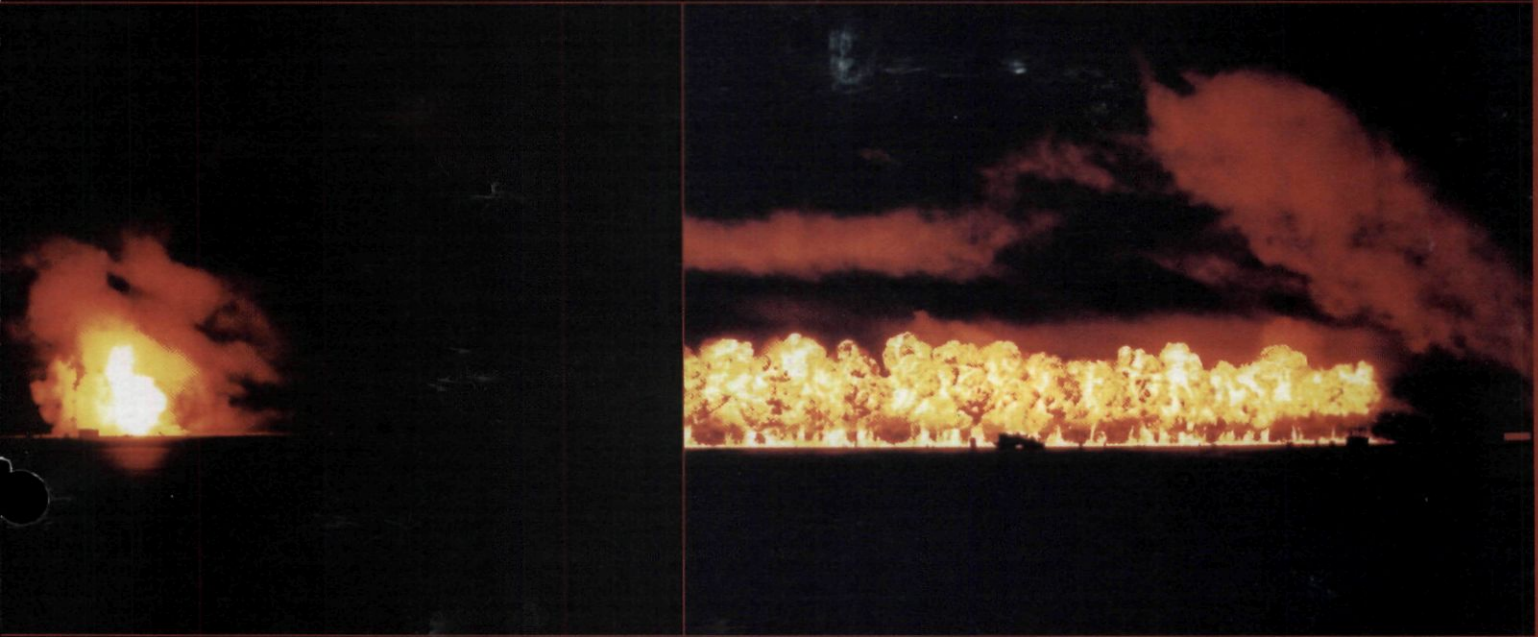


The Voice of the Land Surveyors of California

California SURVEYOR

Institutional Affiliate of American Congress on Surveying and Mapping

Summer 2002 Issue #135



Wall of Fire!

CHANGE SERVICE REQUESTED
The California Surveyor
Post Office Box 9098
Santa Rosa, CA 95405-9990

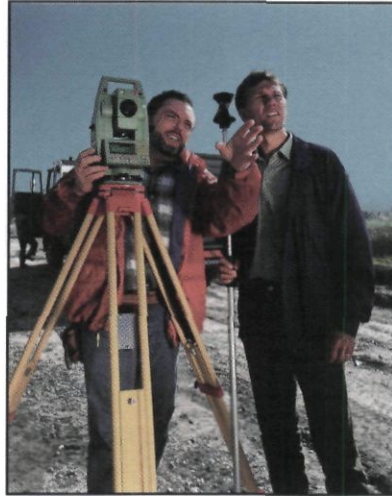


Surveyors Service Company

ISO 9001
CERTIFIED

Sales • Service • Rentals • Training

Now Open in San Diego!



For over 70 years, **SERVCO** has been known for quality products and dependable service. This tradition continues with our newest office in **SAN DIEGO!** Stop by today to see the largest, most complete selection of surveying equipment available.

Come see Bob Elliott the newest employee at SERVCO

- GPS/GIS SYSTEMS
- TOTAL STATIONS
- THEODOLITES
- TRANSITS
- SYSTEM SOFTWARE

- MACHINE CONTROL
- CONSTRUCTION LASERS
- BUILDER'S LEVELS
- FIELD SUPPLIES
- MEASURING TAPES

- WOOD STAKES & LATH
- USED EQUIPMENT
- INSTRUMENT REPAIR
- JOB-SITE DELIVERY
- TECHNICAL SUPPORT



**8170 Ronson Road,
Suites # C & D
San Diego, CA 92111**
tele: 800-282-4454
fax: 858-278-8845

www.servco1.com

Authorized

Leica

Geosystems

Dealer

**Open 8 am - 5 pm
Monday thru Friday**



**Authorized
Sales and Service**

GPS

- Survey Grade Total Stations
- Mapping Grade Receivers
- Recreational Grade Receivers
- Reference Stations

Robotic Total Stations

Optical Total Stations

Data Collectors

Field Computers

Software

Trimble Certified Training

Trimble Certified Repair

Everything today's surveyor needs. All in one place.

New design and construction methods require new kinds of positioning, delivered in a staggering variety of formats. GeoLine Positioning Systems is your authorized single source for a totally compatible toolset of the latest surveying technology to streamline your entire workflow.

We are working to grow with you. GeoLine has recently added new stores, more staff and expanded our repair facilities to give you the power to handle any challenges that come your way.



The Leaders in GPS and Optical Surveying,
GIS and Mapping Technologies

GeoLine Bellevue Corporate Headquarters

1555 132nd Avenue North East
Bellevue, WA 98005-2265
800.523.6408
www.geoline.com

Sales Offices in:

San Francisco, CA
415.345.9970

Los Angeles, CA
818.760.4326

Reno, NV
775.359.3357



**RICK
ENGINEERING
COMPANY**



www.rickengineering.com

- **Civil Engineering**
- **Transportation**
- **Construction Support**
- **Water Resources**
- **Survey & Mapping**
- **Photogrammetry**
- **Specialized Computer Services**
- **Legal Support Services**
- **Creative Services**
- **Land Use Planning**
- **Redevelopment**

5620 Friars Road, San Diego, California 92110-2596
Tel: (619) 291-0707 Fax: (619) 291-4165

**SAN DIEGO • RIVERSIDE • ORANGE
PHOENIX • TUCSON**

CLSA Officers 2002

Marc R. Van Zuuk, P.L.S. • President
Raymond L. Mathe, P.L.S. • President-Elect
Dean J. Palumbo, P.L.S. • Secretary
Robert C. Hart, P.L.S. • Treasurer
Patrick J. Tami, P.L.S. • Immed. Past President
Dorothy C. Calegari • Executive Director

Board of Directors Chapter Representatives

Bakersfield

Kevin Morris, P.L.S.

Central Coast

Randy Ellison, P.L.S. • Linda M. Richardson, P.L.S.
S. Randy Woodjack, P.L.S.

Central Valley

Mike Turnrose, P.L.S.

Channel Islands

James T. Pilarski, P.L.S. • Joseph P. Tennyson, P.L.S.

Desert Chapter

Harrison P. Barton, P.L.S.

East Bay

Harold B. Davis, P.L.S. • Alan R. Duback, P.L.S.
Leslie H. Freligh, P.L.S.

Gold Country

Anthony J. Spillane, P.L.S. • Keith M. Waters, P.L.S.

Humboldt

Barry L. Kolstad, P.L.S.

Lake/Mendocino

Donald H. McMath, P.L.S.

Los Angeles

Steven Gehrke, P.L.S. • Dan May, P.L.S.

Marin

David P. Harp, P.L.S.

Monterey Bay

Bruce D. Barton, P.L.S. • Lynn A. Kovach, P.L.S.
Jerry Combs, P.L.S.

Mother Lode

Russell "Frank" Walter, P.L.S.

Northern Counties

James M. Herrick, P.L.S.

Orange County

Richard Maher, P.L.S. • William R. Ralls, P.L.S.
Cecilia Whitaker, P.L.S. • David Woolley, P.L.S.

Riverside/San Bernardino

Brian H. Hess, P.L.S. • Joseph R. Willard, P.L.S.

Sacramento

Carl C. deBaca, P.L.S. • Jerold L. Peterson, P.L.S.

San Diego

Michael Butcher, P.L.S. • Lonie K. Cyr, P.L.S.

Scott Hurst, P.L.S. • Jacob F. Roth, P.L.S.

David P. Viera, P.L.S.

San Joaquin Valley

Ted J. Kerber, P.L.S.

Santa Clara/San Mateo

Paul W. Lamoreaux Jr., P.L.S. • Keith L. Nofield, P.L.S.

Sonoma County

Michael E. Ford, P.L.S. • Gordon P. Meininger, P.L.S.

Surveyor *California*

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."

PERSONNEL

OWNER

California Land Surveyors Association, Inc.

CENTRAL OFFICE

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

E-Mail address: clsa@ca-surveyors.org

CLSA Homepage: www.ca-surveyors.org

EDITOR

Phillip A. Danskin, P.L.S.

ASSISTANT EDITOR

Dave Ryan, P.L.S.

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: 4,800.

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 are 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 or Microsoft Word.

EDITOR'S ADDRESS

Phillip A. Danskin, P.L.S.

Phil Danskin & Associates

P.O. Box 1796, Sonoma, CA 95476-1796

E-Mail address: geometre@vom.com

DEADLINE DATES

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

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

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

Inside This Issue

Features

Surveying a Wall of Fire

by: Judith Frank 10

Obituaries 14

Three Monuments, One Initial Point

by: Michael A. Duffy, PLS 16

Conference 2002 Highlights 26

Meet the Sustaining Members 32

Department

From the Editor	6
President's Message	9
CLSA Publication Order Form	25
Index to Advertisers	30
Welcome New Members	30
CLSA Membership Application Form	33

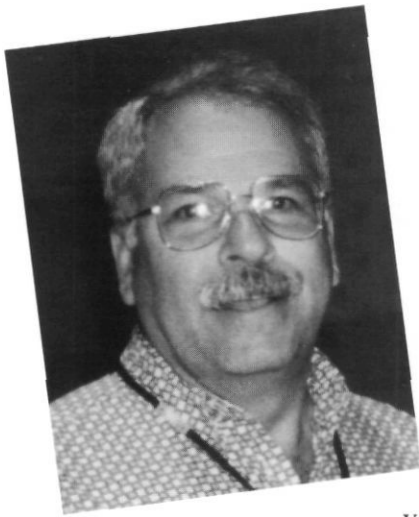
On The Cover

Surveying a Wall of Fire

Article by: Judith Frank, Administrative Coordinator, Johnson-Frank & Associates, Inc. David Woolley, Vice President, Johnson-Frank & Associates, Inc., P.L.S.

Photos by: Roger Frank, President, Johnson-Frank & Associates, Inc., P.L.S.





Tahoe! What a Jewel!

For those that missed this year's successful conference at beautiful Lake Bigler, er Tahoe, you missed a beauty!

Prettier than Britney, or if you're my age, Raquel. Hunkier than, Fabio, or for you vintage ladies - Rock? . . . As the song goes, (Lake Diggler) “. . . you take my breath away.” This is one time governmental intervention is a must in order to preserve this gem! (Unfortunately “pretty” to a surveyor, is an undisturbed bronze disk set at the surface of a paved cul-de-sac, having a radius of 12 meters and a central angle of 270 degrees; with an orange and white striped guard post marked “SURVEY MONUMENT”, with a strobe atop, along the perimeter of the cul-de-sac signs “RESERVED PARKING FOR SURVEYORS; NO PARKING WITHIN 10 METERS”, TOGETHER WITH a five-meter-wide paved road!) *Fil, is this philler?!*

Our keynote speaker Knud Hermansen, Esq, P.E., L.S., Phd . . . was something else! Entertaining and educational. So much so, that he is “booked” three years in advance! So if you missed this one - you might not see another performance for at least three years! Hermansen, also in the teaching business, shared his statistical conclusion regarding continuing education - without testing, it is nearly worthless. Whoa! I learned a lot. I'll have to admit, I may have ‘retained’ more had I known there would be a ‘test’.

If you missed Knud's ethics seminar, you might wish to contact our New Mexico cousin, Steve Frank, at New Mexico State University. NMSU has an accredited on-line ethics course. Next semester starts soon, write Professor Frank at sfrank@nmsu.edu.

Besides other things . . . an obscure bit of trivia was learned from the California State Lands Commission . . . did you know that the proceeds from surplus school lands purchase go to the Teachers Retirement Fund!?! Even if it's a minuscule amount - I smell fish! And you thought the Department of Corrections had clout in Willieville?!

I thought I knew it all . . . until Dan Beardsley's Easements seminar. He threw out a set of circumstances whereby easements can be extinguished through merger! Scary stuff! Knud, I think the world of you, but I learn something at every seminar - no matter how well I think I know the subject . . . and without testing.

Another ‘shoulda’ was Steve Parrish's seminar on urban and double corners! I missed it but the look of some of the faces of the attendees finishing Steve Parrish's seminar was one of joy. So much so, I thought the C.A.M.P. fellas might have burned their evidence in Steve's room!

How ‘bout some stats from Central Office . . .

The conference attracted 578 land surveying professionals from 19 states! There were 26 presentations on topics addressing business practices, legal issues and the technical aspects of land surveying.

The two lunch programs as well as the MS Dixie II dinner cruise were well attended and entertaining. The CLSA Conference hosted the Education Foundation Scholarship Auction. As reported by Bob Hart, Education Foundation Board member, “The selection of silent and live auction items and the return of Dr. Greg “Lightning” Williams of Sparks, Nevada as the auctioneer, created a warm and exciting atmosphere where the audience donated almost twelve thousand dollars to the foundation while acquiring new and vintage equipment and a wide array of memorabilia.”

Many VIP's attended the Conference, notably: Curtis Sumner, ACSM Executive Director; Gerry Curtis, NSPS President; Robert Krebs, NCEES Chairman-Elect; Brett Jefferson, NSPS Area Director; Warren Ward, PLSC Chairman; and Herbert Farber, PLSO Chairman-Elect.

Speaking of “notables” . . . before the scholarship auction I had a nice chat with Curt Sumner. What a dedicated guy . . . and gentleman to boot! Curt believes in NSPS so much he puts his money where his mouth is! He has to be dedicated; to decrease his standard of living by about fifty percent, increase his time away from family, (whom Curt

treasures dearly), by two hundred percent - attempting to keep afloat a wonderful and historical professional society that few of us belong to - let alone participate! Don't come crying to NSPS or CLSA when you hear that big sucking sound comin' from the engineer's lobbyist trying to vacuum up some survey services for John Q. Public! The very least that those-that-don't-belong can do . . . is fiscally support NSPS & CLSA!

There were exhibitors galore! One said to me that this year's convention was better than last year's Vegas conference! Told ya Tahoe was a gem!

Thanks be to Crissy, Cheryle, Viki & Dorothy at our Central office, for all your efforts at this year's great conference! (*Of which, yours truly plagiarized your conference facts.*)

Last but definitely not least, our student volunteers - we couldn't have done it without 'em!

Following last issue . . .

I've been told that my last editorial regarding atrocities at our local Recorder's Office has hit a nerve. Not bad enough to write the editor! Nonetheless, some did vocalize their concerns to me at the conference. I read with dismay from a chapter report that the Butte County Recorder's Office is "inaccessible"!?! Whoa! What's goin' on with our recording bureaus?!

I have received many glowing reviews of Up and Down California. One person, (I won't name names, Pat), is in the process of re-reading it! Ol' Uzes mentioned he occasionally does the same thing. I just wish there were an affordable 1850s map to go with it. Like cookies and milk.

The Record of Survey . . .

I hear from President Cardoza, of the San Joaquin Chapter, that the record of survey checking fee is rearing its ugly head in Fresno County. To the tune of about \$800! Sounds like it might be time for another Goliath slayin'! Why can't we enact legislation to hold harmless the county/its agents from any actions arising from an opined Record of Survey? Better yet, let's go from surveyor to recorder! Or change the sheet size to 610mm by 910mm, (24x36), that wouldn't require multiple sheet Records of Survey!

Thank you for attending our conference. Thanks for participating. And thanks for your support! If you don't belong, won't you please consider joining CLSA and NSPS today! Thanks for your time. ❖



2002 Scholarship Auction Donors

CLSA would like to thank the people that supported this year's Scholarship Auction by donating items.

Reed Bekins
Bergenson's Surveyors Inst. Svc.
BHA Inc.
John Briscoe
C&C Aerial Mapping
California Surveying & Drafting
Dorothy Calegari
Cartwright Aerial Surveys, Inc.
CD Data
Paul Cones
CSU Fresno
Hal Davis
Ron Davenport
Eagle Point
Engineering Supply Company
Fargen Surveys
Roger Frank
Fresno State
Geodimeter SW, Inc.
Geoline Positioning Systems
Bob Hart
Huitt-Zollars
Humboldt Chapter, CLSA
L & L Surveying
Lewis & Lewis
Marin Chapter
Armand Marois
Les Marquoit
Mt. Diablo
Professor Fareed Nader
NorthStar Engineering
Pacific Crest Corporation
Larry Perkins
Professional Surveyor Magazine
RA&MCO Insurance Services
Linda Richardson
Rick Widmer Peak Surveys
Sacramento Chapter
San Joaquin Valley Chapter
SECO
Ed Schillinger
Bud Simmons
Site Manufacturing Company
Sokkia Measuring Systems
Spectra 3D
Surveyors Service Company
Topcon California
Marc Van Zuuk
Walt Robillard &
John Wiley and Sons

If you need it out there...



It's in here.

Log onto www.forestry-suppliers.com or call **800.360.7788** to get your free 600+ page catalog today!

Forestry Suppliers, Inc.
MORE THAN THE NAME IMPLIES®

©2002 Forestry Suppliers, Inc. All rights reserved. 02-0080

MSA® V-Gard Hard Hat Page 496

Forestry Suppliers 5/8" x 11 Thread Heavy-Duty Aluminum Tripods Page 406

Hewlett Packard HP-43B Graphic Scientific Calculators/Data Collectors Page 395

Johnson & Johnson First Aid Cabinet Kit Page 526

CST Enclosed Transit Page 393

NEW CST LaserMark™ LMH Page 405

CST Pro-Line Nylon Clad Steel Tapes Page 424

CST Magna-Trak™ Series Magnetic Locators Page 457

Plumb Bob and Swoath Page 446

Vinyl Stake Wire Flags Page 4

CST Telescoping Aluminum Rods Page 415

CST
CST Corporation
An One Mountain, Ltd., subsidiary

People who do the job right the first time.

Does anyone care about survey marker quality like you? We do. At Berntsen, we have customer service and technical support staff who *understand* the business you're in. We understand the products you need. We have years of industry *history*. We've set our own high *standards* to excel in survey markers, and in the level of *quality* we provide to you.

Today, we lead the industry in providing the best survey markers and accessories to busy people like you. People who expect the best. People who need to have the flexibility to order anytime, day or night. People who do the job right the first time. Call us at (800) 356-7388, or order **online** at www.berntsen.com. Quality from us to YOU.

Berntsen
Survey Markers
800.356.7388
www.berntsen.com

Berntsen International, Inc. • PO Box 8670 • Madison, WI 53708-8670
Tel: 800-356-7388 • Fax: 800-249-9794 • Email: surveymark@berntsen.com



FREE HAT!
with \$50+ online purchase

President's Message



On April 18th, Governor Gray Davis announced the long awaited appointments of Michael K. Welch, Dr. Gregg E. Brandow, Arthur P. Duffy, David J. Fruchtman, and Dale J. Wilson as members of the Board for Professional Engineers and Land Surveyors. These appointments fill the vacant seats of the the Land Surveyor, Structural, Civil, Mechanical Engineers, and the Electrical Engineer respectively. I want to thank all of you that took the time to write the Governor's office. For those of you with an interest, a little background on the appointees may provide some insight as to the Governor's choices.

Michael K. Welch, of Salinas, has more than 30 years of experience in land surveying. From 1968 to 1998, he was a Land Surveyor for M.K. Welch Surveys, Inc. Mr. Welch recently served as the Chief of Surveys, Deputy County Surveyor for the County of Monterey. He serves as a Land Surveyor in the Right-of-Way Engineering Division of Cal-Trans. Mr. Welch has served on the boards of the California Land Surveyors Association, the California Council of Civil Engineers and Land Surveyors, and is a founding member of Surveyors Historical Society and Western Federation of Professional Land Surveyors. The California Land Surveyors Association endorsed Mr. Welch.

Dr. Gregg E. Brandow, of South Pasadena, has 30 years of experience in the field of structural engineering, having worked for Brandow & Johnston Associates Structural Engineers since 1971. He specializes in the structural design of buildings as well as seismic retrofit of existing buildings. Dr. Brandow is licensed as a structural engineer in 16 states besides California. For the past 30 years, he has been an Adjunct Professor of structural engineering at the University of Southern California Department of Civil Engineering. Dr. Brandow is a member of the Earthquake Engineering Research Institute, the Structural Engineers Association of Southern California, and Consulting Engineers and Land Surveyors. He serves as President of Brandow & Johnston Associates. Dr. Brandow earned a Bachelor of Science degree from the University of Southern California, and a Master of Science degree and Ph.D from Stanford University.

Arthur P. Duffy, of San Rafael, has spent his career in engineering positions for public agencies. He has been involved with the Professional Engineers in California Government for several years, and has served as President of both the San Francisco and statewide divisions. After earning his degree, Mr. Duffy worked as a Public Works Engineer for the City of Brisbane from 1986 to 1987. He then became a Transportation Engineer for Cal-Trans, a position he held from 1987 to 1998. From 1998 to 2000, Mr. Duffy served as a Senior Engineer in a special two-year assignment, wherein he also served as Secretary of the Commission's Engineering Criteria Review Board. He now works for Cal-Trans as a Transportation Engineer in Oakland. Mr. Duffy earned a Bachelor of Science degree from San Francisco State University.

David J. Fruchtman, of Los Angeles, has more than 15 years of experience as a self-employed Engineering Consultant. He is a licensed Mechanical and Plumbing Engineer. Mr. Fruchtman is a member of the American Society of Heating and Refrigeration Engineers, American Society of Plumbing Engineers, and National Fire Protection Association. He earned a Bachelor of Science degree from New York State University.

Dale J. Wilson, of El Cajon, has nearly 15 years of experience working as an engineer for Cal-Trans. He is a Senior Transportation Electrical Engineer, a position in which he supervises 18 engineers and technicians, authors electrical specifications, and oversees consultant contracts for the design of traffic plans on state highways. Mr. Wilson has been a voting member of the San Diego Traffic Engineers Council since 1995. He earned a Bachelor of Science degree from San Diego State University.

The role of the California State Board for Professional Engineers and Land Surveyors is to safeguard life, health, property, and public welfare by regulating the practice of professional engineering and professional land surveying. The members do not receive a salary. These positions do not require Senate confirmation.

Continued on page 13

Surveying a Wall of Fire

Article by: Judith Frank, Administrative Coordinator, Johnson-Frank & Associates, Inc. David Woolley, Vice President, Johnson-Frank & Associates, Inc., P.L.S.

Photos by: Roger Frank, President, Johnson-Frank & Associates, Inc., P.L.S.



L to R: Steve Backes, Party Chief, Dave Woolley, V.P., Roger Frank, President

Give me the ones with fire in their bellies, a steel-blue glint in their eye. Stand them next to jet engines that rattle vertebrae, pyrotechnics and exploding bombs that put forth a blast of heat that might melt nails and even better, make your guts rumble. Ask them to donate their time, put them in an orange vest and they smile from ear to ear. This is the hard-core surveyor. They love this profession! They'd survey the boundary of Hades just for the hell of it! We at Johnson-Frank & Associates have been very fortunate to have done a variety of survey projects that are cutting edge, over the top and far from mundane. We appreciate the conventional survey that challenges our abilities to fit all of the pieces of the puzzle together, but there are times when we really relish our assignment. We take on some assignments that call for "the hard-core." Such a challenge was the opportunity to survey a 2,500 foot Wall of Fire at the annual air show of the Marine Corps Air Station in Miramar, California, the original home of "Top Gun." This Wall of Fire would set a record for The Guinness Book of World Records.

Little Did They Know

The volunteers, Dave Woolley, PLS, Steve Backes, Party Chief, and Roger Frank, PLS, had not anticipated the level of excitement the 14th day of October 2000 would bring. They had reported to the EOD (Explosive Ordnance Department) three days before the air show for orientation. On October 14th, they set up instruments adjacent to the flight line, working alongside members of the MCAS Miramar Marine Corps Explosive Ordnance Disposal Team, the San Diego Bomb Squad, San Diego Sheriff's Bomb Squad, Navy Explosive Ordnance Disposal, Army Explosive Ordnance Disposal, and the Los Angeles Bomb Squad, to name a few. Our role was to survey and certify the length of a Wall of Fire that would be detonated from bombs and gasoline containers during the grand finale of the show. The Wall of Fire was expected to stretch for nearly half a mile and establish a record for The Guinness Book of World Records.

Prior to the grand finale pyrotechnic event at twilight, the air show was in full swing with the world famous Blue Angels, the F-117 Nighthawk Stealth fighter-bomber, the B-1B Lancer bomber, Mig-17's, P-51 Mustangs, an AV-8B Harrier, an F-14 Tomcat and other aircraft that sliced and punched their way through the sky. The airshow on this day in October 2000 was dedicated to the 50th Anniversary of the Korean War and "The Forgotten Warriors," veterans of the Korean War.



Dave Woolley and Steve Backes on the runway

Approximately one million spectators filled the stands and milled about in the field to salute the accomplishments of both men and machines. Not a bad arena for setups.

Our history with Miramar: Dave Woolley of Johnson-Frank & Associates has a long and proud history of working with the Southwest Division of the Naval Facilities Engineering Command and subsequently the United States Marine Corps personnel stationed at MCAS Miramar. Back in 1993 we provided research, aerial control and ground utility location for GIS mapping for the developed part of the base from Interstate 15 to the western boundary. In 1995 we did GPS aerial control and topo for the old Camp Elliott portion of the base. Our most recent project involved surveying the boundary of the 23,500-acre base as well as reviewing, plotting, scanning and indexing every recorded land document within the base boundary. Our field crews searched for over 800 points and found more than half. We set over 250 boundary corners and did boundary calculations on 2,500 points. We searched for maps and deeds back to the 1850's and scanned over 10,000 documents, including more than 500 maps. The title report items alone numbered more than 550. You could say we have a "working knowledge" of the area.

Our familiarity with the runways at MCAS Miramar is also tied into another survey project that JFA performed in March of 1999 and November 2000. The base personnel had recently installed a new Instrument Landing System (ILS) that would not pass a flight check test. Realizing that I, Dave Woolley, am a licensed land surveyor and not an avionics expert, please stay with me on this; the planes coming in to land need to rely on the ILS when flying IFR (Instrument Flight Rules). Flying IFR means conditions are such that visibility is less than three miles and not VFR (visual flight rules). It is critical that accuracy be maintained when aircraft are flying IFR. Apparently, there was a digital anomaly in the flight graphics when the plane was on approach to the ILS. It was suspected that a reflection/refraction from the ground was the culprit. We were charged with providing a very precise survey of the area. Precise in this case called for 1/4 foot contours, vertical profiles, digital photographs and dimensions of all surface features.

I found working 350 feet from the centerline of the runways proved to be a very exciting aspect of the job. Throughout the day we had F16's doing "touch and goes" right next to us. Even at a distance of 350 feet, these planes rattled me to the bone. They can literally blur your vision with the decibels from the jet engines. Occasionally, other planes will pass through, some stay, others only touch down on a couple of hundred feet of runway, pull up, loop around for another pass and away they go.

I know that this all sounds really enticing, but if you are thinking that you can stroll out to your local base and check this out for yourself, think again. Access to a base can be difficult, access to a runway? Forget it! The survey work turned out to be the easier part. We were required to have an escort at all times and our escort was in constant contact with the tower. We were not permitted to wear caps or any clothing that could become separated from your person. You must request permission to cross a runway or to be within a given perimeter of the apron. Before you are allowed to cross a runway, you must first walk around your vehicle and dislodge any rocks from the tires and do a complete visual inspection of the vehicle. Debris on a runway can be fatal to a flight if sucked up into an engine. There are other rules and regulations, but the picture should be clear. I don't question these standards; I sure wouldn't want to try to explain that a 1986 Chevy pickup was responsible for the demise of a multi-million dollar jet engine.

Now back to this Wall of Fire. As I mentioned, all of the groups involved volunteered their time and all materials used were donated. We set out our 2500-foot line as well as 250' intermediate stations. The work was completed using a Geodimeter 500 series instrument. As experts in measurement, we applied all atmospheric corrections, checked our tribrachs and measured the line multiple times from each end. The day of the show we repeated the procedure for the official Guinness witnesses. Marine Corps personnel poured 5 (five) gallons (23-liters) of unleaded gasoline into 334 bags stretched out in a 2500-foot string. A detonation cord that coiled like a cobra beneath each sack connected the bags. The gasoline bags were spaced 10 feet apart and the cord would burn at a sizzling speed of 25,000 feet per second.



Marines fill bags with five gallons of gasoline

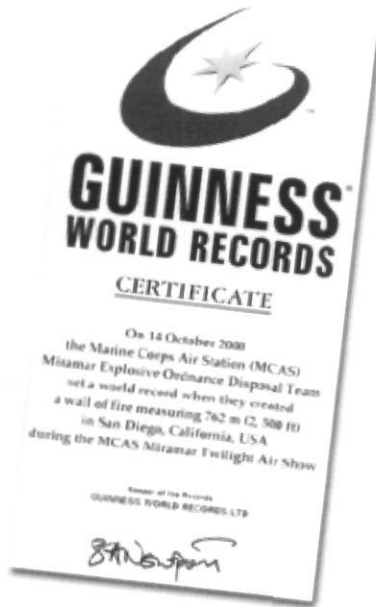
Continued on page 12

Ten drums were placed at 250 feet apart with explosives in and around them. The explosives were set and we measured the layout.

Our final certification letter stated the length of the line as well as the positional tolerance of each point and relative error in the line. After all of this "precise" work, the Marines added another 30-40 linear feet of gasoline to the lines. There was little question that the line was 2500 feet long. It was a very complex but well coordinated mission. I know that I will not work with a finer group of professionals than Master Sergeant Anderson and the others on the line with us during the project.

Show Time – Bring on The Fire

Once the math was done, we sat back to watch the show. Planes screamed through the darkening sky and the fire was detonated. Initially it was a small bonfire but in a matter of seconds it erupted into an unbelievable wall of flames and heat. Flames rose 200-300 feet, dwarfing military vehicles and other structures in view. The crowd's hush became a roar and the bomb squad technicians joined in with shouts of resounding approval. The heat could be felt from a distance of 1,000 feet and more. In a matter of seconds it was over but the experience is with us forever. We had been partners in a feat that had never been accomplished before.



Expectations were met and the record is published on page 143 in the 2002 hardcover edition of Guinness World Records. We were proud to be a part of the team to set a world record. We also felt pride and satisfaction with the integral role we played as surveyors to remind us that this profession is not always confined to stay within the nine dots. Surveying may be mundane to some, but to the "hardcore surveyor" there is nothing like a chance to blaze a path to a new adventure and carve a new grin across a weathered face. ❖

This article was written prior to the September 11th Attack on America. We are so proud to have worked with these brave young men and women who are serving our country. We know firsthand that they accept a challenge and will do all that is necessary to succeed. We extend our heartfelt sympathy to the families and friends of the brave men and women from the VMGR-352 "Raiders" Transport Squadron 352 who lost their lives on January 9th in Pakistan and the fallen heroes of the "Flying Tigers" HMH-361 who perished in Afghanistan in support of Operation Enduring Freedom. Semper Fi.

Miramar's History

Let's explore the history of the ground beneath this pyrotechnical setup. What had scorched this earth years before and what events had evolved to make this the home of the Marine Corps' West Coast air power? MCAS Miramar once was part of a huge rancho owned by Don Santiago Anguello, Mexican Army Commandante of San Diego's presidio. According to the historical files of MCAS Miramar's website, Edward Scripps arrived in 1890 from the East Coast and established a ranch on 2,000 acres in the Miramar area. He is credited with naming the mesa Miramar, loosely meaning "a view of the sea" in Spanish. Ownership of Miramar later went to the Jessop family and the area became a settlement of cowboys and ranchers. In 1917 the Army bought the Miramar area and established Camp Kearny. Few permanent structures were in Camp Kearny when more than 65,000 men passed through the camp to mobilize for World War I. After WWI the camp was a demobilization center and by 1920 it no longer served as a military base.

The base came back to life in 1932 when the Navy brought in the U.S.S. Akron and U.S.S. Macon, the largest aircraft of the times. A mooring mast was built for these dirigibles but once the Akron and Macon crashed at sea the Camp was idle once again.

Activity picked up again with the advent of World War II and runways were constructed in 1940. During World War II both the Navy and the Marine Corps used the base. In 1947 the Marine Corps moved to the El Toro base in southern California and Miramar was re-designated a Naval Auxiliary Air Station. Although Miramar prepared and supported carrier groups and squadrons during World War II and the Korean War, it was during the Vietnam War that Miramar rose to fame for its program in training air combat maneuvers and fleet air defense. "Top Gun" and "Fightertown, USA" were new aliases for Miramar. In 1993, a Base Realignment and Closure committee decision recommended that Miramar be re-designated as a Marine Corps Air Station. Although all of the Navy's F-14 Tomcats and E-2 Hawkeye squadrons were relocated to Fallon, Nevada, Miramar still houses F/A-18 and KC-130 Hercules squadrons, as well as Ch-46E Sea Knight and CH-53E Super Stallion helicopters.

Of the five appointments made, one is self-employed, and works for the State University system, and three work for Cal-Trans. Of the three Cal-Trans employees, two are involved with the Professional Engineers in California Government (PECG). Mr. Duffy is also president-elect of that organization.

To help put these seemingly unimportant details into perspective consider this. The state employees unions were big supporters for Davis' campaign for governor in 1998. After nearly four years of generally ignoring PECG, which represents nearly 10,000 engineers, architects, land surveyors and related professionals who work for the State of California, Governor Davis needs to regain their support for his 2002 re-election bid. This may have influenced his choice of political appointments prior to November Elections.

Davis is also supporting SB1213, which on the surface is a bill that will implement the provisions of a newly adopted Memorandum of Understanding with PECG to provide pay and benefit increases for this year. Also included in the bill is language to implement a specific limit on the amount of state work that can be contracted out to private industry. This would provide a sort of "end run" around

the provisions of last year's Proposition 35 which allowed the state to contract out. If you would like more complete information on the bill, log on to www.leginfo.ca.gov and follow the links to SB1213.

This is just the latest in the continuing saga of PECG vs. private industry; no contracting out vs. contracting out. Among our colleagues that work for Cal-Trans that do support contracting out, there is an awareness that the process is in need of modifications to make it more cost effective. Among the Cal-Trans employees that do not support contracting out, there

seems to be the growing realization that the State simply can not, and should not hire enough staff to handle all the work, all the time. Given the number of positions that have gone begging for qualified applicants, public and private, it is a situation that is unlikely to

change in the near future. To quote my favorite aunt, "isn't that just a wrinkle".

Members of CLSA come from both sides of the proverbial fence, public and private, all of who are equally valuable members of our surveying profession. With the stated goal of CLSA: to represent all of the Land Surveyors of California, in mind, I will make three comments. First, I'll quote one of our Cal-Trans colleagues, "keeping the membership" and membership services "at current levels during the next economic downswing, can not be accomplished without team-building, from sincere hearts." Second, both sides of the issue need to realize there is a valid and important role for both public and private work force in delivering timely cost effective public works projects in California. Constantly batting the pendulum to the far extreme doesn't allow enough time to get anything done other than swinging the bat. And third, if you don't like whatever this year's pendulum swing turns out to be, have no fear, there is always the next legislative session.



*Members of CLSA come from both sides
of the proverbial fence, public and private,
all of who are equally valuable members
of our surveying profession.*

AERIAL PHOTOGRAPHY

DIGITAL MAPPING

TOPOGRAPHIC &
PLANIMETRIC MAPPING

DIGITAL ORTHOPHOTOS

REMOTE SENSING

GIS

QA/QC

HJW



HJW GeoSpatial, Inc.

800.383.2991

www.hjw.com

Obituaries

Ira Alexander, PLS 2674

Ira Alexander passed away in late January from medical complications connected with bladder cancer. He was a spry 80 years "young". Ira was a licensed land surveyor and registered civil engineer in California for over 46 years. During a good part of that time, he was a Fellow of both the American Congress of Surveying and Mapping and the American Society of Civil Engineers. For many years Ira was the Assistant Chief Deputy County Engineer for the County of Los Angeles. He started his career with them in the early 1940's and retired in the 1990's. Mr. Alexander was responsible for administering the Architectural, Survey and Mapping Divisions at Los Angeles County. Ira Alexander indeed was "Mr. Geodesy" in California for many years.

In 1966, the County Engineers Association, in conjunction with the California Council of Civil Engineers and Land Surveyors, appointed him to aid in a joint survey of educational and professional opportunities for surveyors in California. The results of his efforts were published in the ACSM Journal of Surveying and Mapping in the late 1960's.

Mr. Alexander's activities with the ACSM have included working on the national level as chairman of the Control Surveys Division in 1971-72. In 1972 Ira was elected to the Board of Directors of ACSM for a three-year term and in 1975 he was appointed to the Executive Committee. Among the professional committees he has chaired have been those on Geodetic Surveying and on preparation of a Manual on Control Surveys.

In addition to his professional association activities, Ira has served on several educational advisory committees, helping to create courses of study in land surveying at the California State University Los Angeles and at Citrus College in Orange County. Besides teaching many in-house training courses on boundary control and analysis for the County of Los Angeles, Ira also taught many courses in surveying and geodesy at UCLA from 1957 to 1971.

In addition, Ira Alexander taught many workshops for various land surveying and civil engineering associations, throughout California and the nearby western states. His specialty was teaching the proper use of the California State Plane Coordinate Systems, using both the previous CCS27 system, based on the North American Datum of 1927, as well as the current CCS83 system, based on the North American Datum of 1983. Ira's workshops were always humorous and interesting because of the wealth of stories he would tell, which usually, but maybe not always, were directly connected with the subject matter. His way of teaching, i.e., via humorous story telling, is certainly becoming a lost art and it will be sorely missed.

In regards to these latter activities, Ira, along with his son Robert, produced a very useful book of tables, for interpolating parameters needed in the solution of mathematical equations in order to

directly transform geodetic coordinates (latitude and longitude) to state plane coordinates (northings and eastings), as well as the solution of the inverse problem, i.e., to convert from plane coordinates to geodetic coordinates. In addition, Mr. Alexander's familiar "blue pamphlet" was very useful in the calculation of the grid scale factor, needed for correctly reducing the horizontal ground distance to a grid distance and back, as well as for calculating the necessary azimuth corrections.

More recently, along these same lines, Ira taught a workshop course for the CLSA during the mid-nineties in Ontario, CA, when he was still promoting the use of his now relatively famous tables. Although most surveyors by this time were using either "canned programs", or even through the more rigorous "polynomial coefficient" methods, *Ira always stressed that use of his tables provided an ideal opportunity for the land surveyor to better understand the geodetic concepts of map and coordinate projections and the intricate procedures involved.*

Mr. Alexander kept his hand in the various activities of both the CLSA and the ACSM for many years after his professional tenure with the County ended. His face would always be a familiar one at the annual meetings of various land surveying and mapping organizations. *Here again is where his words of wit and story telling are certainly going to be missed by all those who had the privilege of knowing this fine gentleman.*

Ira had specifically requested, through a very close friend of his, to forgo any kind of special memorial service(s) for him. However, his memory will not fade in our minds for the many of us who knew him. It is quite conceivable, given his keen interest and outstanding efforts in the educational arena, that some kind of scholarship in his name will be proposed and brought to fruition in the near future.

Ira leaves, amongst others in his family, his dearly beloved wife and his son Robert J. Alexander. Donations to a proposed Ira Alexander Scholarship Fund will be appreciated, but until the details are worked out, we ask that they be deferred for the time being. God bless you Ira, knowing for sure that you're helping out on that big geodetic network in the sky.

Reprinted from <http://www.norcal-acsm.org>

John "Norm" Andregg, PLS 2515

Sunday, April 7th marked the celebration of the long, colorful and adventurous life of an icon in California's Land Surveying industry. John Norman Andregg, or "Norm" as he was known to most since childhood, was born in Auburn, California on December 21, 1912 to parents Sarah Jane Nielson and John Henry Andregg. He passed away March 25th at Sutter Auburn Faith Hospital in Auburn.

He was a product of the old Auburn Elementary School and Placer High School in Auburn, and the University of California at Berkeley, where he earned a degree in Mining Engineering.

When he left UC-Berkeley, the nation was in the throes of the Great Depression and he lit out for Alaska and its promises for gold mining riches. He joked later in life that he had recovered more gold from his pant cuffs after working in the Sierra foothills than he ever recovered in Alaska. When the Alaska riches didn't materialize, he

joined the U.S. Navy in 1936 and earned his aviator's wings. He flew amphibious PBY's in the Pacific Theater of Operations during World War II and was the pilot of one such reconnaissance aircraft during the crucial Battle of Midway Island in June of 1942. He later retired from the Navy as a commander.

In 1948, he bought the surveying operation of a previous County Surveyor, Jerome Barieau. He changed the name to Andregg Inc., which is in business to this day; although he retired and sold it some 16 years ago. Norm Andregg and his protégé associates comprised the top land surveying firm in the Sierra foothills for many years. They also did considerable work in the high Sierra including most of the land surveying work on the California side of Lake Tahoe. Andregg Inc. continues to be a leader in the Land Surveying and Geomatics industry.

Norm, who was twice widowed, is survived by his daughter Sharon Clark of Homer Alaska; grandchildren Angela O'Brien of Bakersfield and John Farros of South Lake Tahoe; great grandchildren Kaitlyn Elizabeth O'Brien; a stepson, Courtney Lewis of Sun Valley, Nevada; and his long time companion, Carmen Wilson.

His daughter Mrs. Clark, with a wink and a grin said of his wake, "one of dad's last wishes was to have all his friends and enemies have some drinks on him." It is unlikely that Norm had many enemies. He certainly did have copious friends, many of whom he served as mentor while they learned the land surveying profession. His passing is a great loss to all of us. Rest in peace dear friend.

Steven "Dave" Macy, PLS 7033

Dave Macy, a land surveyor at ProjectDesign Consultants (PDC) in San Diego, was an inspiration to everyone around him. For the past 10 years, Dave selflessly acted as a surrogate father for two impoverished children in Mexico, Brenda and Danny. After meeting the children begging on the streets, Dave immediately began providing financial and emotional support to them from that day on. The children now live in an apartment with full utilities, appliances and even a computer. Dave traveled to Mexico almost every weekend to take the children to movies and help them with homework.

Mr. Macy was born in Wayne, Michigan on August 10, 1946. Mr. Macy died February 16, 2002 in an automobile accident in Mexico. A memorial service was held to celebrate Dave's life on March 1st at Eternal Hills Mortuary in Oceanside, California. A dedicated land surveyor for the past thirty-five years, Dave moved from Oregon to San Diego in the late 1980's to pursue a career at SDG&E before moving on to ProjectDesign Consultants in 1997. Dave was responsible for overseeing SDG&E contract surveying and right-of-way work while at PDC.

While Dave will be remembered for his accomplished career in land surveying, he will possibly be more remembered as a selfless, thoughtful, soft-spoken gentleman who treasured his surrogate children, airplanes, pipe smoking and lemon pie.



**TOPCON
CALIFORNIA**

*Confidence means
having the right
equipment to do the
job.*



YES!

**0.0% Interest
for
36 Months
CONTINUES for a
Limited Time**



*Call today for all the
details. We have
exactly the right
product to meet your
needs for today and
tomorrow.*

*Topcon Positioning,
positioning you for
the future.*

*We have the right
equipment and the
right financing pro-
gram! It doesn't get
better than 0%!*



SALES - SERVICE - RENTALS

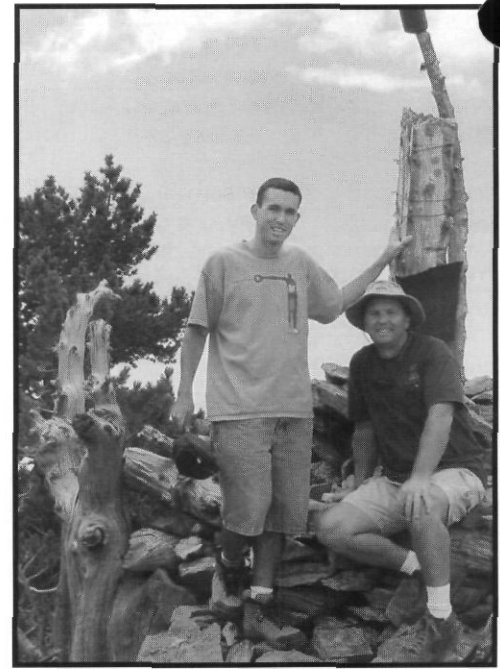
916-374-8575

Fax 916-374-8329

800-500-8575

www.topconca.com

Three Monuments, One Initial Point



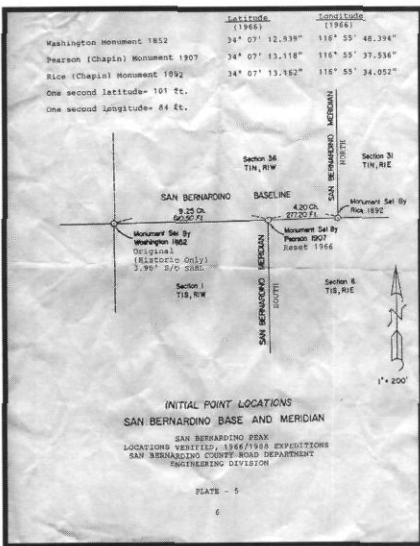
Mike Duffy - Initial Point

On November 7th, 1852, Colonel Henry Washington, Deputy Surveyor under contract with the United States Surveyor General of California, completed a four day hike with 12 men to a point he designated and monumented to be the Initial Point for all future cadastral surveys in southern California. This November will mark the Sesquicentennial Anniversary (150 years) of the establishment of the Washington Monument Initial Point.

Washington describes the journey to his Initial Point that day in his letter dated December, 1852 to Samuel D. King, then the Surveyor General of California,

“The men being much fatigued did not perform much service until the next day. The travel over mountain spurs being very laborious.”

The work was so difficult that Washington’s letter contains a wordy paragraph partially reprinted below hoping to persuade the government to feel sorry for him because he underbid the job. This was probably the first surveyor in California that made this mistake, but we all know it would not be the last.



Three monument diagram

“The amount of my account for expenses incurred in erecting the monument being close to \$511.00 was forwarded to you on the 5th instruction, but although this account closes the transaction with the Government, it is nevertheless proper to state that it does not cover all of my necessary

expenses ... and the opinion expressed by you that Four Hundred Dollars was enough to cover all necessary expenditures upon this work, believing as I do, that the account for the above reasons, would not be allowed, or, if allowed, greatly delayed to the prejudice of the public service.”

Little did Colonel Washington know that his monument would soon become the point of beginning of every piece of private and public property owned by the now 25 million inhabitants of southern California. Nettled at an elevation of 10,300 feet just west of what is now know as Mount San Bernardino, this Initial Point is both the highest and hardest to reach in the entire country. According to surveyor C. Albert White, in his book entitled, “Initial Points of the Rectangular Survey System”, it is also the only one that has not been altered over time by man. And, to add to its mystique, this point has one other unusual characteristic feature that makes it that much more unique – *it is not alone.*

The work was not only difficult, it also had its dangers as indicated by Washington’s records of this time period. They are full of interesting insights and comments on the dangers of surveying in the 1850’s in southern California. A couple portions of his notes read,

“From the last corner a deserted adobe house bears S 2° 15’ East. A man named Moore is said to have been one of the original occupants, but driven off by the Indians.”

Continued on page 18

A Better Way to Build.



The Trimble Toolbox of Integrated Survey Solutions

We know how challenging it is to coordinate the many different aspects of surveying and construction. That's why we created the Trimble Toolbox. With this comprehensive collection of surveying tools, you can seamlessly integrate a wide range of processes into one solution.

The Trimble Toolbox contains everything you need to speed your projects from concept to completion – all available from a single source. We have assembled a totally compatible tool set built with the latest in survey technology, designed to streamline your entire workflow.

With the Trimble Toolbox, you've got one integrated system and software environment supported by a company dedicated to making you the most productive surveyor you can be. Our tools improve workflow, enhance productivity and allow for easy movement of data between the field and your office. What could be better?



TOOLS FOR SURVEY SUCCESS

- Real-time kinematic GPS Total Stations®
- Robotic total Stations
- Servo and Autolock total stations
- Long range DR reflectorless EDM technology
- Ruggedized data collectors with range of powerful field application software
- Powerful engineering, survey and geodetic control software
- Digital levels
- Virtual Reference Station Infrastructure
- All integrated for seamless operation

WWW.TRIMBLE.COM

TRIMBLE ENGINEERING AND CONSTRUCTION DIVISION (937) 233-8921 FAX: (937) 233-9441 1-800-538-7800

© Copyright 2002, Trimble Navigation Limited. All rights reserved. The Globe and Triangle with Trimble is a trademark of Trimble Navigation Limited. SUR 036A B&W (04/02)

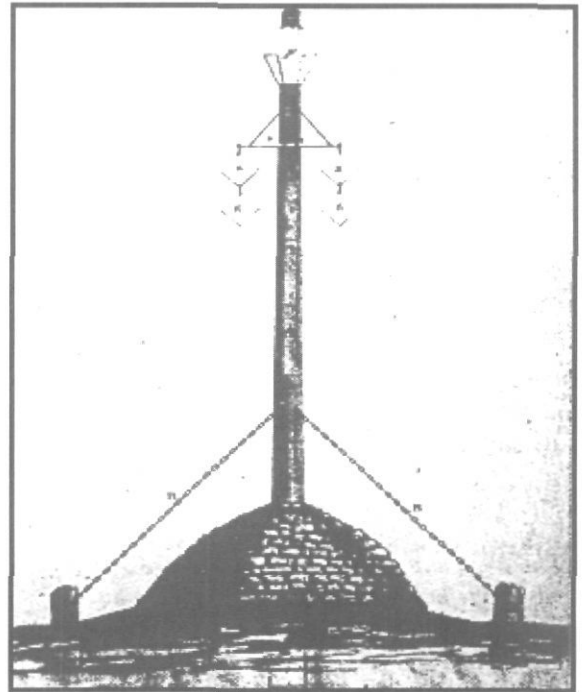
 **Trimble.**

"From the last corner it is S 41° E, about 2¼ miles (can see the smoke but the camps are hidden from the view by a range of hills, near the village) to an Indian Village."

Washington did not travel blindly into this survey assignment. King had sent Leander Ransom, the surveyor who had established the first Initial Point in California at Mt. Diablo the year before, ahead of Washington by a few months. His job was to recon and select an appropriate location for the monument on a high point that would allow the southerly meridian to intersect the Mexico border before striking the Pacific Ocean. His description of the native Indians was a bit more docile than Washington's,

"On our trip we saw several groups of Indians, some on horseback, and some on foot, some with bows and arrows, and some with nothing but a jug of whiskey."

By definition an Initial Point is singular, finite, unique, one of a kind. An Initial Point normally establishes the base and meridian lines as defined by the United States Rectangular System for the orderly subdivision of land for a defined



Washington's diagram of his initial point

region. It officially marks the intersection of two lines extending out to the north, south, east and west as far as is necessary to reach the boundary of the next base and meridian. By a series of strange circumstances, covering a period of over 55 years after Washington's first survey, the San Bernardino Base and Meridian has the dubious honor of three possible initial points.

Washington describes his monument he constructed in great detail clearly planning on observing it from the valley below at a later date. "The monument formed of 2 pieces of timber spliced and braced by 3 iron bands, 25 feet 9 inches long extending from the surface of the earth 23 feet 9 inches long hewed from the surface 8 x 10 inches on 4 sides to the distance of 13 feet and remainder tapering off to top 4 inches in diameter." An eight foot portion of the original post and the entire rock mound remains in good condition today. Washington continues by describing the condition of the sighting tins supplied to him by the Surveyor General's Office, "Before leaving the grounds the tins attached to the cross bars have fallen down, with the exception of one and there being no swivels at hand it was found impossible to fasten them in such a way as to stand the heavy blows. I therefore had them securely fastened to the monument." I add this detail of the tins because several of them have been recovered at the site between 1988 and 2001 (See Washington Sketch



Lewis & Lewis

Ventura: 1600 Callens Rd. Ventura, CA 93003
(805) 644-7405 FAX (805) 644-5780
Toll Free (800) 342-3607 or 235-3377

San Diego: 540 S. Andreasen Dr. Suite A
Escondido, CA 92029
(760) 747-8823 FAX (760) 480-5778




Quality Products - Service - Support

- Land Surveying Equipment
- GPS Systems
- Computer Products
- Accessories & Supplies

Sales - Rentals - Financing

Service - Repairs

New Topcon
GTS-600 PRO Series



GTS-800 Robotic



LEWIS & LEWIS



RENTALS • SALES
SERVICE

Call for Product
Information
&
L&L Price Guide



MOTOROLA



Nikon



TDS

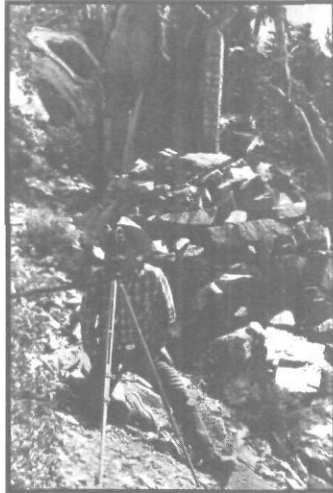
Web Site: www.lewis-lewis.net

Email: sales@lewis-lewis.net

of Monument). Washington also made 10 observations that day to distant objects from the Initial Point that day which included two large structures,

"9 - S 75° 35'W - To old Mission Bldg., approximate distance 20 miles"

"10 - S 87° 05'W - To Mormon Fort, approximate distance 23 1/2 miles"



The story behind the three monuments begins with the final sentence in Washington's letter to Mr. King. Washington closes his letter to the Surveyor General by stating,

"The San Bernardino Mountain about the monument was considered too rugged to attempt the survey of the Base and Meridian Lines from that point. Satisfied that the line could not have been measured with the requisite degree of accuracy."

The saga picks up again eight days later in Washington's government notes dated November 17th, 1852 with Washington beginning a traverse from his 'Point of Beginning', in what is now the City of Yucaipa. He records in his notes a bearing of South 45° West for his Point of Beginning from the Initial Point but gives no distance call (see the George Johnson Plat). He goes on to state that the Initial Point is plainly visible from the valley on that day.



His random traverse then proceeds on courses called out as due North, South, East and West bearings for a distance of over 12 linear miles until he makes the statement,


"set a stake from which the monument on the top of San Bernardino Mountain established on the 8th of November, 1852 bears due East,

and the true distance, as ascertained by the foregoing lines shows it to be 13 miles, 9 chains, 80 links".

Washington then goes on to traverse due East along the San Bernardino Baseline '1 mile, 9 chains, 80 links' to the Township corner for Ranges 2 and 3 West. From this point Washington begins his township surveys of that area that eventually returns him to the 'yet to be established' Meridian Line 12 miles south of his Initial Point.

In a report dated 1967 entitled "Washington Monument Resurvey Expedition" written by Mr. Bill D. Laurie for the San Bernardino County Museum, Mr. Laurie concludes that, "To date, no record has been found which would indicate Washington's methods or procedures for surveying away from his initial point." This missing piece of the puzzle or, as the radio announcer Paul Harvey might say, 'the rest of the story' regarding Washington's establishment of the San


Continued on page 20



LAND SURVEYING

MAPPING

GLOBAL INFORMATION SYSTEMS



JOIN THE RBF TEAM!

PLANNING ■

DESIGN ■

CONSTRUCTION ■

Offices located in

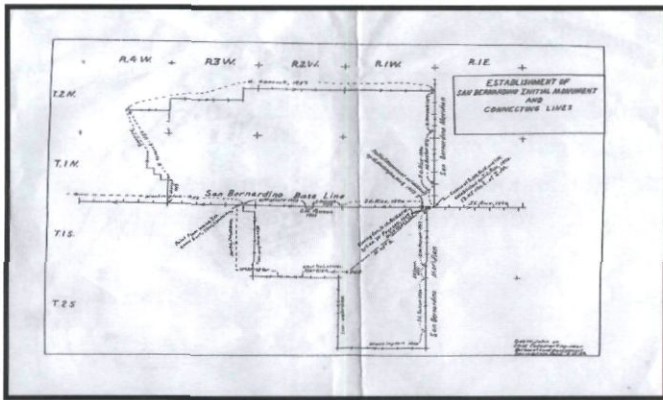
- Camarillo
- Carlsbad
- Irvine
- Palm Desert
- Sacramento
- San Diego
- San Jose
- Temecula
- Walnut Creek

800.479.3808

www.RBF.com

Bernardino Base and Meridian has still never been completely solved, though Mr. White has the most developed explanation in print.

So I am challenged in this brief article to propose what I believe to be Colonel Washington's methodology for establishing the San Bernardino Base and Meridian without ever measuring from the Initial Point itself. I will also pose a challenge to the reasoning (as does Mr. White) behind the United States Government Land Office in accepting the



George Johnson Plat

rejection of Washington's corner twice, in the span of 55 years, after it was established. This despite the fact that the Washington Monument was never reported destroyed and was found by all subsequent surveyors in the area.

George Johnson, a Cadastral Engineer for the Bureau of Land Management (BLM) produced a map in 1969 that summarizes the remaining government necessary to complete the townships in the vicinity of Washington's Initial Point. The BLM can find no text to accompany this diagram to date, but it is very similar to Mr. White's summary in his chapter on the San Bernardino Initial Point.

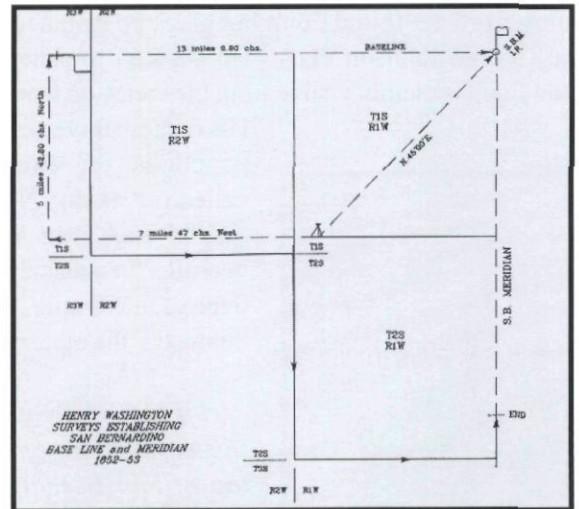
Johnson's map shows Henry Hancock, Deputy Surveyor running a series of township boundaries and traverses between the years of 1853 to 1857 that would return him to the Meridian Line 10 miles north of the Initial Point. Hancock's surveys covered over 34 linear miles. However, it would not be until 1894 that John C. Rice would finally complete the Meridian Line to the Initial Point from the north. And this is when the fun truly begins. Rice's notes describe him meeting the Baseline and finding Washington's monument 13.45 chains (887 feet) to the West. It is then that Rice decides to set a new Initial Point, which he does, in much the same fashion as Washington did 42 years before

him using a huge mound of stones and a large hewed post with scribing. He then runs the Baseline the final six miles to the West calling Washington's monument off line southerly by 4 feet as he goes by it.

In similar fashion, George W. Pearson completes the Meridian Line from the south in 1907 and again finds both Washington and Rice's monuments intact. He decides to set a third point as a closing corner from the south, the monument being a large stone with chiseled markings, to Rice's Baseline and the last of the three Initial Points is born. Pearson's monument falls 610 feet east of Washington's monument and 277 feet west of Rice's monument (see Initial Point Diagram).

The combined distances of the surveys needed to bring the north and south Meridian lines back to the Initial Point area is over 94 miles including Washington's initial traverse out of Yucaipa to his new Baseline. Questions abound as to where the errors were made to have the misclosures of nearly 900 feet in the northern townships and over 600 feet in the southern townships. Also critical to the analysis is discovering how Washington got down off the mountain which is what I hope to describe first.

Washington knew all along that he would never be able to traverse his way off San Bernardino Mountain in time to produce Base and Meridian Lines needed to begin township surveys of the southern part of this promising new state, now



C. Albert White Diagram

only two years old. The idea for a tall post with reflector had already been conceived in the Surveyor General's Office in San Francisco where the tin reflectors were manufactured.



Washington's plan, that obviously included Ransom and King, was to set a tall enough post in an area that could be seen from at least two places from the valley below, one of which would be on the Baseline. We know from his notes he changed his plans to set the Initial Point on the very top of San Bernardino Mountain because he writes to

the Surveyor General of the numerous trees on that peak. So he moves the point to a bald ridge area about 1/2 mile west of the top for better visibility.

Washington randomly placed himself on a 45° angle from the Initial Point by use a solar compass to establish astronomic north and then wiggling in on this line. He then traversed in one mile intervals, avoiding any physical obstacles such as the Crafton Hills, until he got close to the Baseline. He would then need to again wiggle along a true north line until he could site the Initial Point again and find it to be due East of his position. Washington would then only have to add up the latitudes and departures of his traverse to establish two sides of the rectangle he constructed. With the two angles he had measured to the Initial Point, Washington would have created a simple trapezoid figure made up of rectangle and right triangle. Knowing the relationship of the sides of a right isosceles triangle (1,1,Ö2) he could have obtained his distance west of the Initial Point by adding the sum of one long side of a rectangle and one side of his right triangle (see Mr. White's diagram). No higher mathematics were necessary. Washington hints at a simple mathematical solution when he

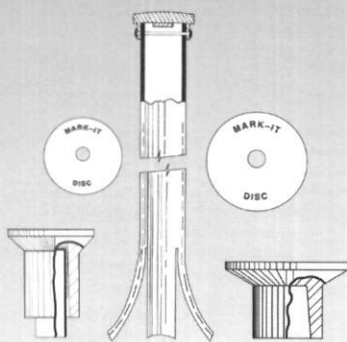
Continued on page 23

MARK-IT®

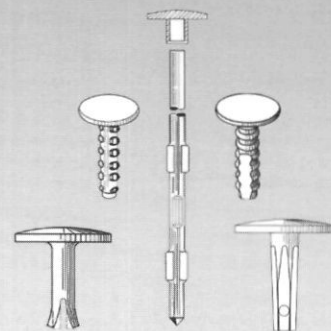
SURVEY MARKERS & MONUMENTS

A Division of Desert Engineering Group, Inc.

HISTORY IN THE MARKING




 SURVEY
 MARKERS
 MONUMENTS
 REBAR CAPS
 BENCH MARKS
 & ACCESSORIES



A Division of Desert Engineering Group, Inc. 3162 E. 46th Street, Tucson, Arizona, 85713 U.S.A.

(520) 882-7363 or 1-800-323-4578 www.desertengrg.com



In Search of Something Better?



Theirs



Ours

Up to 200%
Higher Resolution

Now
There's A
Better Alternative



ParcelQuest from CD-Data is the only source you'll ever need for the most accurate, assessor-direct data and crystal clear maps.

Unlike other costly alternatives, ParcelQuest provides; crystal clear, detailed maps; the most accurate data; more qualitative information; monthly updates; the most current information available; and live technical support. And if that's not enough, ParcelQuest is easy-to-use and very affordable. Find out why over 95% of our customers choose ParcelQuest every year. Visit us on the web or call us today. The best assessor-direct data and maps are just a phone call away.

For more
information call:

CD-DATA

(619) 265-2586

Visit us on-line at www.cd-data.com

ParcelQuest
by CD-DATA

Assessor Direct Data and Maps

states in his notes, "the monument on the top of San Bernardino Mountain established on the 8th of November, 1852 bears due East, and the true distance, **as ascertained by the foregoing lines** shows it to be 13 miles, 9 chains, 80 links."

How accurate could Washington position his Initial Point with this methodology? Quite accurate if he could see the monument clearly and he had no major errors in his 12 mile traverse. A two minute error in either angle he turned to his Initial Point would have resulted in only a 40 foot error at most. A good sign that Washington did not make an error greater than this comes from his own notes of his establishment of the south line of Township 2 South, Range 1 West in late November, 1852. When he measured to what should have been the Meridian Line he states,

"Set temporary post - unable to see San Bernardino mountain there being a very high range of mountains about 5 miles to the North. Went southward to a high hill and then found the meridian from the monument to run 60 links (40 feet) East of the temporary post."

It is more likely that one could find an error in Hancock's open-ended traverse that covered 34 miles, including an elevation change of nearly 3000 feet through Waterman

Canyon. This appears to be the case when one studies his notes of 1857 carefully. As Hancock approaches the Meridian Line ten miles north of the Initial Point his last section is 90 chains long. But how did he "ascertain" this? Could he see the Initial Point five years after it was constructed? His notes do not say. Upon further research and profile analysis of the ground between Fawnskin, where Hancock established the meridian to the north and the Initial Point, it does appear that Hancock did sight Washington's monument to position himself longitudinally.

My final questions concern John C. Rice. Why did Rice establish his own point in 1892? Why did he call Washington's monument an "old temporary monument established by Deputy Washington in 1852"? Why is Rice's last half mile 43.53 chains if he planned to establish his own local Initial Point and Baseline? White's conclusion that Rice's monument should be treated as a closing corner seems difficult to accept because Rice had no line to close against, being nearly 900 feet east of Washington's Initial Point.

I agree with Mr. White's conclusion that "there is only ONE Initial Point and that is the monument constructed by Henry Washington in 1852." But I believe this should be

Continued on page 29



CARTWRIGHT AERIAL SURVEYS, INC. (SINCE 1946)

AERIAL PHOTOGRAPHY

Black & White, B&W Infrared
Color, Color Infrared
Historical Film Library

PHOTOGRAMMETRY

Topographic Mapping
Digital Orthophotos
Volume Calculations
Digital Terrain Modeling

PHOTO LABORATORY

Film Processing
Scaled Enlargements
Rectified Enlargements



5979 Freeport Boulevard
Sacramento, CA 95822-3506
Phone (916) 421-3465 • Fax (916) 422-9631
E-Mail: mapping@casmap.com • Web: casmap.com

Future Events

Coming in September

California Easement Law

Speaker: Dan Beardsley, SR/
WA, Esq.

Coming in October

Measurement Analysis

Speaker: Jeremy Evans, PLS

Visit the CLSA Website for more
information: www.ca-surveyors.org

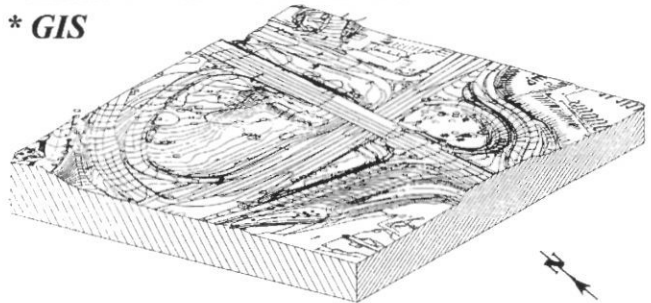
EDUCATION



AERIAL MAPPING

Firm founded 1977

- * PHOTOGRAMMETRIC MAPPING
- * DIGITAL TERRAIN MODELING (DTM)
- * DIGITAL ORTHOPHOTOS
- * AERIAL TRIANGULATION
- * AUTOCAD / MICROSTATION
- * AERIAL PHOTOGRAPHS
- * GIS



(CALTRANS certified as DBE, SWBE & CFMBE)

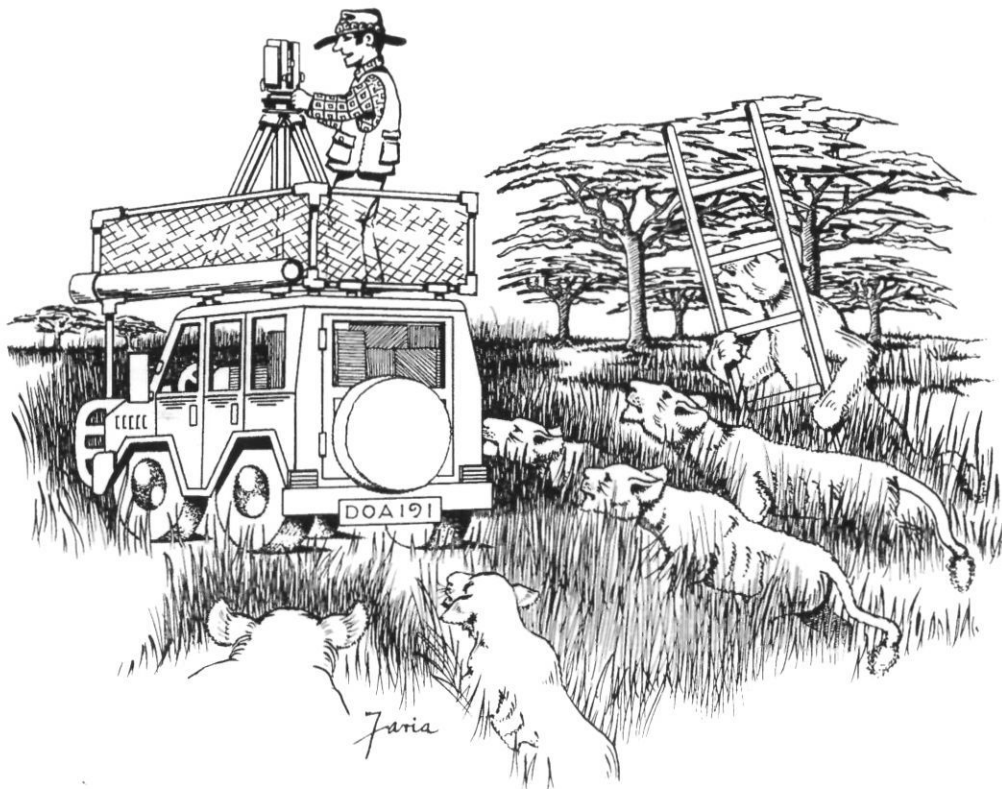
San Luis Obispo CA / San Dimas CA

(805)543-4307

Fax (805)543-7257

mail@aerial-maps.com

www.aerial-maps.com



CLSA PUBLICATION ORDER FORM	CLSA MEMBER PRICE	PUBLIC AGENCY PRICE	* NON MEMBER PRICE	NO. OF COPIES	TOTAL
2002 Complete Package includes: PLS Roster, Pre '82 CE Numerical Listing, PE & PLS Act with Board Rules, Subdivision Map Act and Index & Binder	\$28.00	\$34.00	\$49.00		
2002 Complete Package (as above) includes: PE & PLS Act with Board Rules & Subdivision Map Act and Index on Disk	\$36.00	\$43.00	\$63.00		
2002 Refill Package includes: PLS Roster, PE & PLS Act with Board Rules & Subdivision Map Act and Index	\$20.00	\$24.00	\$35.00		
2002 Refill Package (as above) plus Disk	\$28.00	\$34.00	\$49.00		
2002 PE Act & PLS Act with Board Rules (5 1/2 x 8 1/2)	\$7.00	\$9.00	\$12.00		
2002 Subdivision Map Act and Index (5 1/2 x 8 1/2)	\$7.00	\$9.00	\$12.00		
2002 Celestial Observation Handbook & Ephemeris (Sokkia) with HP-41, HP-42 & HP-48 Programs	\$5.00	\$6.00	\$7.00		
California Coordinate Projection Tables – NAD '83 By Ira Alexander, CE, PLS & Robert J. Alexander, PE	\$8.00	\$10.00	\$14.00		
Right of Entry Cards (minimum order is 2)	\$1.50/ea.	\$2.00/ea.	\$3.00/ea.		
Right of Entry Door Hangers (includes 1 Right of Entry Card) (Pkg. of 50)	\$5.00/Pkg.	\$6.00/Pkg.	\$10.00/Pkg.		
Corner Record Forms – BORPELS 1297 (Pkg. of 25)	\$10.00/Pkg.	\$12.00/Pkg.	\$17.50/Pkg.		
Land Surveying Brochures (Pkg. of 50)	\$15.00/Pkg.	\$18.00/Pkg.	\$30.00/Pkg.		
Standard Contract Forms Agreement for Professional Services (Pad of 25)	\$6.00/Pad	\$7.00/Pad	\$12.00/Pad		
Land Surveying for the Land Owner & Real Estate Professional , by Daniel E. Beardslee, PLS	\$8.00	\$10.00	\$12.00		
CLSA Decals or Bumper Stickers (Decals or Bumper Stickers)	\$1.50/ea.	N/A	N/A		
Land Surveying Story/Coloring Books (Pkg. of 10)	\$24.00/Pkg.	\$28.00/Pkg.	\$36.00/Pkg.		
CLSA Video "A Career Without Boundaries" (A 10 minute video)	\$8.00	\$10.00	\$12.00		

- Member prices are only available to State members of CLSA.
- Fax orders are accepted with Visa or MasterCard payment only
Fax to 707-578-4406
- Please allow 2 weeks for delivery.
- Orders must be received by 2:00 PM for same day FedEx Delivery.
- **Mail your order form and payment to:**
CLSA Central Office
PO Box 9098
Santa Rosa, CA 95405
Phone: (707) 578-6016 Fax: (707) 578-4406

*The difference between member & non-member price may be applied toward membership.

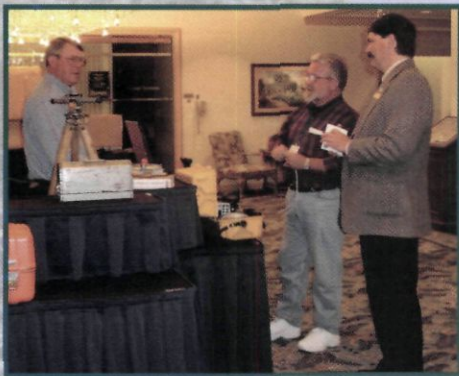
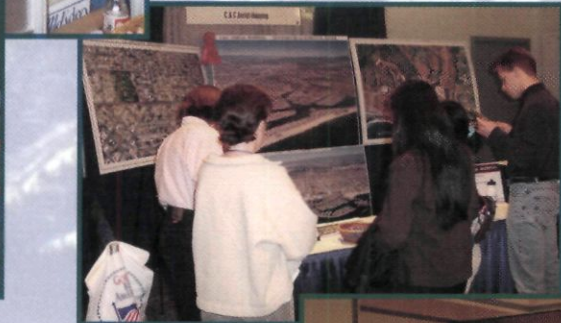
Shipping Information	
Name _____	
Company (if company is mailing address below) _____	
Address _____	
City/State/Zip _____	
Phone _____	Email _____

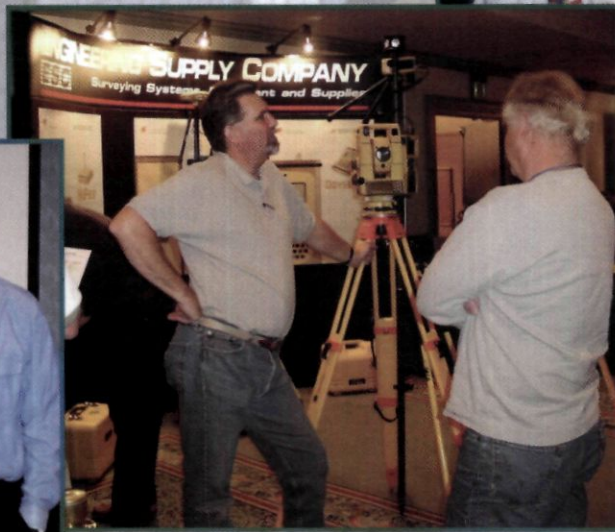
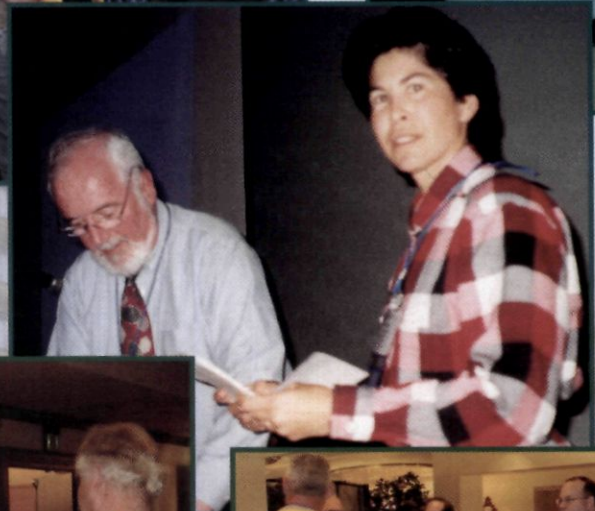
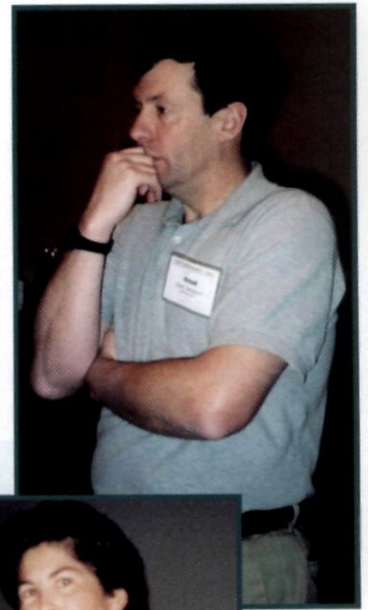
Subtotal 1	
Shipping & Handling Up to \$20.00 add \$4.50 \$20.00 - \$40.00 add \$7.50 \$40.01 - \$60.00 add \$9.00 \$60.01 and above add 15%	
Next Day Shipping provide FedEx Account Number # _____ Add \$10.00 Handling fee.	
Subtotal 2	
CA Sales Tax Outside Sonoma County Tax 7.25% Sonoma County Tax 7.50%	
TOTAL	
Payment Enclosed: <input type="checkbox"/> Check <input type="checkbox"/> M/Card/Visa <input type="checkbox"/> AMEX	
Account #	
Expiration Date	
Name on Card	
Authorized Signature	
For Office Use Only	
TCS	

Highlights

CLSA Conference 2002

March 24-27 Harveys Resort & Casino Lake Tahoe, NV







DMI **DIGITAL MAPPING, INC.**

Complete GIS Photogrammetric Services

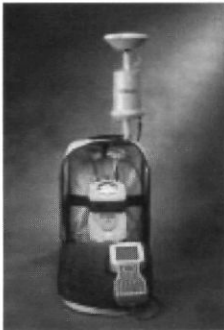
- Aerial Photogrammetry
- Airborne GPS
- Airborne Lidar DEM/DTM
- Close Range Photogrammetry
- Data Conversion
- Digital Mapping
- Digital Orthophotography
- Digital Terrain Model (DTM)
- GIS Image Analysis
- GIS Photogrammetry
- GPS Survey Support
- Photogrammetric Scanning Services

Toll Free 1-866-968-5459

Liliana Aliyazicioglu
President
MWBE

21062 Brookhurst St.
Suite 101 Huntington
Beach CA., 92646
Tel: 714-968-5459
Fax: 714-968-2429
www.admap.com

ALLEN Instruments & Supplies **Spectra Pacific**



**PROVIDING THE HIGHEST QUALITY
INSTRUMENTS, SERVICE, SUPPLIES, and TRAINING
AT THE BEST PRICES!**

The 5600 Total Station series is a completely Integrated surveying™ solution: complete with a range of control units or controllers that can be mounted on the super-light pole for fast, effective survey work. Combine with a suite of survey office software for all of your data processing, design, CAD and visualization needs.



GPS 5700 Total Station System

The GPS Total Station® 5700 optimizes every phase of the survey workflow, creating a total station that's a total solution. The Trimble GPS Total Station 5700 system is a truly integrated all-Trimble system, with GPS, radios, survey controller, and office software all custom developed by Trimble for a totally integrated workflow.

5600 Total Station



"From Concept to Completion"

2940 E. La Palma Avenue, Suite E, Anaheim, CA 92806

800-215-2737

714-238-3434 • FAX 714-238-3441

Authorized Trimble Service Provider
Monthly Certified Trimble Training Classes
Large Selection of Rental Equipment and Supplies

officially documented by the BLM. I also believe the BLM should produce a new plat and notes showing some resolution of this interesting survey problem to re-establish the Washington's Monument as the true Initial Point. GPS measurements are planned to be taken by the author of the monuments established by Washington and Hancock in the 1850's. These measurements will be taken on the Baseline east and west of his Initial Point, and north and south on the Meridians this summer to help complete a more thorough investigation of their relationship to Washington's Monument.

With the 150th anniversary fast approaching, the San Bernardino Mountain Sesquicentennial Anniversary Committee is sponsoring an anniversary hike on October 12th, 2002 with the BLM, which will be filmed and documented, to commemorate Washington's important historical achievement. On November 9th, 2002 the day Washington came down off the mountain, there will be a picnic at the Yucaipa Regional Park from 10:00 am to 4:00 pm. The celebration will include speakers, historical presentations, survey contests, games, a fishing tournament, exhibitions and lunch to celebrate the event with a larger, more diverse audience.

For more information you can email Michael Duffy at mduffy@mwdh2o.com.

SMA PUBLICATION CORRECTION

Due to a misprint, the CLSA 2002 SMA publications, Section 66412 (d) should be corrected to read:

A lot line adjustment between *four or fewer* existing *adjacent adjoining* parcels, where the land taken from one parcel is added to an *adjoining* parcel, and where a greater number of parcels than originally existed is not thereby created, *if* the lot line adjustment is approved by the local agency, or advisory agency.

We apologize for any inconvenience this may have caused. If you would like a replacement page, please contact the CLSA Central Office by e-mail to clsa@ca-surveyors.org or by phone (707) 578-6016.



Tri State Photogrammetry

Northwest Region Office
1925 E. Prater Way
Sparks, Nevada 89434
(775) 358-9491
Fax: (775) 358-3664

Southwest Region Office
3471 W. Oquendo Rd., Ste. 102
Las Vegas, Nevada 89118
(702) 222-0986
Fax: (702) 895-9652



Topographic &
Planimetric Mapping
For Design Engineering



Digital Orthophotography
& Cadastral Mapping



GPS/RTK
Surveys

Image Matched
DTM/DEM &
Contouring



1-800-411-3752
www.TriStateLtd.com

Welcome New CLSA Members

Affiliate

Walter R. Auerbach, *Tahoe City*
 Lance J. Bishop, *Wilton*
 Rick T. Branum, *Visalia*
 Marcel J. DuMoulin, *Orange*
 Aundrea L. Hayes, *Walnut Creek*
 Tammy Hendrix, *Vacaville*
 Abdul Haq Jalili, *San Jose*
 Patrick Keenan, *Visalia*
 Michael E. Kieser, *Los Angeles*
 Craig Lee, *Orange*
 Goldie L. Lewis, *Fresno*
 Israel Lee Odom, *Bakersfield*
 Mihaela Lorina Paun, *San Jose*
 Steven D. Sianez, *Orange*
 Brian D. Spore, *Tracy*
 Aaron P. Tillmanns, *Fountain Valley*

Associate

Dennis L. Barber, *Sacramento*
 Alex Caragay, *Antioch*

Associate (continued)

Matthew B. Crowe, *Grass Valley*
 George Darvasan-Stanciu, *Highland*
 Joseph D. Deal, *Orange*
 Russell F. Faraldi, *Point Richmond*
 Douglas K. Fulde, *Pismo Beach*
 Misha M. Georgevitch, *Simi Valley*
 Mike Gilmore, *Lakeport*
 Peter N. Goodier, *Tahoe City*
 Terri A. Green, *Grover Beach*
 Shelby J. Hoffman, *Temecula*
 Dylan L. Kolstad, *Myers Flat*
 Robert L. Nielsen, *San Ramon*
 Chad M. Rosell, *Newport Beach*
 John T. Snyder, *Arbuckle*
 Brian L. Sousa, *Vacaville*
 Joseph Raymond Sullivan, *St. Helena*
 Mark W. Swallow, *Novato*
 Jerry K. Wahl, *Riverside*
 Peter L. Yorke, *Los Angeles*

CE Corporate

John T. New, *Oakland*

Corporate

Douglas W. Beecroft, *Riverside*
 Giana Cardoza, *Fresno*
 Michael W. Caston, *Grass Valley*
 Albert DeLeon, *Sacramento*
 Phillip K. Fomotor, *Palm Springs*
 Stephen M. Hager, *Orange*
 Janine Lee Hampton, *San Lorenzo*
 Mark D. Hardy, *Calabasas*
 David D. Heinrichs, *Merced*
 Gladstone Hill, *Orange*
 Gregory P. Hopkins, *San Diego*
 Larry W. Hubbard, *Grass Valley*
 Robert Lyman Kazarinoff, *San Luis Obispo*
 Jon F. Koehne, *Bakersfield*
 Charles M. Krepp, *Fountain Valley*
 Kevin Michael Mcquire, *Dublin*
 Edmund S. Miller, Jr., *Long Beach*
 Evan A. Page, *Carmichael*
 Dean C. Phillips, *Corona*
 David W. Plyler, *Bakersfield*
 Steven W. Preece, *Santa Clarita*
 Daniel S. Russell, *Placerville*
 Richard C. Staton, *Orange*
 Kerry Allan R. Stewart, *Cypress*
 Loren K. Toomey, *Lake Forest*
 John E. Turner, *Modesto*
 Mark A. Turner, *Palm Desert*
 Steven J. Van, *Palm Springs*
 Michael J. Walters, *Citrus Heights*
 Michael J. Wines, *Hayfork*
 Steven A. Zanetta, *Ione*

Out-of-State Corporate

Dan B. Chatfield, *Reno, NV*
 David A. Robertson, *Kirkland, WA*

Student

Steve B. Case, *Vacaville*
 Ron A. Moreno, *Moreno Valley*
 Kenneth H. Smith, *Vista*

Sustaining

Digital Mapping Inc., *Huntington Beach*

Index To Advertisers

Allen Instruments & Supplies	28
Berntsen International, Inc.	8
California Surveying & Drafting	36
Cartwright Aerial	23
CD Data	22
C&C Aerial Mapping	24
Digital Mapping	28
Eastern Special Risk Insurance Agency	31
Forestry Supplies, Inc.	8
GeoLine Positioning Systems	3
HJW & Associates	13
Lewis & Lewis	18
Mark-It (Desert Engineering)	21
RBF Consulting	19
Rick Engineering Company.	4
Surveyors Service Company (SERVCO)	2, 35
Surv-Kap	31
Topcon California	15
Tri State Photogrammetry	29
Trimble Engineering & Const. Div.	17

Thanks be to CLSA Central Office for their efforts at increasing enrollment of CLSA. - Ed.

Stay Informed

www.ca-surveyors.org
www.ca-surveyors.org
www.ca-surveyors.org

by visiting the CLSA website for

- **Future Events**
- **Classifieds**
- **Discussion**
- **Surveying Links....**

...and for Members Only

- **Selected Statutes**
- **AG Opinions**
- **Case Law**

To join CLSA,
complete membership form
in this magazine

SURV-KAP

The Landmark Name in Survey Products



Same Day Shipping Available!
Factory Direct Prices!
Small & Custom Orders Welcome!
Individual Attention!
Guaranteed Satisfaction!

- **Markers**
- **Caps**
- **Stakes**
- **Monuments**
- **Accessories**

FREE
CATALOG &
PRICE LIST

- **Aluminum**
- **Brass**
- **Stainless Steel**
- **CARSONITE**
- **PERMAMARK**

1-800-445-5320 FAX: 520-792-2030

P.O. Box 27367 / Tucson AZ 85726
www.surv-kap.com / survkap@mindspring.com

E&O

"QUICK-QUOTE" PROFESSIONAL LIABILITY INSURANCE FOR LAND SURVEYORS

Our firm writes coverage in over 40 states with a well known "A++XI" carrier. Take a few moments to fill out our "QUICK QUOTE" application and we will provide you with a premium indication immediately.

Name _____ Title _____ Phone _____
 Firm _____ Home Office Mailing Address _____
 City/State _____ Zip _____ Fax _____
 Established _____ (YR) Business entity is: Individual, Partnership, Corporation, Other (Detail) _____
 Services: Are you engaged in any business other than land surveying? Yes No If so, a separate application must be submitted. Contact our office. Projects: Indication % of receipts from each of the following: Condos _____% Residential Developments/Tract Homes _____% Oil or Gas Pipelines _____% Dams _____% Bridges _____% Tunnels _____% Other (describe) _____ (Total should equal 100%)
 Total billings for land surveying services: Past Year _____ Current Year _____
 No. of employed staff: Surveyors _____ Draftsmen _____ Chainmen _____ Clerical _____
 Are subcontractors used? Yes No If yes, are certificates of insurance obtained? Yes No What % of your work is done by subcontractors? _____%
 Current Carrier _____ Past year's premium _____
 Policy expiration date _____ Retroactive date (original claims-made inception date) _____
 Professional Liability claims past 5 years Yes No If yes, send a sheet with claim details.

MAIL OR FAX THIS FORM WITH A BRIEF RESUME OF THE FIRM'S PRINCIPALS TO:
EASTERN SPECIAL RISK INSURANCE AGENCY, 68 BROWN ROAD, P.O. BOX 218, HARVARD, MA 01451
 PHONE (978) 456-8200, WATS (800) 341-1110, FAX (978) 456-3245, E-MAIL - SPECRISK@AOL.COM
 CA License #0619313

Meet the Sustaining Members

Trinity Capital Corporation

Trinity Capital Corporation, headquartered in San Francisco CA, is the National leader in financing surveying equipment. Over the past 10 years we have been able to help thousands of Surveyors obtain the surveying equipment they need to grow their business. In fact, Trinity has helped put many CLSA members in business with our equipment financing. Trinity's experience in the surveying industry helps us custom tailor a finance proposal to fit your needs. Financing your equipment not only helps you conserve capital but also helps you gain important tax advantages. If you think you are ready for new survey equipment call Trinity to discuss the benefits of leasing.

Bob Shafer
National Accounts Manager
888-742-8230
bshafer@trinitycapital.com



Topcon California

Topcon California was first established in January of 1994. Our efforts were then and are now directed toward the development and support of positioning technologies for the surveying and construction industry in California.

Professional services and products are what we bring to the industry we serve. Our factory authorized service center, highly qualified sales and office staff and first-rate products are the reasons for our success.

We are proud to represent Topcon, SECO, Lufkin, TDS, Aervoe, Filson, Motorola, CST, Kuker Ranken, Lenker, Sub Surface, Schonstedt, XYZWorks and many other quality manufacturers. We provide everything from flagging and spray paint to robotic total stations and GPS. We are prepared to be valuable partners to the surveying profession as we move ahead together.

We would like to thank all of our clients for their continuing support. We are looking forward to a very positive and bright future working together.

Tri State Photogrammetry

Tri State Photogrammetry provides high resolution aerial photography acquired with state-of-the-art camera technology equipped with forward motion compensation and Airborne GPS. Digital mapping for engineering and GIS are the corner stones of Tri State. Direct interface with our digital photogrammetric systems ensures high-speed feature data capture with superior accuracy.



We offer a complete range of digital imagery products, from image matched autocorrelated aerotriangulation, digital image feature acquisition, autocorrelated DTM/DEM production to digital orthophotography for GIS. Tri State's digital imagery services extend beyond digital orthophotography to include image matched feature collection and contour topography for land planning, transportation master plans, precise engineering design studies, cadastral and parcel mapping, street profiling,

right-of-way location and utility corridor data collection. Tri State offers complete GPS positioning capabilities, from geodetic control surveys to rapid point acquisition for GIS.



Call our Northwest Regional Office at (800) 411-3752 for your next project.

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 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 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.

Educational 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. Professional liability insurance programs are available to members.

JOIN CLSA TODAY!

- **CORPORATE MEMBER** *\$159.00 + Entrance Fee. Shall have a valid CA Professional Land Surveyor or Photogrammetric license.
- **CE CORPORATE MEMBER** *\$159.00 + Entrance Fee. Any California registered Civil Engineer who is authorized to practice land surveying pursuant to Article 3, Section 8731 of the PLS Act and must be actively practicing land surveying and show sufficient proof thereof. CE Corporate membership must be approved by the Board of Directors.
- **AFFILIATE MEMBER** *\$79.50 + Entrance Fee. Any person who, in their profession or vocation, relies upon the fundamentals of land surveying.
- **ASSOCIATE MEMBER GRADE** *\$79.50 + Entrance Fee. Any person who holds a valid certificate as a Land Surveyor-in-Training.
- **OUT-OF-STATE CORPORATE MEMBER GRADE** *\$79.50 + Entrance Fee. Any person who resides in a state other than CA, who is a member of the other state's Association, and meets the requirements of Corporate Member.
- **STUDENT MEMBER GRADE** *\$15.90. A student in a college or university actively pursuing a surveying education.
- **SUSTAINING MEMBER GRADE** *Annual Dues \$318.00 + Entrance Fee. Any individual, company or corporation who, by their interest in the land surveying profession, is desirous of supporting the purposes and objectives of this corporation.

1. Member Grade Applying for _____ Date _____
2. Name (Full) _____
FIRST MI LAST
3. Mailing Address _____
STREET COUNTY
CITY STATE ZIP
4. Mailing Address is: Business Residence 5. Bus. Phone _____
6. Res. Phone _____ 7. Fax _____ 8. E-mail _____
9. Name of Firm, Agency or College _____
10. California License Number PLS# _____ LSIT# _____ RCE# _____ EIT# _____
11. Have you previously been a member of the State Association? Yes No Year _____
12. Signature of Applicant _____

Mail your completed application to:

CLSA Central Office
PO Box 9098
Santa Rosa, CA 95405

Questions?
Phone: (707)5786016
Fax: (707)5784406
clsa@ca-surveyors.org

*First Year Dues are to be prorated from date of application

- Check Enclosed Dues \$ _____ + Entrance Fee \$ _____ = Total Amount \$ _____
- Visa Credit Card # _____ Exp. Date _____
- MasterCard Authorized Signature _____

Sustaining Members

Steve Dillon

ARROWHEAD MAPPING CO
673 S. Cooley Dr Suite 102
Colton, CA 92324
Phone: 909-887-5969
Fax: 909-887-4117



Aerial Photography
Topographic Mapping
Digital Orthophotos



Surveyors Service Company
2942 Century Place
Costa Mesa, CA 92626

Stanton Mahler
President



Office: 800-938-0606
714-546-0606

Fax: 714-546-9724



HASELBACH
SURVEYING
INSTRUMENTS

HANS I. HASELBACH (Jr.)

SURVEYING & GPS SYSTEMS
INSTRUMENT SERVICE & REPAIR



(800) 462-8181
(650) 348-7247
1447 Rollins Road
Burlingame, CA 94010



Steve Carlon
Branch Manager (800) 500-8575
3380 Industrial Blvd., Suite 105 (916) 374-8575
West Sacramento, CA 95691 FAX (916) 374-8329

ARIS
INSURANCE SERVICES
STATE LICENSE # 0795446

MARSHA L. BASTIAN

2101 Business Center Drive 888-377-2107
Suite 230 Fax 888-377-2109
Irvine, CA 92612 Lic. # 0A29944



PETER WILKIEWICZ
REGIONAL SALES MANAGER, SOUTHWESTERN REGION

MAGELLAN CORPORATION
471 El Camino Real, Santa Clara, CA 95050-4300
Tel: 408.615.5243 • Fax: 408.615.5200
petew@ashtech.com • www.ashtech.com



PAUL C. OGDEN
President/CEO

MANUFACTURING CO., INC.
4155 Oasis Road 1-800-824-4744
Redding, CA 96003 Fax (530) 225-8162
(530) 225-8155 seco@surveying.com

Visit our on line catalog @ www.surveying.com



Lewis & Lewis Enterprises

SALES - RENTALS - SERVICE

Call Toll Free (800) 342-3607

Quality

Products Service & Support TOPCON



TrimbleNavigation

P.O. BOX 1328 1600 CALLENS RD VENTURA, CA 93003
(805) 644-7405 FAX (805) 642-3970



Nikon **Trimble** **Geodimeter**
SACRAMENTO—(916) 344-0232 • (800) 243-1414
LIVERMORE—(925) 960-0323 • (800) 988-0838
www.csdinc.com



Johan Larsson
Sales Engineer

GEODIMETER OF NORTHERN CALIFORNIA
340 E. Middlefield Rd., Mountain View, CA 94043
Phone: 650-254-1400 Fax: 650-254-1454
Mobile: 415-860-3416
E-mail: johanlarsson@msn.com
Internet: www.spectraprecision.com



3820 Del Amo Boulevard, #303
Torrance, California 90503

Phone (888) 742-8230
(310) 542-2110
Fax (310) 542-5883
Pager (310) 715-5040
rshafer@trinitycapital.com
www.trinitycapital.com

Robert J. Shafer
National Accounts Manager

Chuck Madrid
Surveying Systems, Sales and Training

Surveying Systems, Equipment & Supplies
Builders Instruments and Laser Systems

Topcon Instruments
Sales Service Rentals Repairs

ESC
Engineering Supply Company

5700 Imhoff Dr., Suite C
Concord, Calif. 94520
Phone: 510/680-4701
Phone: 800/788-3307
Fax: 510/680-2504



MITCHEL E. BARTORELLI
ASSOCIATE
(775) 358-9491

Digital Mapping
Aerial Photography
GIS Services
Digital Orthophotography
Volume Services
Global Positioning Services

Land Information Solutions

1925 E. PRATER WAY www.TriStateLtd.com
SPARKS, NV 89434-8938 FAX (775) 358-3664
Email: MBartorelli@TriStateLtd.com (800) 411-3752



Hammon, Jensen, Wallen & Associates, Inc.

- Aerial Photography
- Digital Orthophotos
- Digital Mapping
- Remote Sensing
- GIS Base Mapping



Imaging the Earth

1-800-383-2991 www.hjw.com

SURV-KAP, INC.

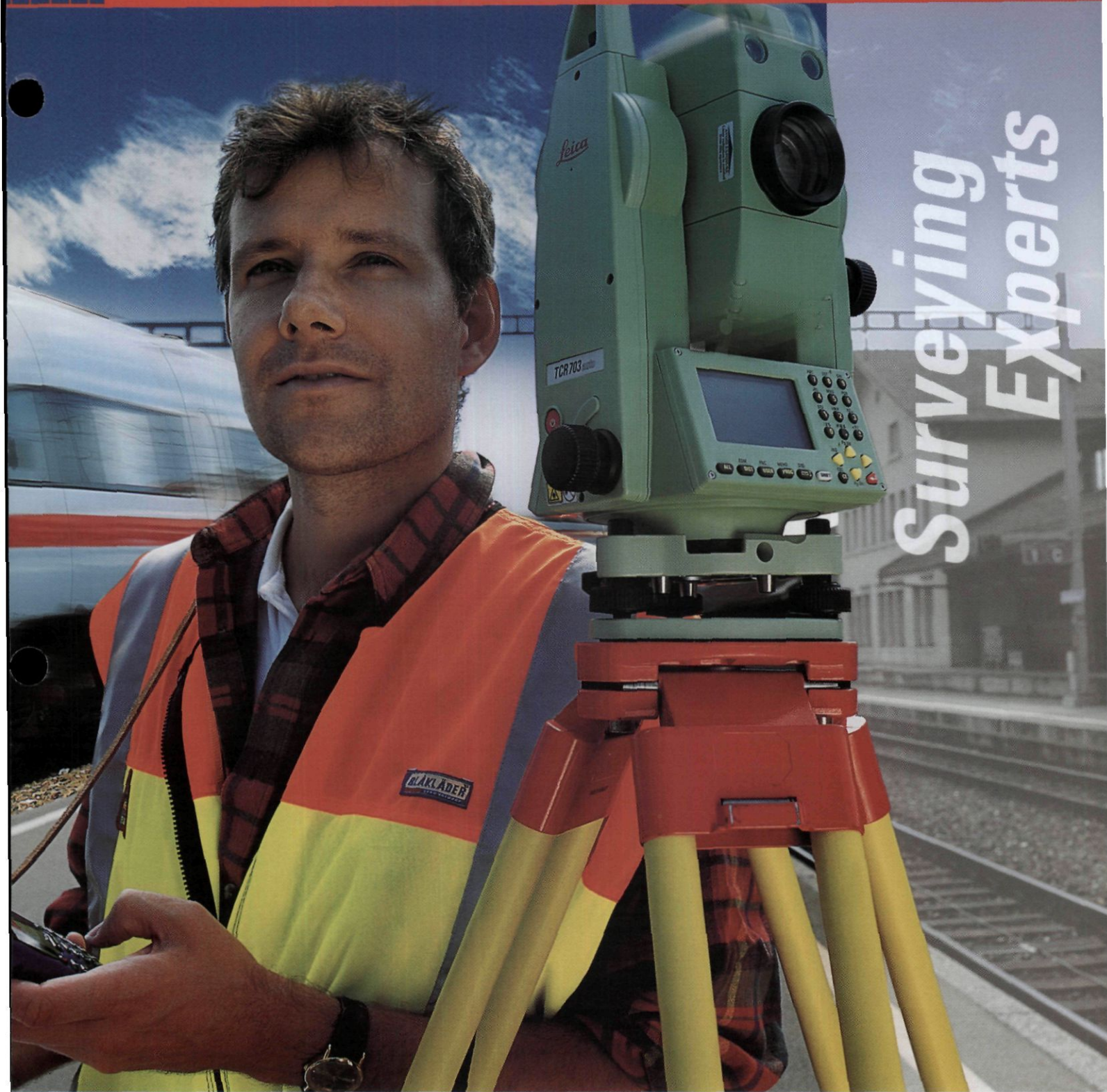
RICHARD B. ROPER
President

P.O. Box 27367 3225 East 47th Street
Tucson, Arizona 85726 Tucson, Arizona 85713
(520) 622-6011 / 1 (800) 445-5320
FAX (520) 792-2030

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. Tel: (707) 578-6016 Fax: (707) 578-4406

**Surveying
Experts**



Leica

TPS700 total stations now come with automated target recognition

MADE TO MEASURE

Whether you measure dozens or hundreds of points a day, with automatic target recognition you will measure more: roughly aim the telescope, start the measurement, done! The TPS700auto automatic target recognition takes care of the fine pointing for you. Result: less fatigue and consistent accuracy in the shortest possible time. Benefit from this unique technology, available for the first time in the TPS700 performance class. Call Surveyors Service Company today at 800-432-8380 for your personal quotation and field demonstration.



**Surveyors
Service Company**
www.servco1.com

Nevada
5328 W. Spring Mtn Rd
Suite# 305
Las Vegas, NV 89146
800-432-8380
702-944-5164 (fax)

California
Corporate Office
2942 Century Place
Costa Mesa, CA 92626
800-938-0606
714-546-9724 (fax)

California
8170 Ronson Road
Suites C & D
San Diego, CA 92111
800-282-4454
858-278-8845 (fax)

Arizona
4317 North 16th St
Phoenix, AZ 85016
800-938-0608
602-274-3740 (fax)

New Mexico
405 Montano Road
Suite# 2
Albuquerque, NM 87107
800-938-0609
505-345-3499 (fax)

NEED TO USE GPS ON A PROJECT BUT CURRENTLY DON'T OWN A Trimble GPS SOLUTION?

CSDS invites you to invest in a 3-day Real-Time Surveying System Training. In turn, we'll waive a one-week rental on a Trimble GPS Total Station, we'll provide three days of Trimble Certified training at the job site of your choice, and we'll allow you to use the equipment on an actual project for the remaining two days following your training.*

This option offers many benefits to your organization:

- *You'll have personnel trained on the latest technology in the industry.*
- *Training will cover both Surveying and Asset Management.*
- *You'll be able to see how a Trimble GPS Total Station system can be utilized and implemented into your current and future projects.*
- *You'll achieve immediate results from your investment in training by completing a real-world project in a very short time frame.*

CSDS offers a complete line of Trimble surveying and mapping rental gear. All units feature the latest software/firmware and include spare cables. For your convenience, the equipment is shipped overnight and there are no rental fees during transit times.*

For more information on our Trimble rental fleet or how you can take advantage of this special offer, please call 800-243-1414 x109 or 916 344-0232 x109. You may also contact us via email: csds@csdsinc.com.

**This offer may not be used in conjunction with any other special or discount. Call CSDS for complete details.*



SACRAMENTO
4733 Auburn Blvd.
Sacramento, CA 95841
(916) 344-0232 • (800) 243-1414

LIVERMORE
6111 Southfront Road, #C
Livermore, CA 94550
(925) 960-0323 • (800) 988-0838



www.csdsinc.com

CONSULTING • TRAINING • SALES • SERVICE • SUPPORT • RENTAL • LEASE
CALIFORNIA SURVEYING & DRAFTING SUPPLY



**Lowest GPS
Rental Rates
GUARANTEED!!**

**FREE!
One Week GPS
Total Station
Rental***