November 2013

SIDE SHOTS

Professional Land Surveyors of Colorado Volume 44, Issue 4

Surveyors Summit
Feb. 27 – Mar. 1, 2014

Calibrated Base Line Activity in Colorado

— page 11

Becky Roland
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SIDE SHOTS

November Journal 2013
Volume 44 **Number 4**

Side Shots is the official publication of the Professional Land Surveyors of Colorado, Inc. and is published quarterly for the betterment of the surveying profession.

Roger Nelson *President* — ***Micheal Bouchard*** *Vice President*

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Deadlines for editorials, articles, pictures and advertising are January 1, April 1, July 1 and October 1. All material received after the current deadline will appear in the next issue of Side Shots.

We would like to invite anyone who is interested to advertise in Side Shots. Do you have something you want to sell, trade or buy? Why not use Side Shots for your next ad? We can also reproduce business cards for advertising. Ad space reservation must be arranged with Becky Roland, PO Box 460022, Denver, CO 80246; 303-551-3266. (Deadlines: January 1, April 1, July 1 and October 1).

Current Advertising Rates:
Business card size or less - Member $25.00; Non-member $30.00
One-Half Page - Member $115.00; Non-member $150.00
Full Page - Member $225.00; Non-member $300.00
Color advertisements — add 33 percent

PROFESSIONAL LAND SURVEYORS OF COLORADO, INC.
P.O. Box 704 Conifer, CO. 80433
AFFILIATE – NATIONAL SOCIETY OF PROFESSIONAL SURVEYORS
MEMBER- WESTERN FEDERATION OF PROFESSIONAL SURVEYORS

Where did our summer go? There is a hint of fall in the morning air, Football has resumed, and hunting licenses have been secured. Colorado experienced fires and floods this year and I want to extend the PLSC's sympathy for those families that were affected by these forces of nature. It is the time of year that we start looking forward to our conference which the education committee has been planning for months. The Surveyor's Summit Conference will again be held at the Arvada Center so look for the save the date announcement and get it marked on your calendar. I encourage each of you to attend and also find a young surveyor to accompany you to this event. I have been attending these conferences for over ten years and always walk away with new enlightenment. The PLSC will be offering the refresher course once again. Please see the advertisement in this issue and begin planning to attend these classes, if you anticipate sitting for a related exam. The feedback that has been received from previous attendees is very favorable.

The PLSC Board members were able to meet in person September 20, 2013 for the first time in a couple of years. Our meeting allowed free exchange of ideas and for members to reconnect with one another. One of the results of this meeting is that the PLSC will provide scholarship funds for one Certified Federal Surveyor enrollment to each of the PLSC's chapters. Applications can be downloaded from the PLSC web-site for submittal to your respective chapter. Applicants must be PLSC members to qualify for consideration and each Chapter will develop the remaining qualification and selection criteria. The PLSC Board also plans to meet either on the Western slope or at the SW Chapter in 2014 which will provide additional opportunity for interaction with our membership. We have worked very diligently over the past couple of years to sort out the details surrounding Bob Stollards' home that was willed to the PLSC. I am proud to announce that with the dedication of Becky Roland we are nearing the end of this process. There are a few repairs that need to be accomplished in the near term and then we will be putting it on the market. PLSC is not suited to maintain a rental property nor do we have a need for a physical office space at this time. The proceeds will be credited to our general operating fund.

We currently have three submittals in the queue for our member spotlight section of the website and are seeking additional submittals. This is an opportunity to recognize your fellow surveyors that are going above and beyond in our communities.

Let's elevate the Survey Profession together!

Sincerely,
Roger D. Nelson, PLS, CFedS

continued on page 5

FROM THE EDITOR

After the record-setting fires and floods, and despite a Federal government shutdown, our PLSC members are working hard to rebuild their communities during this very challenging year. I hope that everyone is taking advantage of the resources the PLSC has to offer during this time.

Mark your 2014 calendars - the Surveyor's Summit meeting, starting February 27th, will be hosted once again at the Arvada Center. The preliminary course listing can be found in this issue, and updates should be available on www.plsc.net. If you are reading this but not yet a member of the PLSC, consider using the application form in this issue to join. If you plan to sign up for enough courses at the Summit, the discounted rates for members will just about cover your membership cost. A more complete and finalized course schedule and instructor list will appear in the next issue of Side Shots.

Roger Nelson mentioned the new PLSC scholarships available for the Certified Federal Surveyor Program (CFedS). I was also informed that there is an extra incentive for veterans. The program was approved by the Veterans Affairs for G.I. Bill reimbursement for the certification tests, up to $2,000 per test. You can learn more about the program and the benefits at www.cfeds.org.

There is a nomination form in this issue for those deserving of recognition for their contributions to the PLSC and the surveying profession. I would encourage you to make a copy, complete it and mail it in. Presentations will be made at the Annual Meeting/Surveyor's Summit next March.

This issue has much to offer. Our featured article is about Calibration Base Line Activity in Colorado, provided by Pam Fromhertz, Colorado State Geodetic Advisor, National Geodetic Survey, NOAA. Pam spent several months gathering the information for this and having it reviewed. Thank you Pam!

Joyce Young has an update from the State Board, and AES Board Member Larry Connolly has an article on C.R.S. 38-51-106 that every surveyor should read. Warren Andrews has contributed Control Points number 22, about ancient surveying instruments. Earl Henderson wrote an analysis of C.R.S. 38-51-103, subdividing a section, and Gordon Wilson wrote about his personal experiences as a summer intern in Colorado.

My thanks also to the seven people from the chapters who faithfully provide us with their latest news, and to Randy Bloom and Mary Beth Broe who provide us with the BLM Cadastral letter.

There is plenty of interesting material to read in this issue. Best wishes to all of my colleagues during the upcoming holiday season, and here's to a happy and prosperous 2014.

JB Guyton
Editor, *Side Shots*

This Month on PLSC.net

November, 2013

PLSC Board of Directors meeting minutes,
July 17, 2013
September 20, 2013

Notice from the Colorado Department of Transportation (CDOT), availability of new Terrain Modeling Survey System (TMOSS) code books.

SAVE THE DATE

4th Annual Rocky Mountain Surveyors Summit
February 27-March 1, 2014 ~ Arvada Center

EVENTINCLUDES

- **Surveyors Symposium**
- **Continuing Education**
- **Exhibitor Social**
- **Chapter Summit Meeting**
- **Survey Olympics**
- **Silent Auction**
- **Raffle prizes**

The Professional Land Surveyors of Colorado (PLSC) invite you to be a part of the 4th Annual Rocky Mountain Surveyors Summit being held February 27-March 1, 2014 at the Arvada Center in Arvada, Colorado. We have combined all of the front range conferences into one event with state-of-the-art presentations and displays from the top suppliers in the industry. Four of our chapters, the Central Colorado Professional Surveyors (CCPS), Colorado Spatial Reference Network (CSRN), Northern Chapter — PLSC (NC/PLSC), and Southern Chapter Professional Land Surveyors (SCPLS) have all joined together to bring our profession the best education and networking event in the State.

- Discounts are available for PLSC Members, Early Registration and Students.
- A full program of speakers that earn you continuing education units.
- Outstanding networking opportunities with colleagues from across the region.
- Displays by industry suppliers and professional service providers.

Updated information will be available online in December.

Go to www.plsc.net for complete information and plan on joining your colleagues February 27- March 1, 2014!

Professional Land Surveyors of Colorado, Inc
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(303) 551-3266
Fax (720) 230-4846
broland@plsc.net
www.plsc.net

Central Colorado Professional Surveyors
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CSRN
COLORADO SPATIAL REFERENCE NETWORK
A Chapter of the Professional Land Surveyors of Colorado

Northern Chapter
Professional Land Surveyors of Colorado, Inc.

PROFESSIONAL LAND SURVEYORS OF COLORADO, INC.
FOUNDED 1960 INCORPORATED 1961

Scheduled Presentations
4th Annual Rocky Mountain Surveyors Summit

Gary Kent, PLS—*Easements and Rights of Way and Title VS Survey-Statutes, Standards and Boundary Law Principles*
Gary Kent is chair of the NSPS committee responsible for the ALTA/ACSM Land Title Survey standards, and is liaison serving in the same capacity for the American Land Title Association. He is a certified instructor for the International Right of Way Association and writes regular columns for American Surveyor Magazine.

Dr. Richard Elgin, PLS—*Improving Your Firm's Office Practices, Marketing Your Surveying Services and Evolution of Surveying Instruments*
A second generation surveyor, Dr. Elgin was raised in St. James and in his late parents' surveying business. He coauthored Legal Principles of Boundary Location for Arkansas. He is the author of The U.S. Public Land Survey System for Missouri.

Pamela Fromhertz—*Latest Developments in the National Geodetic Survey*
Pam has been the NOAA National Geodetic Survey Colorado State Geodetic Advisor since 2004 and interacts with the geospatial community at the local, state, and Federal levels, as well as with private industry. A variety of subjects will be discussed.

Dave Pehr, Esq—*Fixing the Boundary and The Plat Thickens*
Dave Pehr began surveying in 1965 and was licensed as a Land Surveyor in 1972. Dave has practiced law in Westminster since 1976, emphasizing real estate and boundary litigation, as well as representing land surveyors in disciplinary proceedings and civil negligence suits.

Jim Claflin, PLS, BLM Cadastral Branch Chief Montana/Dakotas—*Public Land Survey System Practicum: Decisions and Calculations*
This presentation will discuss existant and obliterated corners, restoration of lost corners and subdivision of sections.

Stan French, PLS, BLM Cadastral Branch Chief Idaho—*Public Land Survey System Case Study: Review of Protest to a BLM Survey*
This presentation will consist of discussions related to a review of a protest to a BLM survey.

Dr. Apoltol Panayotov—*Datums, Projections, Coordinate Systems, and Their Purpose*
This class will be a general description of Datums, projections, coordinate systems, and their purpose.

J E Parker, Jr.—*Reexamining the Centerline Presumption – Asmussen v. United States*
This session analyzes this decision, its affect on adjacent landowners, boundary law and title research and reporting going forward.

Gene Kooper, PLS—*Mineral Survey Retracements*
This presentation will focus on mineral surveys with topics ranging from basic concepts to case histories. There will be something for everyone regardless of prior experience in retracing mineral surveys.

***Mark Armstrong*—NGS OPUS Projects Manager 2 Day Workshop**
NOAA's National Geodetic Survey offers a network processing option for Online Positioning User Service (OPUS) known as OPUS Projects. OPUS Projects allows the processing, adjustment and publishing of multiple stations over multiple days collectively known as a project.

Ken Goff—*Underground Consulting Solutions—Knowledge of Utilities and Advantages of Utility Locating*
Presentation on utilities, physical utility features in the field and markings on the ground. Advantages of locating within ROW and easements

Earl Henderson, PLS—*Colorado State Board of Registration Member, Plat Requirements From the Colorado Board of Registration Perspective*
Discussions will include what are some common problems with plats that are reviewed by the Board.

Joshua Vandiver & Brad Adams, Leica Geosystems—*Laser Scanning for Surveyors 101*
This presentation will be an introduction to the technology of laser scanning and position processing. Static and mobile scanning technology will be discussed.

Urban Drainage & Flood Control District- Resources & Issues Pertaining to Drainage and Flood Plains

Colorado Association of Stormwater and Flood Plain Managers—*Elevation Certifications & Common Mistakes, Base Flood Elevation Determination in Zone A*

Bryan Baker, Frontier Precision—*Introduction To Unmanned Aircraft Systems (UAS)*

Alfred Zarlengo, CIC, AAI—*Contract Negotiations*

TBD—*Discussion of the Affordable Health Care Act and How It Affects Colorado Businesses*

Professional Land Surveyors of Colorado, Inc. Membership Application

The PLSC represents land surveyors' interests in the State, proposes new legislation and changes to existing legislation as the industry's needs change, and works with the State Board of Licensure as an advocate for Land Surveyors. PLSC Chapters include: Central Colorado Professional Surveyors (CCPS), Colorado Spatial Reference Network of the PLSC (CSRN), Northern Chapter—PLSC (NCPLSC), Northwest 1/4 Colorado Land Surveyors (NW1/4CLS), Southern Colorado Professional Land Surveyors (SCPLS), Southwest Chapter PLSC (SWPLSC) and Western Colorado Land Surveyors (WCLS).

1. Member Information:

Name: _____

Company: _____

Address: ☐ **Home** ☐ **Work**

_____

City, State Zip: _____

Daytime Phone: _____

Email: _____

PLS or LSI Number(s) and State(s): _____

☐ **Please do not include my information in the PLSC Member Directory or online directory.**

2. Membership Information:

Membership Type: ☐ **Sustaining—$230** ☐ **Voting—$110** ☐ **Associate—$75** ☐ **Student—$30** ☐ **Retired—$60**
(Please check.)

Included Chapter: ☐ **CCPS** ☐ **CSRN** ☐ **NCPLSC** ☐ **NW1/4CLS** ☐ **SCPLS** ☐ **SWPLSC** ☐ **WCLS**
(Each membership includes one free Chapter membership. Please check—see above for descriptions.)

Additional Chapter: ☐ **CCPS** ☐ **CSRN** ☐ **NCPLSC** ☐ **NW1/4CLS** ☐ **SCPLS** ☐ **SWPLSC** ☐ **WCLS**
(additional Chapter memberships are $20 each. Please check.)

3. Payment Information:

Membership Type: **$** _____
Add'l Chapters: **$** _____
Total Enclosed **$** _____

Payment Type:
Check # _____
Credit Card No.: _____
Exp. Date: _____ **CVV:** _____
Credit Card Billing Address: ☐ **same as above or:**
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OUT HERE, YOU DON'T JUST MEASURE BOUNDARIES. YOU PUSH THEM.

When you're in the field, some days are simple and straightforward. Then, there are the other days: when temperatures are so hot and the air is so thick, you can barely breathe. Days when you're four hours from civilization and you just lost your signal. It's for times like these that Trimble designed the all-new Trimble R10 GNSS receiver. It's lighter and better balanced for less fatigue on long days. The Trimble R10 offers a number of radical new innovations—including Trimble SurePoint™ and Trimble xFill™ technologies—that make getting measurements faster and easier, no matter the conditions. Because extreme working conditions require extreme innovations.

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2014 Colorado Land Surveying Refresher Course

The Professional Land Surveyors of Colorado are offering a comprehensive Land Surveying Refresher Course beginning January 8, 2014. This course offers a review and self-study plan for those taking the National Council of Examiners for Engineering and Surveying (NCEES) **Fundamentals of Surveying (FS)** and **Principles and Practice of Surveying (PS**) examinations. The course is designed to aid candidates in developing and expanding exam-taking proficiencies. The Wednesday evening classes will be 3 hours in length, starting promptly at 6:00 PM.

Fundamentals of Surveying

Session	Date	Topic
1	Wed., Jan. 8	Overview of NCEES Examination Use of Calculator/Basic Calculations
2	Wed., Jan. 15	Fundamental Survey Calculations I
3	Wed., Jan. 22	Fundamental Survey Calculations II
4	Wed., Jan. 29	GIS, State Plane, Geodesy
5	Wed., Feb. 5	Public Land Survey System I
6	Wed., Feb. 12	Boundary Law I

Principles and Practice and Colorado Specific

7	Wed., Feb. 19	Boundary Law II
8	Wed., Feb. 26	Public Land Survey System II
9	Wed., Mar. 5	Colorado Survey Law I
10	Wed., Mar. 12	Colorado Survey Law II
11	Wed., Mar. 19	Professional Practices
12	Wed. Mar. 26	Mock PS and FS Examinations

The Wednesday evening classes will be 3 hours in length, starting promptly at 6:00 PM.

Registration, Fee, Location

The fee for the entire course is $400, or $75 per 3-hour block taken individually. Registration and is open beginning November 1, 2013. See http://www.plsc.net/ for registration information. Classes will be held in one of the conference rooms at the Jefferson County Courts and Administration Building (Taj Mahal), 100 Jefferson County Parkway, Golden, CO. Use the parking lot and main door on the east side of the building. Signage will lead you to the classroom. For questions, contact Becky Roland, Executive Director, PLSC, 303-551-3266, broland@plsc.net. Visit the NCEES site at http://ncees.org/exams/ to learn more about the FS and PS examinations.

Calibration Base Line Activity in Colorado

During 2012 and 2013 various incidents of Calibration Base Lines (CBL) in Colorado not checking, particularly Highline and Durango, were reported to the Colorado State Geodetic Advisor, Pam Fromhertz, National Geodetic Survey (NGS), National Oceanic and Atmospheric Administration. As a result, Pam contacted NGS headquarters and made arrangements for Steve Breidenbach, NGS CBL Program Manager to assist with the re-measurements of these two CBLs so associated distance information could be updated. Additionally, while Steve was in Colorado two user workshops were offered. After several years of searching for a suitable location to replace the Cherry Creek CBL, the Central Chapter of the Professional Land Surveyors of Colorado (PLSC), Colorado Department of Transportation (CDOT) and NGS established a new CBL in July near the Rocky Mountain Arsenal.

The National CBL Program

The CBL program is a cooperative program which provides the public with a means to detect and correct for errors associated with Electronic Distances Measuring Instruments (EDMI). NGS has established more than 300 EDMI CBLs throughout the United States in cooperation with various government agencies, universities, professional societies, and others. There are currently 17 CBLs in Colorado. These high-accuracy base lines provide users with a locally accessible standard for distance measurement. For each state, NGS provides users with location descriptions and the adjusted results of CBL measurements. CBL location descriptions, adjusted results of CBL measurement information, CBL specification documents, CBL user guides, and further information about the program are available at http://geodesy.noaa.gov/CBLINES/.

The standard CBL configuration consists of four markers, or monuments, set in a straight line, with a total line length of approximately 1400 meters. For the conventional CBL, monuments are located at 150 meters, 400 to 430 meters, and 1000 to 1400 meters from the initial or “0-meter” monument. The standard CBL is established according to NGS specifications as stated in “Establishment of Calibration Base Lines,” NOAA Technical Memorandum NOS NGS 8, Revised June 1982 (http://geodesy.noaa.gov/PUBS_LIB/TMNOSNGS8.pdf).

EDMI dedicated to the CBL program are check-calibrated on the NGS Instrumentation and Methodologies Branch Base Line located at Corbin, Virginia, before and after each series of new CBL sites is measured and established. The calibration check serves to standardize the equipment to the National Institute of Standards and Technology standard unit of length. This standard of length was derived from the original invar tapes calibrated at NIST.

Durango and Highline CBL Re-measurements

During the week of June 10th the re-measurement of the Durango CBL and workshop were underway and the following week the re-measurement of Highline followed by a user workshop in Denver occurred.

CDOT Region 5 assisted with the re-measurements in Durango on June 10 and 11. The two day process included using a Wild T2000 Electronic Theodolite, two Leica DI2002 EDMIs, Lietz triple reflector prism, psychrometer, thermistors, barometers, a canopy to shade the instrument, four adjustable tripods, four tribrachs, Wild ZBL 16 optical plummet (spirit level), Wild NL optical plummet (collimator), to name a few of the key pieces of equipment used.

CDOT Region 5 assisting in the re-measurement of Durango CBL. From left: S. Breidenbach, NGS, R. Drum, CDOT Region 5, and Ed Holman.

Photos 1
Wild NL optical plummet (collimator)

Photo 2
Lietz triple reflector prism

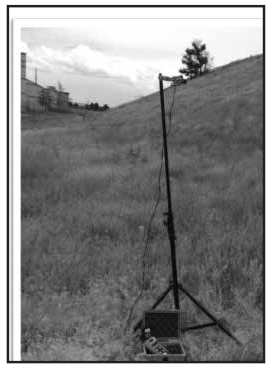

Photo 3
Weather Setup

The process of measuring the baseline includes 240 total distance measurements of the 6 unique segments in the CBL , (0-150, 0-450, 0-1400*, 150-450, 150-1400, 450-1400) beginning with the 0 mark to each of the other three marks, then moving the instrument to each of the other three marks and measuring to each of the other three marks and then repeating that over two days (6 distances x 5 readings x 2 directions x 2 instruments x 2 days = 240 measurements). Each measurement includes 10 readings from two EDMI's. A handheld HP-1000CX computer is used, observations entered and computed for the final measurements. Weather (temperature and pressure) are read at the beginning and end of each EDMI set of readings. Additionally, wet and dry temperatures are recorded at the beginning of each setup to provide relative humidity corrections. Temperature, pressure, and relative humidity are all used to apply corrections to the observed distances.

At Durango the re-measurements revealed nearly 1 cm movement at the 150 mark (Figure 1 shows the results of the re-measurements at the Durango CBL). New distances are now available at the NGS site www.geodesy.noaa.gov under the "survey" tab, then the "CBL" tab, or directly at http://geodesy.noaa.gov/CBLINES/. Also on this page various guidelines are available for download, including NOS NGS-10: Use of Calibration Base Lines, and NOS NGS-8: Establishment of Calibration Base Lines.

DURANGO CALIBRATION BASE LINE, LA PLATA COUNTY, CO
Calibration Base Line Verification Report

New - Old Horizontal Distance Comparison
(Mean of Abstracted Distances - Published Distance)

Segment Difference	0 M	TO	150 M	=	150.0139 - 150.0235	= -0.0096 M
Segment Difference	0 M	TO	430 M	=	430.0267 - 430.0284	= -0.0018 M
Segment Difference	0 M	TO	1000 M	=	1000.0311 - 1000.0319	= -0.0007 M
Segment Difference	150 M	TO	430 M	=	280.0128 - 280.0049	= 0.0079 M
Segment Difference	150 M	TO	1000 M	=	850.0168 - 850.0084	= 0.0085 M
Segment Difference	430 M	TO	1000 M	=	570.0044 - 570.0034	= 0.0010 M

Figure 1

*Often the intermediate and/or terminal monuments are set at varying distances from the initial point.

US DEPARTMENT OF COMMERCE - NOAA
NOS - NATIONAL GEODETIC SURVEY
SILVER SPRING MD 20910

CALIBRATION BASE LINE DATA
BASE LINE DESIGNATION: DURANGO CBL
PROJECT ACCESSION NUMBER: 15787
NEAREST TOWN: DURANGO

QUAD: N371073
COLORADO
LA PLATA COUNTY

LIST OF ADJUSTED DISTANCES (5/20/2004)

FROM STATION	ELEV.(M)	TO STATION	ELEV.(M)	ADJ. DIST.(M) HORIZONTAL	ADJ. DIST.(M) MARK - MARK	STD. ERROR(MM)
DURANGO 0 2000	2070.780	DURANGO 150 2000	2071.504	150.0235	150.0253	.1
DURANGO 0 2000	2070.780	DURANGO 430 2000	2078.700	430.0287	430.1017	.1
DURANGO 0 2000	2070.780	DURANGO 1000 2000	2108.130	1000.0348	1000.7320	.2
DURANGO 150 2000	2071.504	DURANGO 430 2000	2078.700	280.0051	280.0976	.1
DURANGO 150 2000	2071.504	DURANGO 1000 2000	2108.130	850.0109	850.7996	.1
DURANGO 430 2000	2078.700	DURANGO 1000 2000	2108.130	570.0054	570.7647	.1

Distances at the Durango CBL Prior to the 2013 Re-Observations – Do Not use

US DEPARTMENT OF COMMERCE - NOAA
NOS - NATIONAL GEODETIC SURVEY
SILVER SPRING MD 20910

CALIBRATION BASE LINE DATA
BASE LINE DESIGNATION: DURANGO CBL
PROJECT ACCESSION NUMBER: 15787
NEAREST TOWN: DURANGO

QUAD: N371073
COLORADO
LA PLATA COUNTY

LIST OF ADJUSTED DISTANCES (6/13/2013)

FROM STATION	ELEV.(M)	TO STATION	ELEV.(M)	ADJ. DIST.(M) HORIZONTAL	ADJ. DIST.(M) MARK - MARK	STD. ERROR(MM)
DURANGO 0 2000	2070.780	DURANGO 150 2000	2071.504	150.0140	150.0158	.2
DURANGO 0 2000	2070.780	DURANGO 430 2000	2078.700	430.0271	430.1000	.2
DURANGO 0 2000	2070.780	DURANGO 1000 2000	2108.130	1000.0343	1000.7315	.3
DURANGO 150 2000	2071.504	DURANGO 430 2000	2078.700	280.0130	280.1054	.2
DURANGO 150 2000	2071.504	DURANGO 1000 2000	2108.130	850.0199	850.8086	.2
DURANGO 430 2000	2078.700	DURANGO 1000 2000	2108.130	570.0066	570.7658	.2

Distances at the Durango CBL After the 2013 Re-Observations

CDOT Region 1 (formerly Regions 1 and 6) assisting in the re-measurement of Highline CBL. From left to right: B. White, J. Buffington, J. Sparks, T. Bridgeman, CDOT Region 1.

J. Buffington

Highline re-measurements revealed the 0 mark moved by approximately 7 mm and the 452 by 10 mm. (Figure 2 shows the results of the re-measurements at the Highline CBL. This is a relative trend tracing back to the measurements to 2004. CDOT Region 1 (and former 6) was on site to assist with the measurements.

HIGHLINE CALIBRATION BASE LINE, ADAMS COUNTY, CO
Calibration Base Line Verification Report

New - Old Horizontal Distance Comparison (Mean of Abstracted Distances - Published Distance)				
Segment Difference	0 M TO 150 M =	150.4324 -	150.4239 =	0.0085 M
Segment Difference	0 M TO 452 M =	452.3511 -	452.3548 =	-0.0037 M
Segment Difference	0 M TO 1276 M =	1276.5833 -	1276.5769 =	0.0064 M
Segment Difference	150 M TO 452 M =	301.9191 -	301.9309 =	-0.0119 M
Segment Difference	150 M TO 1276 M =	1126.1508 -	1126.1531 =	-0.0022 M
Segment Difference	452 M TO 1276 M =	824.2319 -	824.2221 =	0.0098 M

Highline Figure 2

US DEPARTMENT OF COMMERCE - NOAA
NOS - NATIONAL GEODETIC SURVEY
SILVER SPRING MD 20910

CALIBRATION BASE LINE DATA
BASE LINE DESIGNATION: HIGHLINE CBL
PROJECT ACCESSION NUMBER: 15787
NEAREST TOWN: AURORA

QUAD: N391044
COLORADO
ADAMS COUNTY

LIST OF ADJUSTED DISTANCES (4/19/2004)

FROM STATION	ELEV.(M)	TO STATION	ELEV.(M)	ADJ. DIST.(M) HORIZONTAL	ADJ. DIST.(M) MARK - MARK	STD. ERROR(MM)
HIGHLINE 0 M 1998	53	HIGHLINE 150 M 1998	1657.723	150.4239	150.4284	.1
HIGHLINE 0 M 1998	53	HIGHLINE 452 M 1998	1661.967	452.3550	452.3874	.2
HIGHLINE 0 M 1998	53	HIGHLINE 1276 M 1998	1672.657	1276.5785	1276.6801	.3
HIGHLINE 150 M 1998	23	HIGHLINE 452 M 1998	1661.967	301.9311	301.9609	.1
HIGHLINE 150 M 1998	23	HIGHLINE 1276 M 1998	1672.657	1126.1546	1126.2536	.2
HIGHLINE 452 M 1998	67	HIGHLINE 1276 M 1998	1672.657	824.2235	824.2928	.1

Distances at the Highline CBL Prior to 2013 Re-Observations – Do Not use

US DEPARTMENT OF COMMERCE - NOAA
NOS - NATIONAL GEODETIC SURVEY
SILVER SPRING MD 20910

CALIBRATION BASE LINE DATA
BASE LINE DESIGNATION: HIGHLINE CBL
PROJECT ACCESSION NUMBER: 15787
NEAREST TOWN: AURORA

QUAD: N391044
COLORADO
ADAMS COUNTY

LIST OF ADJUSTED DISTANCES (6/19/2013)

FROM STATION	ELEV.(M)	TO STATION	ELEV.(M)	ADJ. DIST.(M) HORIZONTAL	ADJ. DIST.(M) MARK - MARK	STD. ERROR(MM)
HIGHLINE 0 M 1999	1656.553	HIGHLINE 150 M 1999	1657.723	150.4323	150.4369	.2
HIGHLINE 0 M 1999	1656.553	HIGHLINE 452 M 1999	1661.967	452.3515	452.3839	.4
HIGHLINE 0 M 1999	1656.553	HIGHLINE 1276 M 1999	1672.657	1276.5851	1276.6866	.5
HIGHLINE 150 M 1999	1657.723	HIGHLINE 452 M 1999	1661.967	301.9192	301.9490	.2
HIGHLINE 150 M 1999	1657.723	HIGHLINE 1276 M 1999	1672.657	1126.1527	1126.2517	.4
HIGHLINE 452 M 1999	1661.967	HIGHLINE 1276 M 1999	1672.657	824.2336	824.3029	.2

Distances at the Highline CBL After the 2013 Re-Observations

User Workshop

As indicated earlier, both field re-measurements were followed by a User Workshop. The workshop entailed a brief overview by Pam of the current work and status of the CBLs in Colorado. Steve provided the details on the error sources and the re-measurement procedures. Mark Guerrero, CDOT Region 4, provided an in-depth review and explanation of the CDOT CBL worksheet required for CDOT projects. Sample worksheets along with blank ones

can be found at http://www.coloradodot.info/ . [Select the "Business Center" (along the top) tab then the "Manual" (along the left side) tab, then "Survey" (along the left side) tab then "Survey Forms and Documents" tab (along the left side) and scroll to the bottom to find the CBL worksheet information.] Approximately 12 were in attendance in Durango, including CDOT, BLM, and a professional surveyor from Colorado and New Mexico. Close to 40 were in attendance in Denver representing CDOT, local government (Aurora, Colorado Springs, Denver, Greeley), private sector, vendors, and various PLSC Central Chapter (CCPS) members. The presentation material can be found at the NGS website under the "Science and Education" tab (along the top) and then under the "Presentation Library."

Establishment of a new CBL in Denver

Around 2008 the Cherry Creek CBL was destroyed when Cherry Creek State Park re-routed a creek to run through the CBL. In addition, the road was re-aligned limiting access to the widely used CBL. At this time an informal search for an alternate location ensued. About two years ago Shawn Clarke of LW Survey Company identified a site on the south side of Denver as a possible location. While this site turned out not to be suitable due mainly to access issues, Mr. Clarke's action led the CCPS to form a team focused on establishing a new CBL in the Denver metro area. The team consisted of Dave Stewart, CDOT; Jim (JJ) Rihanek, CCPS; Kevin Kucharczyk, J.F. Sato and Associates; Dave Kuxhausen, Woolpert; Chris Raml, Wooplert; Roger Kelley, Baseline Land Surveying, Inc.; Scott Kimminau, CDOT; Shawn; Jack Sparks, CDOT; Pam Fromhertz, NGS. Many days were spent driving around looking for sites. Many thanks to Roger, Dave, Kevin, Jack, and JJ for their time in conducting this tedious process. Unfortunately the team found it very difficult to find a suitable location due to NGS requirements – a straight-line with intervisibility between all 4 points (typically 0, 150, 450, 1000-1400 meter) not crossing roadways or streams with no significant power lines nearby. The team searched areas from Centennial Airport to Parker to 470 on the west side of town to Broomfield to an area outside the Arsenal (identified early on by Kevin). It was the location at the Arsenal along Highway 2 just north of 88th avenue that met the requirements. The new CBL was installed on July 17th. The CCPS generously donated funds and CDOT provided equipment to create the 2 foot diameter 6 foot deep holes to establish the new CBL.

A newly established baseline needs to sit for a season of frost before it is measured. Pam plans to have the NGS CBL equipment shipped back to Colorado in 2014 to re-measure all the baselines in Colorado with the assistance of CDOT. At that time the newly established Arsenal CBL will be measured.

Setting of the new CBL station. Digging a 2 foot diameter hole 6 feet deep. CDOT Region 1 provided the equipment to drill four holes for the new CBL. From left to right: J. Faust (on the drill rig), E. Mundt, CDOT; T. Meeks, JFSato; D. Kuxhausen, T. Perazzo, C. Raml, Woolpert; K. Kucharczyk, JFSato

Setting of the new CBL station. A geodetic mark is placed on top of the concrete. The concrete was provided by the Central Chapter of the Professional Land Surveyors of Colorado. The distances on the marks will be measured next year and the new CBL published at that time. The Denver skyline is visible in the background. From left to right: B. White, T. Bridgeman, CDOT; D. Kuxhausen, C. Raml, Woolpert

Many thanks to Steve Breidenbach, CDOT Region 1, 4, 5, 6 (now part of CDOT Region 1) and the Central and Southwest Chapters of the PLSC for their assistance in making these projects successful. Additional thanks to Steve for assisting with writing this article and providing the figures.

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2013 - Nomination for Recognition

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- ❑ Surveyor of the Year
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This nominee deserves special recognition because (state reasons, use as many pages as necessary, or attach résumé):

Instruction:

1 Copy this form or get it electronically from the PLSC Web site at “www.plsc.net”, and mail or email the filled-out form to:

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2. A description of the above categories can be found on the PLSC web page.

3. Nominations must be received by January 15, 2014.

STATE BOARD UPDATE

By Joyce J. Young, Program Director
State Board of Licensure for Architects, Professional Engineers, and Professional Land Surveyors

Renewals
The Renewal for your license that expires October 31, 2013 is now open! You must renew your license before December 31, 2013. You will be required to reinstate your license if you exceed this 60 day grace period.

There is a *Renew Your License* web page specifically for Architects, Professional Engineers, and Professional Land Surveyors.

As the location of this page can be confusing, here is the path to get to this page:
> Go the to the profession's Board homepage at: http://cdn.colorado.gov/cs/Satellite?c=Page&childpagename=DORA-Reg%2FDORALayout&cid=1251632130538&pagename=CBONWrapper

> Click the *Professionals (Applications & Forms)* TAB and then
> Click the *Renewal* TAB
The *Renew your License* page will open
> Click the appropriate profession.

You can also search Google for "DORA Professional Engineer & Professional Land Surveyor Renewal 2013" and it should be at or near the top of the results.

PLEASE NOTE: The act of renewing your license reflects that you acknowledge and attest to several reporting items. With that, *please* ensure that you read all of the information that is part of the renewal process.

Practicing with an expired license is a violation of the law and subject to disciplinary action.

If you have any questions about renewals, including renewal requirements, expiration date questions, status change requests, etc., please email the Office of Support Services at the following address: **dora_dpo_renewalline@state.co.us** or call **303-894-2984**.

If you experience technical issues when renewing online, including computer troubleshooting, system access, etc., please email the helpdesk at the following address: **dora_dpo_onlinelicenses@state.co.us** or call **303-894-7800**.

Rulemaking
The Board will be considering possible rulemaking in the coming months. If you would like to be part of this process, please notify our office of your interest by emailing the following information to us at **dora_aesboard@state.co.us:**
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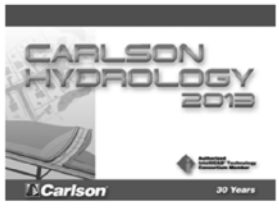

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A Closer Look
§§ 38-51-106 (1)(b)(I) & (II), C.R.S.

**By Larry Connolly, PLS, Board Member,
Colorado Board of Licensure for Architects, Professional Engineers
and Professional Land Surveyors**

There have been plats submitted to the Board that misinterpret the language of §§ 38-51-106 (1)(b)(I) & (II), C.R.S. and this is an attempt to clarify the statute.

38-51-106 reads:

(1) All land survey plats shall include but shall not be limited to the following:

(b) (I) All recorded and apparent rights-of-way and easements, and, if research for recorded rights-of-way and easements is done by someone other than the professional land surveyor who prepares the plat, the source from which such recorded rights-of-way and easements were obtained; or

(II) If the client wishes not to show rights-of-way and easements on the land survey plat, a statement that such client did not want rights-of-way and easements shown;

This means that all Land Survey Plats shall show all recorded rights-of-way and easements unless the client does not want them shown. It is important that this is negotiated between the surveyor and client beforehand so that the surveyor will know how to address the statutory requirement appropriately.

If the client wants the rights-of-way and easements shown, the certifying surveyor is required to show all and not some of the rights-of-way and easements on the Land Survey Plat. If the surveyor relies on an outside source for the recorded rights-of-way and easement research (such as a title policy), that source shall be stated on the plat or it will be assumed that the surveyor did the research. A statement on the plat could read: "The source of rights-of-way and easement research was conducted by ABC Title Company under their Order Number 123456, effective June 14th 2013."

If the client does not want rights-of-way and easements shown, there shall be a statement on the plat stating such. A statement on the plat could read: "At the request of the client, and in accordance with 38-51-106(1)(b)(II), rights-of-way and easements are not shown hereon."

The surveyor shall avoid adding certain inappropriate

disclaiming statements. The following are examples of inappropriate statements:

• "Rights-of-way and easement research was not conducted by this surveyor" – This is inappropriate as it does not identify who did the research.

• "Rights-of-way and easements are not shown hereon" – This is inappropriate as it is not the surveyor's choice to not show rights-of-way and easements on the Land Survey Plat.

• "Only easements shown on the subdivision plat of ABC Subdivision filed January 6th 1957 are shown hereon" – This is inappropriate as all rights-of-way and easements are required to be shown current to the Land Survey Plat and certain rights-of-way and easements may have been granted since that date.

• "At the request of the client only easements on the north line of the property are shown." – This is inappropriate as there is no provision in the statutes to only show some of the rights-of-way and easements on a Land Survey Plat.

It is important to remember that § 38-51-106 (1)(b)(II), C.R.S. does not apply to Improvement Survey Plats and Subdivision Plats.

The client does not have the choice to have easements not shown if they require an Improvement Survey Plat. § 38-51-102 (9), C.R.S. defines an Improvement Survey Plat as (emphasis highlighted):

(9) **"Improvement survey plat" means a land survey plat** as defined in subsection (12) of this section resulting from a monumented land survey **showing** the location of all structures, visible utilities, fences, hedges, or walls situated on the described parcel and within five feet of all boundaries of such parcel, any conflicting boundary evidence or visible encroachments, and **all easements**, underground utilities, and tunnels for which properly recorded evidence is available from the county clerk and recorder, a title insurance company, or other sources as specified on the improvement survey plat.

§ 38-51-106 (1)(b)(II), C.R.S. does not apply to subdivision plats pursuant to Board Rule 6.10:

6.10 Depiction of Easements and Rights-of-Way on Subdivision Plats.

The purpose of this rule is to provide clarification regarding the requirements of Section 38-51-106(1)(b), C.R.S., as it pertains to "platted subdivisions." The generally accepted standard of practice with respect to the preparation of land survey plats for platted subdivisions is to depict on all such plats all recorded and apparent rights-of-way and easements, regardless of clients' wishes.

Remember to ask your client if they want rights-of-way and easements shown. Make sure there is a statement on the plat stating the client did not want rights-of-way and easements shown if they decline. If they want them shown, make sure the client understands that all must be shown, not just some. When showing all rights-of-way and easements, if the surveyor relied on an outside source for the research, the surveyor must state the source on the plat or it will be assumed that the certifying surveyor did the research.

Control Points – Number 22

By Warren Andrews, PLS

Ancient Surveying Instruments

Most surveyors have heard rumors of or have actually seen pictures of the Egyptian rope stretchers who measured off the fields again after the Nile flooded, wiped out the boundaries, and brought in new soil for the farmers. In the Tigris-Euphrates valleys in Mesopotamia (modern Iraq) the Sumerians probably also used ropes for measuring and water levels for the canals, temples, and palaces. Also, the construction of the first and second temples in Jerusalem must have used accurate measuring tools to make the stone and wood connections in the 11th Century B.C. (perpetuated in modern Freemasonry ritual). Most of the known references, though, about surveying instruments and methods come from the Greek and Roman period. The old jingle was that "the Greeks had the brains, the Romans had good drains."

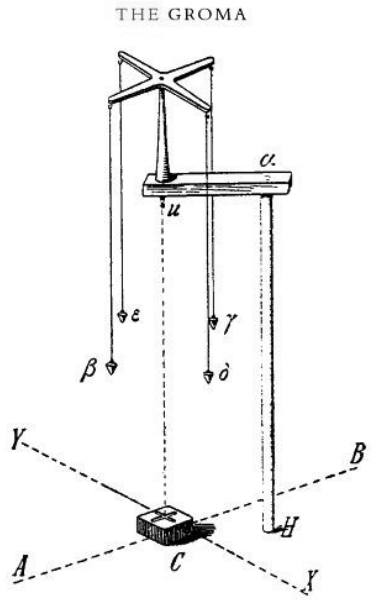
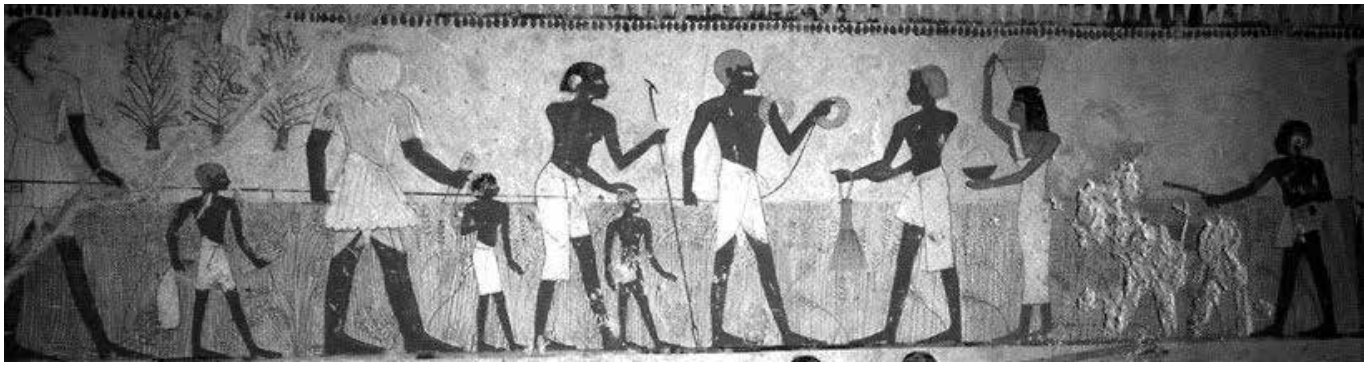


FIG. 5.1. Schulten's reconstruction of the groma (Schulten 1912, 1884).

From Surveying Instruments of Greece and Rome, M.J.T. Lewis

Because a problem with the ropes or cords was that the length changed if they were wet or dry and what tension was used, the Roman military surveyors usually used wooden rods. These might change in length a tiny bit but if they were tipped with brass ends, the wear was insignificant. For very long distances, such as for mapping a country, there were specialists in pacing. (Our modern mile comes from "mille" [Latin for 1,000] which distance was a thousand average paces of 5.28 feet of a Roman soldier, a Roman pace being a double step).

For running levels there were two instrument options, the "chorobates" or water level (water in a trough up to 20 feet long which would have been very heavy and cumbersome to use even though accurate) or secondly the isosceles triangle made of wood or metal with a



Cordsman Egyptian Tomb of Menna: *Dynasty (ca 1475 BCE). Part of Menna's duties would have been the overseeing of agriculture in the estates of the pharaoh, including the laying out or surveying of the fields. The scene of the stretching of the cord is part of an overall tomb plan showing the various phases of planting and harvesting of the crops for which Menna would have been responsible. The only instrument that is depicted in the scene is the rope itself. Nothing is shown about how they would maintain line, if that was important to this phase of the survey.*

plumb bob hanging at a center mark on the cross bar. The plumb bob would give verticality while the A frame legs would give the horizontal as close as you could read the center mark. The precision in the Greek and particularly in the long Roman aqueducts of 1 in 8,000 grade or a minimum of 1 in 20,000 is quite surprising. The plumb bob arrangement could be used for either horizontal, vertical or with different marks, a gradient.

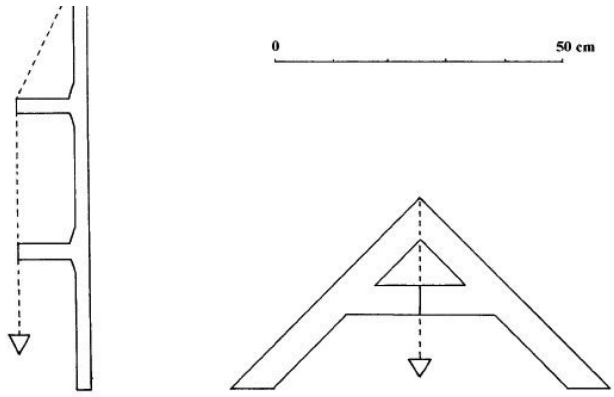


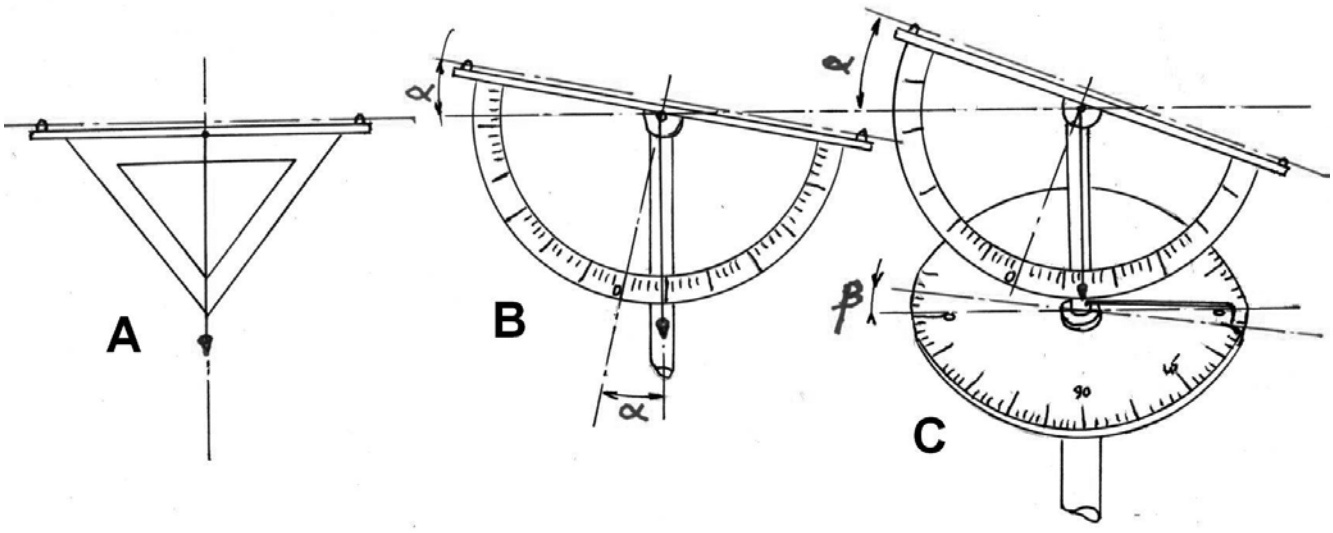
FIG. 1.5. Egyptian A-frame level for horizontals and plumb-line for verticals, c. 1300 BC (based on Glanville 1942, Pl. 22).

From Surveying Instruments of Greece and Rome, M.J.T. Lewis

The use of similar right triangles to determine unknown vertical or horizontal distances was one of the ancient surveyor's most important methods. The "groma," used to achieve the right angles needed, involved hanging 4 plumb bobs from equal length cross arms which were at exactly right angles to each other. The center of the cross arms was directly over the initial point. (Sounds like setting up a transit or a total station nowadays over a point, doesn't it?) Line of sight across the plumb bob chords wasn't quite as accurate as a modern optical theodolite but multiple sightings would average out somewhat!

For other than right angles in a horizontal plane, there was the predecessor to the modern transit, the "dioptra," which could measure horizontal angles or tipped up could measure vertical angles. It was many centuries later than marks of degrees, minutes, and seconds would be scribed on the circular plate plus the trigonometry to go with them would be developed. But the ancients weren't stupid and they would have had some kind of marks on the circular plate that supported the pivoting sighting bar.

For more details and descriptions of usage, I suggest the English author, M.J.T. Lewis' book, "Surveying Instruments of Greece and Rome." He actually reconstructed a modern "dioptra" and a "libra" and his son tried them out in the field.



Three stages in the evolution of the dioptra, from a simple horizontal sight, to a multi-angle measuring tool (from Wikipedia)

Statute of the Month: 38-51-103. Procedure for Subdividing a Section.

By Earl Henderson, PLS

This statute is divided into (1)-(2). (2) is divided into (a)-(d). And (a) is further divided into (I)-(II), so I'm not going to take the space in this publication to write it all out for the reader. I hope you are able to find it for yourself and read it thoroughly. I will quote the parts pertinent to my discussion though.

(1) states that whenever we as Professional Land Surveyors (PLS's) survey property that is described in terms of the PLSS we "...shall proceed according to the applicable rules contained in the current (BLM Manual)...". I think we all already know that don't we? But do we understand it is a better question. It's important to note that this does NOT say that whenever we're trying to *relocate* an aliquot corner that we pull out our measuring devices and calculators and place a new monument where we determine mathematically it should be based on the existing surrounding monumentation and the Manual's instructions on how to subdivide a section. We must first know the history of not only the aliquot corner and monument we're trying to *relocate* but also all the other corners and monuments surrounding that location that could have an effect on the *relocation* process. After all, it may be pertinent to know that if we're trying to *relocate* the east quarter corner that was originally surveyed in 1889, that the current northeast corner monument was set by double proportionate measurement in 2002 and the current southeast corner monument was set in 1968 by some unknown means. Our first responsibility is to do our best to find the <u>original</u> location of the corner. The chances of hitting the original location of the east quarter corner by proportionate measurement between these two monuments is very close to, if not less than zero. If there is evidence to be found, we are much more likely to find something close to the original location. And use of evidence over proportioning of any kind is exactly what the Manual tells us to do. I have numerous places in my copy of the Manual highlighted that say as much including, but not limited to 4-2, 4-5, 5-1, 5-2, 5-4, 5-5, 5-29*, 5-36*, 6-36,7-1, 7-2, & 7-5. In fact, the Manual tells us that we MUST first use the evidence before we're permitted, as a last resort, to do any calculations to re-establish a monument (BLM Manual 7-1 & 7-2). So if you're about to proportion in a new monument location, be afraid...be very afraid. You may have missed some evidence of the original corner location and be about to start some problems for some property owners, the thick of which will encompass you for sure.

(2) describes for us the proper procedures for *subdividing* a section. Did you note that italicized word *subdividing*? If that section has been *subdivided* at any time in the past prior to our *retracement* survey then we are not a *subdividing* surveyor but a *retracement* surveyor and (2) doesn't even apply to us. In that situation we MUST go back to (1) and apply the rules of evidence. Unfortunately, I am concerned that many PLS's in Colorado don't understand this fundamental difference between being a *subdividing* surveyor and a *retracement* surveyor. Many of those folks won't ever understand it because they aren't reading this, or any other articles or textbooks about their profession for that matter, or trying to grow to be better professionals. But I digress. How many times in this modern era do we get a call from a property owner that owns an entire section, or even an entire quarter section, that wants to subdivide that property into aliquot parts? That's a rare experience any more. So if that's not the call you got, then you're not a *subdividing* surveyor but a *retracement* surveyor and governed by the rules of evidence not the rules for *subdividing* a section. And as if that's not enough, (2)(b) emphasizes the rules of evidence by stating in part "...shall include all control corners that were *originally monumented*..." (emphasis added) and (2)(d) adds more emphasis with "...the location of *original aliquot corners*..." (emphasis added). The way I read this, the State of Colorado, through these statutes, is trying to tell me something. And that is to use the original corner locations if it is at all possible to determine them before breaking out the calculator and relying on some mathematical solution.

The reasoning for all this is actually pretty simple. This country was originally surveyed starting many hundreds of years ago in the east and only about a couple of hundred years ago starting in Ohio and moving westward. As PLS's it is our sacred duty to perpetuate the originally surveyed locations of all corners, whether they came out of the PLSS or not, whether they were set in error or in a different era, and NOT to try to fix those locations by setting pincushions or ignoring evidence of the original locations. Property owners, whose category many of us also fall into, rely on the original locations to be accurate, not necessarily precise. And as Thomas

Jefferson knew, a time will come when better measuring devices will be invented and future land surveyors will laugh at the imprecision with which we ourselves are currently setting monumentation. But to become "Mr. Fix-it" and try to correct monumentation to the mathematically precise location would completely disregard the Bona Fide rights of the property owners. Where could you possibly begin such a correction (Greenwich, UK?) and where would it ever end (The year 2525. If man is even still alive?)? And who is going to tell the current descendent of a patent claimer that they don't own the farm they've been cultivating for centuries but they actually own the swamp next door because the original surveyors dropped a chain or two?

It is the height of hubris to think you can more precisely reset any monument that is not lost by any mathematical method to a location that is better than where the original corner monument was set. It literally cannot be done. That's what the Colorado Statutes and the BLM Manual are both trying to tell us. Are you listening?

Internship Story

By Gordon Wilson

I remember my first day on the job site, a large subdivision at the edge of the Denver metro area. With a newly acquired safety vest and hardhat—both fresh out of their packaging, unworn—I awaited instructions for the day's work with nervousness for being on a construction site as a paid employee for the first time.

The internship I performed at Merrick & Company this past summer is something I see as an invaluable experience now that I find myself back in the classroom for one more year of my Bachleor's degree in surveying. An internship allows an upcoming surveyor to take his or her recently acquired knowledge to the field, become familiar with all sorts of new equipment, pick up some practical advice from experienced surveyors, and learn to develop meaningful professional relationships.

The journey from my home at the University of Maine to the Merrick & Company office in Greenwood Village, Colorado was made possible largely due to the help of my professor Knud Hermansen. When I mentioned that I'd like to work in Colorado for the summer, Dr. Hermansen contacted the president of the Professional Land Surveyors of Colorado, Roger Nelson. Roger then introduced me to the opportunity at Merrick and upon following through with the application process, I was awarded the position.

Merrick is a diverse company and I was able to work on several projects from construction-staking to easement preparation to as-built topographic survey field collection. With the exception of construction-staking, the work I performed this summer was entirely new to me. The benefit of an internship is that you break the vacuum that often surrounds academia. School-work, for the sake of practicality and efficiency, is largely theoretical. Real-life field experience breaks the theoretical bell-jar and allows the hands to see what the brain has been working on all those months in the classroom. With the first day jitters gone, a little dirt on my vest, and relationships that are sure to aid me in the future, I feel more prepared to enter the field after graduation.

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September 23, 2013

Mr. John B. Guyton, Editor
Side Shots
3825 Iris Ave.
Boulder, Colorado 80301

Dear Mr. Guyton:

This letter is to inform you of official BLM cadastral surveys in Colorado that have been accepted from June 20, 2013, through August 28, 2013. These surveys were filed in the Public Room, Bureau of Land Management, Colorado State Office, 2850 Youngfield Street, Lakewood, Colorado 80215, and are available at http://www.glorecords.blm.gov.

The accepted original surveys, resurveys, supplemental plats or remonumentations are listed below by township, range, meridian, group number, type, approval date and number of plats.

Township	Range	Meridian	Group No.	Type	Approved	Plats
T. 34 N.	R. 8 W.	NMPM	1384	Plat & Notes	06/20/13	3
T. 3 N.	R. 79 W.	Sixth	1497	Plat & Notes	06/26/13	1
T. 13 S.	R. 70 W.	Sixth	1507	Plat & Notes	07/23/13	1
T. 14 S.	R. 68 W.	Sixth	1535	Plat & Notes	07/30/13	1
T. 14 S.	R. 69 W.	Sixth	1535	Plat & Notes	07/30/13	1
T. 8 S.	R. 78 W.	Sixth	1582	Plat & Notes	08/28/13	2

As other surveys are completed, I will advise you of their acceptance. You may circulate this letter among the membership of the Professional Land Surveyors of Colorado.

Sincerely yours,

Randy Bloom
Chief Cadastral Surveyor for Colorado

CCPS

The CCPS is happy to announce that monuments for the new "Arsenal" Calibration Base Line have been set near the Rocky Mountain Arsenal. Working with the NGS and CDOT, CCPS was able to donate materials and help out with construction. The baseline will be measured by the NGS and published for public use in 2014. Thanks again to Pam Fromhertz (NGS), Dave Stewart (CDOT), and everyone else who donated their time and other resources to make this happen!

Thanks to Vern Lee from Merrick for being the guest speaker at our August general membership meeting at the Double Tree in Aurora. He spoke about his experiences and knowledge of HDS (high-definition scanning) while highlighting some lessons learned through field collection and the creation of final deliverables.

Warren Ward will be our October general membership meeting speaker at The Table Mountain Inn located in Golden, Co. His presentation will be a discussion of the NSPS Trig-Star program in Colorado, the NSPS Certified Survey Technician (CST) program in Colorado, and the National Society of Professional Surveyors.

If you have a speaker in mind for a future meeting please let me know. These are great venues to discuss anything regarding the land surveying profession.

The 2013 CCPS board of directors consists of:

Officers; Christopher Raml, President; David Kuxhausen, Vice President; Mark Wilson, Secretary; Aaron Willis, Treasurer. The directors are Shawn Clarke, George Robinson, John Wilhelm, Terry Pickering, Kevin Kucharczyk, Ken Baker, and Tony Perazzo. Thanks to all of you who serve on our board.

Please visit us at www.centralcosurveypro.com for contact information, meeting details, and general CCPS news.

Christopher Raml, PLS
CCPS President

CHAPTER NEWS

CSRN

The Colorado Spatial Reference Network is looking for nominations for board members. Almost all positions are open this year as board members are finding their work schedules conflicting for time with the CSRN. Those positions are President - two one-year terms, Vice-President – two one-year terms, Secretary – two two-year terms, Treasurer – two two-year terms, and two board directors positions as Kayce Keene and Larry Rector are willing to run again. The name of this chapter implies that it is involved with a GPS network which was the plan originally. However the GPS Dealers are managing the GPS networks so the chapter's involvement in GPS networks has waned. This Chapter's future is dependent on the CSRN members and people stepping up to be on the board. The CSRN has had several successful years with two GPS Day events that were successful. With a fresh vision and involved CSRN members this chapter can continue to be a vital entity for the Professional Land Surveyors of Colorado. With the crossover of Land Surveying and Geographic Information Systems, this chapter could be used to help both fields. It is my hope that someone new will step forward and take on the task of bringing the CSRN into the future. I will be available as an advisor or source of what has happened to the chapter for the past six years.

Jan L. Sterling, PLS
CSRN President

NC-PLSC

The summer hiatus is now over and the monthly chapter meetings are back underway. Our September meeting was kicked off by an Aerial Surveyor, Ralph Vomaske, with Mapworks with an excellent presentation on aerial mapping. The October meeting will host Joe Schneiderwind of Geotech with a presentation on Machine Control. Our November meeting will have Tamara Slusher with Laimer County Clerk and Recorder come in and discuss new access/computer systems, new recording type, and how to get digital accounts. We hope you'll all join us for our Christmas dinner at Abbondanza Pizzeria, Wednesday December 4th at 6:00 pm.

The Northern Chapter had a membership drive this past spring in hopes to drum up more interest in the PLSC. We're hopeful that this outreach got many thinking about what the PLSC does for them. The Northern Chapter has an excellent opportunity for current NC-PLSC Members ONLY (recently all Chapters have been allotted $1500 in scholarship money from the PLSC). Apply online (http://www.plsc.net) if you want an opportunity for a scholarship to become a Certified Federal Land Surveyor (CFedS). Generally this scholarship money has been reserved for younger people going to school for surveying, however the PLSC has determined that we can indeed use this money towards other areas such as CFedS. The PLSC just recently voted on providing a fixed amount to each chapter for scholarships this fiscal year. Check out the PLSC website for more information.

And, speaking of websites, the Northern Chapter has a Google Site now which will allow us to post more information online. Please visit us at https://sites.google.com/site/ncplsc/home

Our Chapter welcomes Doug Ritter as our new director. Paul Bacus continues to lead the charge on the legislative committee. Laine Landau is directing an effort on TrigSTAR. Lots of great things are happening in the Northern Chapter. Want to make a big difference? Start attending our meetings and you'll see opportunities present themselves.

Kayce D. W. Keane, PLS
Northern Chapter President

NW ¼ CLS

I write this article as we are in the midst of government shutdown that is starting to affect all of our businesses at some level. To those that work directly for the FAA, National Parks, USFS, BLM or FHWA, the effect is almost immediate. Websites for BLM and GLO maps and notes are shut down, contacts are unavailable in many cases and even OPUS is not working at the moment. I have personally lost where I am without OPUS.

Many surveyors work indirectly for Federal government jobs, such as CDOT projects where there is substantial federal money involved, or future FAA projects. There will be bids delayed as the shutdown continues on and perhaps even cancelled bids as the government officials struggle to catch up on the backlog once they reopen.

The greatest concern at this time is that the U.S. would actually default on its National Debt. Although unlikely, the brinkmanship that is being practiced in Washington makes this at least possible. If this were to happen, interest rates would skyrocket and the world would descend into a global recession. If this were to happen- and it is unimaginable they would allow this to happen- every job in the country would be impacted.

Although we are all surveyors we are also all citizens. We have a responsibility to not just ensure the health of the surveying industry but the larger community as well. To that end, we must start considering remedies to the quagmire that has become Washington. It was built on a swamp and has returned to its roots. Far too many senators and congressman have essentially "Safe" seats. Their District or State is dominated by one party or the other and thus they do not feel accountable to the average citizen. What they are risking with the National Debt default proves they do not feel accountable to anyone, even the largest corporations. This fundamental fact must change. And it is up to all of us to help make that happen however we can.

Brian T. Kelly
President NW1/4

SCPLS

The September Board of Directors meeting was held in Colorado Springs.

The chapter's annual Paul G. Grout Memorial Golf Tournament and Picnic were held this year. There was a good turnout of sponsors and participating teams. We thank the sponsors and the volunteers that made this a successful and fun event.

Discussions on available scholarship money concluded that we have no applicants at this time. It was suggested that we study the possibility of offering scholarships for mathematics, and/or related basic courses toward a degree in Land Surveying.

A $500.00 donation was given to the Sawyer-Garstin (late 1800's to early 1900's) historical map and document collection. The collection is located at the Miramont Castle in Manitou Springs. The document files and abstracts are 100% complete as the files have been archived and entered into Past Perfect Museum database software. The historic maps have been sorted and only about 20% archived. The donation

of funds will be used for storage materials for plat maps. The maps and documents are available to the public, although copies are not available at this time. The project needs a large document scanner to provide copies for research etc. When completed this will be a valuable research collection for Land Surveyors and related fields.

It was disclosed that the Colorado Springs City Engineering & Surveying Department has scanned the original 5x5 survey control book on display at the Pioneer Museum. The 5x5 survey control was prepared around the early 1900's when the downtown was being developed. It will be a valuable tool for the resurveys of the old town blocks. This information is now recorded with the El Paso County Clerk and Recorder and available to the public. The Land Surveying Professionals thank the City for making the information accessible to the public.

A membership meeting is scheduled for the October meeting. Announcement will be forthcoming with date and presentation.

The chapter will have the annual Christmas Dinner Party at the La Renaissance Restaurant in Pueblo, Friday December 13, 2013. This is always a fun time with the white elephant gift exchange after the dinner.

Joseph Alessi, PLS
President, Southern Chapter

SWC-PLSC

The SWPLSC held our most recent chapter meeting on Tuesday, September 10 in Durango. We had the honor of hosting Michael Boeckman on behalf of the BLM. Michael had a presentation of a subdivision protest case in Idaho.

The 2013 Colorado Land Surveying Refresher Course is now available to surveyors in the SW Chapter area. This course offers a review and self-study plan for those taking the National Council of Examiners for Engineering and Surveying (NCEES) Fundamentals of Surveying (FS) and Principles and Practice of Surveying (PS) examinations. Attached is the order form for the Refresher Courses. These are on DVD and being offered

to the Chapters at a 25% discount.

Please contact Parker Newby at pnewby@goffengineering.com with questions or to request an enrollment form.

We are working on updating the chapter website with current officers, meeting minutes and time/location information. We are hoping to include the BLM's corner cards in our website as Mike Boeckman is currently scanning these to be available in pdf format.

Our next meeting is scheduled for Tuesday, November 11. Look for guest speaker information, time and location in the upcoming email.

Joshua J. Casselberry, PLS
President, SWC – PLSC

WCLS

Our group met on September 11th for our Chapter meeting. I encourage members to take the time and attend the Chapter meetings to see what is going on and visit with fellow surveyors. Meetings usually last about 1 ½ hours. Peter Krick as usual prepared an excellent dinner.

Warren Ward came to this meeting and gave a presentation on NSPS. He spoke about the benefits of having a national organization that is there to help the survey community. Thank you Warren Ward for taking the time and energy to visit the Chapter and providing information to us.

Sean Mullen, a Cadastral Surveyor from the Uncompahgre Field Office gave a presentation on a typical project from the newly established Dominguez- Escalante National Conservation Area. Thank you Sean for sharing the information with the Chapter.

We are looking for ideas for our Spring Seminar (2014). Let us know what you would like to see next year. Peter Krick will chair the committee.

We are looking for individuals to fill the President, Vice – President, Secretary/Treasurer and a couple of board seats for next year. Please contact Richard Bullen (970) 245-4921 if you are interested or would like to nominate someone. We will discuss this at our next chapter meeting, which will be November 13th at the City of Grand Junction building. Dinner at 6:00 and meeting starts at 6:30. See you there.

Richard Bullen, PLS
President, WCLS

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