

SASKATCHEWAN LAND SURVEYORS' ASSOCIATION

Newsletter

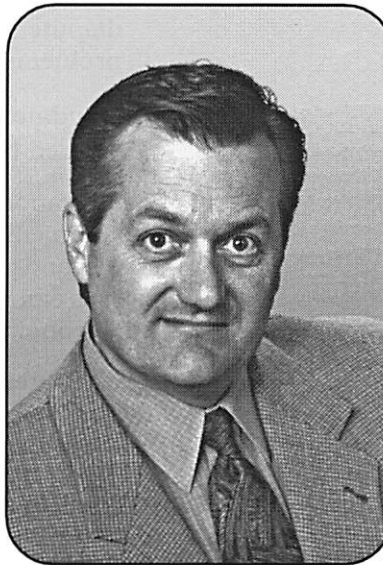
President's Message to the Membership

By R. J. Pominville, SLS, P. Surv, President

I am writing this as Joanne and I prepare to attend the A.N.L.S. Annual Meeting in Yarmouth, Nova Scotia. This will be our third provincial meeting that we have attended with each experience being invaluable. We have gained an appreciation of the effort involved for a sole practitioner to preside as President of our association.

We attended the A.M.L.S. Annual Meeting at Gimli, Manitoba in September. A concern was raised at this meeting that they were unable to attract graduates from the U. of C. Geomatics program. This problem seems to be a common concern within our association as well. With our numbers declining, it is obvious that something has to be done to attract new members and the U. of C. is the obvious place to turn to. An interesting point was made in the Manitoba meeting. It was suggested that the members tend to focus their attention on graduates of the Geomatics Program, and that often they are too late as the student has obtained employment or is committed to a certain project.

A pro-active approach to recruiting must be taken. If we are to attract the students, we must build a relationship early in their program by providing summer employment or participating in co-op work/study programs. These relationships should be started in the first year and must offer the students a challenge as well as a learning opportunity. You cannot expect to keep someone's interest if they



are only laborer for the summer and sent back to school in the fall. They will need support throughout the year both financially and morally.

Our Association can take a step in this direction by taking advantage of the current opportunities to meet and speak with the U. of C. students. However, it will have to be the individual members of this Association that will take up the challenge. This may include a trip to Calgary for a meeting with students, or maybe as simple as initiating some contacts through the U. of C. student's website. I believe that you will find the Geomatics Department to be very co-operative in facilitat-

ing opportunities to contact students.

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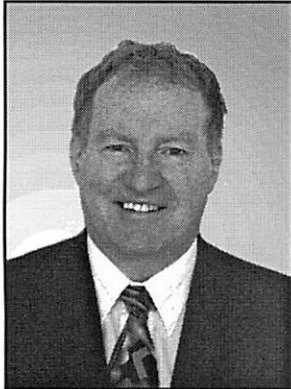
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Council Highlights

By A. Carl Shiels M Sc., P. Eng., Executive Director



The Saskatchewan Land Surveyors' Association Newsletter is published by the Saskatchewan Land Surveyors' Association for circulation to its members.

Deadlines for articles will be the last Friday in December, March, June and September.

The opinions of the contributing writers may not be consistent with those of the Council of the Saskatchewan Land Surveyors' Association. Articles may be reprinted with appropriate credit given to the authors, unless it is under copyright.

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1998/99 Council

President	Roy J. Pominville
Vice President	Bill C. Soroski
Past President	Bob A. Webster
Councillors	Jim A. Boyd
	Robert J. Morrison
	Walt J. Schoenfeld
	Jeff T. Skelton
	Walter M. Streelasky
Public Member	A. Carl Shiels
Executive Director	Candy Shiels
Executive Assistant	Doug A. Bouck
Newsletter Editor	

Meeting #2 July 5, 1999 - via Teleconference

The President called the meeting to order at 9:00 a.m. and described some of the highlights of the Association of Newfoundland Land Surveyors Annual Meeting in St. Johns, These included:

- The Presidents' Forum in which problems related to law suits and discipline seemed to be high on the list of concerns for some of the associations with many looking at alternate dispute resolution methods to resolve their problems;
- Mandatory Continuing Education being considered by several associations;

A motivational speaker gave a very impressive presentation emphasizing how, through improved attitudes and a more professional approach, businesses can prosper in the province in spite of difficult economic times.

The business meeting included a motion to amend the bylaws to provide for both membership in the association and a separate licence to practice.

The President also reported on his attendance at the CCLS meeting where discussions related to the Geomatics 2000 initiative dominated the agenda. Apparently CIG continues to have second thoughts about the concept.

Administrative Bylaws

The amendment to the administrative bylaw that had been approved by Council at meeting 1998/99 #8 regarding audit and deadline for mail-out of copies of the audited statement, needed to be reaffirmed since the deadline for filing the amendment with the Department of Justice had passed.

Regulatory Bylaws

The amendments to the regulatory bylaws, approved at the annual meeting, had been forwarded to the Minister for approval along with a reminder that she had ninety days within which to approve the amendments.

Recommendations of Board of Examiners

Council approved a recommendation from the Board of Examiners that the syllabus be changed to increase the focus on a project-related paper as opposed to the recent trend of simply concentrating on the history of the survey system in Western Canada.

APEGS/SASTT

A meeting had been held with APEGS and SAA to discuss the progress of talks with SASTT. Apparently some progress had been made in resolving some of the outstanding issues, the definition of applied science technology and the wording of the bylaws proposed by SASTT continued to be sticking points. Additional meetings between APEGS and SASTT, as well as between the individual associations and Minister Bradley, were scheduled.

SARM Liaison

The President and Executive Director outlined the events that lead up to an agreement between SLSA and SARM regarding the procedures and costs of Grid Road surveys. It was noted that this matter had 'fallen between the cracks' since the agreement had been reached but it was still considered to be a very important opportunity to liaise with SARM. The President agreed to discuss this matter with the chairman of the Practice Committee to make sure that it was properly dealt with.

Intent of Article XX, Section 3 of the Bylaws

An inquiry received from a member who was having difficulty complying with the 'Minimum deductible' requirements of the mandatory professional liability provisions of the bylaws. He pointed out that the intention of the bylaw was not clear and it conflicted with many of the insurance policies offered by insurance companies.

It was agreed that R. A. Webster would review the bylaw and, after discussing it with the representative of the CCLS Public Liability Insurance Committee, provide a report to council at the next meeting.

Reciprocity Between WCBE Provinces Regarding Practical Experience of Articling Students

The President explained that there had been an expression of interest, primarily from the Alberta President, in developing reciprocity agreements between the four western associations with respect to the practical experience requirements of land surveyors in training.

It was agreed that this matter would be given further consideration as and when a more specific proposal was received.

Committee Reports

Convention Committee

The President reported that plans for the 2000 annual meeting were proceeding well with confirmations having been received for many of the necessary facilities. Consideration was also being given to a second golf tournament on the Saturday after the business meeting.

The final report from the chairman of the 1999 annual meeting indicated a small net profit from the event.

Education Committee

No report

Practice Committee

No report

The proposal from the Business Development Bank of Canada was discussed. It was noted that, although the proposal had been approved by the members present at the annual meeting, it would be appropriate for Council to receive further information regarding the plans for implementation of the project. It was agreed that President Pominville would discuss this matter with M. A. Marien, Chairman of the Practice Committee, with a view to having the matter dealt with during the fall Committee Workshop.

Public Relations Committee

No report

The President acknowledged a motion to adjourn at 9:55 a.m.

Meeting #3 September 22, 1999

Committee Workshop

The morning of the Council meeting consisted of a workshop devoted to a review of the terms of reference and the work plans of the various standing committees. In addition to the members of council, the workshop was attended by D. A. Bouck, Chairman of the Education Committee, and M. A. Marien, Chairman of the Practice Committee. W. J. Adams, Chairman of the P. R. Committee, was represented by council liaison member W. J. Schoenfeld.

The workshop was called to order at 10:05 a.m. and adjourned at 11:45 a.m.

Business Meeting

The President convened the business portion of the meeting at 1:00 p.m. As a follow up to the morning workshop, he encouraged all members of council to maintain close contact with the standing committees with which they provide liaison and try to make sure that some of the items from the suggestions list are 'tied down' and completed during the next year.

The President also reported on his attendance at the annual meeting of the Association of Manitoba Land Surveyors at Gimli, Manitoba. He noted that the meeting was attended by most provincial Presidents as well as the President from the Minnesota association. President Pominville, along with the Presidents from Ontario and Quebec, were asked to provide a panel discussion on the background and strategy for implementation of continuing education programs. The panel presentation was well received by all in attendance.

SLSA Handbook

At the request of Council, the staff had prepared two versions of the SLSA Handbook, one based on the complete table of contents as suggested by A. Jensen, and another consisting only of those items that were considered 'essential' to all surveyors. Although there was a difference in the cost of the two versions, there was not a great deal of difference in the size of the binders required to hold them. It was agreed that the SLSA Handbook should continue to include all documents listed in the table of contents, that the up-to-date table of contents should be included on the SLSA web site for those who wished to obtain updates directly

from the Queen's Printer, and that the cost of the Handbook should be set at \$200.00 plus GST to cover the cost of shipping and handling.

APEGS/SASTT - Update

The Executive Director reported that there had been two meetings between APEGS and SASTT since the summer break but very little progress. A third meeting between APEGS and SASTT was scheduled for the end of September and it would probably become clear at that meeting whether any further agreement could be achieved.

The Executive Director also indicated that APEGS have suggested that there be a Memorandum of Understanding signed between them, SLSA and SAA to deal with any outstanding concerns there might be between the three associations prior to a move to modify the exemption provisions in the three acts.

It was agreed that the President, former Past-President P. M. Maloney and the Executive Director would continue to liaise with APEGS regarding the development of an M.O.U. and negotiations with SASTT.

Status of Amendments to Regulatory Bylaws

The Executive Director explained that a letter had been received from the Legislative Services Division of SPMC indicating that the regulatory bylaw changes approved at the last annual meeting had not been approved by the Minister before the election call. As a result, they would have to be re-submitted for approval once the new cabinet has been named.

Seminar on Desk Top Publishing

After consulting with the editor of the SLSA Newsletter, the Executive Assistant had attended a conference on desktop publishing that dealt specifically with the software used by the Association to prepare the newsletter and other Association publications. It was agreed that Shiels & Associates Consulting be compensated for the cost of attendance at the conference.

R. B. Pollard/K. B. Beatty - Land Surveyor in Training Agreement

Council approved a Land Surveyor in Training Agreement submitted by R. B. Pollard, ALS and K. B. Beatty, SLS, ALS. Mr. Pollard received his ALS

commission in the spring of 1999 and is a graduate of the U. of C.

Appointment of Auditors

As set out in the amendment to the bylaws at the last annual meeting, auditors for the 1999 fiscal year needed to be appointed prior to year end. Council was asked to consider two options; a) reverting to the practice of having members conduct the audit; or b) retaining a professional accountant to carry out the audit. If preference was for a professional auditor, the Executive Director recommended hiring the same auditor that was used for the 1998 fiscal year as a way of reducing the cost of the audit. W. J. Schoenfeld, as one of the member auditors appointed for 1998, spoke in support of using the same, professional accountant as last year. It was agreed that, subject to his acceptance of the appointment, Don MacMillan be appointed auditor for the 1999 fiscal year.

Replacement of Association Photocopier or Printer

The Executive Director explained that the office photocopier was nearing the end of its useful life and may need to be replaced if the service company refuses to provide further maintenance and support. However, after considering alternatives, it appeared that there may be a financial advantage to replacing the aging laser printer with a new, state-of-the-art laser printer that could, in combination with the existing scanner, do all office printing including those items currently printed by commercial printers such as the newsletter, committee reports, annual directories etc. The Executive Director explained that, although both options had not been fully investigated, it was clear that a capital expenditure of up to \$5,000 would be required to handle printing and/or photocopying requirements for the next several years. It was agreed that the Executive Committee be authorized to approve an expenditure of up to \$5000 for upgrading office printing and/or photocopying equipment.

Listing of Canada Land Surveyors in the SLSA Directory

At the suggestion of one member, Council considered whether it would be appropriate to include a list of members who have CLS commissions in the Association's Annual Directory. It was pointed out that many of the members have commissions in other provinces as well and, if consideration was

to be given to members with CLS commissions, equal treatment should be given to those with other provincial commissions.

It was agreed that, for the 2000 SLSA Directory, all members would be invited to indicate what other commissions they hold, and that those commission designations would then be included, beside the member's name, in the companies listing of the directory.

SLSA Web Site - Update

The Executive Director explained that the Executive Assistant had spent a considerable amount of time during the summer upgrading the SLSA web site. Although there were still a few 'glitches' in it, it had been installed on the host computer and members were invited to visit the site and provide comments and suggestions at their leisure.

It was suggested that a) the association investigate getting its own domain name and b) make the URL for the web site more prominent in the various Association publications.

"The Art of Mapping" Display - Potential Donation from the Government of the Netherlands

An offer was received from Willem DeLint, past-President of the Saskatchewan Architects Association involving the donation of an art exhibit entitled 'The Art of Mapping' which had been prepared by the government of the Netherlands and which is currently being exhibited throughout Canada. At the completion of the tour, the Government of the Netherlands is prepared to donate the exhibit to some organization who would be able to house and display it. Mr. DeLint's suggestion was that the SLSA could become a partner in the donation of the exhibit to a suitable recipient.

The proposal received approval in principal from Council as a possible project to celebrate the 90th Anniversary of the Association. However, before a final decision is made, the P. R. Committee was asked to review the proposal and, in conjunction with Mr. DeLint, identify potential recipients of the display and obtain more detailed costs associated with its transportation to Saskatchewan.

Member Advertising in SLSA Newsletter

As a result of a request to place a 'help wanted' ad in the newsletter, council was asked to consider a

policy regarding the cost of such advertising. It was agreed that members would be eligible to advertize in the newsletter but at the same rate as other advertisers.

Land Surveyor in Training - Mentor/ Council Meetings

The President reminded Council of a suggestion that had been made at the last annual meeting regarding meetings between Council and land surveyors in training and their mentors. According to the information from the annual meeting, the Alberta Land Surveyors' Association has a requirement that each land surveyor in training and his/her mentor meet with Council once per year to review the progress of the student and to deal with any problems that may arise. J. T. Skelton, who was just about to begin the articling process in Alberta, agreed to provide more details on his experience with their program. It was also agreed that the option of meeting with council should be encouraged with Saskatchewan Land Surveyors in Training and that this should be emphasized in all future correspondence between the Executive Director and SLSIT's.

Committee Reports

Convention Committee

The President reported that plans for the 2000 annual meeting are beginning to 'firm up' with confirmation that it will be held in Waskesiu.

Education Committee

Discussed during morning Committee Workshop

Finance Committee

The President noted that President's and Vice-President's travel would be running over budget. The Past-President pointed out that part of the over-expenditure was associated with his attendance at the Association of Canada Lands Surveyors annual meeting.

It was agreed that an over-expenditure in travel would not be a problem because of projected savings in other areas.

Practice Committee

The President reported that he had signed the Client Services Contract with the Business Development Bank of Canada for conduct of the Costs Study.

Public Relations Committee

Council reviewed a draft of a public information pamphlet dealing with the policies and procedures of formal public complaints. Although it had been 'okayed' by the P. R. Committee, there were certain policy changes that need to be implemented in advance of the publication being distributed to the public. In particular, the Act specifies that formal public complaints are to be sent directly to the Professional Conduct Committee but no such committee had been appointed.

It was noted that the Professional Conduct Committee would be performing essentially the same duties as the previously established and ongoing Complaints Committee. However it was also noted that the Complaints Committee currently consisted of only two members while the Act requires that there be three members on the Professional Conduct Committee. It was decided that the 'Complaints Committee' would be renamed the 'Professional Conduct Committee', and that the Chairman of the Professional Conduct Committee would be invited to recommend a third member for appointment to the committee. The draft pamphlet on public complaints was also referred to the Professional Conduct Committee for comment before finalizing it for public distribution.

RPR Committee

The President noted that the RPR committee had been inactive for the past three years except to deal with matters related to Title Insurance - a topic that might be handled equally well by the P. R. Committee.

It was agreed that the RPR Committee Chairman be invited to consider whether his committee should be disbanded or reassigned.

Next Meeting

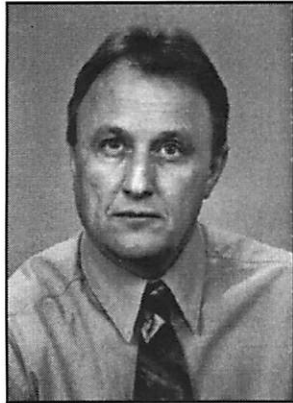
The next meetings of Council were tentatively scheduled for 9:00 a.m., November 1, 1999 and December 13, 1999, both in Regina.

The meeting adjourned at 4:20 p.m. ☒

*Tell a man that there are 400
billion stars and he'll believe you.
Tell him a bench has wet paint
and he has to touch it.*

Councillor's Report

By W. J. Schoenfeld, SLS, P. Surv.



In reviewing past issues of the newsletter it appears that I am not the only councillor that has cracked his brain trying to come up with a topic on which to write his report as the deadline looms. I thought the problem was solved when I suggested to one of the secretaries that she may want to write an informative, witty and interesting article that I could submit to which I received a reply that definitely could not be printed in the Newsletter. As a result I had to come up with something so here goes.

The third Council meeting was recently held at which, the Committee Workshop review was held. As most of you are no doubt aware it is at this meeting that the goals and objectives of the standing committees are reviewed and formulated for the year. In listening to President Roy outline what he would like to see accomplished it is obvious he has taken the responsibility of being President very seriously.

During the Workshop a situation was outlined that could be a very unique opportunity for the Association to obtain some good PR. At present the Dutch government is sponsoring a cross country tour of maps which were prepared by Dutch cartographers from the Middle Ages to the Industrial Revolution. When the tour concludes in Vancouver in January or February of 2000, rather than ship the display back to the Netherlands, the Dutch gov-

ernment would like to find a home in Canada for the maps. The exhibit would be donated to whoever took over the displaying in return for paying the shipping charges from Vancouver to its new home. The task of investigating this matter was delegated to the Public Relations Committee. Since the display covers a wall area of 120 sq. metres it would likely have to be housed in a university or museum. As council liaison I look forward to working with the committee to see what can be done in trying to obtain the maps and in finding a place for them to be displayed. If anyone has any ideas or comments on this matter please feel free to contact me.

Although I have served on Council for only a very short period, one quickly gains an appreciation as to the time and effort that other members put into the Association. This is something you do not really see until you are a part of it. So far I have found the experience very interesting and enjoyable. Although more work than what I was led to believe; by a partner who shall remain nameless during his recruitment campaign, it is certainly something that I would recommend to other members who have not yet served on council.

Now that I have written my article for the ninetieth year or is it ninety-first, I think I'll get to work on next year's article. Or maybe I'll wait 'till next week. ☒

What's Happening

Fall Education Seminar: Send in any topic you would like to see presented at the next Educational Seminar.

Next Council Meetings: November 1, 1999, and December 13, 1999, both in Regina.

Spring 2000 Annual Meeting Update: Accommodation is at a premium in downtown Waskesiu. We encourage you to book your accommodation as early as possible to assure yourself the accommodation of your preference.

The Convention Committee has blocks of available rooms booked for May 31st and June 1st, 2000 at various hotels in the Waskesiu core area. These rooms will be held until the end of December, 1999. Additional nights' stay (for June 2nd, 3rd, 2000 weekend) will be at each delegate's discretion and subject to availability of rooms at the given hotel.

Annual Meeting Highlights:

Wednesday, May 31, 2000

Annual Golf Tournament Elk Ridge Golf and Country Club
Opening Social Elk Ridge Golf and Country Club

Thursday, June 1, 2000

Opening/Annual Meeting Assembly Hall

Education Seminars

President's Ball

Friday, June 2, 2000

Annual Meeting/Closing Assembly Hall

Elective Activities Lobstick Golf?, Paddle Wheeler?, Fly-in fishing?

Accommodation Choices (with bookings held for SLSA)

Waskesiu Lake Lodge: tel - (306) 373-8796 (winter number), (306) 663-6161 (fall number)

Adjacent to the Assembly Hall

One and two bedroom suites \$ 135 - \$ 179 / night

Chateau Park Chalets: tel - (306) 663-5556

3 minute walk to Assembly Hall

Chalets with two bedrooms, fireplace, deck, etc. \$ 125 - \$ 145 / night

Armstrong Hillcrest Cabins: tel - (306) 922-2599

3 minute walk to Assembly Hall

B Grade Cabins \$ 65 / night

McKenzie Inn: tel - (306) 764-7504 (winter number), (306) 663-5377 (fall number)

Adjacent to Assembly Hall

Light Housekeeping Suites \$ 65 / night

Other Accommodation (no bookings held for SLSA)

Skyline Motel: (306) 663-5461

Pleasant Inn Motel: (306) 663-5373

Bakers Bungalows: (306) 663-5211

Lakeview Hotel: (306) 663-5311

Kapasiwin Bungalows: (306) 663-5225

Spring 2000 Locator Training Seminar: Radiodetection Canada has finalized the spring 2000 Advanced Underground Pipe and Cable Locating Seminar schedule. The presentation covers the basic principles involved in locating underground facilities and techniques for solving difficult locate problems. The presentation is generic in nature and does not promote specific manufacturers or models. In Regina on Feb. 10, 2000, and in Saskatoon on Feb 11, 2000. For more information, contact SLSA Office, or Radiodetection Canada at 1-800-665-7953. ☒

New Limitations Act Proclaimed

By G. K. Allred, A.L.S., as seen in *ALS News*, reprinted with permission of the author.

Finally, three years after being passed in the Legislative Assembly of Alberta, the new Limitations Act has been proclaimed. Even three years, however, is a short period of time in the history of proposals to amend the former Limitations of Actions legislation.

In the fall of 1977, the Alberta Land Surveyors' Association made a submission to the Institute of Law Research and Reform commenting on their working paper on Limitations of Actions. In our 1977 submission, the ALSA endorsed the philosophy of new legislation that "everyone should be able to rest assured that after a given time, he is protected from claims."

The former legislation had an ultimate ten year limitation period but it commenced from the date the cause of action arose. This became known as the "discovery rule" after Mr. Justice LeDain in the Central Trust case before the Supreme Court of Canada stated: "... a cause of action arises for the purposes of a limitation period when the material facts on which it is based have been discovered by the plaintiff by the exercise of due diligence."

The discovery rule can prove disastrous for surveyors. It is said, tongue in cheek, that doctors bury their mistakes, lawyers hang theirs but surveyors monument theirs. Despite the humor of the adage, nothing could be further from the truth because survey errors often don't even come to light until many years after the survey has been completed, and there is the monument providing hard evidence of the surveyors deeds (or misdeeds).

Like the former legislation, the new Limitations Act

sets out a general limitation period and an ultimate limitation period. The general limitation period in the new Act is simplified and standardized for all actions. Where the former Act had a two year limitation period for actions in tort and a six year limitation period for actions in contract, the new Act has one general limitation period of two years for all causes of action. The former Act also had a special one year limitation period applicable to some medical practitioners. The general limitation period in section 3(1) states that:

3(1) Subject to section 11, if a claimant does not seek a remedial order within

(a) 2 years after the date on which the claimant first knew, or in the circumstances ought to have known,

(i) that the injury for which the claimant seeks a remedial order had occurred,

(ii) that the injury was attributable to conduct of the defendant, and

(iii) that the injury, assuming liability on the part of the defendant, warrants bringing a proceeding, or

(b) 10 years after the claim arose,

whichever period expires first, the defendant, upon pleading this Act as a defense, is entitled to immunity from liability in respect of the claim.

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Case Study No. 1

By Lyall Pratt, A.L.S., reprinted as seen in *ALS News*, June 1999, with permission of the author.

The Project

A practitioner conducted a pipeline right of way survey in surveyed territory. The township the survey fell within was originally subdivided in 1901. The right of way survey was done during frost-free conditions. Many of the section corner monuments appeared to be missing, and the registered plan of the right of way survey showed four miles of re-established section corner evidence. All of the corners had been mechanically re-established relying on the township plan dimensions.

The Plan Examination

In 1929, a road survey was conducted in Section 25. The practitioner's right of way survey made no mention of this road plan or the evidence established by it. This road survey had located what would appear to be original survey evidence at five of the monuments defining the limits of Section 25. The plan shows that the survey found pits at the E~ of Section 26, and a mound at the E~ of Section 25 as per the original township survey. The road was surveyed along the east/west quarter line of Section 25 and three iron posts were placed on the quarter line, which was the south limit of the road. The nearest iron post to the E~ of Section 26 was 2.5 chains (50.29m) east along the quarter line. The road plan was canceled at the Land Titles Office in 1959, or approximately 40 years ago.

The Field Inspection

We found no trace of original evidence at any of the re-established section corners. It would appear that none of the few existing fences was more than a few years old, and in fact the practitioner appeared

to be correct in resorting to mechanical re-establishment. Our field inspection found all three monuments along the quarter line that had been placed by the 1929 road survey and found that they lined up very well. Producing the line west 2.5 chains to the E~ of Section 26, we disagreed with the practitioner's reestablished position by approximately 1 metre. The road was abandoned, and no physical trace of any road grade remained. Nothing in the field would indicate that a road had ever been constructed or surveyed along the quarter line.

The Legislation

Section 40(1) of the Surveys Act says:

"When a surveyor is required to reestablish the position of a monument placed in the original survey in accordance with Section 29 that cannot be found, the surveyor shall do so from the best available evidence respecting the position of the monument." In the Manual of Standard Practice under Part E, Section 4, there are three pages listing Guidelines for Retracements and Restorations. The parts on research, hierarchy of evidence, and lost monument procedure on townships are particularly applicable to this survey.

The Corrections

As a result of our findings, the practitioner agreed that the 1929 road survey had likely found original survey evidence, and that a properly weighted assessment of the documentary and physical evidence available would place a greater weight on the road plan monuments. Clearly our findings and the practitioner's agreement with them, resulted

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Communication, Public Relations and the Land Surveyor

There is probably no other profession in America where good communication and public relation skills are more important.

By R.A. (Dick) Ainsworth, PLS reprinted as seen in the *Nebraska Surveyor*, Summer, 1999.

Now there are three words you rarely see used in the same sentence! Land surveyors with good communications and public relations skills are scarcer than hen's teeth. But, it's about time that land surveyors come in out of the woods (or the field), and start acting like the "professionals" we so eagerly want to be considered as.

There is probably no other profession in America where good communication and public relation skills are more important - particularly when dealing with the typical land owner. Private property - and the boundaries thereof - are sacred. And, messing with a person's property boundaries is almost as touchy as messing with his/her spouse - and in some instances, probably more risky.

Land surveying is an art that very few property owners have even a limited knowledge of. They do not begin to understand what is involved in confirming or re-establishing the boundaries of their property. And, the fact that many people feel that no two surveyors ever come up with the same answer anyway, only adds distrust to this misunderstanding. And, if they do not understand what is involved in establishing their boundaries, they cannot be expected to have an understanding of the costs involved.

So we have a profession that few of our clients understand, dealing with one of the most sacred issues in America - private property boundaries. And, more often than not, it involves a boundary between two parties that are hostile toward one another (generally over the sacred boundary line we have been hired to survey). We should go into jobs like this as if we are walking on egg shells. Instead, we act like

the proverbial bull in the china closet, charging around telling our clients and their neighbors just as little as possible (trust me, I know what I am doing, so you don't need to), bad-mouthing all previous surveyors that have even thought about working in the area, and in general being belligerent.

In addition, far too often we alienate our clients by giving them a minimal or best-case cost and time estimate for doing the work they employ us to do - apparently because we do not want to "scare them away" by being realistic. Then, when we get into the job and discover that we can not do the work for the quoted fee (which we generally consider to have been only a "ball park estimate" anyway, and not something we are bound to) or within our projected time table, we typically fail to communicate this certain over-run in cost and time to them. We apparently prefer to "surprise" them with our bill once the job is complete, or close enough to being complete that we feel we can send them a bill.

Believe me, I don't have all the answers, but I do know that land surveyors are more often than not their own worst enemies. I have been in this business long enough, and have watched enough land surveyors alienate enough clients and their neighbors (many to the point of filing a complaint with the licensing board and/or a lawsuit against them), that I feel I am qualified to provide some suggestions for dealing with clients and their neighbors.

The following are my very basic "Guides to Better Communications and Business Relationships", which are offered in no particular order of importance:

Continued next page

- Always be as realistic and honest as possible when providing a cost and/or time estimate to a prospective client.
- Always provide your client with a written proposal, and ideally, get them to sign something indicating that they are in agreement with your proposal (and that they plan to pay you for your work).
- Always make every effort to complete the job within the estimated time frame, and for the estimated cost. And, if you can see that you will be running over either the estimated cost or time, notify your client immediately, preferably in writing, explaining the reasons for the overrun and/or delay. The fewer surprises, the better.
- Always tie up all the loose ends when finishing a job, and don't leave bits and pieces (i.e. corner records, filing of plat, final billing, etc.) hanging for weeks/months/years.
- Always remember that you may have been hired by one property owner, but the property line(s) you are surveying, are not only your client's, but their neighbor's as well. (In reality, the neighbors are your defacto clients, and not someone to ignore and/or fight with.)
- Always be as cordial as possible when discussing any aspect of a job with anyone - (client, neighbor, another surveyor, government officials, etc.)
- Always instruct your survey crews to be as cordial as possible, and to not comment (speculate) on things they are not certain of, or that may be better off left for you to discuss with the client and/or neighbor. Survey crew members can (and often do) get us in a good deal of "hot water" by making what they consider to be harmless comments.
- Never bad mouth another surveyor to your client or their neighbors. We have enough of an image problem that we don't need to add to it ourselves. If you disagree with another surveyor/surveyor, simply tell the client/neighbor that you may have a difference of opinion regarding a corner/line location, and that you will discuss it with the other surveyor. And then do just that—in a non-confrontational manner.
- Always keep an open mind, and remember that it is possible that you may be wrong! Although most surveyors that I know do not believe it possible, none of us are perfect, and we should never forget that!
- If, on the off chance you did make a mistake, always do everything you can to make it right, at no cost to the client. (You were paid to do it right the first time, they should not have to pay for it again.)
- Always make every effort to satisfy your client. (The old saying the client is always right has a good deal of merit.) Even if they are not right, if you let them think they are, and they go away happy, it will save you untold future grief. You can satisfy 100 clients, and 98 of them will never say anything about you - good or bad! But, make one client mad, and he will tell everyone he knows that you are a rotten, no good surveyor, and poor excuse for a human being!
- With written communications (and particularly billings), always take the time to explain yourself in some detail. The better informed your client (neighbor, other surveyor, etc.) is, the less likely he/she is to question you.
- Always be willing to negotiate (or recommend your client consider negotiating) a "middle ground" if necessary to resolve a dispute. Disagreeing and/or fighting with a client, their neighbor, or another surveyor is not the solution! This will nearly always cost you money in the long run. Keeping attorneys out of your disputes will save everyone money in the long run. Don't be bull-headed about winning the battle, only to lose the war!
- Always take advantage of any opportunity to further develop your oral and written communication skills. Workshops, seminars, and classes in these subject areas are among the most critical forms of professional development for a registered land surveyor.

I can absolutely guarantee you that if you follow these simple, and seemingly obvious guidelines, it will cut your grief, and the bad reputation you may be giving the land surveying profession, significantly. (And, in all likelihood, increase your profitability.) I know most land surveyors just want to

Continued on page 940

Use and Calibration of the Prism Pole

By Wesley G. Crawford. Reprinted with permission from *POB Magazine*, August 1999 issue. Copyright Business News Publishing. Illustrations copyright Wesley G. Crawford, Creative Construction Publishing, 2720 South River Road, West Lafayette, IN 47906 www.creativeconstruction.com.

Scope

Recently I visited a jobsite and the construction surveyors told me about a problem they were having with their control. It seemed that some control points were established by the owner's surveying department for use during the project's construction. The construction surveyors were checking the given control and could not get their measurements to agree with those of the owner's crew. My first question was "Is your equipment calibrated?" They replied that their total station had been checked recently. I asked if the prism pole had been checked, and they replied, "about a week ago." Recognizing that prism pole bubbles should be checked daily, we performed a calibration check of the prism pole bubble and found that the bubble was, indeed, off. After adjusting it, the measurements checked within the tolerance that could be expected with the equipment.

I also commented that anytime they were checking or establishing control, they should always have the prism on a tribrach on top of a tripod for best results - but that is a topic for another Back to Basics column.

Total station users know that the prism pole is generally the greatest source of error in EDM measurement. Several factors cause this including: 1) the bull's-eye bubble on the prism pole is not in proper adjustment; 2) the prism pole may be bent; 3) the prism is attached incorrectly so an offset of -30 is used when it was intended to use an offset of 0; 4) the person holding the pole can't keep it still and hasn't been taught methods to steady the bubble; or 5) the person is just plain inexperienced. The list of errors is numerous, and it takes a con-

stant conscious effort by the rodman to eliminate some of the errors and reduce others in size.

Proper Techniques

Often the least experienced person is assigned the task of holding the prism pole. Proper use and handling of the prism pole is very important in reducing human error. The surveyor should make sure the rodman is well-trained in the use of the prism pole.

Make sure the prism hasn't been attached to the

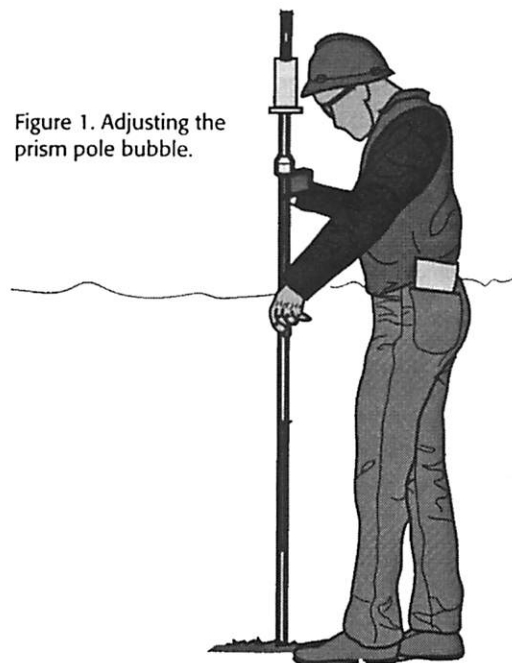


Figure 1. Adjusting the prism pole bubble.

Continued next page

prism pole backwards. That is, many prism brackets are made to accommodate both a 0 offset and -30 offset. At a jobsite last January, a new total station was delivered with the statement "ready to use." The surveyor began to check some control points and each distance checked was about a tenth off of previous measurements. It was quickly determined that the prism was attached to the wrong side of the bracket. Normally, the required offset should be facing the instrument and the prism attached to that side. Check it out before mistakes are made.

Holding a prism pole perfectly still with the bubble perfectly centered for more than a few seconds is practically impossible. The bubble will move as you move. To overcome this, a tripod is the best solution; specific prism pole tripods can be used, or two 4' laths can be used to create a makeshift tripod. I personally find some tripods or bi-pods to be difficult to use and my favorite is the inexpensive lath. Regardless, for precise work with a prism pole, use or create a tripod.

The very fast radial stakeout process results in the prism pole being laid on the ground when stakes are being driven into the ground. This on-and-off-the-ground process can be gentle or rough, depending on the rodman. It should be stressed emphatically to rodmen that the prism pole can be bent or the bubble knocked out of adjustment if it is handled incorrectly. If this results, the prism pole bubble will need to be adjusted (see Figure 1).

Calibration Techniques

The surveyor should check the bubble frequently to ensure the prism pole is plumb when the bubble is centered. Several simple tests to check the bubble can be used that require no special tools, or a special prism pole calibration bracket is available commercially.

Using a Door Opening - One popular method is using a simple doorframe in a building. This method requires a drill, a screw eye hook and a plumb bob. This is done by first drilling a 1/8" hole in the top of the frame. Then, a

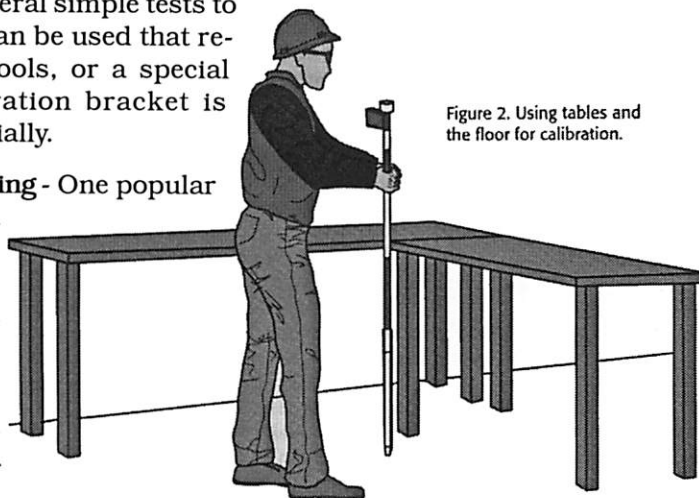


Figure 2. Using tables and the floor for calibration.

plumb bob is hung from a screw hook in the drilled hole where the plumb bob point touches the floor is marked, and a hole is drilled there. A spare point is attached to the top of the prism pole and the prism pole is placed in the drilled holes. If the prism

Holding a prism pole is a simple but very important surveying activity.

pole bubble is in adjustment, it should be centered. As a check, the pole should be rotated to make sure it stays centered. If it doesn't, the bubble needs adjusting. I tell surveyors to store their prism poles in this makeshift calibration testing position every night. This ensures that the bubble is ready for use everyday.

A Commercial System - A similar principle is used with the commercially available prism pole bubble calibration brackets. The brackets are hung on the wall and the prism pole can be placed in the brackets to determine if the bubble is in proper adjustment. Storing the prism pole here is a good idea.

Tables and the Floor - Another simple method doesn't use any tools or brackets. Two stable objects such as tables are all that are required. Set the tables so they form an "L." To perform this method, the construction surveyor simply places the prism pole against the corner of the tables, centers the bubble, and very slowly rotates the prism pole. If the bubble is in proper adjustment, the bubble will stay centered while the pole is rotated. If the bubble is out of adjustment, it will drift

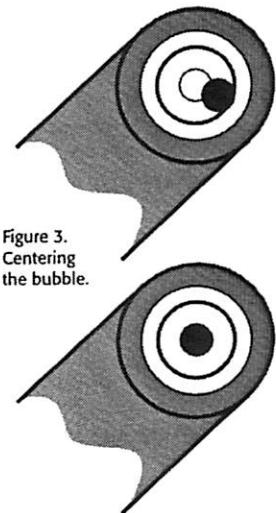


Figure 3. Centering the bubble.

slowly off center as the prism pole is rotated (see Figure 2).

Adjusting the Bubble

Most bubbles are adjusted by using a screwdriver or an Allen wrench and by turning screws on the bottom of the bubble housing. Study your prism pole bubble to determine how to make the adjustment. Use a trial and error approach to get the bubble in proper adjustment.

Perform adjustments until the bubble remains centered as the pole is rotated (see Figure 3).

Summary

Holding a prism pole is a simple but very important surveying activity. It is performed well if the rodman is fully trained in the proper techniques of using a prism pole. Every person assigned this task should be aware of the proper handling of the prism pole and the possibility that the bubble needs to be checked daily. Anyone should be able to check and adjust the bubble to make it ready to use everyday in the field. ☒



Dr. Alec McEwen Becomes Emeritus Professor

This extract from the University website is reprinted with permission. To view more news from the U of C, visit their website: www.ensu.ucalgary.ca/News.

The Department of Geomatics Engineering is pleased to announce that the University of Calgary has granted the status of Emeritus Professor to Dr. Alec McEwen.

Dr. McEwen has had a truly distinguished career and he is a highly respected member of the land surveying profession in Canada. He holds three degrees in law, in addition to five professional land surveying commissions, including three in Canada and two in Africa. He has distinguished himself in numerous capacities throughout his long career, both in Canada and abroad. He has worked in numerous countries as an advisor to the United Nations, the Canadian International Development Agency and other international sponsors. For 15 years, he was Canadian Commissioner, International Boundary Commission, an Order in Council appointment.

Dr. McEwen was a faculty member in the Department of Geomatics Engineering during the period 1991-95. His teaching and research in the Department and effective liaison with the land surveying profession resulted in the re-accreditation of the Geomatics Engineering program by the Canadian Council of Land Surveyors.

Throughout his career, Dr. McEwen has taken a keen interest in scholarly work and he is internationally known for his numerous contributions to land tenure issues. Since his retirement from the University of Calgary, Dr. McEwen has remained very active. He has been involved as an expert in a score of land reform projects around the world and has continued to publish scholarly material.

New Limitations Act Proclaimed

continued from page 933

The new Limitations Act appears to override the discovery rule by virtue of the provision of the ultimate limitation period of ten years set out in Section 3(1)(b) and reaffirmed in Section 11.

Section 11 is paraphrased as follows:

"If within 10 years after the claim arose, a claimant does not seek a remedial order... the defend-

ant, ... is entitled to immunity from liability in respect of the claim."

As with all legislation there are a myriad of exceptions and conditions but generally the new Limitations Act appears on first glance to be a vast improvement over the former Limitations of Actions Act. It will be interesting to see how the courts interpret the new legislation in view of the case law based on the discovery rule. ☒

Case Study No. 1

Continued from page 934

in additional field work and plan corrections. Several monuments had to be moved to account for the change in position of the E of Section 26. It appears that the practitioner's plan search did not find the canceled road plan, or did not order it because it was canceled.

The Message

I believe that this entire problem resulted from either a poor plan search, or a failure to recognize the value of the survey evidence shown on canceled plans. It is virtually impossible to re-establish a monument from the best available evidence, if all the available documentary evidence is not obtained before going to the field. Plan searches are critical in this regard. Never overlook a plan because it is canceled or abandoned. It may contain valuable evidence that can assist in re-establishment situations where mechanical re-establishment is the only available option.

In this regard be extra careful when searching plans through the new Land Titles SPIN (Survey Plan Index) system. The graphics of this system are from the provincial mapping base, and canceled plans, abandoned plans, and monument plans do not show up in the mapping base. What you see may not be all the plan information available. You will also have to check the plan listing to be certain there are no canceled, abandoned, or monument plans in the area of your survey.

I also believe that Part E, Section 4, of the Manual of Standard Practice, Guidelines for Retracements and Restorations may be the most important part of our Manual. I encourage all land surveyors to review this section and apply the guidelines to your future re-establishments. ☒

Communication, Public Relations and the Land Surveyor

Continued from page 936

survey, they don't like to deal with people, they don't like to take time to write letters or send out bills, and least of all, they don't want to even consider compromising with anyone about anything. But, if you are going to be in private practice, no matter the size (or even doing a bit of moon-lighting), these are all necessities of doing business. If you are not willing to follow these guidelines, either hire someone that will to run this end of your business for you, or seriously consider changing professions.

Good communications and public relation skills are the missing ingredient that holds the land surveying professional back from other skilled and highly successful professions. However, through education and commitment we can become the professionals we so eagerly want to be, and at the same time, provide meaningful benefit not only to our profession as a whole, but to the public, which we have taken an oath to serve and protect. ☒

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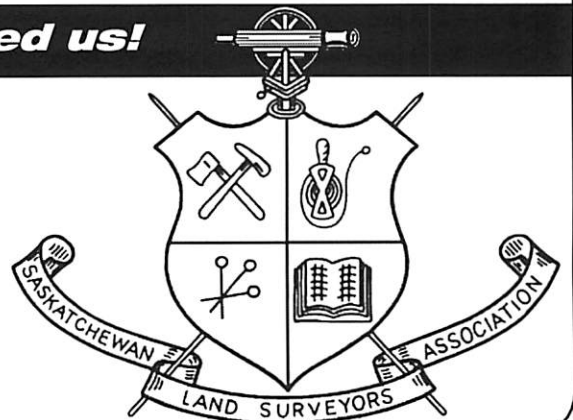
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President's Message

continued from page 925

I would like to encourage you all to take time to analyse your own needs and see if there may be an opportunity that you can offer. This effort will not only provide you with the benefits of a long term technically qualified employee as well as some succession planning within your practice. It will also help to ensure the long term survival of our Association.

I wish you the best and hope to see you at the fall seminars. ☒

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News from Seattle

Submitted By R.I. McNeil BCLS,
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1999, with permission.

A helicopter was flying around
above Seattle when an electrical
malfunction disabled all of the
aircraft's electronic navigation and
communication equipment.

Due to the clouds and haze, the pilot
could not determine his position or
a course to steer to the airport. The
pilot saw a tall building, flew toward
it, circled, drew a handwritten sign
and held it in the helicopter's win-
dow.

The sign said: "WHERE AM I ?" in
large letters.

People in the tall building quickly
responding to the aircraft, drew a
large sign and held it in a building
window.

Their sign said: "YOU ARE IN A
HELICOPTER."

The pilot smiled, waved, looked at
his map, determined the course to
steer to SEATAC (Seattle/Tacoma)
airport and landed safely.

After they were on the ground, the
co-pilot asked the pilot how the
"YOU ARE IN A HELICOPTER"
sign helped determine their position.

The pilot responded, "I knew that
had to be the Microsoft building
because they gave me a technically
correct but completely useless
answer."

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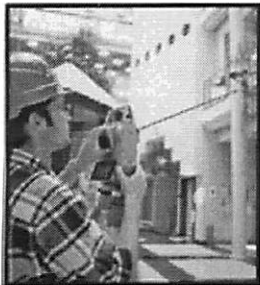
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A Short Essay on Digital Data Distribution

By John A. Loch, L.S., P.E. (with a lot of input and help from other surveyors). Reprinted from the *Arizona Surveyor*, September 1997, with permission.

This is a short essay on the distribution of digital data, a topic of interest to many surveyors. Digital data includes CAD drawing files, which are what I will be using in the example, but the principles described apply to any type of electronic information distribution.

Many surveyors are finding themselves in a position of having to distribute CAD drawings to others, but the general problem with the distribution of data in a digital format is retaining control of the data after it has been released.

The first recommendation I can make is to try to avoid having to release files in a digital form because basically you can almost forget the concept of retaining any control over data after having done so. Write good contracts and copyright your maps. These are certainly the first steps you should be taking. Unfortunately, once it is released there are no practical methods of controlling the use or alteration of the digital information. Legal recourse may be possible, but it is slow and expensive. Instead I am going to concentrate on retaining records of what you released.

In this essay I will be mentioning specific products, but this is not intended to be an endorsement of any of these products. They are simply the ones that I am familiar with and that I use in my own practice. Computer products, both hardware and software, will keep changing and the important thing is to evaluate whether a product can do what you want. Define your goals and look for a product and methodology to implement your goals. One of the most important concepts is that of an electronic signature. There are many articles available on the

subject and this will be of increasing interest to the land surveyor.

Let's start working through an example problem. Most of the information has been presented in a question and answer format.

The Example

If you want to provide a copy of an AutoCAD drawing contained in a file called test.dwg to another firm, the easiest thing to do would be to copy the drawing file onto a disk and hand it over. This is the absolute wrong way. For you will now get my first rule of data distribution:

Never transmit digital data in its native file format.

Why not?

Well, once you have provided a direct copy there is no record of what was sent. You have not provided any electronic document that the receiver can keep and that you can prove is the document that you intended to send.

The document that you have sent is in a form that is too easy to alter.

So—if you are not transmitting digital data in its native format, then how are you transmitting it?

Use a program that will read the file that you want to transmit and produce another separate file that will still contain of the data of the original file, but cannot be directly utilized. The main purpose of this file is for the purpose of transferring the data. This file can be re-expanded to reproduce the original file. The program that I use is called PKZIP version 2, which is produced by a company called

PKWARE, Inc. Actually, there are several programs provided by PKWARE when you purchase PKZIP. PKZIP is a program that compresses, or zips, files. PKUNZIP is a program that expands, or unzips, zipped files. Several other utility programs are provided. The example that I will work through uses the DOS version, but several other platforms are available.

What are the other benefits of this process?

There are several other benefits to the use of this program. One benefit is file compression. The file that I transmit is usually much smaller than the original file. As an example, AutoCAD drawings often compress by as much as 60%. This can save disks or reduce time when using a modem. Using some features of the program, I can build security features into the transfer process, such as authenticity verification and password protection.

What is authenticity verification?

It is a feature in PKZIP that allows you to imbed a code into the compressed file that, when expanded, or unzipped, will verify the authenticity of the compressed file by displaying a message. To use this feature you must own a fully registered copy of PKZIP and send to the company, PKWARE, for code information. This is practically free with the only cost being your time and postage. With this code information, a program called PUTAV is run. This program alters your copy of PKZIP to allow the imbedding of this unique code into files that you are compressing. The use of an authenticity code is the most practical commercially available equivalent to the electronic signature.

What about password protection?

Another feature of PKZIP is the use of a password. Basically, the compressed file can only be expanded by someone who knows the password. I do not use this feature much since you cannot expand the file if you forget the password. I have used this feature upon occasion for the problem of "the check is in the mail." I have sent out files, but not supplied the password until I was paid for my work.

Back to the example.

To prepare the drawing test.dwg for transmittal you would zip the file using the following command:

```
PKZIP -ex -! test.dwg
```

This reads the file test.dwg and creates the file test.zip. -ex is a switch that uses the most com-

pact form of file compression. -! is a switch that tells the program to use the authenticity code feature.

If the recipient has PKZIP you can simply copy this file to disk and give it to them. They can use their own copy of PKUNZIP to expand the file, which will create the file test.dwg for them. If they do not have PKUNZIP then there is one more step that you have to take.

There is another program called ZIP2EXE that will read a ZIP file and create an EXE file that is self-expanding.

Using ZIP2EXE

ZIP2EXE test.zip

This is the command that will cause file test.zip to be read and the file test.exe to be created. Test.exe is an executable file that creates the file test.dwg. At the time of expansion the authenticity data should be displayed.

Using PKUNZIP

This is the command that will create the file test.dwg. At the time of expansion the authenticity data should be displayed. Keep a record copy of the file that you have prepared for transmittal. Inform the recipient that the transmitted copy should be retained for their records, and keep a copy for yourself.

Practical application

You have sent a drawing to someone. A month later they call and say that you missed something—call it a building. You check your drawing at your office and you see the building located in the drawing on the monitor right before your eyes. If you have followed the method outlines, your next step is to take your record copy and expand the drawing, using another subdirectory so that you will not overwrite your existing drawing. Check this drawing for the building. Assuming that you did not make a mistake in your survey or in preparing the map, and the building is there, it is time to tell them to recreate the drawing from the zipped copy that they retained for their records. If it is a true copy, then the building will be there. If they don't have their record file at all, then you are the only one with the records and they are really out of luck. If they do have the record copy, they will be creating a drawing with the same building on it as the copy that you have in your possession and, during the process, your

authenticity code should be displayed. If somebody is trying to fake it, they will have a hard time getting the correct authenticity code to appear. It is not a completely foolproof system, but it sure is difficult enough for the amateurs to beat.

A few other comments

One of the other common methods that I have heard of some people using is to send hard copies of data along with the digital versions. Their transmittal will indicate that the two are supposed to be identical, but the hard copy governs over any deviations. This will only work for relatively simple projects. Frequently, surveyors are preparing increasingly complex mapping that has multiple drawing layers and viewports. At the same time, you should keep in mind that you should only provide what you are obligated to provide. As an example, many users have no need to know anything about your traverse and some of the basis of your boundary analysis. If this is the case, copy the drawing into another file and erase the layers that contain this information before you transmit the drawing.

Another method some people are making use of is the distribution of data on CD-ROMs. With recent price drops, this is becoming affordable and it is difficult to duplicate the original CD, but I would still make use of the PKZIP and authenticity verification features as previously described. The recipient can copy the zipped file from the CD to a hard drive and expand it there to produce the .dwg file.

If you only have an obligation to produce a digital copy of a paper drawing, another way to degrade the drawing is to plot the drawing to a file with only the necessary layers on and thawed. Generally the best plotter selections is one of the Hewlett-Packard plotters. There are several inexpensive utility programs that will convert a Hewlett-Packard plot file into a DXF. I have used one program called UNPLOT. A DXF is a well-defined graphic exchange file format that can be brought into a CAD drawing, creating a new .dwg file. In the process, the new drawing has been reduced to a level of graphical accuracy only using the coordinate system of the plotter, not the true modeled accuracy in your original drawing, and the layering scheme has been reduced to layers simply defined by the plotted pen number. This process reduces the accuracy and removes some of the 'intelligence'. Attribute information and viewport data is lost. Even text is re-

duced from an easy-to-edit text entity to a series of short line segments and dots which are very difficult to edit. In most cases, arcs and polylines will be reduced to many small line segments. The level of degradation can be controlled by the scale of the plotting and the plotter selected. This can be zipped and transmitted or it can first be brought into a drawing file that can be zipped.

I have recently seen something that is very disturbing. I have seen digitized signatures along with digitized seals being applied to CAD drawings. Current scanning and reproduction technology is frightening enough. I have no intention on making it any easier for anyone to copy my signature or allowing for the possibility of my seal being reproduced without my knowledge. I recommend that everyone use their impression seal only, and be sure to place a note on your maps stating that only copies bearing your embossed seal are true valid copies.

Develop a checklist for providing digital copies. This sample list is based on a couple of lists I received from different firms.

Sample check list

1. Requests are to be approved by a principal of the firm.
2. When a .dwg file is sent out, the file on the disk should have the firm's title block and certification.
3. The .dwg file should include the firm's copyright, a date prepared, and initials of the preparer.
4. A .dwg file sent out on disk should be accompanied by the print or prints.
5. All .dwg files should be plotted on polyester film to be kept on file at the firm.
6. All extraneous information on drawings should be removed. This will usually include point numbers, control points, break lines and any notations meant for internal use only but contained in the working drawing.
7. The actual .dwg file should never be sent out. Convert the data to a ZIP or EXE format.
8. Exact copies of the disks, hard copy, and even the transmittal should be retained for record purposes. The transmittal should be sure to

clearly identify the items transmitted, and clearly indicate that hard copy governs over digital copies of data.

9. The transmittal and data to be released should be reviewed and approved by a principal prior to release.

Final Suggestion

Always put a note on every drawing indicating that the drawing is only valid with the impression seal of the surveyor that prepared it applied. If possible, use your impression seal on the disk because the digital information age is going to be interesting. ☒

Since light travels faster than sound, isn't that why some people appear bright until you hear them speak?



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Committee Organized to Steer Consulting Project

A committee consisting of Tom Webb, Peter Unger and Murray Marien has been formed to assist with a cost study which is being undertaken by the Association. The project was approved by the membership at the Annual General Meeting in May and will be undertaken by the Business Development Bank of Canada.

The purpose of the study is twofold: first to provide some comparative figures to assist members in pricing their services and secondly to educate members on establishing prices on pricing strategies.

Laurel Sawatzki and Laverne Bissky of the Business Development Bank's Consulting Group along with the Committee have chosen 10 companies

to participate in the study. Laurel will be conducting interviews with the participants and assisting them with the collection of data. Laverne will develop a seminar to present the results of the survey and discuss how this information can be used in pricing services. The seminar will be presented by both Laverne and Laurel and will likely take place in the spring of 2000.

The ten participating companies will enjoy the benefit of two half days spent with a professional consultant.

Further questions regarding the study can be directed to Tom Webb at 955-5330 or Laverne Bissky at 373-7360. ☒

The Importance of Return Clients

by Milton Denny, PLS. Reprinted with permission from *POB Magazine*, July 1999 issue. Copyright Business News Publishing.

Whenever people start to talk about marketing, they get excited about going out and finding new clients. You need to reach out to new areas and markets to retain company health and grow, but some of the best clients are in your own backyard. Here are the different types of clients you may encounter.

Client Number One

Our first example is the local client with a lot of repeat work. This may be boundary or lot surveying, or subdivision work including minor engineering. This client may be satisfied to use the same company for a long period of time because of good service and reasonable cost. Many times this work is billed on an hourly rate.

Client Number Two

Our second client type consists of larger engineering companies that want to contract for engineering or mapping surveys. Most often the engineering survey is only a small but important part of a much larger engineering project. The final product may have to be delivered in special software in digital format and may include high-technology surveying such as GPS. Since this product is part of a larger project that may take place over a longer period of time, most engineering companies are willing to pay a fair going rate for this work. One word of caution: For these projects you need to require that you cannot wait to be paid until the engineering company gets paid. I currently am waiting on the money from a mapping job that was done

two years ago because the engineering company has not been paid for the design work. Getting paid on this project is based on the sale of bonds for a highway extension that may never be built.

Retention of existing clients should be the number-one priority of any marketing effort.

Most engineering survey work is contracted out by project engineers for their projects. Most of these project managers want a good quality product delivered on time. Have them by your office to look at their job in progress. If you can prove to them that you have the product they want to purchase, they will be a return client year after year. Some engineers even change companies and still come back to buy services from companies they trust. Many times this work is contracted to small or minority businesses because of requirements in the contract.

Client Number Three

The third client type falls under government contracting of surveying services. The state departments of transportation (DOT) have recently become buyers of survey services. Companies are selected in most states using the Brooks Bill (qualification-based selection or QBS). Once you are selected, it is easier to have a follow-up contract - provided you perform satisfactorily.

continued next page

The federal government also contracts survey services. Most of the work being contracted is going to high-technology firms who also provide mapping and GIS services.

Clients return to companies where they have good experiences.

Client Number Four

This is the client with bigger jobs. This job may not happen on a weekly or monthly basis. This may be an ALTA survey or a survey of commercial or industrial property. This work may come from a survey broker or attorney. Most likely this job is not in your immediate area and may entail some travel. You may not be the only survey firm giving a price for the work. Time frame is important on this job. This type of client returns to the company that has proven they can deliver a quality product in the time frame required. On this type of job the client may have more than one survey over a larger geographic area. Ask them for all the jobs. You could turn a \$10,000 survey into a \$100,000 project. Many of these jobs originate from the office of real-estate attorneys. Stop by their offices and see if you can meet other members of the firm that also contract work.

Client Number Five

The last type of client is the last-minute client. It all starts when you receive a frantic call from a new client who wants the survey done in a very short time frame.

You should ask yourself these questions: Should we try to even do the job at all? Can we do the job? How much can we charge? Each one of these jobs can be very different in the type of work, but all share common elements: a client we have not worked for before, a very short time frame and an out-of-state client. The most important thing is to make sure you get paid. Many surveyors have told me you need to get half the money up front. Sounds good, but you never get the remainder. You did the job for half-price. How about a price including a stiff charge for quick turnaround and a certified check mailed to you overnight before you start the work? If the client has a problem and needs your

help, this is the time you need to make money for your effort. One other suggestion: Involve a local attorney in the contracting of the job. Have the attorney collect the money up-front and hold it until the job is completed.

The bottom line with these type of clients? I have required payment up-front and the client came back at a later date with other jobs, giving me the two key things with these jobs: payment and more work.

Retaining Clients

It makes no sense to run halfway around the world looking for new clients but lose clients at home. Retention of existing clients should be the number-one priority of any marketing effort.

Clients return to companies where they have good experiences. Following are some final ideas for keeping your clients.

- Have a technology open house to show your clients all the latest equipment and services you provide.
- Have an employee potluck lunch at your office. Invite some of your most important clients to mingle with your employees. I can assure you this works.
- Call up some of your most important clients and take them to lunch. They will tell you things over lunch they wouldn't say in their offices.
- Offer part-time work for some of the children of your better clients. There could be a downside to this, but your client will find it hard to go to another firm when their children are employees of yours.
- How about this: I know a firm that posts their jobs-in-progress on the company website. The client accesses the site with a special code so that they can see how their job is progressing on a daily basis.
- Offer a formal quality control effort to assure clients are receiving the job for which they contracted.

Milton Denny is a senior project manager with 3001, The Spatial Data Company. Send comments and questions to Milt Denny, c/o POB P.O. Box 7021, Troy, MI 48007-7021. ☒

What the Hell is Estoppel?

By Don Duffy, BCLS, ALS. Reprinted with permission from *The Link* as seen in the July 1999 issue.

The Oxford International Dictionary defines estoppel as "An impediment or bar to a right of action arising from a man's own act". Introduced in the English Courts of Equity in 1531, it is part of Canadian common law and has reasonably frequent application, particularly with respect to the law of contracts.

In order to enact a Torrens-type land title system in British Columbia, it was necessary for the Legislature to abrogate many important principles of the common law. Boundaries, in the Torrens system, are established by survey and can not normally be established by legal decisions based on common law principles, although the common law is routinely applied by judges in adjudicating survey evidence. *Flello vs. Baird*, (CA024227), Vancouver Registry,) is the first modern case where a property boundary line was legally established by estoppel.

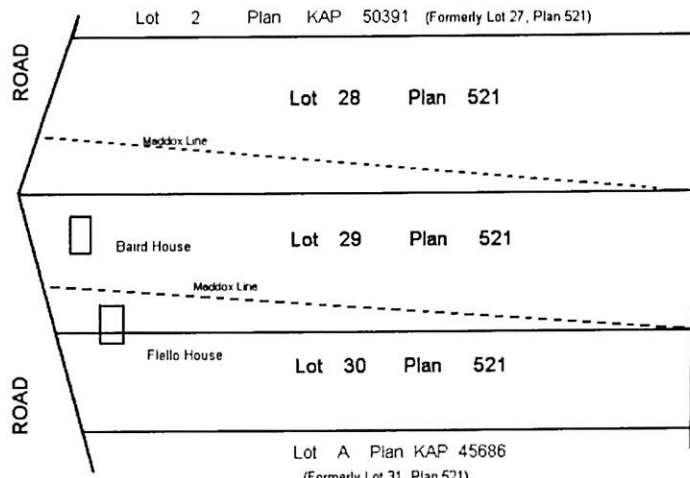
The line in question is the boundary between Lots 29 and 30, Plan 521, Kamloops LTO. This plan, which is situated at Okanagan Landing, has all the attributes of a 'problem area,' for surveyors. Sur-

veyed in 1908, probably poorly monumented, and containing serious inaccuracies, it was subject to only scattered residential occupation until the nineteen seventies. In 1973, Chester Gehue, BCLS, did a major reposting survey of Lot 26 and of many lots north of Lot 26. Ties were made and dimensions shown as far south as Lot 32, but the lots between Lots 26 and 32 were not reposted. A cursory review of this plan indicates that the old evidence along the rear line looks fairly firm, with evidence along the front, (road and lake side), somewhat more scanty.

Without going into the details of this posting survey, which are irrelevant to the decision of the court, it is useful to note that the plan shows a pattern of bearings which indicate that the angles at the northeast corners of all of the lots between Lot 26 and

Lot 33 are acute angles, between 87 and 88 degrees.

In 1979, Mr. and Mrs. Baird, who were aware of some controversies over boundaries in the area, purchased Lot 29. About 1980, having discovered evidence of new postings on or near their lot which



SKETCH - NOT TO SCALE

continued next page

caused them some concern, they retained the services of William Maddox, BCLS, to repost Lot 29.

Maddox must, presumably, have found persuasive evidence to lead him to the conclusions that he reached, but this evidence is not clearly shown on his posting plan, which was filed in 1983. The effect of the Maddox survey, to quote from the decision of Mr. Justice Taylor, was to show, in his (Maddox) opinion, the correct boundaries of Lots 28, 29 and 30, as being shifted, on the west side, to the north. In terms of Lots 29 and 30, the north-

It is not enough that the location be unknown.

It must also be in effect unknowable, or totally indefinable by conventional survey methods.

erly boundary of the west side shifted north by some sixty-six feet, whilst the northeast corner remained constant, as in earlier plans. A major difference between the Maddox plan and other plans, is that the Maddox bearings indicate an angle of over 91 degrees at the northeast corner of Lot 29, a difference of between three and four degrees from the Gehue plan.

By 1991, when the Flellos purchased Lot 30, most of the problems in the area had been more or less resolved, on a piecemeal basis. New titles, based on reference plans, had been issued, covering the former lot 27, to the north, and the former Lot 31, to the south. The boundary between Lots 28 and 29 was still very much in dispute, however, with Baird taking the position that the Maddox line was the correct boundary between these lots. Not surprisingly, the owners of Lot 28 were not prepared to accept this, as their north boundary was now fixed by a reference plan and adoption of the Maddox line would have resulted in a reduction of about 20 metres in the frontage of their lot, as compared to that shown on Plan 521.

In 1992, the Flellos decided to build a house. According to Fello's sworn affidavit, Baird requested that Fello build his house as close as possible to

the Maddox line, in the hope that this would reinforce his claim against the owner of Lot 28. Baird raised no objection when Fello built his house about 5 metres south of the Maddox line. The trial judge found that, up until early 1997, Baird continued to maintain that the Maddox boundaries were the correct boundaries and even built a fence and established a hedge along the Maddox line between Lots 29 and 30.

In 1997, Baird purchased Lot 28, thereby ending the dispute with respect to the north boundary of Lot 29. He then reversed his position with respect to the correctness of the Maddox boundaries and claimed ownership of the triangular area upon which Fello had built his house. He offered to sell this portion to Fello for \$130,000. Fello then commenced a legal action to obtain title on the basis of estoppel. In other words, his claim was that, because Baird had led him to believe that the Maddox line was the true boundary, he had encouraged him to act on this belief by building a house and had confirmed the location of the boundary by establishing a fence and hedge along it, Baird was estopped at common law from claiming the land later on.

Mr. Justice Taylor of the BC Supreme Court found in favour of Fello and ordered that the north boundary of Lot 30 be established along the Maddox Line. Solicitors for Baird then appealed this decision to the BC Court of Appeals. There were a number of grounds for appeal, but the primary one was the claim that, under the Land Title Act, boundaries must be defined by survey. There are, apparently, no precedents for the establishment of a boundary by estoppel since introduction of the Torrens System.

In rejecting this argument and upholding the decision of Mr. Justice Taylor, Mr. Justice Cumming of the Court of Appeals makes it clear that establishment of a boundary by estoppel, within the BC Torrens System, will be a rare event, which can only occur if there is real uncertainty in the location of the boundary. In other words, it is not enough that the location be unknown. It must also be in effect unknowable, or totally indefinable by conventional survey methods. In this case, valuable evidence as to the general state of uncertainty of boundaries in the area was provided by a report, prepared by G.M.Thomson, BCLS, for the Ombudsman, in 1983. ☒

Writing: Expanding Your Sphere of Influence Through Better Business Communications

By Jane Watson, reprinted with permission from Words of Mouth.

Improving writing skills is not a difficult task. Unlike creative writing, business writing does not require talent. It merely requires you to follow a number of easy-to-learn rules, to focus on the reader and to use common sense.

The following information reviews some problems with key documents and the writing process and offers some action steps:

Letters

Common complaints: too lengthy, too complicated, pompous tone, can't figure out the action required.

Action step: Focus on what the reader wants to know and what you want the reader to know. Omit any other details. Keep paragraphs short (opening and closing lines no longer than three-four lines and nothing in the body over eight lines). For a warm tone, use the word "you" more often than "I," or we.

Your last line leaves the lasting impression. Take special care that your last sentence tells the reader what he is to do after he has read your letter.

Reports

Common complaints: too long, too much information, too technical, too difficult to read.

Action items: Focus on what the reader needs to make a decision. If you are writing to readers with different backgrounds, chunk the information according to chronology and degree of technical difficulty. Use descriptive headings so readers will only have to read the information they require.

Use design aids to make long documents visually appealing:

- White space
- Bulleted or numbered lists
- Short paragraphs
- Talking heads and sub-heads

Proposals

Common complaints: off target, too commercialized, emphasis is on the service/product, lists features not benefits.

Action items: Identify receiver's problem/concern and his goals. Focus on how your product/service will assist the receiver in meeting his objectives. Don't assume reader will instantly understand how your service/product will meet his needs. Make a clear connection.

E-mails

Common complaints: too many, lack of etiquette, too demanding, poor tone, spelling and grammar errors.

Action items: Only send e-mails to people when necessary. Don't send copies to disinterested people. Don't be chatty. Organize e-mails in a descending pyramid fashion. The first paragraph should tell the reader why he must read the message. Second paragraph contains a key point. The following paragraphs provide support. The final paragraph reiterates what the reader should do next.

Don't issue demands unless you are the chief "honcho." You are more likely to get a quick re-

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The Absolute Truth About Least Squares

by Mark Cummock and Greg Wagstaff. Reprinted with permission from *POB Magazine*, July 1999 issue. Copy right Business News Publishing.

We investigate absolute accuracy and error ellipses in the last installment of our series.

Several years ago as a young surveyor in my hometown, I visited the county surveyor's office for information on monumentation. After I paid my money, I scanned the information and noticed the angles were all written to the thousandth of a second.

"You don't really expect me to believe these numbers, do you?" I commented.

"Oh yes," the person replied. "Those angles were averaged from eight sets."

I think I rolled my eyes and left.

Over the years, I have often thought about that little incident. Can a person really have confidence in such a statistic (average to the thousandth of a second), even with a half-second gun? Will we see theodolites pushing the sub-millimeter level? Are there any theoretical limits on measurement accuracy?

In this article, we will present the following: absolute accuracy, error ellipses and closing comments about least squares programs.

Absolute Accuracy

Our guest in this article is Werner Karl Heisenberg (1901-1976). More than likely he hasn't been the subject at dinner parties of late, unless you belong to Eggheads Anonymous. His claim to fame rests securely on many things, but especially for one huge idea called the "Uncertainty Principle." Briefly, this principle states...

Heisenberg: "If you don't mind, I believe I am much more qualified to carry on this conversation than you. The principle applies to the sub-atomic level,

and what it says is that we can't measure the position and velocity of sub-atomic particles with absolute accuracy. You, however, are thinking of applying this principle to surveying. Go ahead and do that, but you surveyors have a long way to go before you reach the sub-atomic level. It seems to me that current technology for surveyors bottoms out around the millimeter mark for EDMs and the halfsecond mark for theodolites. Let's look at what that really means.

First, imagine you have a plumb pole attached to a tripod (I love using all this surveying jargon even though I was a Nobel Prize-winning physicist). Say we have a very conscientious rodperson and the pole is plumbed very well. However, the level bubble itself may only be a two-minute bubble. If the pole is just 30 seconds out of plumb (parallel to the direction of sight), but well within the bull's-eye of the bubble, the out-of-plumb distance at the top is close to 0.001'. (See Figure 1.) This would

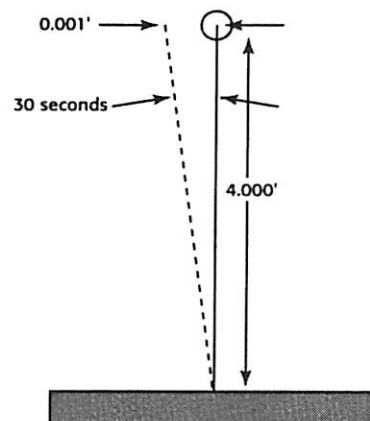


Figure 1. Pole 30 seconds out of plumb.

be undetectable for the current level of survey grade EDMs. However, many plumb poles have four-minute bull's-eye bubbles. This may actually increase the chance of small, out-of-plumb errors creeping into your measurements.

Now, for angles. One second of arc at a mile will be close to three hundredths of a foot. As an experiment, have your rodperson lay down a staff a mile away from the theodolite. Make sure the staff is perpendicular to the line of sight. Use your theodolite to carefully measure off three hundredths on the staff. I would dare say that many theodolites can't even resolve three hundredths of a foot at that distance.

Imagine now at a thousandth of a second as the introduction mentioned. We would be looking at 0.00003' (three hundred-thousandths) in a mile distance. For comparison, the width of a hair is around 0.0008' (eight ten-thousandths) and a thousandth of a second at a mile splits the width of the hair into 32 very, very thin strands. That is pretty fine surveying (if not a bit fantastic) by any standard. Granted, averages are different than direct measurements and listing the average to the thousandth of a second may be not be a problem mathematically, but it's not realistic. Imagine reporting the average of your pacing to the hundredth of a foot; that, too is a bit on the fanciful side. Just as with linear distances, small, undetectable uncertainties enter in.

In the Holy Grail of surveying accuracy, perfection is never achieved. Little undetectable errors are bound to creep in, even while doing excellent work. They come from many different sources: from the equipment, environment, survey methodology or humans themselves. Instead of looking at these like you would at pimples before a prom date, think instead that these errors build survey character and legitimize our measurements.

By the way, did you know that one of the most important theories of the 20th century was proved by measurement data? I say proved because subsequent analysis of the data showed that the measurements weren't really strong enough to assert proved, but the measurements were touted as proof anyway. Beware of measurements that look too good to be true!

Error Ellipses

Others have already talked of variance and stand-

ard deviation. The (sample) standard deviation really describes how tightly grouped the measurements are. Gauss, who was also a surveyor besides being a mathematician, asserted that survey measurements follow a normal curve. In other words, it is much more likely to get measurements near the average. Contrast this with something like rolling a die where any number from one to six is equally likely.

Using the concepts of average and standard deviation, we extend from one dimension to two dimensions and come up with an error ellipse. I'm not pulling anything out of a Star Trek movie with the word dimension; I'm only saying that error ellipses really give us a statement about the precision of our points we put in the ground. The standard error ellipse is the two-dimensional equivalent of the standard deviation¹.

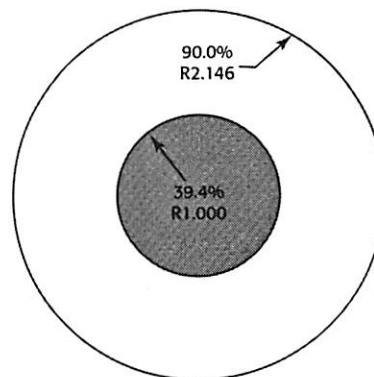


Figure 2. Error Ellipse Sizes.

Let me make an analogy. Suppose you are an archer. Furthermore, suppose your arrows hit the target with a normal distribution (well, actually bivariate normal (Bain and Englehardt)). The radius of the bull's-eye is such that about 40 percent of your arrows hit there. This is our standard error ellipse (really a circle in this case). Units are added here for illustration only. Contrast the 40 percent of arrows in the bull's-eye to about 67 percent of measured distances falling within plus or minus one standard deviation. The concept is the same in both cases; the percentages change because we go from a line to a surface (like that of the target).

Let's say you shoot 10 arrows at the given target. You expect four arrows within the bull's-eye region. The second circle has been expanded to such an extent that it should catch 90 percent of the arrows altogether. The radius of the larger circle is

found by multiplying the radius of the smaller by 2.146. Now, as we walk to the target to retrieve our arrows, we should see about four arrows in the bull's-eye and five arrows between the bull's-eye and the outer circle, or 90 percent of the arrows within the boundary of the outer circle. The tenth arrow might not even be near the target; perhaps it is stuck in some tree for all we know.

For this illustration, I have assumed the semi-major and semi-minor axes of the ellipse to be the equal. However, in your surveys, you will get different error ellipse sizes for your points. These error ellipses are usually sized so they catch about 95 percent of the points. Right about now I might expect some of the less patient to send a barrage of epitaphs my way about catching 95 percent of the points. Yes, there is actually only one point and we place an imaginary elliptical target at that point. We tell the crew to perform the survey nine more times and we mark a point on our target each time that point is resurveyed. Our expectation for doing that survey 10 times is for 9 to 10 points to fall within our error ellipse. The key is that these targets may be easily sized. If we think that 90 percent is a good number, we multiply our standard error ellipse by 2.146 so that our target expands to cover 90 percent of the measurements.

Another way of looking at this is to suppose the above diagram represents the error ellipse for a certain survey point. Your expectation of putting points in the bull's-eye would be 40 percent, supposing, of course we use the same methodology and equipment, etc. Keep in mind also that the size of the bull's-eye would be customized to your own measurements and equipment. This ability to account for equipment really gives least squares power.

Example

As a quick example of an actual survey, let's look at the following. Points 1 and 4 are control points. Using traverse techniques we start from 1, backsight 4 and foresight 2. We move ahead to point 2 and do the same. Likewise for point 3. When we get to point 4, we close out the angles by backsighting point 3 and foresighting back to control point 1. If we do typical traverse calculations and adjustment, we get an error of closure and distribute the error among points 2 and 3 by some well-defined rule, like the compass rule (not shown). However, we do not get any idea of

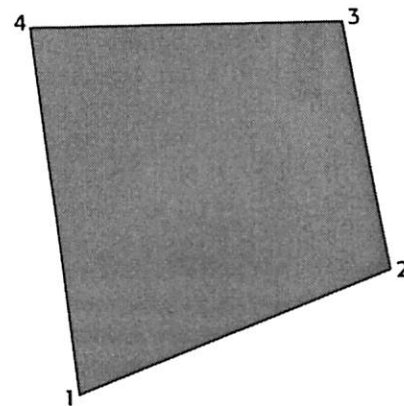


Figure 3. Traverse.

confidence or repeatability regions for each point-only an overall closure.

If, however, we adjust the same data using least squares, we get error ellipse sizes² for our adjusted points. Very quickly, we can determine any prob-

Point ID	Semi Major	Semi Minor	Orientation
2	0.022	0.013	49°00'45"
3	0.021	0.012	95°54'02"

lem spots in our survey by looking at how big the error ellipses are. For this example, the error ellipses are quite small. At the 95 percent confidence level, the semi-major and minor axes are all less than or equal to 0.022', or about two-hundredths. Since the error ellipses (targets) are so small at the 95 percent level, this should give us a very large amount of confidence that our survey is tight and repeatable. In fact, if we did repeat this survey a hundred times just for argument's sake (the real challenge is getting a crew to do it without argument), we would expect about 95 points around two and three to be covered by a quarter. This is a little more reasonable than splitting the width of a hair into 32 strands!

Conclusion

Error ellipses give us a way to quickly estimate repeatability regions around our points. They are a natural consequence of using least squares techniques. They allow us to effectively analyze our data. Each point has its own customized error ellipse that not only takes into account the survey data, but also the survey equipment. Some least square packages even plot the error ellipses for you³. This has the added benefit of allowing you to quickly

scan a plot of your survey for trouble spots. Big error ellipses could be big trouble.

Error ellipses are really the two-dimensional equivalent of the standard deviation. We mentioned multipliers to go from the standard ellipse to a bigger ellipse in order to catch a larger number of points. These multipliers may be calculated or looked up in one of the many good surveying texts.

We also discussed absolute accuracy, or the Holy Grail of surveying. In spite of our best efforts to carefully measure, unavoidable uncertainties enter in. There is no way to eliminate them, so we learn to deal with the uncertainties. Rather than fixate on absolute accuracy, we stress the idea of

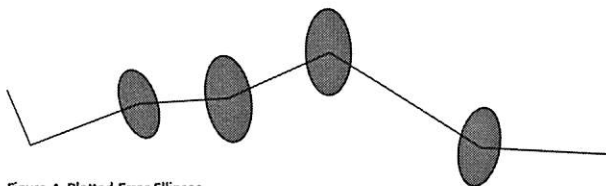


Figure 4. Plotted Error Ellipses.

using good survey methodology and equipment applicable to the accuracy needs of the job.

Now, if we can continue with the idea of absolute accuracy to the subatomic level....

Authors: "That's fine, Werner, but let's hold off the rest of this for another time."

We give special thanks to Werner Karl Heisenberg (1901 to 1976). He, like our other guests, was carefully selected for his unique viewpoint and huge ideas. Our contract with each of our guests is similar. Besides the many details and fine print, it comes down to this: anything that is wrong with the articles is the responsibility of the authors; anything that is right our guests gladly take the credit. This seems like a common arrangement, is it not?

In closing, there are many good surveying software packages that offer least squares reductions. Try one. You should be able to enter in relevant instrument specifications for angle and distance precision. Things like holding a direction or distance for various legs of your survey should also be doable. Going through the calculations manually would be tedious, but not impossible. However, there are many good least squares programs that make the calculations easy (and dare we say fun when you realize the power and control you have). You should be able to crank out a statistical re-

port. Do so. Highlight a few things like the standard deviations and error ellipse numbers. You now have a fuzzy, warm feeling of what they are. Take this with you to your next job review and see if it doesn't get you a raise.

Greg Wagstaff, a professional surveyor in Georgia, has worked for Leica Geosystems Inc., Norcross, Ga., for almost 10 years. He likes challenging survey problems where applied math or computer modeling help with the solutions.

Mark Cummock also works for Leica. His roots go back to Utah where he was registered as a surveyor in the 1980s. He, too, likes to grapple with tricky survey problems and use technology for solutions.

1. Raymond E. Davis, et. al. *Surveying Theory and Practice.* (McGraw-Hill, 1981.) 33.

2. Calculation done using Liscad software.

3. Plotted error ellipses graphic courtesy of StarPlus Software, Inc. ☒

Where There's A Will...

... Actual lines taken from wills

- ☛ I leave my wife every damn thing I own that she wants, provided that my dog, Lobo, who is essentially of the same temperament as I, be allowed more damn freedom than I've been allowed.
- ☛ My overdraft at the bank goes to my wife; she can explain it.
- ☛ I want six of my creditors for pallbearers. They have carried me for so long, they might as well finish the job.
- ☛ To my son, I leave the pleasure of earning a living. For 25 years he thought the pleasure was mine. He was mistaken.

Writing: Expanding Your Sphere of Influence Through Better Business Communications

continued from page 958

sponse, if you tell people why you need them to take action. Be clear on the action you want the receiver to take. Remember he is not a mind reader.

Use upper and lower case and correct punctuation. It is easier for people to get your message when it is written in the same manner as all their other correspondence.

Pay attention to grammar and spelling. Incorrect use of the English language detracts from your message. Reader's thoughts stray from your ideas to thinking about the correct word.

Style

Common complaints: outdated style, lack of clarity.

Action items:

1. Write the way you speak - assuming you speak in a grammatically correct fashion.
2. Never send your reader to the dictionary.
3. Keep your average sentence length to 15 words.
4. Don't write a sentence requiring more than 4 pieces of punctuation.
5. Use active voice sentences, whenever possible.
6. Use bulleted or numbered lists.
7. Keep paragraphs short.

8. Use linking words, such as in addition, however, first, to connect your thoughts and to deliver your ideas in a smooth, easy-to-follow fashion.

9. Be courteous.

Grammar

Common complaints: wrong punctuation, subjects and verbs don't agree, misused or misspelled words.

Action items: Grammar rules change with the times. Review a recently published grammar book to ensure your knowledge is up to date. If you have been out of school more than five years, chances are it isn't.

If you want to assess your grammar abilities, try the grammar quiz on the J Watson & Associates' site. The answers and the explanations are also there.

www.canlink.com/jwatson

Good luck and good writing!

Jane Watson can be reached at (905) 820-9909. "Words of Mouth" is a newsletter published five times a year featuring insights and ideas from Canadian Key Note Speakers. Subscription information can be obtained at 1-888-966-6884 or wom@idirect.com Articles can be downloaded at their website at www.newzletter.com. ☒

What's on the Web

These website urls were seen in the *Nebraska Surveyor*, Spring 1999 issue. If you happen to see any interesting sites, let us know! Send the url into SLSA office.

Survey publications on-line:

cadence-mag.com	Cadence Magazine online (AutoCAD)
eomonline.com	The Magazine for Geographic, Mapping, Earth Information
geoinfosystems.com	Geo Info Systems Magazine Web Site
geoplacement.com	Formerly known as GIS World
pobonline.com	Point of Beginning (POB) Web Site
profsurv.com	Professional Surveyor Web Site

SLSA Calendar

September 1999 - February 2000

SEPTEMBER

5	6	7	8	9	10	11
	Labor Day					
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

OCTOBER

3	4	5	6	7	8	9
				4	15	16
24	25	26	27	28	29	30
31						

American Congress on Surveying & Mapping/Michigan Society of Profnl. Surveyors Fall Conference - Grand Rapids, Michigan Oct. 16-20; www.survmap.org or 301-530-1619 ext. 10

Oct. 22, 23
ANSLS AGM

Nov. 1
Council Meeting
SLSA Office

NOVEMBER

7	8	9	10	11	12	13
				Remembrance Day		
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

DECEMBER

5	6	7	8	9	10	11
14	15	16	17	18		
19	20	21	22	23	24	25
						Christmas Day
26	27	28	29	30	31	
Boxing Day						

Dec. 13
Council Meeting
SLSA Office

JANUARY

					1	
					New Year's Day	
2	3	4	5	6	7	8
9	10	11	12			
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

Jan 15
Membership Fees Due

BCLS AGM Jan 27-29

FEBRUARY

						5
6	7	8	9	10	11	12
13	14	15			18	
21	22			24	25	
28						

AOLS 108th AGM Feb 16 - 19

