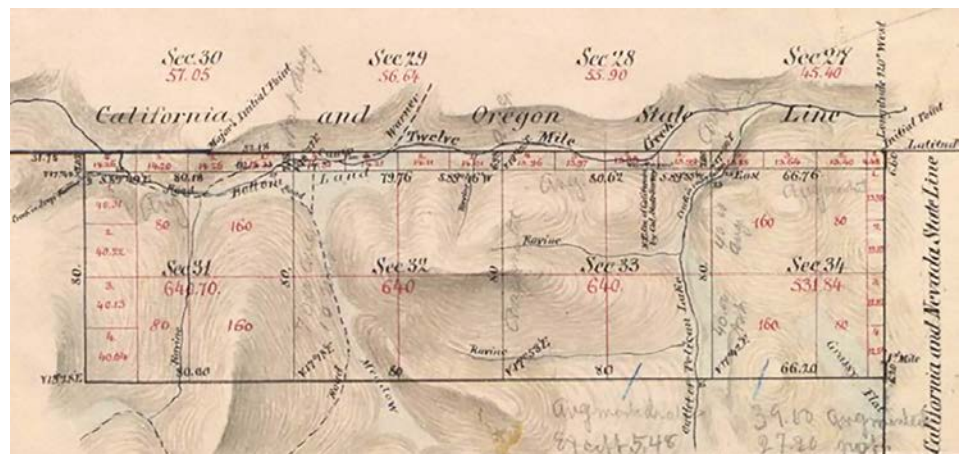
"The practice of anticipating the appropriations is deemed unwise and contrary to the spirit of the law. The surveys should not be commenced in advance of the year for which the means is provided by Congress and no moneys can be used to pay for work done before they were appropriated.... The object of this restriction is to keep back the surveying operations to the legitimate period of time contemplated in the appropriations...." (1871, 4)

STUDY AREA

The area at issue in my study encompasses approximately four miles of the boundary

between Oregon and California along the 42nd parallel of north latitude, as it intersects the 120th meridian of longitude west of Greenwich. All of the monuments are located in or on the boundary of California Fractional Township 48 North, Range 17 East of the Mount Diablo Meridian (T48N, R17E MDM). This area includes the three monuments as set by surveyors in 1863, 1868, and 1872 to represent the northeast corner of the State of California.

Access to the study area, which follows the rugged canyon of the water body known as Twelve Mile Creek, includes county-maintained gravel and unmaintained dirt roads northeast of Fort Bidwell, California and into southern Oregon. The county road access to the study area, which shows as the "Road to Camp Warner" on William Minto's detailed map below, is a graded, well-maintained gravel road; in fact, I set up the GPS base for this study on a highway benchmark adjacent to this road after it enters Oregon. In the following image, Minto's map notes the location of each monument as surveyed by him in 1879. Minto's survey is the most comprehensive record of the three corner monuments currently available. From the west, Minto noted the monuments he found as "Major's Initial Point" (1868 monument between Sections 30 and 31), Kidder's 1863 "N.E. Cor of California by CA State Survey" and "Stone Mound" (between Sections 28 and 33) and Von Schmidt's 1872 "Initial Point."



Excerpt of Map of Fractional Township 47N, Range 17E, MDM as surveyed by William Minto, Deputy Surveyor, October 1879, showing monuments marking the corner of California set by Kidder (1863), Major (1868), and Von Schmidt (1872). Reprinted from BLM Cadastral Survey records.

continued on page 10



The land surveyors who established the monuments investigated in this project characterized the land in the study area in similar ways. John Kidder reported “the surface is rough and broken, with scattering juniper” yet with “considerable grass” in the vicinity of small lakes and “little timber,” being “rough and mountainous” with graveled hills that are “smooth and rounded;” he found Twelve Mile Creek to be “a considerable river, from the mountains on the west, [that] flows through a deep rocky canon” (1863, 53). Daniel Major frequently mentioned the “rocky worthless soil” and “mountainous and rocky” terrain in his notes (1868, 6). Alexey Von Schmidt, who set the monument that would become the accepted corner, described the “Land [as] rocky Tables: rolling and broken, Sage brush and scrub Junipers.” (1872, 17)

In the course of my retracement and location of the monuments, I found these descriptions to be applicable. The 1863 and 1872 monuments lie on public land administered by the Bureau of Land Management. I accessed the 1863 monument by walking across relatively flat land strewn with volcanic rock and juniper trees. The 1872 monument is most easily accessible by a dirt road running south of the county road on the Oregon side of the border, ending at Twelve Mile Creek, and then requiring the crossing of the creek and climbing a steep rocky embankment. The creek and terrain north of the 1872 monument is depicted in the following photographs.

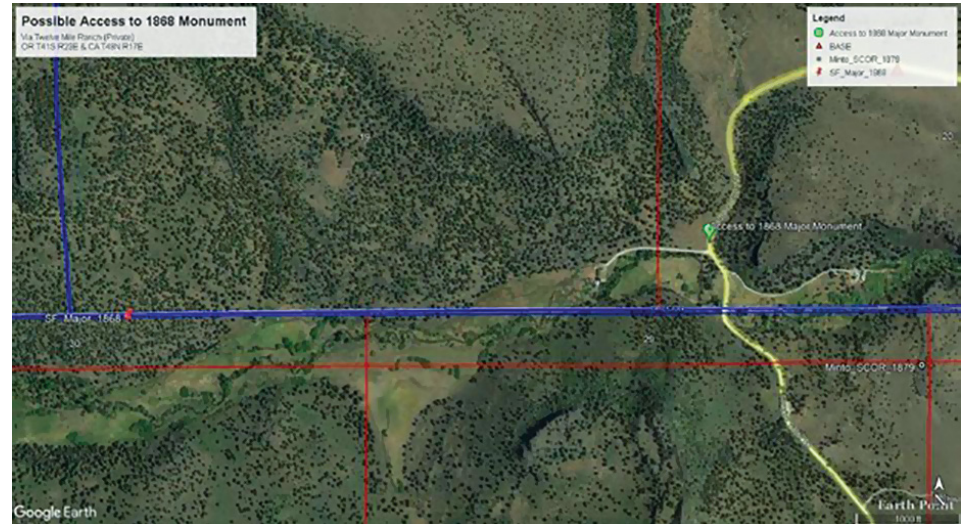


Views of Twelve Mile Creek looking east (top) at creek level and northeast (bottom) from a higher elevation on the south bank, descending from the 1872 Von Schmidt monument. (March 27, 2022 photos taken by author)



The 1868 monument (over three miles west of the currently accepted corner of the

State) presently lies on Twelve Mile Ranch, a private ranch that straddles the state line and Twelve Mile Creek. The satellite image below shows access via the road entering the ranch and following the creek west. I requested and was granted permission from the landowner to enter the property, as there is no practical way to reach Major’s monument through public land.



METHODS

In the retracement of the three monuments for the northeast corner of California, I sought to accomplish the following objectives:

- 1 Research the historical context of the controversial locations;
- 2 Retrace fieldwork of the corner monumentation of three surveys, including research on the intentions, methods, and challenges of each survey, and reading and referencing the field notes and survey maps, where available;
- 3 Present the results of my retracement in a meaningful format that tells the story of the contradictory monuments; and
- 4 Analyze the issue from a project management perspective.

On March 27, April 3, May 6, and May 15, 2022, I located and set a GPS base station on U.S. Coast and Geodetic Survey Elevation Benchmark A118, set in 1934 in a large rhyolitic rock alongside Oregon County Road 3-14 in the NENW of Section 20, T41S, R23E, Willamette Meridian. This benchmark is located about four-tenths of a mile north of the Oregon-California border, approximately one mile from the possible location of the 1863 monument and about two miles from the 1872 established northeast corner of California.



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The Conundrum – continued from page 11

The base consisted of a Javad Triumph-1M GPS receiver, sending correction signals by Bluetooth to an external Javad HPT UHF radio transceiver, powered by a marine battery. The radio antenna was tipped toward the study area, a practice which encourages the radio signals to roll into and over the terrain. Latitude, longitude, and ellipsoid height were collected in WGS84 using a Javad Triumph LS-Plus receiver and then transformed into NAD 83 (2011), NAD 27, and a local coordinate system in distinct projects set up in the LS before going into the field.



Base station, looking south

To prepare for my search for the monuments, I studied the plat and field notes of William Minto's 1879 GLO-commissioned survey of the fractional Township 48N, Range 17E of the Mount Diablo Meridian, which called for all three of the corner monuments. In Google Earth, I traced his distance calls from the corner of Sections 28, 29, 32, and 33 (from hereon called Minto's "western corner") to search for the 1863 monument. In anticipation of receiving permission soon to enter the private property where the 1868 Major monument is located, I followed the same procedure in Google Earth to trace Minto's notes to Major's rock mound and comparing his calculations with the 1870 distance calls of his predecessor John C. Partridge. I marked waypoints in Google Earth for approximate areas to search for these monuments, then exported the waypoints and tracks as KMZ files. I imported the KMZ files into the BackCountry Navigator application on my smartphone. The 1872 monument is well-documented and frequently visited, and as it is the accepted corner of the state, was easy to navigate to with BackCountry.

Major's 1868 monument, however, lies just north of the creek and close to an access road, but on private land. By georeferencing an 1879 survey plat in ArcGIS Pro and also using the Ruler tool in Google Earth to retrace the same survey's calls for the monument, I was able to identify exactly where I should search for this monument. Using the Lake County, Oregon and Modoc County, California Assessor's Offices websites, I was able to identify the parcel numbers of the property. One landowner owns Twelve Mile Ranch, which straddles the state line along the creek. I was able to obtain the landowner's name and postal address, which was the only available way to contact him. I wrote the landowner a letter explaining my project and requesting access to his property. He called several weeks later to discuss the project and agreed that I could access his land.

Another key method that helped make sense of the disparate surveys of this region was to create an Excel spreadsheet with details about each survey, including the names of the surveyors and commissioning bodies and officers, relevant field

note pages and calls, and instruments mentioned. I build this spreadsheet as I read and collected data, which informed my later efforts to see connections among the details; making these links was critical to being able to tell this story.

All readings were post-processed in the LS by Data Processing Service (DPOS), which is similar to the National Geodetic Survey's Online Positioning User Service (NGS OPUS); DPOS also processes GLONASS data from stations that record data from those satellites. I exported the survey data into CSV files, which I imported into an XY data table in ArcGIS Pro, in order to create layouts and eventually a story map to tell the story of the confusion over the location of this corner. I also imported the same points into Google Earth to produce slides for the purpose of telling the story of this land. I georeferenced William Minto's survey map in ArcGIS Pro and attached geotagged photos from my fieldwork to the surveyed points for use in my presentation. 📍

To be continued in the next issue, part two of three.



Early American Surveying Equipment

Dr. Richard L. Elgin, PS, PE



America's Requirements

Much of America's surveying practice descended from the English, but our early surveying equipment did not. The Old World used the delicate, expensive theodolite to divide its lands, sighting on points and measuring angles on a divided, graduated circle. American surveyors needed to establish boundaries over vast wildernesses which were difficult to traverse and they needed to do it quickly and cheaply. Enter American innovation, technology and craftsmanship to improve a device used by mariners for hundreds of years, a form of which was being made in England, the magnetic compass. The result was the rugged, inexpensive standard American compass. As one commentator said of the American compass, "Where accuracy can be sacrificed to speed and cheapness."

The Compass

Rugged, the compass with its body of wood or brass, two sight vanes, a leveling device and placed on a staff or tripod, required only a balanced magnetized needle resting on a sharp point. The needle aligned itself with the earth's magnetic field and pointed to magnetic north. Magnetic north was known to move and hence was a poor direction with which to reference boundaries. This movement was well known, being noted in some 1746 instructions that it "... may in time occasion much confusion in the Bounds ... and, Contention." Variation, the angle between True Meridian (a line of longitude) and Magnetic North was known to differ

at different locations on earth and the angle was known to change in amount over time and location. True North was a better reference direction and in 1779, Thomas Jefferson wrote that the plats of surveys were to be drawn "protracted by the true meridian" and the variation noted.

The first standard American compasses were "Plain" compasses. They used magnetic north and had no mechanism for applying the variation angle, converting magnetic direction to true direction.



The standard American vernier compass by W. & L.E. Gurley. This form with vernier, outkeeper, sights, level vials, was made from about 1860 and remained in the Gurley catalogs into the 1930s. It attached to either a tripod or Jacobs Staff.

David Rittenhouse (1732-1796) was an American man of science. He is generally credited with adding a vernier to the plain compass so one could "set off" the variation, the needle still pointing to magnetic north, but the bearing to the object sighted read on the compass circle being the true bearing. Thus the "plain compass" became the "vernier compass," a great advancement in the American compass.

The Land Ordinance of 1785 specifies that all lines be surveyed "by the true meridian ... the variation at the time of running the lines thereon noted." Tiffin's Instruction of 1815 (the first written instructions issued by the GLO to its Deputy Surveyors) specified, "A good compass of Rittenhouse construction, have a nonius division...." This is a vernier compass, "nonius division" meaning a vernier. Thus, the vernier compass became the standard instrument for surveys of the USPLSS. Until....

William Austin Burt and His Solar Compass

William Austin Burt (1792-1858) was a GLO Deputy Surveyor, who, in 1835 while laying out townships in Wisconsin noted unusual deviations in the lines surveyed using his compass. He began work on a method and form of compass that would determine the direction of the true meridian independent of magnetic north. He invented an ingenious device that uses the observer's latitude, the sun's declination and local time to determine true north. The device mechanically solves



A rare Solar Compass by a very rare maker, John S. Hougham; Franklin, IN. Compass was made about 1861.

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the PZS (PoleZenithStar) Triangle. The prominent Philadelphia maker, William J. Young (1800-1870) built the device, and Burt was awarded Patent 9428X on February 25, 1836.

Burt made improvements to his solar compass and an improved version was patented in 1840. In 1850, Burt's patent expired which allowed other makers to produce the solar compass. (The circumstances of the expired patent are a sad story.) There are about 12 known post-1850 makers of solar compasses. All the solar compasses made prior to 1850 are marked "Burt's Patent" and "W.J. Young" or "Wm. J. Young," he having made them. They are not dated or numbered. Those made by Young after about 1852 are numbered.

Is It a Transit or a Theodolite?

Generally, the theodolite refers to an instrument with divided circles to measure both horizontal and vertical angles to high precision, the telescope is relatively long and will not transit (rotate 360 degrees) about its horizontal axis. The more common term "transit" refers to an instrument with both horizontal and vertical circles (only horizontal on early transits), a 4-screw leveling head, bubbles for leveling and a telescope that



This is one of the first transits made in America. William J. Young, Philadelphia. Three minute least count, bullseye bubble. Was made in the very early 1830s.

will transit. William J. Young is credited with building the first dividing engine in America. That allowed him to cut circles and he is credited with building the first American transit in 1831.

The transit developed and attachments, such as a variation on Burt's solar compass, was added by many manufacturers. For mining applications, parallel telescopes were added, thus allowing sightings at large vertical angles into steep mine shafts. Large precise transits were constructed for control surveys and astronomical observations. Horizontal circle diameters can be as large as 18 inches.



Gimbaled compass by James Reed (1792 - 1878) of Pittsburgh. Used in the mines.

Collecting and Values

Early and vintage surveying equipment is highly collectible. It is the surveyor's heritage, it represents about 200 years of advancing measurement technology, and some illustrate incredible craftsmanship and artistry (especially of the early makers). As with other collectibles, there are highly desirable, usually rare instruments (such as the solar compass). And, there are the early Virginia and Pennsylvania makers that made compasses that are works of art. But, even instruments by the prolific makers like W. & L.E. Gurley and Keuffel & Esser are desirable.

There are many collectors of early American surveying equipment, some with very large collections. Most collectors buy and sell instruments, research makers and surveying equipment, and a few offer repair and restoration services. Most collectors focus on a particular maker (or two), and others focus on the makers of a particular city (St. Louis, for

example), and others are interested in a particular instrument form (transits with unusual attachments, for example). There are online resources for early surveying equipment. Some are: www.surveyhistory.org run by David Ingram. The Facebook page, "Antique Surveying Instrument & Ephemeris," run by Dale Beeks. And www.compleatsurveyor.com by Russ Uzes. Among the collector community, there is broad and deep knowledge of early American surveying equipment, but that knowledge is not well-documented. There are not many reference books on the makers and their equipment. A few have been covered in articles and short treatises but there are not good reference materials on the broad topic.

What Are We Going to Do With Grandpa's Surveying Stuff, and What's It Worth?

Regrettably, there is not a national museum or repository where surveying equipment can be donated. Beloved equipment left to families or owned by old surveyors and seeking a home have limited options. The Smithsonian will not accept any such equipment, except for historically important equipment with known provenance. Most such equipment is not highly valuable. It is likely 90 percent of such equipment would be worth less than \$1000 per piece. Eight percent would likely be worth up to \$10,000. One and one half percent, up to \$100,000. And the last half percent, over \$100,000. Most collectors will have no interest in about 90 percent of the equipment offered to them (they already have plenty of early- to mid-1900's Gurley and K&E transits and levels). The best recipient for most low- to mid-level surveying equipment may be a local museum, particularly if the equipment was used in the area by a local surveyor.

As with most collectibles, old or vintage surveying equipment is not worth what it was 10 or 20 years ago. The rare, unusual, historically important pieces have not lost their value during that time period and can easily be sold.

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The Future

Boundary surveyors, being mensurators, detectives and historians have an appreciation for the equipment that laid out America. The equipment is our heritage, to be preserved, admired, studied and displayed. Every boundary surveyor needs an old compass and a chain proudly displayed on their desk. 🌐



Dr. Elgin is a surveying practitioner, educator, researcher and author. He owns a large collection of early American surveying equipment. He is an expert in the Chandlee family of makers,

Dr. Richard L. Elgin, PS, PE *John S. Hougham (Indiana) and the St. Louis makers. He's written several books including Riparian Boundaries for Missouri, Legal Principles of Boundary Location for Arkansas and The U.S. Public Land Survey System for Missouri. He co-authored the Sokkia (Lietz) Ephemeris. He can be reached at: elgin1682@gmail.com*



An assortment of chains: Gunter's Chain, 66 feet. A half-chain, 33 feet. Railroad or Engineer's Chain, 100 feet.



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Rock Fall Analysis; a True Test Case

Jed Gibson, PLS



It had been two long days working in the remote Kings River canyon and finally the last flight was being prepared. The drone was sitting idle as it collected its five-minute GNSS preflight static session. I was stationed at the “high-tech tailgate desk” finalizing the flight plans and completing the necessary safety checklists. The other two crew members stood waiting for the timer to be up and the drone to take off, ready to collect LiDAR data and Nadir imagery.

As I stood leaned up against the tailgate focused on the laptop, I started to feel dizzy and shaky. It had been a long 100°+ day and I thought to myself, “Did I drink enough water?” I turn and look at the other two crew members and ask, “Did you feel that?” They looked back at me puzzled-looking and asked, “Feel what?” I think, “Okay, I need some water. This heat is getting to me.”

Before I could leave my “high-tech tailgate desk,” a loud rumble comes crashing through the canyon and the truck starts violently shaking. There is nowhere to hide.



We are on a small mountain trail of a road at the bottom of 1,500’ of vertical relief of a granite rock face. This is not going to be good...

The other two run for the non-existent cover and yell back to me, “Yeah! We felt that!” An 5.8 magnitude earthquake had struck some 70 miles away and we were definitely feeling the effects. So how and why did we get ourselves into this situation?



The R.E.Y. Engineers team was sent deep in the foothills of the Sierra Nevada mountains to collect high density LiDAR. Our client, a power company, was concerned about steep rock faces directly above a penstock that was feeding a powerhouse another 2,300’ down to the base of the mountain. Having had a previous penstock destroyed by falling rocks, the power company’s engineers were looking to leverage new technology to identify issues and create solutions to hold the power of Mother Nature back. They needed as dense of LiDAR point cloud as

we could provide with a minimum of 1 point per square inch. Traditional manned aircraft LiDAR would not be dense enough and using conventional LiDAR scanners would not be feasible due to the extreme elevation difference, large area, and ruggedness of the rock face. This is where the use of a drone was most ideal.

R.E.Y. deployed the DJI Matrice 600 heavy lift drone with a Reigl Mini-VUX and a Sony A600 digital camera. The LiDAR unit is able to collect 100,000 points per second and the camera is set to capture an image every 1.5 seconds. The drone would have to travel up and over a ridge 1,500’ above the only reasonable launch and recovery zone reachable by truck. With the large area, steep relief, and high-density LiDAR point cloud requirement, this would not be a one flight mission. A series of 15 flights would be completed to cover the area. With the subject matter being multiple rocks of all shapes and sizes, and the LiDAR being an



continued on page 18

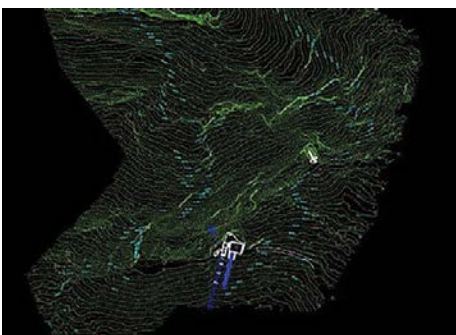


Rock Fall Analysis – continued from page 17

“in-line” scanner, the flight plans would have to be slightly offset and at different angles from each other. Having different angles and viewpoints to the rocks below, a full model of the rocks and terrain could be more accurately mapped, and less interpolation would be needed. The dense LiDAR point cloud could show large crevasses in the rocks along with any undercuts and areas where dirt had already started to slide.



Once the onsite collection was completed, the data was processed and registered to our survey control. The point cloud was exported, and the extraction team went to work. Having collected nadir imagery along with the LiDAR, we were able to create an orthomosaic image and also colorize the point cloud. This was very helpful for the team to be able to distinguish between the bushy vegetation and the granite rock faces. They created a digital terrain model of the site and identified the large rock outcrops the engineers were looking to hold in place.



Having a few years of experience flying drone-based LiDAR, I have found they don't send us out to the easy and flat jobs right off a nice, paved road. This is just one example of the many times we have been tested on some way off the beaten path difficult jobs. Just getting to the job was a challenge. Two hours driving a winding road all the way around the reservoir to reach the base camp.



After reaching the base camp that is when it got really interesting. A road barely wide enough to fit a truck carved into the side of a sheer rock face. It is rock face on one side and sheer canyon on the other side with bridges built in areas where the ground just seemed to disappear.

Although we had all the cool technology to see where and what needed to be deemed safe, I was able to attest to the soundness of the rocks from the hands-on experience of the earthquake, having stood at the bottom and faced it myself. I guess it was just another day at the “high-tech tailgate offices” of R.E.Y. 🌱



Jed Gibson, PLS

Jed Gibson is a licensed Professional Land Surveyor in California. He is the Lead UAV LiDAR Pilot and Project Manager at R.E.Y. Engineers, Inc., headquartered in Folsom, CA. He has been surveying since 2014 and has an extensive background in remote sensing, land surveying, and large-scale topographic mapping projects, including the Oroville Dam, the tallest dam in the United States. (916) 366-3040 JGibson@REYEngineers.com



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The Deprecation of the U.S. Survey Foot

By Steven J. Martin

Editor's Note: This article will appear concurrently in *American Surveyor Magazine* and the *Nevada Traverse*.



Some of you know about the deprecation of the U.S. survey foot already, and some may be asking, "What the heck is deprecation?" So let's start with a definition:

"Deprecation is a term widely used in the field of legal metrology and other measurement science fields of study. It describes a decision to discontinue the use of a specific measurement unit or method of sale."

The U.S. survey foot will fade away with the National Spatial Reference System (NSRS) Modernization including the roll-out of the State Plane Coordinate System of 2022 (SPCS2022). The National Institute of Standards and Technology (NIST) and the National Geodetic Survey (NGS) have taken action to make it so.

U.S. survey foot = 12/39.37 meter
international foot = .3048 meter

The difference between the two definitions is exactly 2ppm, or about 0.01 foot per mile.

"The intent of this action is to provide national uniformity of length measurement in an orderly fashion with minimum disruption, correcting a measurement dilemma that has persisted for over 60 years." (85 FR 62698, Document number 2020-21902).

This deprecation should have already happened with the North American Datum of 1983 (NAD83) and SPCS 83, however

change is hard. Do not fret though, SPCS 27 and SPCS 83 coordinates will not change, as legacy systems they will still be in terms of the U.S. survey foot, if they are currently defined that way (see graphic for U.S. survey foot jurisdictions). NGS recognizes that changing SPCS 27 or SPCS 83 coordinates would cause even more confusion than exists today. It is only going forward into SPCS2022, for states using U.S. survey foot in their SPCS, that users will need to change to the official conversion, commonly called the international foot, when converting from metric coordinates and in software settings.

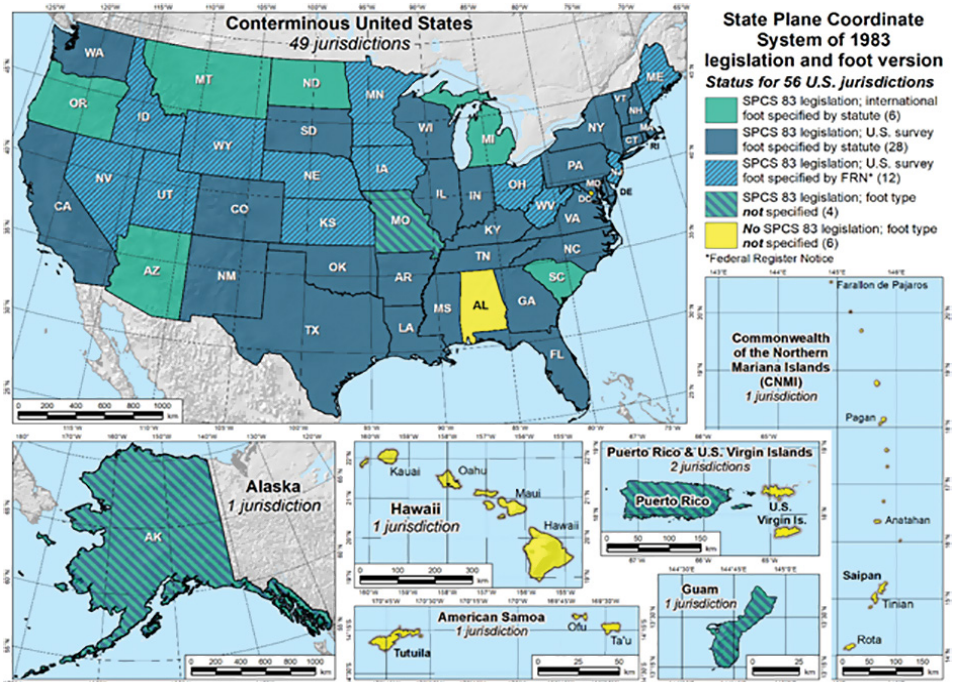
To give some background on the issue: In 1893 the Mendenhall Order officially

embraced the meter, abandoned the old British Imperial Yard, and defined the foot to be exactly 1 foot = 1200/3937 of a meter.

In 1959, a new definition of the foot was adopted, 1 yard = 0.9144 meter (FR 59-5442). However, there was an exception for the Coast & Geodetic Survey to continue using the old definition of 1 foot = 1200/3937 meter "until such a time as it becomes desirable and expedient to readjust the basic geodetic survey networks in the United States."

Despite the mandated change to the international foot in 1959, the surveying

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community in 40 jurisdictions elected to continue using the U.S. survey foot when the national geodetic survey network was readjusted in 1986. As mentioned above NIST and NGS have taken action to make complete the transition to the new “international” foot definition effective December 31st 2022.

The difference between the old U.S. survey foot definition and the current “international” foot definition may be subtle, but when dealing with numbers in the millions of feet range such as with State Plane Coordinates, this difference can be significant. Where I used to practice in the Alameda County, CA service area of the East Bay Municipal Utility District (EBMUD), an apparent shift of approximately 12.9’ would occur if the wrong definition was used in converting or reprojecting CCS83 based mapping. Several issues were encountered when I started at EBMUD, where CAD files obtained from outside agencies for road reconstruction projects were used to design a water line relocation. EBMUD was a Microstation shop and the AutoCAD files obtained were converted to Microstation by drafting staff without knowing about the correct units settings to use. The discrepancy only became apparent when we (the surveyors) were asked to stakeout the new waterline (on short notice of course). It takes some training and quality control along the way to avoid these conversion issues. The ultimate goal of having a single definition of the foot is to avoid these kinds of issues.

So, to sum up, the switch to the “international” foot definition for all SPCS2022 users will occur with the rollout of the Modernized NSRS and SPCS2022, now expected in 2025. This will not affect informed users of SPCS 83 or SPCS 27 for the current 40 jurisdictions officially recognized by NGS as using the U.S. survey foot definition. Mistakes do occasionally occur with users of SPCS 83 and SPCS 27 and education on the two definitions will help head those off. Education is even more important in advance of the planned 2025 rollout of SPCS2022.

“Elimination of the U.S. survey foot after 2022 will reduce problems with having

two versions of the foot in simultaneous use. In contrast, if both foot types were allowed after 2022, the problems (and costs) would never go away. Early on there may be confusion, errors, and costs associated with the change in the foot type, but these will diminish over time. Had this change been made in 1986 as originally intended, it would be only a distant faint memory by now. It further bears repeating that the change in foot type will occur in tandem with the 2022 NSRS modernization, and that it will be a very small part of the other changes happening after 2022.” (<https://www.nist.gov/pml/us-surveyfoot/frequently-asked-questions-faqs>)

[nist.gov/pml/us-surveyfoot/frequently-asked-questions-faqs](https://www.nist.gov/pml/us-surveyfoot/frequently-asked-questions-faqs))



Steven J. Martin

Steven J. Martin retired in 2020 after over 34 years with several utility and public works agencies, including most recently as the Survey Supervisor for the East Bay Municipal Utility District headquartered in Oakland, CA. He was a Director for CLSA for over 15 years, a past Chairman of the CLSA Education Foundation, a past member of the CSRC Executive Committee, and the past CLSA-CSRC Liaison.



For More Information:

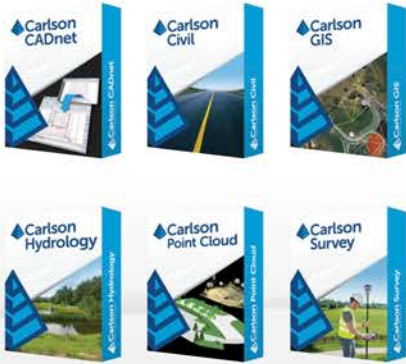
See the recorded webinars on the NGS website – December 12, 2019 “Putting the Best Foot Forward: Ending the Era of the US Survey Foot” (https://geodesy.noaa.gov/web/science_edu/webinar_series/ending-us-survey-foot.shtml), April 25, 2019 “Fate of the US Survey Foot after 2022: A Conversation with NGS” (https://geodesy.noaa.gov/web/science_edu/webinar_series/fate-of-us-survey-foot.shtml), and November 10, 2022 “Changes Afoot After 2022: State Plane and the Death of the US Survey Foot” (https://geodesy.noaa.gov/web/science_edu/webinar_series/changes-af-foot-after-2022.shtml).

There are several presentations on the subject in the NGS Presentation Library (https://geodesy.noaa.gov/web/science_edu/presentations_library/), most recently “Retirement of the US Survey Foot” by Michael Dennis 5/5/2021.

NIST has a set of web pages on the U.S. survey foot at (<https://www.nist.gov/pml/us-surveyfoot>), including a Frequently Asked Questions page.

See also New York Times article “America Has Two Feet. It’s About to Lose One of Them,” published 8/18/2020 (<https://www.nytimes.com/2020/08/18/science/foot-surveying-metrology-dennis.html>). ☺

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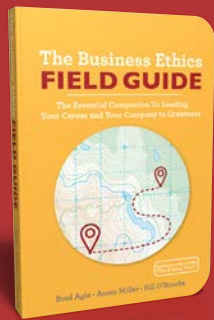
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The Business Ethics Field Guide - part 6

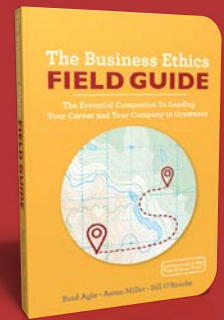
Challenge 5: Suspicious Without Enough Evidence

By Brad Yarbrough

DO
WHAT IS
RIGHT,
NOT
WHAT IS
EASY



This series features 13 articles from Brad Agle, Aaron Miller and Bill O'Rourke, co-authors of *The Business Ethics Field Guide*. Each article focuses on a common work dilemma, while providing real life examples and insightful solutions.



How many times have you sensed that something must be wrong, but you weren't entirely sure? This dilemma is not about how you stop something; it's about how you discover if there is something that should be stopped. Of course, the way you investigate matters. Looking into potential wrongdoing often appears to be an outright accusation, so tact is required.

The first question is to ask if you are the right person to investigate. If not, maybe your responsibility is to be sure an investigation is conducted by a more appropriate person. The investigator must be experienced with the issues and have a strong reputation for fairness, especially if the results are likely to become public. Remember, by selecting that person you will likely be jointly responsible for the results, so be careful in that selection.

Additionally, consider confidentiality. If others have a need to know, tell them an investigation is occurring. Sometimes it can begin confidentially, but as soon as a

likelihood of misconduct is uncovered, give them a summary as soon as practicable. Likewise, be careful not to share the information with the wrong people (those who have no need to know about the investigation). Remember that at the "right" time, the accused parties should have a right to confront the evidence.

A Case Study

An anonymous allegation was made on the company's compliance telephone line that a Plant Manager in Australia was spinning the safety results. Our company received 1,200 such calls annually and about 90 percent had little to no substance. However, every complaint was investigated.

I sent the manager with the company's best safety record keeper to Australia to investigate. She called a week later and informed me of 50 unreported incidents. Most were minor first aid cases, but four were more serious, recordable cases. She spoke with the victims and the safety manager. In each case, they were

instructed by the Plant Manager not to report the incidents. When confronted, the Plant Manager denied the allegations but could not refute the evidence.

These facts were reported to the Operations leaders of the company. They invited me to a meeting in New York City where they asked if the company had to fire the employee in question. I responded, "No, he's already fired himself. Now 60,000 employees are watching you to see what you do about it."

The Plant Manager was terminated and of course, all the employees noticed. In fact, the Operations leaders who made the final decision enhanced their personal reputation for supporting and reinforcing the safety value of the company.

The Right Questions

Here are some critical questions to ask when suspicions emerge:

continued on page 24



Who is accountable for solving the problem?

Once they are identified, bring them into the discussion and keep them advised. It may be appropriate to hand the responsibility for the investigation to them.

What if the allegations are true?

What if they are false? Ignoring allegations that turn out to be true can have harmful results and might create a bigger mess that needs to be rectified. The consequences of ignoring an allegation could be serious and potentially make you complicit in the conduct. Treat allegations as just that and not as facts. Putting too much credence on allegations could bias an investigation or destroy a reputation, even if the excused is exonerated.

Are the accusations reliable?

Did the accusation come from a trustworthy source? Does the accuser stand to gain from their claims? Even reliable accusations may be explainable or excusable. Most investigations will reveal three or four sides to a story. Keep an open mind to the facts and the reasons for the conduct.

Some Pitfalls

Be careful of the following traps:

• Acting Hastily.

Acting too quickly is a common mistake. Gather the facts quickly, then act.

• Delaying Action.

Don't delay the investigation nor the action. Delaying or not acting is acting. It will cause confusion in the organization or will be seen as condoning the behavior.

• Avoid Bias.

Bias and the appearance of bias must be avoided as much as practicable. Be careful to be objective in describing the problem, in charging the investigator and in reviewing the information. Be as factual as possible in the explanations.

• Not Gathering Sufficient Evidence.

To maintain credibility, be thorough. Try to corroborate the truth. Be thoughtful and deliberate in every step of the process.

• Report Results Appropriately.

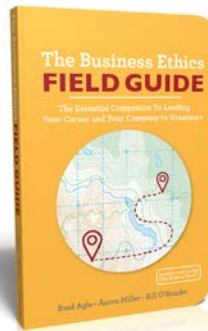
Report results to the leaders who need to know the information. Know that there may be legal or policy reporting requirements. If the accused is exonerated, try to keep the accusation and investigating confidential.

In Summary

It's important to ask if your organization has clear rules for handling complaints. Does your organization have a culture of fairness? Should you anticipate that allegations will occur?

Allegations are unavoidable. Have policies and rules on who will investigate various types of allegations, who will review results and who will be made aware. Some organizations have a Compliance Department that handles these matters, while others use their auditors, lawyers or human resource professionals depending on the type of allegation. What is important is that there is a process and procedure in place.

Misunderstandings will occur in organizations. The best way to address them is by having an open, honest, fair culture where employees are encouraged to speak-up when they have questions and where leaders listen and respond to them. 📍



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.

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.



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However, surveying land is becoming increasingly complex. Not only have licensing requirements changed dramatically over the past decade, but the evolution of technology has drastically impacted the design and functions of modern surveying techniques.

As surveyors continue to look for ways to improve efficiency and accuracy, the next generation of engineering and construction industry leaders is ready to confront those challenges head-on at Cuyamaca College.

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Maria Teresa Mirabal: October 15, 1935 – November 25, 1960
Surveyor and Political Activist, Dominican Republic

Every year, on November 25th, the three sisters, Minerva, Patria, and María Teresa, are honored on the *International Day to Eliminate Violence Against Women*, which was declared by the UN in their honor.

Drawing by Rosaly Zambrana, reprinted with permission



The San Francisco Chapter of CLSA congratulating Ms. Kate Anderson as the new City and County Surveyor of San Francisco at the Old Ship Saloon, Oct. 22.

Editor's Note:

The State of California remedies issues and problems within the state in a rule-making process called Legislation. Our association's committee focused on legislation at the state level is the "Legislative Committee."

The next page is a full-size form for proposed legislation for members to contact them. As you can see, it is focused on new or existing law because this is the way the state government acts. This form came from many months of careful thought from the committee members.

There are multiple ways to use this form, available at the Member Section ("Downloads") of the CLSA website:

www.californiasurveyors.org/MemberDownloads.aspx

You may fill it in electronically, and email it to:
clsa@californiasurveyors.org

You may cut or copy it out of this magazine, fill in, scan and email it to the address above, or mail it to:

California Land Surveyors Association
Attn: Legislative Committee
526 South E Street
Santa Rosa, CA 95404

Please fill out all parts of the form and attach multiple pages if necessary. The legislative committee looks forward to hearing from you. 🗣️

Please see and fill out the "Proposed Legislation" form on the next page.



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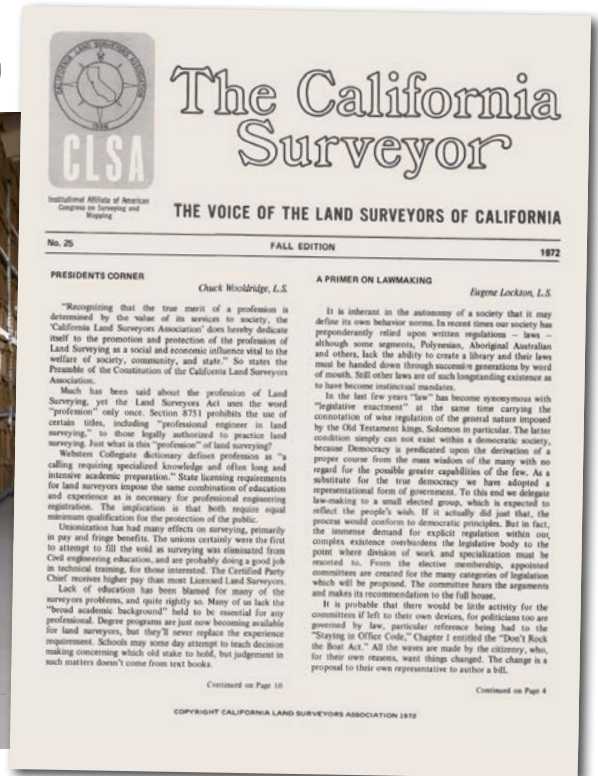
Worksheet on Proposed Legislation

Date:	
Name:	
Address:	
State/Province:	
Zip/Postal Code:	
Email:	

Submit by email

Title or subject:
What is the problem or deficiency in present law which the bill seeks to remedy?
Proposed solution to the problem or deficiency. Can it be done by regulation (identify agency) or is legislation necessary?
What code and section(s) would be added, amended or repealed? And, is this a state mandate or local government?
Estimated fiscal impact on any and all levels of government and the private sector.
Has bill been introduced before on this subject? If yes, identify year and bill number.
What organizations would support or oppose such legislation. Please list organization with position.

From the Archives



An excerpt from issue #25 of *California Surveyor*, published Fall 1972

EDITOR'S NOTE: This article may have been edited to correct spelling, for clarity or for length.

The source issue, as well as all other archival issues, may be read in their entirety in our archives, available at: www.californiasurveyors.org/CalSurv.aspx, and by clicking the *California Surveyor* magazine cover on the website.

A Primer on Lawmaking

Eugene Lockton, LS

It is inherent in the autonomy of a society that it may define its own behavior norms. In recent times our society has preponderantly relied upon written regulations – laws – although some segments, Polynesian, Aboriginal Australian and others lack the ability to create a library and their laws must be handed down through successive generations by word-of-mouth. Still other laws are of such long standing existence as to have become instinctual mandates.

In the last few years, “law” has become synonymous with “legislative enactment,” at the same time carrying the connotation of wise regulation of the general nature imposed by the Old Testament kings, Solomon in particular. The latter condition simply cannot exist within a democratic

society, because Democracy is predicated upon the derivation of a proper course from the mass wisdom of the many with no regard for the possible greater capabilities of the few. As a substitute for the true democracy, we have adopted a representational form of government. To this end we delegate law-making to a small elected group, which is expected to reflect the people’s wish. If it actually did just that, the process would conform to democratic principles. But in fact, the immense demand for explicit regulation within our, complex existence overburdens the legislative body to the point where division of work and specialization must be resorted to. From the elective membership, appointed committees are created for the many categories of legislation which will be proposed. The committee hears the

arguments and makes its recommendation to the full house.

It is probable that there would be little activity for the committees if left to their own devices, for politicians too are governed by law, particular reference being had to the “Staying in Office Code,” Chapter 1 entitled the “Don’t Rock the Boat Act.” All the waves are made by the citizenry, who, for their own reasons, want things changed. The change is a proposal to their own representative to author a bill.

When the proposed change is drawn up in the form of a bill, the various committees are polled to determine which shall hold the “hearings.” The author’s administrative

continued on page 31



assistant is responsible for arranging the series of appointments, hearing dates, etc., that will ensue. Not all committee members will invariably be in attendance. The author of the bill is nominally the spokesman for its passage, but he considers himself paid to process legislation, not to go out on the end of a limb for its enactment. If it appears to be a popular measure, several legislators may get on for the ride; because the number of bills

sponsored and passed reflects favorably upon the diligence of the lawmakers.

Assembly Bill No. 200 this year (1972) had 42 Assembly member co-authors; it dealt with conservation, which is very big just now. The losers are lucky to hold a single sponsor for the full legislation gamut. "All interested parties" will be heard to speak on the measure. Broadly this means that those with an axe to grind may do their

best to influence the committee in the direction of self-interest.

There is some similarity between the Hearing Room and the Judicial Chamber. Under the adversary system in our courts the two sides of a case are presumed to be fully exploited by each advocate. The Judge listens to both and, secure in his appointment, makes his decision. Under the committee system a greater diversity exists among those who may appear, either in support or opposition, and the Legislator is not secure in his appointment. There is no penalty as in football for "piling on," and the number of those appearing for one side is limited only by the capacity of the party to summon these "friends." The legislator who is insensitive to "numbers" and/or "friends" has yet to be elected.

This pressure is called "muscle," and this system, like democracy, is imperfect but apparently the best available. The "numbers" element is not representative of the voting public, but it does represent the core of the legislators' campaign funds. And "friends" are always good people to go along with. Unfortunately, we have to earn friendships, and that may mean work for some of us.

In summary our behavior is now lawfully controlled by "muscle," but that's the way it started out anyway. ☺



A PRIMER ON LAWMAKING Continued from Page 1

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HUD PROPOSED SETTLEMENT COSTS COMMENTS

The volume of replies received in response to recently published proposed settlement cost standards by the U.S. Department of Housing and Urban Development has resulted in extending the period of public comment from July 31 to August 31.

The proposed standards, first published in the Register on July 4, are a first step toward establishing maximums for surveys and field surveys in specific areas where the HUD Secretary determines that excessive charges are being collected from home buyers and sellers in connection with FHA-insured mortgage transactions.

While the initially proposed maximums are limited to the metropolitan areas of Cleveland, Newark, N.J., San Francisco, Seattle, St. Louis and Washington, D.C., it is contemplated that standards will be set in the future for additional areas where the Secretary determines that costs are excessive. ▲

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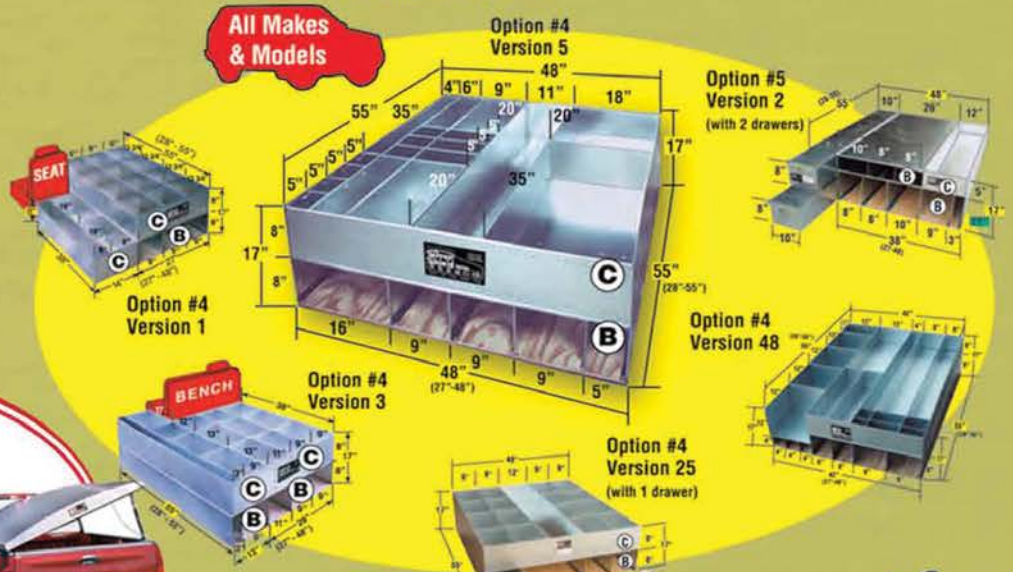


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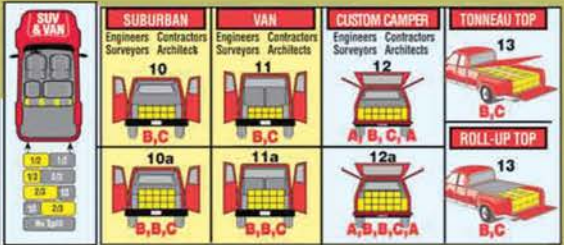
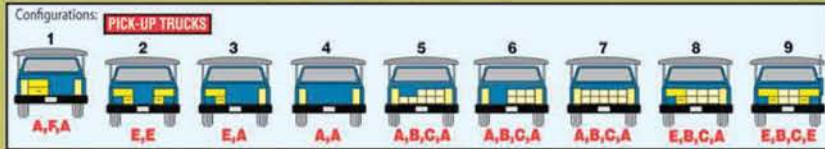
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