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The California Surveyor

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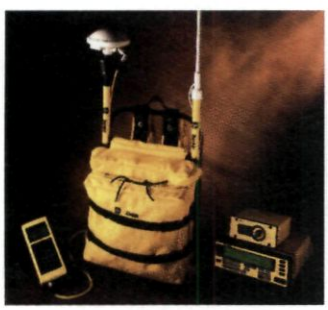

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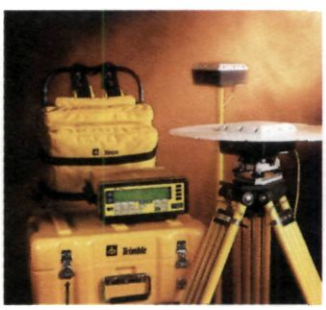

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The California Surveyor

is the quarterly 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 Licensed Land Surveyors in the State of California as well as to all members of 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 the Land Surveyors and their work."

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ADVERTISING
Commercial advertising is accepted by *The California Surveyor.* Advertising rates and information can be obtained by contacting CLSA Central Office, P.O. Box 9098, Santa Rosa, CA 95405, (707) 578-6016, Fax (707) 578-4406. Circulation: 5,200.

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, P.O. Box 9098, Santa Rosa, CA 95405, (707) 578-6016, Fax (707) 578-4406.

EDITORIAL MATERIAL
All articles, reports, letters, and contributions are accepted and will be considered for publication regardless of the author's affiliation with the California Land Surveyors Association, Inc. Contributions submitted on floppy diskette medium is encouraged. For compatibility, disks should be 5.25 or 3.5 inch, MSDOS (IBM compatible) format. We can accept ASCII text files or word processor files from the following programs: WordPerfect, Microsoft Word.

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The California Surveyor

DEADLINE DATES

Spring	January 10, 1994	Fall	July 10, 1994
Summer	April 10, 1994	Winter	October 10, 1994

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

On the Cover :
George Washington as a young surveyor from a vintage cigar box top.

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From the Editor

More Four Letter Words

By:Tom Mastin, P.L.S.

New Year... New Ideas... Same old problem: education. I am not going to get up on a soapbox and talk about Professional Mandatory Units. That box is well worn, and as I have seen state after state adopt PDU programs, I'm sure we'll have one in California soon.

The education problem that concerns me the most these days is that of fundamental education. I believe the best way to get a well rounded "fundamental education" is through Community Colleges and State Universities. I know that those who have learned surveying through experience will at times condemn those with a formal education as having no common sense in surveying. However, anyone who has worked with a graduate will soon realize the fundamentals are there and they'll not only pick up the details quickly, but will challenge us to understand some aspect of surveying better.

It isn't realistic at this time to think all future Professional Land Surveyors will be graduates from a four year accredited program. We are still a profession that relies heavily on the apprenticeship system. As I look at the current apprenticeship system, I see some major problems that must be dealt with.

I know many in the profession look back at those apprenticeship years with pride, and rightfully so. Sometimes however, we have the attitude of "if it was good enough for us, then it should be good enough for them". It won't be "good enough for them" and not because the new generation of land surveyors lack something we had (other than Elvis). It's because the method the profession uses for performing its work has so drastically changed.

Think about some of the recent changes. I know there is great disparity in wages across the State so I won't bring up numbers, but the percentage of overhead directly attributed to hourly expenses of employees has increased dramatically over the last 25 years. Technology has advanced to where the operation of field equipment is easy enough that we can teach someone within a few weeks how to competently set up a total station and use a data collector. Office technology allows us to take the data from the field, process a tentative map, design a subdivision, generate lots and prepare a final map without human hands ever touching the product.

These changes have a direct effect on the training of new land surveyors. The high cost of employees does not allow employers to write off long term non-productive work. The technology in the field allows employers to send out highly competent technical individuals with relatively little field experience to efficiently perform the data collection. These people often lack training in the professional aspects ranging from keeping clear concise notes, to determination of the worth or need of a monument.

"If it was good enough for us — then it should be good enough for them"

Today's offices rely on computers and software that require significant training. Current software is developed towards the needs of experienced users, such as someone trained at college, who have a comprehensive grasp of computer systems. This limits the potential for those who started their surveying apprenticeship in the field to gain experience in the office. Not too long ago all you needed to learn office skills at home, during the evenings, was a board, pencil, paper, straight edge and a calculator. Today someone would spend thousands for the hardware and software needed to train at home.

This should concern all of us, not just those beginning a surveying profession. If there are not enough professional and technical surveyors to provide the surveying services required, then others will step in to fill the void. We must be able to show lawmakers that we are developing enough surveyors to meet future needs. These surveyors must be trained in all aspects we consider important in surveying.

I don't have an answer except to say we must train these individuals. Their education will have to be mostly done outside the workplace. We should be making partnerships with our community colleges to provide the training. Their training should cover all aspects of field and especially office automation as well as professional responsibilities. We, as an Association, must provide the professional education to all those in the land surveying profession. As individuals, we must encourage new members of our profession and enlighten them to the importance of a well rounded surveying education.

Off the soapbox, and just a few more words before I retire my keyboard. First, many of the articles written for *the California Surveyor*, (besides educating) are there to spark a public debate on issues. If you feel an author has misrepresented a fact or an issue, I hope you will write *the California Surveyor* as it is **your moral responsibility** to inform the profession of this. The profession will not be able to judge without hearing all sides of the story.

Also for those of you who did not get your issue of *the California Surveyor*, you may think it is late but it's not. Those of you reading this know better. Due to lack of available funding for the publication of *the California Surveyor*, we have cut the circulation to only members, advertisers and Licensed Land Surveyors in the State of California. We may have to eliminate those licensed land surveyors who are not members of CLSA if our current cost cutting measures are not as effective as hoped for. So please, if you are reading this and you are not a member of CLSA, consider joining before *you* no longer receive *The California Surveyor*.

I hope all of you have a happy and successful 1994. ⊕

Letters To The Editor

■ LETTER FROM A FRIEND

Charles (Chuck) Moore, a Licensed Land Surveyor in California, a Life Member and past president of the California Land Surveyors Association and a Life Member of ACSM and his wife Ingrid have, after a 38 year career in surveying, retired to Switzerland. There they purchased a chalet in the vicinity of Leuk (between Zermatt and the Lake of Geneva) in the Canton Wallis in the southwest part of Switzerland.

For the past 20 years Chuck was employed by the San Diego County Surveyors Office; the last two years as the Principal Land Surveyor.

This particular area of Switzerland is well known for its beautiful weather, abundance of hiking trails and both winter and summer skiing. Chuck and Ingrid plan to convert their chalet into a *"Bed and Breakfast" Inn during the* summer and winter months.

For information on accommodations and travel arrangements, their address is:

Charles & Ingrid Moore
St. Barbara 136
CH - 3953 Leuk - Stadt
Switzerland
Tel. 01141-27634738 (9 hours ahead of Calif)
Rates are $45 US per room per night.

They suggest any correspondence to Switzerland should be sent via airmail as surface mail takes 4 - 6 weeks.

■ C.L.S.A. - THE BEGINNING

I'm sure many of you are under the impression that the California Land Surveyors Association was established in 1966. This is a common misconception. This article sets the record straight. It explains how and when the C.L.S.A. was really founded, introduces the men involved, and takes a look at the organization's original bylaws.

Recently, I spoke with an old timer at one of our chapter meetings in Sacramento, and mentioned it was terrific the C.L.S.A. had been around since 1966. He said the association was actually formed in the late 1800's here in Sacramento. An old surveyor named Bob Plumb told him about it many years ago. He went on to explain that Mr. Plumb was retired and living in the old geezers home. I said I didn't think he was showing much respect for the old surveyor by calling him an "old geezer." He said that he didn't mean any disrespect, but Mr. Plumb lived in a retirement home for surveyors which was donated by another old surveyor named Imanold Geezer.

I called the home and when Mr. Plumb answered the phone he said, "Tanna hep you?" Pardon me? I asked, a little confused. "Jebba minnit why I det my teef in," Mr. Plumb mumbled. I waited a minute, and when he came back he apologized, telling me he had to put his "choppers" in. I introduced myself explaining I was curious about the origins of C.L.S.A. and wanted to find a copy of the original association bylaws. He said as far as he knew, he had the only set ever written. The bylaws had been compiled in 1885 when the association was first founded.

After talking with him, I wanted to meet with him and see the bylaws. The next day I met with Mr. Plumb at the Old Geezers Home. He explained to me that because his father was a surveyor, he had attended the meetings with him when he was a small boy. I asked Mr. Plumb his age and found out he was approaching 120 years old! He *didn't look a day over 115 years to me.* I began reviewing the bylaws and right away I knew I would have enjoyed those meetings: the bylaws proclaimed the Drop Dead Saloon on 2nd Street in Sacramento as the official meeting place. Apparently, the bylaws back then only called for three officers: president, secretary, and sergeant at arms. The qualifications for office were straightforward: the president must never have been convicted of a "serious" felony; the secretary had to be able to read and write; and the sergeant at arms had to be of above average size and strength.

The bylaws also stated all three officers must limit their consumption of alcohol during a meeting to "keep their wits about them." I think this was a good rule. I plan to suggest that we amend the present association bylaws to include this rule.

The bylaws included some pretty harsh punishments and rules where monuments were concerned. First, any surveyor found moving the monument of another surveyor would be hung, and smoked to death by burning cow "dung." They didn't use the word "dung": the word they used rhymes with "spit." Second, no more than two monuments would be set on any survey, no matter how big the area. Finally, (and most important to those seeking future employment) all monuments set should be made of a material that will rot or rust in a short time.

The President and Sargeant-At-Arms were the only two people allowed to keep their guns at association meetings.

Mr. Plumb also had a copy of the minutes from the first association meeting. As he began to reminisce, I took some notes. It seems the president fired a couple of shots into the ceiling of the Drop Dead Saloon to bring the meeting to order. Well, this sounded like a typical meeting to me so far, even by today's standards. Two of the surveyors didn't get along too well. Rusty Link and Rod Mann began arguing about one of Rod's bids. Rusty was really irritated about losing the last three projects to Rod, so he pulled his gun and started shooting at Rod's feet to *make him "dance." Rusty accidentally* shot Rod's big toe off his right foot. One of the saloon dancers, named Bambi Azimuth, knew first aid and patched him up pretty quickly. (From then on, whenever Rod was pacing line, he had a tendency to drift to the right.) After restoring order, a motion was made and passed requiring all shooting irons to be checked at the door with the sergeant at arms. The president and sergeant at arms were the only two people allowed to keep their guns at association meetings.

The association also had several standing committees which gave reports at the meeting. The New Technologies Committee was reviewing the latest invention, the tack ball. Several members thought this was a remarkable invention and marveled at the great technological advances being made. Mr. Bob Bogus, owner of Bogus Engineering Company and the only civil engineer member of the association said he would never use a tack. He stated that land would never be valuable enough to be staked that accurately. Why this idea was as stupid as thinking a person could get his location from a magic black box, for example. Mr. Bogus had a reputation for sloppy work, so his comments came as no surprise to the other members.

The Professional Practices Committee was chaired by Hal I. Tosis, otherwise known as "Single Angle." Mr. Plumb said he remembered everyone calling him "Single Angle" because Hal thought it was a waste of time to turn an angle more than once. Hal said he never made a mistake, so why double the work? (I bet we all know a surveyor like that.) Single Angle wanted to recommend establishing a rule that forbid using an EDM to measure a line. I asked Mr. Plumb what "EDM" meant, since they didn't have "electronic distance measuring" equipment in those days. "Equally dubious means," he responded with a smile. For example, a property line was measured by multiplying the number of minutes it took to gallop a horse along the line times the number of chains a horse can gallop in a minute. The president suggested more research on the subject. The committee was also reviewing whether surveyors who used umbrellas to shade themselves and their instruments were "sissies" or not. Rod Mann said he had seen Rusty Link using an umbrella once, and a frilly umbrella at that. Rusty reached for his six shooter, but lucky for Rod the sergeant at arms had confiscated it.

The Education Committee discussed the idea of minimal education for licensure as a land surveyor. They all thought it was a good idea, but they couldn't decide if the requirement of a second grade education would be too great of a hardship on those just entering the profession. Further study was recommended.

The Legislative Committee reported they had spoken to a Mr. Bill "Under The Table" Payoffski about acting as the legislative advocate for the association. Bill said there wasn't a piece of legislation written that he couldn't push through the legislature if the "skids were greased properly." The association liked the way Bill phrased things and voted to hire him immediately.

With all business finally discussed, the meeting ended quietly with everyone agreeing to meet again in three months.

It's good to re-evaluate the things that are important to the association and the profession. It sure seems to me for as long as the association has been around, certain topics are continually debated. Continuing education, legislation, and the use of umbrellas and tack balls are as topical today as they were over a hundred years ago. The Sacramento Chapter has had many very heated debates on the umbrella issue. I've had to break up several fist fights because of this issue. I understand now why our chapter bylaws state that all shooting irons shall be checked at the door before the start of the meeting. It seems like a good idea. I plan to suggest we amend the state association bylaws to include this rule.

GEEZER - as told to Gary Leonard, P.L.S. Sacramento

[Editor's Note - Please take the preceding letter as it was intended.]

■ SURVEYNET NOW AVAILABLE ON CDMG ONLINE

CDMG ONLINE is a computer bulletin board service (BBS) operated by the California Division of Mines and Geology in Sacramento. The principal focus of CDMG ONLINE is on geoscience and GIS. The BBS carries over 400 echo conferences (from five BBS echomail networks plus selected USENET conferences) and has over 1,500 files available for immediate download. More than 37,000 messages passed through the BBS in November 1993.

Of special interest to CLSA members is the fact that CDMG ONLINE is now the West Coast hub for SurveyNet, founded by George Fergusson of Whitefield, Maine. Although SurveyNet is the name of George's BBS (the official BBS of the Maine Society of Land Surveyors), SurveyNet has been transformed into an echomail network, with member BBSes in California (CDMG ONLINE), Colorado (GISnet), and Virginia (the U.S. Bureau of Land Management's Cadastral Survey BBS). This provides surveyors from across the country with a ready forum for discussing issues of common interest, whether they be professional, business, or personal in nature.

As a SurveyNet hub, CDMG ONLINE allows two-way electronic mail traffic. For example, if a surveyor posts a question in a SurveyNet conference at CDMG ONLINE, he or she may get responses from surveyors in Maine, North Carolina, Colorado and Alaska. It is this widely distributed exchange of ideas and information that makes telecommunications so valuable, and the more participation, the better.

How to participate? You'll need access to a computer, communications software, a modem and a phone line (network users: check with your system administrator). Offline mail reading software is recommended - it will save on long-distance charges (if applicable), help you find messages of interest, and let you read messages and write replies at a more leisurely pace. Some good shareware, freeware, and test-drive readers for MS-DOS (including Windows), Macintosh, Amiga and other types of computers are available for downloading from CDMG ONLINE.

If you're new to computer telecommunications, there are books available to help you get started, or you can ask an experienced friend for advice. But perhaps the best way to get going is to dial in and learn by doing" - you can't hurt the computer and you can't hurt the BBS, so feel free to experiment.

Two tips for neophytes:

1. At the message menu, you'll have to join one of the conferences in order to read or write messages while online.
2. In order to download SurveyNet messages for use with an offline mail reader, you'll have to configure (select) the desired SurveyNet conferences first.

CDMG ONLINE is ably run by Ted Smith of CDMG. They currently have four lines available (3 at 14400 bps, 1 at 9600 bps), and can be reached at 916-327-1208. If you're feeling adventurous, you might also check out GISnet BBS (operated by Bill Thoen; 303-447-0927), SurveyNet BBS (207-549-3213), or CAD-BBS (run by Jerry Wahl, former CLSA Sacramento Chapter presi-

Continued on page 14

Meet Your 1994 Officers

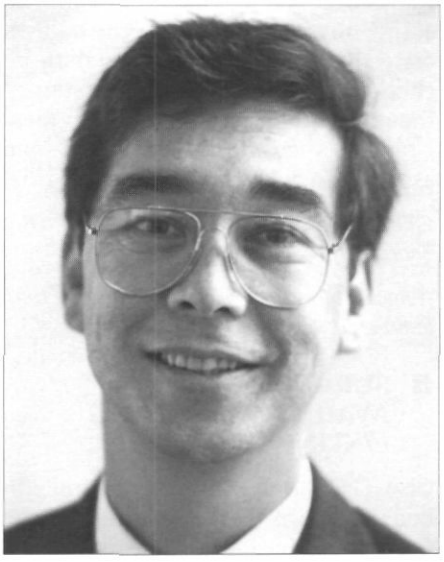
KURTIS K. HOEHN, P.L.S.
President

Having been born and raised in the wonderful State of Washington, I was not aware of the profession of surveying until my Uncle (Sam) introduced it to me in 1968 as a "Topographic Surveyor". For the next three years I was given the opportunity to see what surveying was all about and to learn how U.S.G.S. Quad sheets were produced from the initial control to the final field editing process. It was great and I was thoroughly hooked on surveying. I then started Junior College in Orange County then transferred to California State University, Fresno. I graduated in 1975 with a degree in surveying and Photogrammetry. From there I was introduced to the real world of surveying (construction staking, boundaries, calc., etc.) and still continue to enjoy it.

Thanks to the economy, I am now happy to say that I have started a small surveying firm with my wife, Anna, also a Licensed Land Surveyor. I became a member of C.L.S.A. in about 1981. I became more active in the association to the point of becoming an officer in the Orange County Chapter in 1987. I was elected President of the Chapter in 1990. I did not realize the complexity of the state organization until I became a chapter representative for Orange County. I have risen through the officers chairs to becoming the President of the State Association for 1994. Through all of this I continue to believe that this organization is one of the best things going for land surveyors in the State of California.

I have also been professionally active in other areas. I have been a director for The California Foundation for Land Surveying Education. I have been involved with grading of the California Land Surveyors exam from 1986 through 1992. I have also been on the Land Surveyors Item Writing committee from 1987 through 1991.

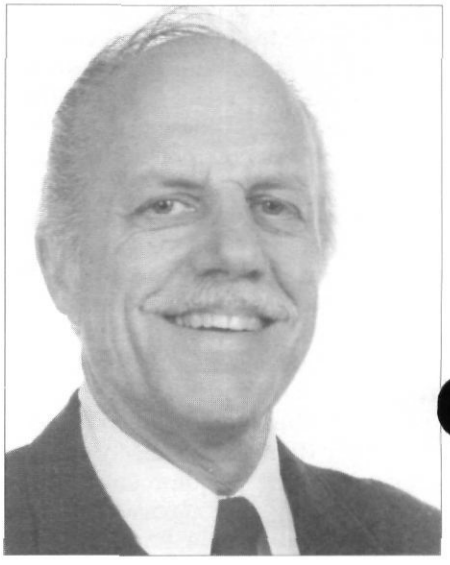
My goal for 1994 is to continue to encourage participation in C.L.S.A. and to let people know that the association must grow and become an even bigger voice for the land surveyors of the State of California.



BILLY MARTIN, P.L.S.
President-Elect

My involvement with surveying began in 1978 working for Rabe Engineering in Fresno as a Rear Chainman. I always enjoyed math and also working outdoors, so surveying seemed to be a perfect fit. In 1980, that perfect fit ended when our firm went from 6 crews to 1 crew. Since I lived in Fresno, I took advantage of the survey program at CSUF and hoped to sit out the recession in school. I eventually graduated and have since worked as Director of Surveys for a small 20-person surveying and civil engineering firm; I have operated my own company for 3 years; and I am currently the Director of Surveys for Brian Kangas Foulk in Redwood City.

I have been involved with CLSA since 1985. I have been the Chapter Vice President and President for the Santa Clara/San Mateo Chapter and was a Chapter Representative for two years prior to becoming a State Officer. On the personal side, I am married and have a wonderful two year old son and we are expecting a second boy on March 5th.



FREDERICK W. KETT, P.L.S.
Secretary

Born in Berkeley, California and native to Marin County, I started surveying in 1957 and with the exception of approximately one year, I have been working in this profession continuously since then. Initially I worked in the San Francisco Bay Area for various surveying-engineering companies with the idea of learning as many of the different types of surveying activities as possible. Licensed in 1968, I decided my preference was boundary surveying and in a rural area with a private company. I have been a sole proprietor of a land surveying practice in Murphys, California since 1974. I have been a member of CLSA since 1969. I have been CLSA Treasurer since January 1992 and am looking forward to a busy year in 1994 as Secretary and member of the CLSA Executive Committee. I have continuously served as a Chapter Representative and on various CLSA

committees for the past twenty years. I served on the LS/TAC of the State Board of Registration, Chapter Committees and have been a chapter officer repeatedly.

I feel strongly about the value of the CLSA organization and its benefit to its members both professionally and socially. CLSA should, in my opinion, make a concentrated effort to set and maintain realistic goals and continuously strive to systematically accomplish those goals. There should be an effort made to streamline administrative matters and devote more time and effort toward professional matters. Let us put pressure on ourselves to make 1994 a real year of accomplishments for CLSA.

GARY T. LIPPINCOTT, P.L.S.
Treasurer

I am 51 years old and was raised in a surveying environment. My dad is a surveyor. About a week after I graduated from high school in Wenatchee, Washington in 1960, I found myself working for him in his new private surveying business in Paradise, California. I had a scabbard on my belt with a nice new shiny 16- ouncer ready for action. A chainman. As the business was small, I was able to quickly gain a wide variety of surveying and business skills. Because I was willing to take advantage of the situation and to learn from my dad's experience, I was able to take and pass the two-day surveying exam the first time in 1969. With my license, I became a partner with my dad and eventually bought him out when he retired several years ago. After thirty years of being in private practice, I accepted a position as County Surveyor with Yuba County in 1991, sold my practice and embarked into the public side of surveying. I continue to find the position both challenging and rewarding.

Along the way, I attended Chico State College for 3 years majoring in civil engineering. After that I spent two years in the Marine Corps. Of that time, I spent 13 months vacationing in Viet Nam. Using the GI bill I attended Butte Community College, taking business and real estate classes. The semester after my GI Bill ran out I became and have continued to be a part time instructor at Butte College, teaching surveying and map drafting. I also taught surveying one semester at Chico. I have been a corporate member of CLSA since 1970- 71 and have been active as a chapter representative, a chapter officer and a member of several committees ever since. Some of the committees include the Legislative, By-Laws, Administrative Matters, Education, Proprietor's Council, Nomination, and Finance Committees. Additionally, I am a current director of the CLSA Foundation. I am also a member of NSPS-ACSM and a current Director of the Northern California Section of ACSM.

It is my conviction that when you accept the responsibility of being a professional (licensed) surveyor, you have also assumed an obligation to become the best you can be and the duty to support the profession to which you belong. One of the best methods to accomplish this is through a professional association like CLSA. Be active, involved and dedicated.

My wife Selma and I were married in 1969 and were blessed with two children. Cheri, 22, was married in December and works at a local title company. Lori, 20, attends Butte Community College and still lives at home. ⊕

ALTA Survey Standards:
Overlooking the Forest for the Trees

By: R. Lee Hixon, P.L.S.

Fortunately, there has been more discussion recently concerning ALTA-ACSM Land Title Surveys. This increasingly important facet of modern survey practice has come a long way in recent decades especially concerning the issues of what should be included in the survey and the language of the certificates that we sign. These efforts toward clarification are to be applauded but have we overlooked another facet of ALTA surveys that is equally important?

Years ago when I first read through the requirements I was left with a nagging suspicion that I wasn't fully understanding the table at the end which spells out the manner in which angles and distances were to be measured. Titled "Minimum Angle, Distance and Closure Requirements," it states that for an urban class survey there should be two direct and two reverse angles (a total of four horizontal measurements). In addition, any distance measurement that was too short (depending on the EDM manufacturer's specifications) had to be measured by a steel tape.

Based on the word "closure" in the heading of the table I had always assumed that these requirements were meant for procedures governing only the control loop portion of an ALTA survey as opposed to the many topographic shots taken on such jobs. But is this in fact the intent of the table? After all, since ALTA surveys are considered by all to be the definitive survey, the most comprehensive, detailed and accurate of all surveys, maybe the table was supposed to effect all shots on these projects and it was simply a case of a poorly written table heading that had been confusing me.

True, the 1992 Revision contains a sentence about surveyors using their own judgment" in order to achieve accuracies comparable to those adopted by ACSM for a designated class of survey," but what exactly does this mean and does it in fact answer my question?

Should I be taking four angles and using a steel tape to measure a sewer maintenance cover? A power pole? A water faucet? Or should I do the obvious and take only one angle and use a prism to measure the hundreds, even thousands of such objects? What about building corners? Should they get two angles? Should objects close to property lines receive more attention than those interior? Not knowing for certain what future use the site was destined for should one play it safe and measure everything carefully and, if so, how carefully?

I decided to run my concerns past another surveyor to see if he had resolved this dilemma at all. This surveyor who had more experience than myself said that he had always interpreted the table to be referring to all shots taken on an ALTA survey. He then followed that statement by counseling that, of course, most surveyors probably would only take one angle to a power pole and use a distance meter instead of a steel tape even though technically the table meant to include 4 repetitions for everything.

My suspicions confirmed, I then began a long-distance telephone quest to pose this question to someone on the 1992 revision committee. Of the three members that I talked to, two had not even considered the issue and the third "assumed" that the table was referring only to the control loop. Thus, even at the highest level, our profession is making assumptions about "the table."

An informal poll of about 40 northern California surveyors supports my original doubts. There was no agreement as to what exactly the table was referring to. By far the majority supported the contention that the table was vague and one had to interpret its meaning. They also admitted they only shot one angle to all objects except control points and property corners even though the table "probably" intended four angles to everything.

As a result, I was comforted in realizing my confusion was shared by the majority but discomforted in the knowledge of what that meant. One does not have to reflect long to know what this ambiguity can lead to in our increasingly litigious society.

Here we have a document whose sole purpose is the clarification of the obligations that an ALTA survey imposes on surveyors only to realize that when it comes to the actual taking of measurements—the raison d'etre of surveying itself—the document fails to deliver. That so much confusion should exist among practicing surveyors on this matter is an indictment of our effort to, (1) clearly specify to ourselves (and our clients) what it is that we purport to be doing and, (2) avoid being held liable for damages that could easily result from a misunderstanding as to how we should be doing it.

To clients, there is a belief that an ALTA survey is the "best" survey. What they expect for the extra cost is that an ALTA survey will protect them from the omissions or lower standards of a "regular" site survey. They undoubtedly feel they are buying insurance against a sloppy or incomplete final product.

It takes little imagination to foresee a very expensive court case that could revolve around the inaccurate location of some structure or object the surveyor thought of minor significance but which turns out to be critical to some aspect of future construction. (Compare Bell vs. Jones, 1987, District of Columbia, wherein a surveyor was successfully sued due largely to a lack of clear communication with his client and where the court upheld the emerging concept of a national standard of care for surveyors.) When hundreds of thousands of dollars are at issue—even millions—it would be devastating to realize that one's client (and their attorney) was under the assumption that all site features were to be measured with high accuracy. After all, isn't the table entitled, "Minimum Requirements?" Keep firmly in mind nothing makes better fodder for an opposing attorney than the existence of ambiguity in a contract or a document like the ALTA survey standards.

Any future revisions of the ALTA standards should squarely face this issue. However, we would be well advised to first engage in a debate over the best manner to clarify the table. There should not be a rush to incorporate language we would later regret.

There appear to be two avenues we could choose from. First, we could keep the "technique-based" table now in use but add new columns to take into account the various types of meas-

urements that are encountered on an ALTA survey. For example, control loop points could have two angles repeated, four distances meaned, with vertical angles doubled at one (or both) ends of the course. Property corner monuments and centerline monuments may need two angles. Interior site objects may only need one angle except for objects close to a property line which would need two angles. And so forth.

The problem with this approach is it tends to be "technology dependent"; as advancements change the equipment used in the measuring process, the table needs to be modified. Also, it is not easily understood by the average non-surveyor.

A significantly different approach would be to specify the level of spatial accuracy instead of the method of measurement; that is, regardless of the equipment or techniques used this table would delineate the degree of spatial accuracy of all objects shown on the map" relative to each other and to the parcel boundary." For structures and all other site objects the table would specify, for example, building footprint locations be measured and shown to the nearest 1/10 of a foot, light poles and street lights be shown to the nearest 3/10 of a foot, etc.

Thus, we would be defining accuracy in terms of the relative locations of all objects to each other on the map as opposed to the manner in which the objects are measured. This is not only a more straightforward approach to the issue of accuracy but one which non-surveyors can more easily understand in everyday terms. After all, the client or the lender is not the slightest bit interested (nor should they be) in the way we do our work. They are after results. What they want is a map showing the project and everything of importance on the project site with a certain degree of spatial accuracy. So why not avoid the jargon and technical tables and let the client know that buildings would be shown to the nearest inch or two (or whatever) and all other objects would be shown to the nearest two or three inches?

Aside from the manner in which the accuracy is described in the ALTA document there is another aspect which is perhaps just as important: namely, the negotiability of accuracy itself. In other words, the surveyor could explain why it is that higher levels of accuracy demand more work and thus costs more and then let the client decide what is necessary for the project and pay for it accordingly. Why should the client pay for the location of trees and water meter boxes to the nearest hundredth of a foot if such accuracy is not relevant to their needs?

I was told the purpose of one of my ALTA surveys was that an out of state purchaser needed a more complete "picture" of what the site was like to aid him in the decision of whether to buy the property or not and no new construction was planned. Another was commissioned because an out of state purchaser wanted the raw data necessary for the planning of a major new construction program that would leave some of the existing improvements but remove others that would conflict with new buildings. Should both surveys be approached in the same way with the same level of accuracy and with similar high estimates to the clients just because they are both located in "urban" areas?

It is a mistake to lump all ALTA surveys together and pretend they can be universally described in a document which does not allow for easy modification from one job to the other. If the goal is unambiguous communication between client and practitioner, then we need to structure our contracts and documents so they can be tailored to suit the varying projects we encounter. The table now in use is the surveying equivalent to the "legalese" lawyers have finally come to admit is a destructive barrier to good relations with their clients.

The end product, after all, is a plat showing the client what is on the property, be it structures, easements or whatever. The use to which that plat is put varies from client to client and accuracy should be negotiated with those clients in such a way that they can intelligently decide for themselves what they want for their ALTA dollar. If the plat contained a statement about the relative spatial locations of everything shown on it then the client—and any future user of the plat—would be able to decide for themselves if and how they could make use of it.

This article does not pretend to totally address the issue of accuracy much less come up with the perfect answer to its role in future ALTA revisions. Rather, I am only interested in bringing the issue to the table. Are ALTA measurement standards uniformly understood by surveyors and uniformly applied in field and office procedures? Do our clients adequately appreciate the subject of accuracy, what they are paying for, and what it is they are getting? Are we increasing the chances for litigation by creating an ambiguous contractual situation that opens far more doors to misunderstanding than it closes? Shouldn't we forget about tables of accuracy and focus on a simple manner to state on our plats that undimensioned objects are shown to the nearest (fill in the blank) foot or fraction of a foot and then leave it to the surveyors to use whatever field measuring techniques that they feel will insure the desired result?

I suggest that the various state surveying organizations begin a discussion of this issue with the eventual goal being to channel our suggestions toward the national level and a revision of the ALTA measurement standards that would address these issues. If we can, then we will at once have provided all parties to an ALTA contract with a better understanding of the end product and diminished our own vulnerability to needless litigation. ⊕

SURVEYING ON OR ADJACENT TO RAILROADS

By: George R. Dunbar, P.L.S.

Back in 1958 after 10 years of topo and construction surveying in the US Army Combat Engineers and a few months surveying lot re- tracements in Michigan after leaving the Army, I came to my present location in Santa Cruz County, California and went to work as a party chief (after a 6 month stint as a chainman to learn my way around).

My supervisor at the time was a gentleman whose solution to a misclosing deed was to measure his version of the record from the point of beginning to the last course and throw all of the error there, since almost every deed contains the phrase "thence to the place (point) of beginning." I knew such a solution was erroneous that it disregarded all evidence and our arguments were long and bitter.

Normally, in the field, I was on my own and proceeded in a manner I deemed appropriate, and submitted my final notes and solutions to the office, which disgruntled my supervisor no end since he had no input. It was, however, appreciated by our mutual employer, Tom Polk Williams, RCE 6270. Although Tom was only registered as a Civil Engineer, he was one heckuva Land Surveyor. Both Tom and that supervisor are now deceased.

One day while retracing a boundary line that was the former centerline of the "Dougherty Mill Railroad," a narrow gauge lumber mill railroad, I found the BC's and EC's of the right of way monumented by 8" x 10" timbers with nails in their centers. The right of way was 40 feet wide and measured exactly between monuments.

The deed description was "thence with a radius of 573.14 feet for a distance of 322 feet." Realizing something was weird after first attempting a standard highway solution, employing the arc and radius to find the delta (32°11'23") highly suspicious for the dates the Railroad was in existence, since single seconds almost never appeared and even 30 seconds was very unusual, and missing the EC monuments, I referred to my book of tables. My first clue was the uneven radius since locally all street curves were in even feet and usually in even hundreds of feet for easier curve solutions in both the field and office. Remember, this was prior to computers, hand held calculators, and even Curtas. Lo and behold! I discovered that railroads operated differently than the rest of the world, they used a chord definition for degree of curve! HA! HA! says I, now I know the answer. But wait a minute according to my book the radius should be 573.686, how very strange. Luckily, it was the end of the day and I proceeded back to the office to consult my supervisor who insisted upon using the arc and radius and a circular curve to solve my dilemma. This resulted in odd seconds which I assured the man I had tried and was sure it was wrong and in fact I had tried this method first in the field and it didn't fit.

I was absolutely sure he was wrong, so against my better judgment (It is always unwise to go over the first sergeants head to the CO) I went in to consult "the boss." He listened to my problem and agreed we were dealing with a railroad definition of degree of curve, and then asked me if I had checked out using the Southern Pacific Railroad definition i.e.,: using 50 foot chords instead of the standard 100 foot chords? I admitted my complete ignorance of this so he took me into the back room and began rummaging around in boxes and drawers and came up with a little book of tables that had been copied from the SP tables, and everything fell into place. There listed for a 10 degree curve was my radius of 573.14 feet and using a delta of 32°12′ and six 50 foot chords and a 22 foot chord, everything came together and fit like a glove. There were no odd seconds (unheard of in those days). I felt that I had joined the ranks of the enlightened, now I knew something even some licensed surveyors, as evidenced by my supervisor, did not know! I made sure I knew the whereabouts of that little book from that day forward.

My next encounter was with the Southern Pacific Railroad right-of-way, which showed the right-of-way as 60 feet, 30 feet each side of the centerline and with a taper curve on each end. Having seen my little book and the right-of-way map, I was aware of the fact that again the Southern Pacific marched to a different drummer. They did not use standard railroad spirals either, but had developed their own "tapered curves." Again, employing this book of tables and splitting the tracks carefully on each tangent and using only a modicum of "Kentucky windage" I was able to fit the centerline as shown on the right-of-way map and establish my boundaries concentric to the centerline and at no place deviate from the center of the tracks by more than 0.05 of a foot, and most importantly I was in agreement with the Southern Pacific whose rights were senior. This was what I felt was a truly remarkable solution, considering the length of time the rails had been pounded by trains, the number of times rails had been uprooted to replace bad ties, and all of the other things that might have happened to displace the track by more then my small amount of deviation.

I have since surveyed many properties adjoining railroads both where tracks still exist and also where almost all evidence including cuts and fills have ceased to exist in the 34 years prior to my retirement, and using the little book on most of them and the knowledge that almost ALL railroads use some type of chord definition of degree of curve for their layouts and consequently for their deed descriptions for right of way acquisition.

I would caution some of our younger members not to rely upon their computer definitions of circular curves when surveying adjacent to ANY railroad without investigating a little more.

After I retired, and wishing to share the little book with others, I have compiled these tables, diagrams, and formulae into an 8½" by 11" format consisting of 37 pages, with 2 inserts copied from a SPRR right of way map and all bound together to make a book. (*See adjacent sidebar for details on purchasing the book*). The book was graciously lent to me by Bowman & Williams, my former employer.

Any surveyor contemplating a survey along the Southern Pacific RR should be aware of the existence of these tables or should inquire with the SPRR (this they may find to be a slow process). The tables may also be of interest to Railroad History buffs, model builders, and surveying history buffs. I am a member of the Mount Diablo Surveyor's Historical Society and have donated to them one of my original "hand built" copies to preserve the information, and being a member of the national Surveyor's Historical Society plan to ask them if they would like a copy also.

(George Dunbar P.L.S. is one of the most active retired land surveyors in the State. He has practiced in the Santa Cruz County area of California for the last 35 years and continues to live in the beautiful coastal village of Aptos in Santa Cruz County). ⊕

- S P Curve Tables Available -

The S.P. Taper Curve Tables mentioned in this article are now available. This document was compiled by Mr. Dunbar and contains the tables, diagrams and formulae in an 8½" by 11" format, totaling 37 pages with 2 inserts copied from a SPRR right-of-way map. Requests for copies should be made directly to Mr. Dunbar at the address below. ($35.00, $1.50 S/H + 8¼% = $39.89)

George R. Dunbar, PLS (retired)
Professional Land Surveyor
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Aptos, CA 95003

LETTERS TO THE EDITOR...

Continued from Page 7

dent; 703-440-1761). Configure your communication software settings for 8 bits, no parity, 1 stop bit, before calling these systems.

George and Ted would love to expand SurveyNet to other BBS systems; either one of the SurveyNet hubs (SurveyNet BBS or CDMG ONLINE) can provide the feed. If you run a BBS, or can interest a local BBS in becoming a SurveyNet member, contact George Fergusson or Ted Smith for more information about this opportunity.

■ BLURBS ON BUGS NGS CORPSCON PROGRAM

Having been introduced to the NGS Corpscon program, I immediately called to order a copy of my own, thinking that all my prayers had been answered. At least where nasty, time-consuming, error fraught Lat/Long to State Plane/NAD 83 to 27/Zone X to Zone Y conversions were concerned. Certainly this was too good to be true, I said to myself and to some degree, it was.

Upon receipt of the program, I loaded all available files onto my hard disk under a subdirectory named CORPSCON, and fired it up for a test run. Sure enough, it failed. For some mysterious reason it would not do the magical conversion of a Measured NAD83 position to estimated NAD27 equivalency *[Editors note: This is not to be mistaken for a measured NAD 27 position].*

As I had a client at the time asking for exactly that, I was motivated to solve the riddle.

I called around; first friends, (generally making a nuisance of myself), then the NGS (repeatedly), who ultimately referred me to the software mensch at the Corp of Engineers who built the beast. It was then the joke was told. The problem with the software is that it cannot handle having all 6 provided databases in the current subdirectory! Never mind the reason it just won't.

So if you are having similar problems with this program, or are hesitant to acquire it because you've heard of such woes, try this: Delete a couple of unneeded files and get back to work.

My suggestions:

Delete:
STGEORGE.LAS
STGEORGE.LOS
(St. George Island)
PRVI.LAS PRVI.LOS
(Puerto Rico/Virgin Islands)

Or any other of the database pairs you are unlikely to be using, and see how your program runs now. And when all else fails, read the documentation. Hey. you're welcome. Anytime. Don't even think about it.

Will Frinfrock, PLS
San Luis Obispo ⊕

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THE OWNERSHIP OF SURVEYS AND WHAT CONSTITUTES A SURVEY AND MAP

By: William G. Raymond C.E.

circa 1896

[Editor's Note : I want to thank Hal Davis for sending this article for publication. As you can see even 100 years ago they were asking the question "Why don't surveyors ever agree?"]

There seems to be a difference of opinion among surveyors as to how much of the information obtained, and how much of the work done in making a survey shall be furnished to the individual for whom the survey is made. Many surveyors keep what are called "private notes." All men doing business as surveyors keep notes of all surveys in a convenient form for ready reference. The extent to which these notes are private has not been rightly comprehended by all surveyors, and hence has resulted the difference of opinion mentioned.

This article is an attempt to present a side of this question that has not heretofore been fully considered. An endeavor has also been made to point out to the young surveyor a line of action expedient for him to follow, which will at the same time be found advantageous to the community in which he works.

In this discussion the question arises at once, "What constitutes a survey?" and the answer obviously depends on the object of the survey. This discussion will be confined to land surveys; that is, to surveys made for the purpose (1) of subdividing a large tract of land into smaller parcels to be sold; (2) of determining the boundary of a tract the description of which is known; (3) of determining the description when the boundaries are known.

Continued on the next page...

Ownership of Surveys...Continued from Page 15

The principle to be enunciated applies to any other survey as well, be it railroad, canal, bridge, or topographical survey. Indeed, it is well understood in all such surveys, but seems to be ignored by many engineers having to do with land surveys.

A survey is the operation of finding the contour, dimensions, position, or *other particulars* of any part of the earth's surface, ... tract of land, etc., and *representing the same on paper.*

In making a survey it is necessary to set certain points, called monuments or corners, and to determine a description of these points. These items therefore become a part of the survey. Then a map must be drawn. This map, to be a faithful representation of the ground and the work done, should, together with the notes, show all of the items mentioned.

"A great deal of laxity is shown in the conduct of offices of city engineers and county surveyors"

The object of establishing monuments or corners and describing them is twofold: (1) to mark on the ground the boundaries of the tract, and (2) to secure definite information as to its location with reference to other points or tracts, so that from this information the land may at a future time be found. For a complete survey, therefore, the corners must be fixed, information that will preserve their location must be obtained, and the facts must be delineated on a map with accompanying notes.

To whom belongs this survey? It would appear to be evident that it belongs to the individual who pays to have it made. It is not readily seen in what way the survey, or any part of it, becomes the sole property of the surveyor. He may keep a copy of his notes to facilitate his future work; but he has not the shadow of a claim to a single note, the time for taking which has been paid for by his employer. If his charge for his work is on a time basis, there can be no question as to the correctness of the above statements. If he contracts to do the work for a definite sum for the entire job, he may take as much time as he likes, and may keep as many private notes as he desires; but he is bound in honor to return to his employer the complete survey; and, if he does so, the private notes would thereafter be of no great assistance to him in securing further employment, particularly when it is remembered that men of repute do not bid against each other for professional work. His reputation for accuracy and honesty will be a far more potent factor in securing employment than any set of private notes fairly obtained.

It is true that a great many surveyors hold a different opinion, and purposely return their maps and notes in such condition, that, while they may serve the purpose for which they are primarily made, they do not tell the whole story, nor enough to make it easy for another surveyor to relocate the tract surveyed. When this is done, the person ordering the survey does not receive what he pays for. Something is withheld. It seems to need no argument to show that this is radically wrong.

But there is another reason for condemning this practice. The correct and permanent location of all public land lines, as streets, alleys, etc., as well as the permanent location of party lines between private owners, is a matter of the gravest importance, and no information that will at all serve to fix such lines in their correct positions for all time, should be withheld from the owner who pays for the survey, be it private citizen, municipality, county, or state.

The records of monuments and street lines made by a city engineer are no more his private property than are the records in the offices of the clerk, auditor, or treasurer, the property of the individuals who held office at the time the records were made. The correctness of the position assumed has been indicated by court decisions.

A great deal of laxity is shown in the conduct of offices of city engineers and county surveyors. The methods of regulating the pay of these officers has doubtless had much to do with this. It is frequently the case that the surveyor receives no salary, but is allowed to collect certain specified fees for work performed, and this gives color to his claim that his work is private and belongs to him. That this is not true concerning the public work he does is evident from what has preceded. That the records of work done for private citizens are not the property of the public needs no demonstration; but such work belongs to those citizens for whom it was done.

A different policy should be pursued with regard to these offices. In every case such an office should be a salaried one, with such salaried assistants as may be necessary. Certain fees should be prescribed for performing the various kinds of work that the surveyor may be called upon to do within the limits of the territory of the political division whose servant he is. These fees should cover all work connected with public construction and public or private land lines, and should be returned to the public treasury.

Their amount may be regulated, from time to time, so that they shall aggregate a sum sufficient to pay the expenses of the office. They should, of course, not cover work of a private character not having to do with land lines. But the entire public is interested in the permanency of land lines, and all records concerning them made by a public official should become public property. The permanency of land lines is too important a matter to be subject to avaricious and jealous rivalry; and all the surveyors in a given district should cooperate to preserve, in their correct places, all lines within the district.

To this end, the returns of every surveyor made to the owner should be thoroughly complete. Maps made for filing as public records should be so finished as to enable any surveyor to relocate the land without the least uncertainty as to the correctness of his work. That this is done in very few instances is well known to every surveyor who has had occasion to examine public records for data for surveys which he has been called upon to make.

Because of the fact that in most cases neither owners nor attorneys have been fully posted as to what constitutes a complete description, sufficient for relocation, and because surveyors have been willing to let matters stand as they were, great carelessness has arisen in the practice of making and filing maps for record.

While in some states good laws exist prescribing what shall appear on a map before it will be received as a public record, in more states there is nothing whatever to guide either owner,

surveyor, attorney, or recorder in the matter. In the county records in such states, anything that is made up of lines and figures and labeled "this is a map," is considered sufficient basis for a correct description and location of the property it purports to represent—no matter whether it is drawn by hand, photo-lithographed, or simply printed with "rule" and type. The records are full of auctioneers' circulars, manufactured in a printing office from information coming from nobody knows where, filed at the request of the auctioneer's clerk, with no name of owner or other interested party attached, except as the name of the auctioneer appears in the accompanying advertisement. Further than this, these maps are frequently purposely distorted to create a favorable impression of the property to be sold. Wide streets are shown where only narrow ones exist, streets appear opened for the full width where they have been opened for but half their width, subdivisions are indicated as rectangles that really may not be even parallelograms, etc. Such maps as these frequently form the only basis for the description and location of the property they are supposed to represent. Such misrepresentations are bad, *very* bad for those who buy; but is the information given by these circulars much worse than that furnished by many of the maps made by surveyors and filed at the request of the owners?

On these plots, of "additions," we find lines indicating the boundaries of blocks and lots, all of which blocks and lots are numbered; the names of streets appear in neat letters; a few dimensions, possibly all linear dimensions, will be given; the streets or blocks may be delicately tinted, and the whole set off with a fine border and title. As an exhibition of the draughtsman's skill, these maps are perhaps valuable. As a source of information as to the location of the lines they purport to show, they are worth little more than the auctioneer's circular. Perhaps they have a few more figures, and the presumption may be a little stronger that the figures are correct.

Examine one of these maps closely. There will be found no evidence that a monument has been set in the field; not an angle is recorded, though the lines may cross at all sorts of angles; and dimensions are given that do not agree among themselves, so that the angles can not be calculated. There will be found no name signed except, possibly, that of the surveyor, who thus advertises what we shall charitably call his stupidity.

Frequently no monuments are set except small stakes at the corners of the blocks; but even the fact that such stakes have been set is not recorded on the plot. One who is acquainted with the practice of surveyors in a given district knows at what points to look for such stakes, and if they have been set and not pulled out to make room for a fence post or building, he may succeed in finding them. Some surveyors are accustomed to set stakes a certain distance away from the point the stake is supposed to mark, but no mention of this fact appears on the map. In fact, the map is so drawn that no one but the surveyor who made it can write a description of any one of the parcels of land shown, or correctly locate it on the ground. Furthermore, the surveyor himself finds it impossible, after the lapse of a few years and the destruction of his "private marks," to rerun any one of the lines exactly as originally laid out.

It is easy to see to where this leads—impossible descriptions of property,

Continued on Page 20

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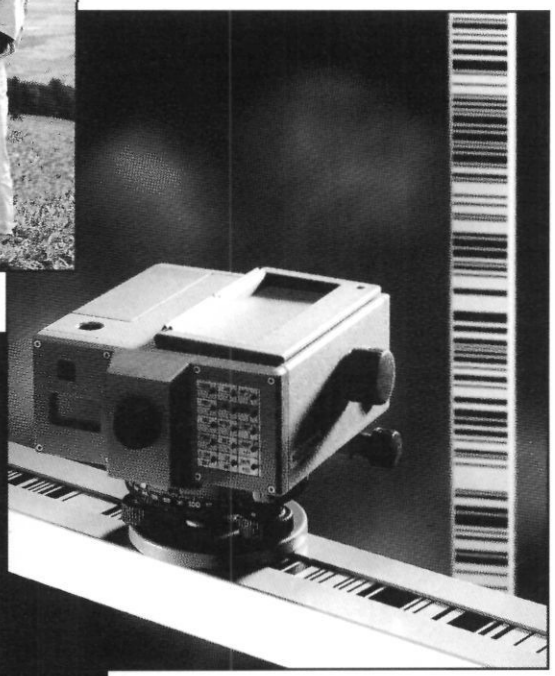

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THE MYSTERY OF THE RANCHO AGUAJITA

By: George R. Dunbar, P.L.S.

The Rancho Aguajita (or Aquajito) is a mystery.

I surveyed in Santa Cruz County for over twenty years before I ever heard of it, and there were surveyors who surveyed the County for almost twice that long that never heard of it. Many surveying today are unaware of it's existence. I contacted Chris Perez of the State Lands Commission, through Roy Minnick, who furnished me with the information recited below. At that point he reached a deadend, after informing me that he would contact the National Archives.

This was years ago, and since I never heard from him again, I presume he was unable to obtain any more information. Why was a patent never issued? Was Senor Villagrana paid off not to pursue his claim? Perhaps he was frightened off? The survey notes prepared by Frank Reade in February 1882 tie to the house of Francisca Villagrana, which seems to indicate the family was still present at that time and in possession.

An early map (undated), probably prepared by E.D. Perry prior to 1900 (based on the drafting) on file in the County Surveyor's Office gives no indication of this Rancho, all of the parcels shown and their owners do not even approximate Mr. Reade's survey. A map prepared by the County Surveyor (Tom W. Wright) in 1865 and filed in Volume 7 of Deeds at Page 254 also gives no indication of the Villagrana family or it's claim. The map does, however show lands in the name of Francisca VILLA, and adjoining lands to the north in the name of Miguel VILLA. Perhaps the family changed it's name, with nothing ever recorded?

The patent holders indicated in County Records, are: Francis Villa, (1-Patents-192), P.M. Rodriguez, (1-Patents-189), and John Lutz (1-Patents-107). Apparently these Patent holders exchanged deeds in 1865 based on the aforementioned map by T.W.Wright.

Rancho Aguajita was surveyed and a plat filed in 1882, but this Rancho *never* appears anywhere in the chain of Title, as far as I can ascertain. It appears in a book prepared by The State Lands Commission. A notice was filed in the Santa Cruz Sentinel on April 22, 1882 that the survey had been made and confirmed to Miguel Villagrana and signed by Theo. Wagner, U.S.Surveyor General. Field notes and the plat are available (I have a copy).

From information I have:

Expediente # 113 was filed with the Alcalde of the Village of Branciforte on Feb. 15, 1834 and is on file in the State Archives in Sacramento.

Deseno included by petitioners with expediente and also on file in the Archives.

Granted by Governor Juan B. Alvarado under authority of the Mexican Government on Nov. 20, 1837. Confirmation of the grant is filed with the Expediente and Deseno in the Archives.

Confirmed Feb. 20, 1855 by the Board of Land Commissioners and filed in the Record of Decisions, Volume 2, Page 540.

Confirmation was appealed to the District Court for the Southern District by the U.S. Attorney General but appeal was dismissed on Nov. 16, 1858 and confirmation was upheld.

Rancho was surveyed in Feb. 1882 and approved by the U.S. Surveyor General on July 31, 1882.

The Rancho lies mainly under what is now Harbor High School, in the City of Santa Cruz. The title policy issued to the School District and furnished to the surveyor makes no mention of the Rancho, or any possible claims to title by the Villagrana heirs.

A Deed from A. Villa to D. Long filed in 1885 in Volume 44 of Deeds, at Page 148, which would include some of the Rancho makes no mention of the Rancho or the Villagrana claim... What happened?

Rancho Aguajita was surveyed and a plat filed in 1882, but this Rancho *never* appears anywhere in the chain of Title

Nowhere does this Rancho appear in any chain of title, although it is sketched in the old plant of Santa Cruz Land Title. No arb number was ever assigned to this parcel. No mention of the map or claim is shown in any title insurance policy that I know of. If anyone can shed any light on this mystery, I would appreciate hearing from them.

If anyone has any suggestions as to where else I could look to solve this mystery, I would appreciate hearing from them. If not I leave this to the next generation of surveyors to ponder over.

⊕

Ownership of Surveys... *Continued from Page 17*

giving opportunity for differences in judgment as to interpretation of what was intended; disputes as to position of party lines; costly litigation and expensive movement of structures begun or completed; and the actual shifting of lines back and forth by different surveyors, or even by the same surveyor, honestly trying to locate the lines properly.

The writer has seen enough trouble of this sort to indicate to him that a radical change is needed in the field work and mapping of cities, towns, and additions, not to mention farms and other tracts of land that it may be necessary to lay out and describe. So long as fallible man is responsible for the accuracy of surveys, maps, and descriptions of properties, so long will there be errors; but that it is possible greatly to reduce their number by proper regulation the writer is fully persuaded. What we have been describing are not maps at all, or at most they are very imperfect maps, and "what constitutes a map?" thus seems to be a very pertinent question.

A map of a city, town, or addition, or other tract of land, serving as a basis for the description of property, should furnish all the information necessary for the proper description and location of the various parcels shown, and also of the whole piece. It should further show the exact location of the whole tract relatively to the lands immediately adjoining; particularly should this be done when an offset or angle in a street line occurs. To accomplish these things, there should appear on the map the following items:

(1) The lengths of all lines shown.
(2) The exact angle made by all intersecting lines.
(3) The exact position and character of all monuments set, with notes of reference points.
(4) The number of each block and lot.
(5) The names of all streets, streams or bodies of water, and recognized land marks.
(6) The scale.
(7) The direction of the meridian and a note as to whether the true or magnetic meridian is shown. (It should be the true meridian.)
(8) The angles of intersection made by the lines of adjoining property with the boundaries of the tract mapped.
(9) The exact amount of offset in lines that may extend from the outside through the tract mapped.
(10) A simple, complete, and explicit title, including the date and the name of the surveyor.

All this is necessary to make the map valuable for *description and location* of the property it represents.

Of course monuments will not be shown if none have been set, and very frequently none are set, either from carelessness on the part of the surveyor, or an unwillingness on the part of the owner to pay their cost. Monuments of a permanent character should be set at each corner of a tract surveyed, and at least two, visible the one from the other, should be on the line of each street. If these monuments are not placed on the center lines of the streets, they should be at *uniform* distances from the center or property lines. If placed with reference to the center line they should all be on the same side of the center. In streets extending east and west the monuments should all be on the north of the center, or they should all be on the south, and at uniform distances. In streets extending north and south the monuments should all be on the east of the center or all on the west. Uniformity in such practice saves a vast amount of time.

Monuments may be set at uniform distances from the block lines, in the sidewalk area, and this is an excellent practice. The stakes or monuments set at the corners of the blocks in additions, or town sites, should never be the *only* stakes or monuments set in the tract.

That the map may be reliable there should appear on it the following:

(1) The certificate of the surveyor that he has carefully surveyed the land, that the map is a correct representation of the tract, and that he has set monuments (to be described) at the points indicated on the map.
(2) The acknowledged signature of all persons possessing title to any of the land shown in the tract, and, if possible, signatures of adjoining owners.
(3) If of an addition, the acknowledged dedication to public use forever of all areas shown as streets or roads.
(4) If a street of full width, whose center line is a boundary of the tract is shown, the acknowledged signature of the owner of the adjoining property, unless his half of the street has been previously dedicated.

It has been already stated that, in some states, a map may be filed at the request of any person, and without signature. This practice frequently leads to trouble. The writer knows of cases in which owners of large tracts of land have had those tracts subdivided and have taken land of adjoining non-resident owners for street purposes without the consent or knowledge of those owners. When, at a later day, the owners of the land so taken have objected and attempted to close half of the street, trouble of a serious character has arisen. The same trouble has occurred where streets have been run through narrow gores of land and have subsequently been completely closed, leaving houses built on the mapped property without outlet. Time and again have cases of this sort come to the knowledge of the writer.

Having pointed out certain evils, it remains to suggest a remedy. It lies in the enactment of laws governing these matters. There should be included in the statues of every state a law explicitly defining what shall appear on every map filed for reference, and making it a misdemeanor to file a map that does not strictly conform to the requirements. In the absence of such laws it is believed that the young surveyor can assist greatly in a much-needed reform, by following the principles suggested in this paper as the correct ones, and avoiding the errors here indicated.

It is hoped that those graduates of our engineering schools who drift into this class of work will be guided by a higher principle than that which actuates the surveyor who covers up his tracks, at the expense of his employer, in order to secure a monopoly of the business of the locality. The young surveyor can spend his energies to greater advantage in devising new and better methods of work, than in inventing ways for hiding information that belongs to his employer. Certainly a thorough education should so broaden the young man's views as to make it impossible for him to be controlled by those meaner instincts which, if indulged, lead ever to narrow the vision and prevent one from perceiving the greater problems that continually present themselves for solution. ⊕

Affiliate

Timothy D. Fitzpatrick . . . Healdsburg CA
Richard M. Howard . . . . . Marina CA
James Todd Stovall . . . . . Kingman AZ

Associate

Charles L. Beal . . . . . Yorba Linda CA
J. E. Braley . . . . . Colfax CA
Dwight J. Busalacchi . . . . . Daly City CA
Frank A. Donk . . . . . Lathrop CA
Mark W. Duffner . . . . . Aptos CA
Andy Fuller . . . . . Grover Beach CA
Randolph David Gospich . . . . . Aptos CA
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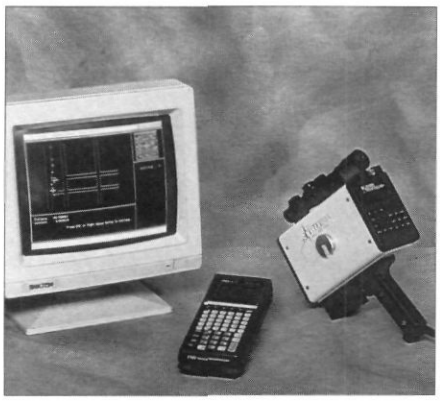
★ ★ NOTICE ★ ★

The State Board of Registration is seeking additional Licensed Land Surveyors to participate in the grading of the 1994 L.S. examination. Grading will take place May 19 - 21 in Monterey. All expenses will be paid. For more information call Denise Tomlinson at the Board office at (916) 263-2277.

Product News



Laser Tech LaserWalkabout

Laser Technology, Inc. and ConTerra Systems have introduced LASERWALKABOUT, a laser based mapping system for AM/FM and GIS applications such as asset inventory, wildlife habitat mapping and natural resource mapping. The system consists of a Criterion 300 or 400 series handheld survey laser, a data collector and a comprehensive suite of field and office software. It is designed as a highly portable mapping tool that can even be used in urban areas and under dense vegetation canopy. When used in conjunction with GPS, it provides a degree of mobility, flexibility and productivity that cannot be achieved with GPS alone.

The LaserWalkabout office software module provides automatic, user transparent computation of feature locations based on a known reference point. Several field data files can be automatically processed using reference coordinates from a companion GPS file. The software also provides graphical map display and editing of data files and data conversion to standard interchange formats including dBASE, Arc/Info, DXF and flat ASCII.

For more information contact:
Laser Technology, Inc.
7070 South Tucson Way
Englewood, CO 80112
Phone: (303) 649-1000
Fax: (303) 649-9710

ConTerra Systems
888 43rd Avenue
San Francisco, CA 94121
Phone: (41 5) 387-11 84
Fax: (415) 751 -8104

New Brochure On Zeiss Rec Elta- 15 Total Station

The Rec Elta 15 is the most economical and compact of the Zeiss Rec Elta line, all of which feature fast measuring times, ease of operation, and built-in recording of measured and computed data. A special advantage for practical use is the menu technique combined with the clear key/menu assignment; there is no confusion due to multifunction keys.

The brochure explains the logical Rec Elta 15 program structure which makes the instrument so easy to learn and easy to use. Full specifications are given for this exceptionally efficient and lightweight instrument designed for cadastral, engineering, construction and supply line surveys.

Zeiss Rec Elta - 15 Computerized Total Station

For a copy of the new Rec Elta 15 brochure, contact the Surveying Division, Carl Zeiss, Inc., Thornwood NY 10594. Call (914) 681-7305; fax (914) 681-7472.

NEW CUSTOM MAPPING FEATURES AMONG THOMAS BROS.' GEOFINDER 2.1 MAPPING SOFTWARE

IRVINE, **Calif.**—Thomas Bros. Maps has introduced GeoFinder 2.1, an updated and improved DOS-compatible software version of the company's widely used Thomas Guide map books.

GeoFinder 2.1 provides organizations with a practical and affordable alternative to building custom geographic information systems (GIS). The mapping software package gives Realtors, appraisers, city planners, transportation companies and other organizations the ability to integrate their computer-based address files with the most up-to-date digital mapping information available.

Thomas Bros. Maps' GeoFinder 2.1 computer mapping software is one of a variety of digital mapping products and services the company is able to offer through its ongoing development of a sophisticated mapping data base. Maintained and updated by Thomas Bros. Maps, this complete and highly accurate digital mapping data base also enables the company to license a variety of custom street index files, raster files (or "picture files") and GIS graphic files to companies or organizations wanting to develop or enhance their own GIS data bases.

For additional information about Thomas Bros. Maps' new GeoFinder 2.1 mapping software, to obtain a free demo diskette that provides an overview of GeoFinder 2.1 capabilities, or to find out the location of your nearest Thomas Bros. Maps' dealer, call toll free 1(800) 899-MAPS.

EARLYBIRD MUNICIPAL PROJECTFINDER IDENTIFIES OVER $7 BILLION WORTH OF CAPITAL IMPROVEMENT PROJECTS IN THE INLAND EMPIRE.

Costa Mesa, CA. EarlyBird Municipal ProjectFinder has identified over 6,200 capital improvement projects with a total value exceeding $7 billion in the Inland Empire. EarlyBird Inland Empire is comprised of over 98 governmental agencies' capital improvement budgets throughout Riverside and San Bernardino counties. According to John A. Montierth, EarlyBird Director, "This program is the only comprehensive database available today that identifies roads, highways, buildings, bridges, landscape architecture, etc. to be contracted from planning/design to construction over the next three years."

EarlyBird is owned by Official Airline Guides, Inc., publishers of the standard in travel reference publications for travelers and travel professionals.For more information call John Montierth at 714/435-7710.

SURVEYING AUTOMATION '94 COMING TO DC

CANTON, MICHIGAN- P.O.B. Publishing Company; publisher of *P.O.B. Magazine* will sponsor **Surveying Automation '94.** P.O.B.'s annual technology conference on June 21, 22, &; 23, 1994 in Washington DC. in conjunction with A/E/C SYSTEMS '94 automation exposition.

Surveying Automation '94 will be held at the Renaissance Hotel, adjacent to the Washington Convention Center where A/E/C SYSTEMS '94 the world's largest automation exposition for the design and construction industry is being held. More than 30,000 design and construction professionals are expected to attend the 100+ conference sessions and view the 1400 booth exhibit area.

For more information Contact Cindy Stainisz at 313/981-4600

AND THE. WINNER IS . . .

DENVER, Colorado (October 27, 1993): Forget the Oscars, the Tonys and the Emmys, Pentax Corporation's Survey Division Electronic Level PLP2/PLP3 have just been named GMARK winners. Now that's an award winning performance.

This annual award is given to a product with an outstanding design by the Ministry of International Trade and Industry. This achievement is the second in two consecutive years, following the one awarded to the Pentax Total Station PCS1 for the year 1992.

PENTAX Precision Products Group is a subsidiary of Asahi Precision Company, Ltd., of Japan with corporate headquarters located in Colorado. In addition to survey equipment, PENTAX markets cameras, lenses, binoculars, rifle scopes, closed circuit television lenses, video products, and a wide range of specialized lenses and accessories.

For more information contact Anne Haggar at: (303) 799-8000 x 261

GEODIMETER TOTAL STATIONS CHOSEN BY DEFENSE MAPPING AGENCY

ITASCA, IIL, November 24, 1993— Geotronics, manufacturer of Geodimeter survey equipment, has been awarded a significant contract for surveying total stations by the Defense Mapping Agency of Reston, Virginia. The Defense Mapping Agency contract follows the large contract Geotronics received from the U.S. Army earlier this year.

Other Geodimeter total stations include: the System 4000—a robotic surveying system; the System 500—a line of instruments that enable the customer to select the optimum set of components and capabilities for his or her own exact needs; and longrange total stations from the System 400 product line.

Leica's WILD CR244 GPS Controller for RTDGPS

Geotronics AB is headquartered in Danderyd, Sweden. Geotronics of North America, Inc. is located in Itasca, Illinois and is responsible for marketing and servicing Geotronics products throughout North America. For more information, contact Geotronics, 911 Hawthorn Dr., Itasca, IL 60143; (708) 285-1400; fax, (708) 285-1410.

FastRegs Software Updated

Users of Macintosh computers and those working in a Windows environment can now utilize FastRegs computer software from OSHASoft, Inc. The program, which previously had been available strictly for DOS users, has just been released in a new 3.0 version that has been developed to take advantage of the increasingly popular, graphical operating systems, especially by offering onscreen illustrations.

FastRegs 3.0, like its predecessors, allows users to easily search for and print out relevant OSHA and EPA regulations. The product has come into widespread use by employers, safety professionals, plant managers, engineers, attorneys, and others throughout a variety of industries, as well as by government officials.

For more information, contact OSHASoft, Inc. at P.O. Box 668, Amherst, NH 03031-0668, or call (800) 446-3427. In New Hampshire, call (603) 595-1414. The fax number is (603) 595-0088.

LEICA'S NEW OFFERINGS

Leica recently introduced a second version of its popular GPS sensor.

The well known WILD SR299 GPS Sensor is a dual frequency geodetic receiver. The L1/L2 microstrip antenna is fitted on a ground plane and built into the Sensor. The SR299 is light and compact, the perfect solution for almost all standard survey requirements.

The new Sensor is the WILD SR299E with WILD AT202 external antenna. In this configuration, the L1/L2 microstrip antenna with ground plane is fitted in a small, lightweight housing the WILD AT202 external antenna.

A new GPS Controller and a new version of SPCS (Sensor PCControl) software support full RTCM corrections and NMEA message output. System 200 can now provide Real Time Differential GPS at 1m to 3m accuracy levels for applications on land and water and even in the air.

The WILD CR244 is a new version of Leica's small, handheld GPS Controller. It connects to WILD SR299 and SR299E GPS Sensors, to a radio communication link, to a PC with hydrographic-survey/navigation software, and even to an echo sounder. The new CR244 has all the surveying, recording and navigation features of the WILD CR233 GPS Controller plus full Real Time Differential GPS capability. ⊕

Here's Some Important Information About CLSA

The goal of the California Land Surveyors Association is to promote and enhance the profession of surveying, to promote the common good and welfare of its members, to promote and maintain the highest possible standards of professional ethics and practice, and to elevate the public's understanding of our profession. CLSA represents all land surveyors, whether they are employees or proprietors, whether in the public or the private sector.

Representation

LOCAL: Your local chapter represents you in local issues. Through your chapter representative to the State Board of Directors, the individual member can direct the course CLSA will take. STATE: The surveyor is represented at the state level through an active legislative program, legislative advocate, and liaison with the State Board of Registration. REGIONAL: CLSA is an active member of the Western Federation of Professional Land Surveyors. This federation is composed of associations throughout the western United States and addresses regional issues. NATIONAL: Through institutional affiliation with the National Society of Professional Surveyors and the American Congress on Surveying and Mapping, CLSA is represented at the national level.

Education Opportunities

CLSA presents annual conferences which provide technical and business programs, as well as exhibits of the latest in surveying and computing technology. Seminars and workshops are presented to assist in continuing education. CLSA publishes the *California Surveyor* magazine and the *CLSA News* to keep the membership abreast of changing legislation, legal opinions, and other items which affect our profession.

Business and Professional Services

CLSA provides a fully staffed central office which is available to answer questions or to provide up-to-date referrals concerning legislation, educational opportunities, job opportunities, or other issues concerning our membership. Health and professional liability insurance programs are available to members.

Join CLSA Today!

Application for Membership in the California Land Surveyors Association

Mail Your Completed Application To:

CLSA Central Office
P.O. Box 9098
Santa Rosa, CA 95405-9990

Questions?

Phone (707) 578-6016
Fax (707) 578-4406

** First year's annual dues are to be prorated from date of application*

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Mailing Address (above) is: ☐ Home ☐ Business

Employment: ☐ Private (principal) ☐ Private (employee) ☐ Public ☐ Retired

☐ $145.00 CORPORATE MEMBER: Shall have a valid Calif. Professional Land Surveyor or Photogrammetric license.
☐ $ 72.50 AFFILIATE MEMBER: Any person, who in their profession, relies upon the fundamentals of land surveying.
☐ $ 72.50 ASSOCIATE MEMBER: Any person who holds a valid certificate as a Land Surveyor in Training.
☐ $ 14.50 STUDENT MEMBER: A student in a college or university actively pursuing the study of land surveying.
☐ $290.00 SUSTAINING MEMBER: Any individual, company, or corporation desirous of supporting the association.

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CLSA PUBLICATION ORDER FORM	CLSA Member Price	Non-member Price	Quantity	Total Amount
1994 Complete Package including PLS Roster, Pre-'82 CE Numerical Listing, PLS Act & Board Rules, Subdivision Map Act, and Binder	$22.00	$ 38.00		
1994 Refill Package including PLS Roster, PLS Act & Board Rules, Subdivision Map Act.	$16.00	$ 32.00		
PLS Act and Board Rules (1994 publication) (5½ x 8½)	$ 5.00	$ 10.00		
Subdivision Map Act (1994 publication) (5½ x 8½)	$ 6.00	$ 12.00		
Pre-'82 CE Numerical Listing	$ 9.00	$ 18.00		
Binder with index tabs for LS Roster, Pre-'82 CEs, LS Act & Board Rules, Subdivision Map Act, and Misc. Statutes *(text of Misc. Statutes will be available at later date)*	$ 6.00	$ 6.00		
California Coordinate Projection Tables – NAD '83	$ 6.00	$ 12.00		
Right of Entry Cards *(minimum order is two)*	2 / $ 3.00	2 / $ 6.00		
Corner Record Forms *(minimum order is 25)* (Form PWA-102) (8/88)	25 / $ 10.00	25 / $ 15.00		
Land Surveying Brochure *(minimum order is 100)*	100 / $ 15.00	100 / $ 30.00		
Standard Contract – Agreement for Prof. Services	$6.00 / pad of 25	$12.00 / pad of 25		
Land Surveying for the Land Owner & Real Estate Professional	$ 5.50	$ 11.00		
Easement And Related Land Use Law in California, Second Edition *by Donald E. Bender, J.D., L.S.*	$ 20.00	$ 30.00		
Cadastral Survey Measurement Management System Three-ring binder documentation & three disks	$ 50.00 / set	$100.00 / set		
NGS 1983 California Horizontal Control Coordinates Data Disks	$ 35.00	$ 70.00		
NGS Search Program (for use with NGS disk)	$ 20.00	$ 40.00		
MEMBERSHIP ITEMS (not available to non-members)				
Lapel Pin with CLSA logo	$ 6.00	not available		
Decal of CLSA logo *(minimum order is two)*	2 / $1.50	not available		
Shareware Disk #2 – BLM – SPC & UTM Conversion	$ 3.50	not available		
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$20.01 to $30.00	$ 3.75	Over $50.00	Add 10%*

* Add 10% to a maximum of $10.00 shipping.

- Make your check or money order payable to California Land Surveyors Association (CLSA).
- Mail your order form and payment to:
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  P.O. Box 9098, Santa Rosa, CA 95405-9990
  Phone: (707) 578-6016 Fax: (707) 578-4406
- Minimum order for Master Card or Visa is $20.00.
- If you are paying by Master Card or Visa, you may fax your order to (707) 578-4406 between the hours of 9:00 AM and 5:00 PM, Monday through Friday.
- Member prices are only available to members of the State California Land Surveyors Association.

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NGS Horizontal & Vertical Data Base for California
- Order Form -

In July 1992 the NGS came on line with a new integrated data base. This base collectively holds all data for all "horizontal & vertical" control including the HPGN stations. The information is available in a readable ASCII format, that has been compressed onto a 3.5" IBM compatible disk. Each control station is considered a record which will fill one (to several) page(s) when printed. Each record contains the station name, geodetic latitude and longitude, sta plane coordinates in meters and feet, azimuth marks, and recove information. The first update will be available sometime in mid-Summer 1994.

The above database is not the same as the "NGS 1983 Calif. Horizontal Control Coordinates" also available.

MEMBER
$20.00 per disk

COUNTIES

NON-MEMBER
$30.00 per disk

The whole state can be purchased for $400.00 (member) • $600.00 (non-member)

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Also Available:

SEEKER - *Seeker allows you to extract full report or summary information from the above NGS data files based on geographic coordinates. Supports ASCII or DXF file formats.* - $30.00 (member) $60.00 (non-member) *This is a must have!*

GEOID93 *(calcs. estimated geoid heights)* $20.00 (member) $30.00 (non-member)

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7½% Sales Tax	$
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Published Quarterly by the
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