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MEMBER — WESTERN FEDERATION OF PROFESSIONAL SURVEYORS

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JOHN LEE, PRESIDENT

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VOLUME 9, NO. 1

MARCH 1997

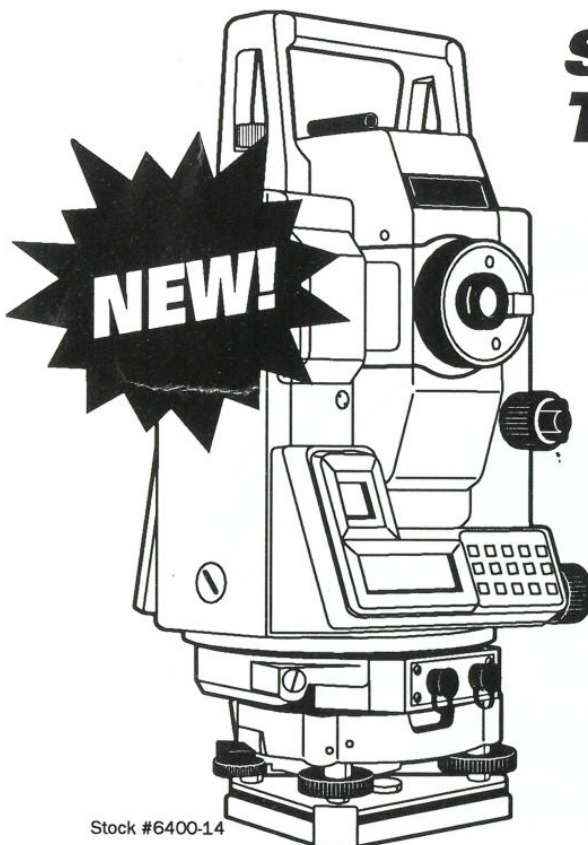
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1997 PLSW MEMBERSHIP APPLICATION PROFESSIONAL LAND SURVEYORS OF WYOMING

AFFILIATE — AMERICAN CONGRESS ON SURVEYING AND MAPPING
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☐ **Special Member**, Student, annual dues \$15. (Pursuing a post secondary academic course of study, and currently enrolled.)

☐ **Sustaining Member**, annual dues \$100. (Persons, institutions or corporations desiring to assist PLSW financially.)

I AGREE TO OBSERVE THE CONSTITUTION AND BY-LAWS OF THE PROFESSIONAL LAND SURVEYORS OF WYOMING AND THE CHAPTER THEREOF TO WHICH I WILL BELONG AND TO SUPPORT SAID ORGANIZATIONS IN THEIR ENDEAVORS.

APPLICANT'S SIGNATURE

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(For Affiliate Member applicants only.)

NOTE: All portions of the state have chapters. Chapter dues or assessments may vary in amount. Applications are considered by the board of Directors at quarterly meetings. Send completed application to PLSW, c/o R. L. Hudson, Sec./Treas., P.O. Box 784, Thermopolis, Wyoming 82442.



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SOKKIA™

(Continued from Page 17)

authorities in the NAFTA countries will continue to regulate as before.

- NAFTA does not automatically extend the right to professionals from one country to practice in another.

- NAFTA does not override or supersede any of a country's or jurisdiction's laws regarding passports, visas, business licenses, or other regulations regarding entry to a foreign country or the operation of a business.

Historically, professionals engaging in international operations have faced certain barriers to their providing services outside their own country. These include refusal of local entities to recognize their credentials and qualifications, lack of available information on licensing requirements and qualifications, and requirement for citizenship and residency. The North American Free Trade agreement attempts to overcome these issues and facilitate cross border professional practice.

The engineering profession has been actively negotiating a mutual recognition document for several years and the negotiating terms signed such document in 1995. Canada and Mexico have nearly completed their ratification process and are anticipating putting it into effect within the next year. The participating organizations in the United States: NSPE, NCEES, and ABET, have not completed ratification. There are significant concerns among the NCEES member boards which may result in the document not being ratified without substantial revision. The issue will be discussed at their annual meeting in August.

These negotiations have been very structured and costly. There have been three meetings per year, one in each country. Each country sends a large delegation and translators are provided at great cost. It is doubtful that either NSPS or CCLS can afford such a process. It is in the best interest of our organizations to proceed on an informal basis until a thorough understanding of each other's requirements and concerns is reached. Although there has been some contact with surveyors associations in Mexico, that contact has not yet established any firm relationship. It should be noted that several professional organizations for the various aspects of surveying (Colegios) were signatories to ratification of the MRD produced by the engineering profession. It is possible that some of all of those organizations might not be interested in any further negotiations. This situation may create a problem. From their perspective, they will believe that they have entered into an agreement in good faith. In this country our position most likely will be that the agreement has no standing as far as the surveying profession is concerned. Neither the Canadian or US Surveyors were part of the negotiations for the engineer's agreement or had any input to the agreement that the various engineering groups signed.

There are approximately 28 million professionals in the United States, about one quarter (1/4) of the work force. There are 1.9 million engineers and approximately 36,000 land surveyors. Other professions have begun the process of negotiating an understanding. At this time we are only aware of the engineers producing a formal document which has been signed by the negotiators, but not ratified by all necessary entities. Other professions are only now beginning to consider the process and ramifications.

The draft MRD presented by CCLS at the Denver meeting is a working document and was not intended as a final document or intended for publication. It was presented merely to inform the NSPS membership of the progress of the informal discussions to date. It proposes essentially that the cross border practice of

land surveying be attempted in phases. In the initial phase, those areas of practice that do not include boundary delimitation would be allowed. Boundary work would be prohibited until a later phase when, hopefully, education, experience, and examination requirements have become more standard among the countries.

Our understanding is that while non-boundary aspects of surveying such as GIS, geodesy, construction surveys, and photogrammetric mapping are included within the definition of the practice of surveying in Canada (Geomatics), those tasks can also be performed by others with the proper professional training and experience. In the United States there are still some jurisdictions which only include boundary surveying within their definition of practice, while others are broader. NCEES adopted a new definition of the practice of surveying into its model law in 1995, and many states are in the process of changing their statutes to echo the current model. In these states, the non-boundary aspects of surveying also require a license. In those jurisdictions whose statutes include the broader definition of survey practice, anyone attempting to practice in the nonboundary aspects without a license would be in violation of that jurisdiction's statutes and subject to discipline.

One of the basic requirements of any mutual recognition document or agreement is that it cannot be made for the purpose of circumventing the NAFTA requirements. It is possible that some may look upon any agreement for Land Surveyors that does not include boundary delimitation as circumventing NAFTA requirements. Others may feel that the NAFTA requirements for the professions leave enough room for the professions to interpret the rules within a broad spectrum, particularly if the negotiators from all of the participating countries forming the agreement can agree to limiting certain aspects of the practice of the profession.

NSPS has applied to the Office of the United States Trade Representative for sanction to be the organization representing surveyors in any NAFTA negotiations. We have included NCEES representatives in our committee meetings on an informal basis to date. Our understanding is that NCEES has informed the United States Trade Office that they don't object to NSPS representing the licensed land surveyors in the United States, but that any licensing issues will have to ultimately be approved by their members. Once NSPS has approved a basic strategy, both NSPS and NCEES will need to work together to develop a document that the members and representatives of both organizations can accept and support. It should be noted that the requirements listed in the first section of this paper primarily deal with licensing issues.

NOTE: The NAFTA requirement and provisions listed in this paper are largely taken from comments and articles by Bernard Ascher, Director of Service Industry Affairs of the Office of the U.S. Trade Representative. This is the agency which coordinates the formulation of trade policy and represents the United States in trade negotiations, Mr. Archer is the person charged with overseeing negotiations regarding professional services under NAFTA.

EDITORS NOTE: Anyone interested in obtaining a copy of Draft No. 5 "An Agreement Regarding the Mutual Recognition of Registered/Licensed Surveyors in the Jurisdictions of the United States of America and Canada", dated October 19, 1996, please contact Central Office and request the NAFTA Draft Proposal. Malcolm Shaw, Trustee, is involved with the NAFTA process on NYSAPLS behalf.

EDITORIAL POTPOURRI

O NEW PLSW MEMBERS - At the 30 JAN 97 Board of Directors meeting, the following new members were approved:

Richard Doyle, LS	Gillette, WY	Member
David Vliem, LS	Gillette, WY	Member
Harry Pierce, LS	Arvada, CO	Member
William Beville	Cody, WY	Associate
Michael Hansen	Cheyenne, WY	Associate
Glen Borkenhagen	Cody, WY	Special

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O PLSW MEMBERSHIP - Recruiting new members is every members responsibility. RECRUIT A NEW MEMBER TODAY.

O SUPPORT OUR ADVERTISERS - As evidenced by the exhibitors at the annual convention, our advertisers support us. We should support them.

O LOCAL PLSW NEWS - We need news of your chapter's activities. Send us a summary of your chapters activities or other related activities for publication. Summaries need not be typed. The deadline for the next issue of *Lines and Points* is presented on this page.

O PLSW BOARD MEETINGS - Tentative 1997 Board of Directors meetings are scheduled as follow:

May 3	Thermopolis
September 13	Rawlins
November 14 & 15	
or	
December 5 & 6	Casper (Winter Tech Session)

O LINES AND POINTS FAX - The *Lines and Points* fax number is 307-235-5604 or 307-235-8184.

O E-MAIL LINES & POINTS - *Lines & Points* is on the WEB. Contact www.dond@trib.com.

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PLSW (Professional Land Surveyors of Wyoming) is a statewide organization of Registered Land Surveyors licensed to practice in the Equality State of Wyoming. PLSW is dedicated to improving the technical, legal, and business aspects of surveying in the State of Wyoming. PLSW is affiliated with the American Congress on Surveying and Mapping and the Western Federation of Professional Land Surveyors.

Editorial Staff: John Hibsman, Steve Strang, Don Davis.

Lines and Points subscription \$50/year

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Camera ready advertisements with payment should be mailed to *Lines & Points*, PLSW, Box 904, Casper, WY 82602

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1997 ANNUAL STATE MEETING SUMMARY

The 1997 annual state meeting of the Professional Land Surveyors of Wyoming was held in the west meeting room of The Inn at Rock Springs on Thursday, January 30th, 1997. Conforming to tradition, this meeting was in conjunction with the 77th annual convention of the Wyoming Engineering Society.

All attendees were asked to sign the attendance list upon entry to the meeting and booklets containing the agenda and reports were presented at that time, rather than during the meeting.

The meeting was called to order by President Pete Hutchison at 1:07 P.M. with fifty-one members and three guests present. Honorary Members Wes Reed, Paul Scherbel, Bryce Rumph and Joe Popp were in attendance as were six affiliates. Following introductions of officers and honorary members, a period of silence was observed for deceased member Richard W. Olson and the wife of Honorary Member Art Hipp.

Pete made a last call for ballots; then Wes Reed and past president Chris Hamilton, substituting for Teller Bob St. Claire, departed to tabulate the voting results.

Secretary Rick Hudson stated the minutes of the 1996 Annual State Meeting, held in Casper last February, had been published in the October edition of our newsletter *Lines & Points* and asked for comments or corrections. They were approved as presented.

The treasurer's report was presented, also by Rick Hudson, and consisted of tabulations of the current funds as well as expenses and balances for the past calendar year. This report was accepted as printed.

Discussion of the 1997 Budget followed. Rick stated the present version had been approved by the Board of Directors at the December meeting in Casper. Following amendment resulting from a general discussion, the matter was tabled until later in this meeting.

Member Ralph Goodson, as President of the State Board of Registration for Professional Engineers and Professional Land Surveyors, presented an oral report which included a redefinition of land surveying by NCEES and mention of the NCEES review of the land surveying and fundamentals examinations. He stated there is a movement from an "apprenticeship" to a "knowledge" basis for qualification and testing of land surveying candidates. He briefly mentioned the proposed legislation, designated "House Bill 0194". Further discussion of this bill took place during committee reports.

The following committee reports were presented: Audit - Finance, Membership, Nominations and Elections, Standards Ethics and Professional Practice, Education, Legislative, Public Relations and Publicity, Scholarship, History, Handbook, SOS / NSPS Map, Newsletter and Trig-Star Committees.

Stan Abell, Co-Chairman of the Membership Committee, reported that, as of the last day of 1996, PLSW membership stood at 118 members, including ten active Honorary and one Life Member, and 38 affiliates.

Jim Claflin's Education Committee report dealt with our first Winter Technical Session, held on December 6th and 7th at Casper. The report indicated that, of the 71 participants, 64% were PLSW members while the remainder came from within Wyoming and the surrounding states. Jim's report also suggested a two-tier price structure, one for members, another for non-members.

John Steil, Chairman of the Legislative Committee, presented an oral version of his three-page written report concerning bills in the 54th Wyoming Legislature that may affect our profession. Specific attention was directed toward House Bill 0194, Surveyors

and Engineers Amendments, Senate File 0035, Surveyors Perpetuation and Filing Act and House Bill 0204, Provisions - Civil Penalty for Practicing Without a License. A general discussion followed wherein questions were answered by SBRPEPLS member Martin Pedersen.

Martin followed with his Scholarship Committee's report, stating that we are providing scholarships to Rusty Blough and Edward Reading both of whom are attending Oregon Institute of Technology.

Rick provided a capsulated version of "An Updated History" which will be printed and distributed as an insert to the "PLSW Handbook".

John Lee, representing SOS / NSPS Map Competition, reported that five maps (one in each category) were submitted to NSPS last month. He continued by stating that the "S.O.S." Corner Record Competition received five entries, urged all members to vote for their preference and submit an entry for next year's competition.

Don Davis, of our newsletter *Lines & Points*, stated that a profit of approximately \$82 was realized this past year. He also indicated that future mailings will be stamped rather than metered.

Pete discussed Marshall Lindeen's Trig-Star Committee report and stated this year's state winner was Jason Facer of Star Valley. Jason received a \$300 honorarium and an engraved plaque for completing the examination in less than 16 minutes.

Pete stated that National Society of Professional Surveyors Governor Becky Braman's report of the Board of Governors' Meeting on November 16th and 17th in Denver had been printed in *Lines & Points* and that there was nothing new to report.

Paul Reid, our delegate to Western Federation of Professional Surveyors, presented an oral version of his written report recapping "WestFed" activities during the past year. He encouraged all members to consider attending the 1997 conference March 9 - 13 at Las Vegas. A general discussion followed and centered around the topics of scholarships and conventions.

The first item of old business concerned the conversion of USGS benchmark levelling to NAVD 1988. Herb Stoughton updated the membership on the proposal and stated that no significant progress had taken place, due in large part to a lack of funding.

The next item of old business concerned the "Deceased / Retired List" being compiled by our Upper Platte Chapter. Martin had previously mentioned this matter during discussion of the budget. At that time he stated that the list is still being circulated amongst the chapters and that no funding will be required, for publication of the results, until next year.

Presidential citations were next; Pete presented certificates to Marshall Lindeen for his efforts with Trig-Star, Jim Claflin and Ann Brady for arranging the Winter Technical Session, and Becky Braman and Paul Reid for representing us at NSPS and WFPS meetings respectively. He also presented Rick Hudson with a special award for his service as Secretary / Treasurer.

Pete then announced a recess, at 2:37 P.M., wherein members socialized, viewed the "S.O.S." display, and generally discussed surveying matters great and small. The meeting was reconvened at 3:02 P.M.

The Teller's Report followed: Our 1997 officers are John P. Lee, President; R.L. "Rick" Hudson, Vice President; Herbert W. Stoughton, Secretary / Treasurer.

(Continued on Page 5)

NAFTA Fact Sheet

What role can the national Associations play in shaping the future for this profession as it tries to adjust to a client driven society? What should be protected? What should be gained?

Property line delimitation is so jurisdiction-dependent, the assessment and evaluation of evidence so dependent upon the history, culture, physical geography, and law of a particular jurisdiction that it must be a special case within NAFTA.

Chapter 12 of the NAFTA encourages "the relevant bodies and their respective territories to develop mutually acceptable standards and criteria for licensing and certification of professional service providers."

The Agreement says that Canadian American and Mexican survey associations, corporations and societies, should have licensing requirements which; are based on objective and transparent criteria, are no more burdensome than necessary to insure the quality of a service, and do not constitute a disguised restriction on the cross-border provision of a service.

- First, it promotes fairness amongst the NAFTA countries and the provinces and states within those countries. It ensures there is a level playing field.

- Second, the MRD would ensure that the public's interest is protected by allowing each province and state to maintain its necessary standards of practice and education.

- Third, it makes crossing the border to provide your service that much easier although a surveyor would still have to conform to the applicable immigration and visa requirements.

- Fourth, this MRD would be a model for surveyors for any future trade agreements. As far as we are aware, this Agreement would be the first of its kind and would set a precedent for what we feel is necessary.

- Finally, a NAFTA sub-agreement in surveying allows surveyors to control their own destiny. It is an agreement for surveyors, by surveyors, and would have the blessing of our respective federal governments. But it would not be imposed on us by any government or other profession.

We have developed a draft Mutual Recognition Document (MRD) to help guide us and keep us on track. The purpose of the document is to facilitate cross border trade in professional surveying services, only between the signatory stakeholders pertaining to this document and eventually the recognition of other jurisdiction's credentials and licenses.



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NAFTA and the SURVEYOR

What does the North American Free Trade Agreement (NAFTA) require of professions?

NAFTA seeks to provide equal access to cross border practice among professionals in the three participating nations. The requirements for the professions are general in nature. The criteria are listed below:

- NAFTA requires **non-discriminatory** treatment with regard to licensing. Fair and objective criteria must be used to assess qualifications and ability to practice a profession. These criteria are based mainly on education, experience, examination, and ethics. Requirements must be TRANSPARENT, which means that they must be publicly known.

- NAFTA required the elimination of citizenship and permanent residency requirements by January 1996.

- Licensing bodies are required to establish or maintain procedures to review the qualifications of applicants from the other NAFTA countries and to provide acknowledgments and responses to inquiries in a timely fashion. It should be clear that no Mexican or Canadian professional will be permitted to practice in the United States even temporarily, unless they meet all the requirements applicable to U.S. practitioners.

- NAFTA has specific provisions to encourage the professions to work toward mutual recognition based on the objective criteria stated in the agreement.

- NAFTA contains specific provisions regarding temporary licensing of engineers and recognition of foreign legal consultants. No mention of temporary or limited licensing for other professions is noted.

- The parties to the agreement were to notify each other of non-conforming measures applicable to the professions by the extended deadline of March 31, 1996. The three parties have agreed to "grandfather" all non-conforming state and provincial measures existing on January 1, 1994. This means that any licensing laws in force at that time may remain, with the possible exception of citizenship and residency requirements.

- NAFTA requires a professional to be capable of conversing in the language of commerce of the country in which they wish to practice.

What does NAFTA **not** require of the professions?

- NAFTA does not require an individual state, territory, or provincial licensing body to treat professionals from the other participating countries differently from the way it treats professionals in its own jurisdiction or from other jurisdictions within its own country.

- NAFTA does not require professions to reach mutual agreement standards, it only encourages such agreements. There is no time limit or deadline set for such agreements. (It should be noted that the Canadian government is pushing the provincial licensing bodies to reach such agreements. There has been a hint that the Canadian national government will step in if the professional societies do not act.)

- NAFTA does not require standardization or harmonization of licensing procedures and qualifications requirements among the countries. Each state, province, or territory can continue to operate under their existing statutes and regulations.

- NAFTA does not set up its own licensing process for any profession. There will be no "national" license to practice.

- NAFTA does not establish requirements for education, experience, or examinations for the professions. The regulatory

(Continued on Page 18)

BLM NEWS

This letter is to inform you of official cadastral surveys in Wyoming that have been accepted from November 22, 1996 through December 26, 1996, were officially filed and are now available in the Survey Records Office, Wyoming State Office, Bureau of Land Management, P.O. Box 1848, 5353 Yellowstone Rd., Cheyenne, Wyoming 82003.

The accepted surveys are listed below by township, range, type of survey, meridian, and acceptance date.

SIXTH PRINCIPAL MERIDIAN, WYOMING

Township and Range	Type of Survey	Meridian	Accepted
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T. 13 N., R. 104 W.	Dep. Res.	6 P.M.	11/22/1996
T. 54 N., R. 71 W.	Dep. Res.	6 P.M.	12/04/1996
T. 54 N., R. 72 W.	Dep. Res.	6 P.M.	12/04/1996
T. 55 N., R. 72 W.	Dep. Res.	6 P.M.	12/04/1996
T. 32 N., R. 107 W.	Dep. Res.	6 P.M.	12/26/1996
T. 43 N., R. 115 W.	Corrective Dep. Res.	6 P.M.	12/26/1996
T. 42 N., R. 116 W.	Corrective Dep. Res.	6 P.M.	12/26/1996
T. 16 N., R. 81 W.	Supplemental Plat	6 P.M.	12/26/1996
T. 41 N., R. 86 W.	Supplemental Plat	6 P.M.	12/26/1996



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(Continued from Page 4)

Member, and NSPS Area 7 Director, John Steil asked all officers present to come forward and take the oath of office. Following the administration of the oath, and the affirmation of the membership, former Vice President D.R. "Dick" Griffin, presented now Past President Pete Hutchison with a plaque recognizing his leadership of PLSW throughout the past year. The new officers seated themselves and Rick, not reluctantly, passed the files and minute manuscript to Herb.

President John Lee began new business with the NCEES correspondence course funding request. Ad hoc chairman Paul Blough was not in attendance and committee member Dick Kohler made an oral presentation regarding the matter. He briefed members on the purpose of the course and the fee for same, approximately \$200, and stated that current contributions, nationwide, have ranged from \$100 to \$1,500. A general discussion followed wherein it was agreed the matter should be given further study before any specific financial assistance is granted by our Board of Directors.

The budget matter was removed from the table, discussed and finally approved with all members, save one, casting an affirmative vote.

Past President Pete Hutchison reported on the Laramie County Community College equipment funding project that had been undertaken and completed this past year. He stated that Geotronics, of Denver, and the Wyoming Department of Transportation had offered six "total station" instruments to the college for the surveying program. Contributions from individuals, chapters and PLSW, in the amount of \$6,000, were acknowledged at the LCCC Foundation luncheon last December.

John acknowledged member Scott Scherbel who led a general discussion concerning the possibility of combining the annual state meeting with the Winter Technical Session. After lengthy debate, with no action taken, the status quo prevailed.

Announcements followed: Pete mentioned the invitations, to the new president, to attend the Nebraska and Montana conventions; and discussed the proposed "Big Sky 2000" convention. John Steil presented an update regarding the proposed dedication of the southeast corner of the state, tentatively set for mid-August. John reminded members that "S.O.S." voting was still open, membership application forms were available at the door and that the Board of Directors would be meeting upon conclusion of this meeting.

There being no further business, John gavelled the meeting into adjournment at 3:55 P.M.

Dated this 10th day of February, 1997.

R.L. Hudson, Secretary / Treasurer, Retired

President's Message

Dear PLSW Members,

Thank you for your vote of confidence.

We had another successful and interesting WES convention this year in Rock Springs. I saw some new and interesting equipment on display during the convention. I enjoyed the social aspect of our annual convention as well as the business side. Next year's convention is scheduled to be February 6-8th in Sheridan. The PLSW annual meeting will be on February 5th, so please mark your calendars and plan to attend.

The "Save Our Surveyor" contest had five entries this year. I hope that everyone attending the WES convention had time to view them. PLSW will sponsor this contest again next year. So throughout the year, keep this in mind and select your best corner recordation as your entry. Your corner records could be next year's winner!

We held our first Board of Directors (BOD) meeting immediately after the 1997 annual meeting. The Board reviewed applications and approved membership for 6 new members. Please continue to encourage interested individuals to join PLSW. BOD meetings scheduled for this year are May 17th in Thermopolis, early September in the Rawlins area, and Casper in conjunction with the Winter Technical Session. All members are invited to attend.

I think that the 1996 Winter Technical Session was a very big success. We plan to sponsor another one this year, tentatively in Casper, WY, early in December. The committee is searching for and considering subjects that are appropriate to land surveyors in Wyoming. I think that providing this kind of low-cost locally presented continuing education opportunity is an important function of a professional society such as PLSW.

I have received word that the land surrounding the "Cast Iron Monument" might be taken into trust for the Iowa Tribe of Kansas and Nebraska. This monument marks the eastern terminus of the Kansas-Nebraska boundary. We wrote letters to the Bureau of Indian Affairs, Wyoming's Congressional delegation, and the Secretary of the Interior requesting that permanent access by easement be established from the nearest public highway to the site.

The State of Wyoming formed the Wyoming Geographic Information Advisory Council (WGIAC) a number of years ago. This council promotes the use of geographic information systems (GIS) as an information, planning, and management tool to better manage the State's resources. I recently learned that a representative from a professional mapping organization may be a voting member. The information surveyors create/collect is vital information to have in a GIS. I know the PLSW is not specifically a "mapping" organization, but I informed the chairman of WGIAC that PLSW is interested in being involved. Some Southeast chapter members have shown interest in the council. Please let me know if other members are also interested in receiving future information about WGIAC activities.

PLSW has been invited to participate in a multi-state professional surveyors conference in the year 2000. I plan to have a discussion about this at the May BOD meeting. Montana and Idaho associations are participating. Washington has declined, and North and South Dakota have also been invited to participate. It is scheduled to be held at the Big Sky Resort in southwestern Montana on April 18th - 23rd, 2000.

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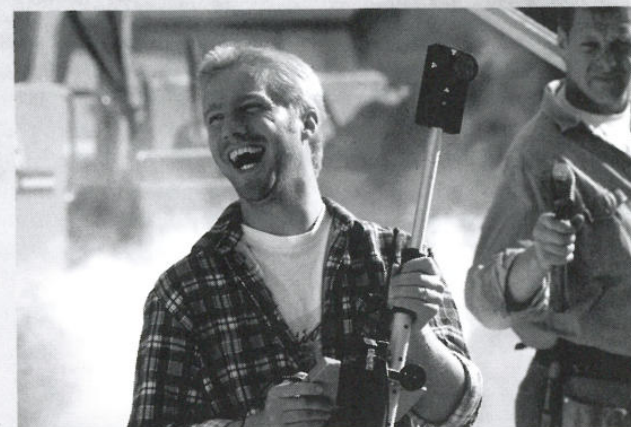
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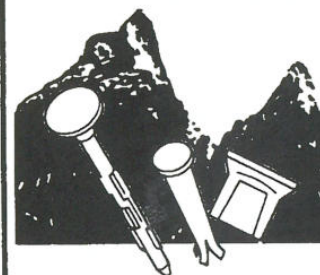
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Updated and/or new Statements should be mailed to the Wyoming Department of Transportation, Engineering Services, P.O. Box 1708, Cheyenne, WY 82003-1708.

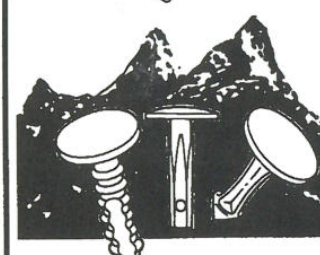
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TRI-POINT: WYOMING - UTAH - COLORADO

DATE VISITED: June 26, 1991

ACCESS ROUTE: From Rock Springs, WY go S on US 191 about 28 miles. At the bottom of a steep hill, turn L on dirt road #4-34. Go E on 4-34 for 6.2 miles, then generally S on road #4-27 for about 6 miles to Red Creek Ranch. Ask permission to continue from Mr. Allen, the ranch owner, and check on road conditions beyond this point. Continue on 427 up the hill about 5-1/2 miles to a saddle. At the saddle turn left (E) and proceed on a very poor road for 4 miles to the marker at 8402 feet elevation, making this the highest tri-point.

This is a very scenic area, so go early enough in the day so that you can linger at the tri-point and along the access roads to enjoy the scenery. In dry weather these roads are passable for 2WD drive vehicles, but at some times of the year, a 4WD would be helpful. There is a large billboard-like sign at the tri-point with the following text:

PUBLIC LAND SURVEY MONUMENT

To State Corner of the States of Wyoming, Utah and Colorado (Lat. 41°00'42.616" Long. 109°02.158" Elevation 8402')

This point was monumented by surveyor Rolin J. Reeves on July 19, 1879, while completing the survey of the west boundary of the state of Colorado and the east boundary of Utah Territory. The boundary line separating Wyoming Territory from Colorado and Utah Territories was surveyed by US surveyor A. V. Richards in 1873.

The original monument was found to be disturbed in 1931, and was remarked by US Cadastral Engineer E. V. Kimmel with a brass tablet seated in a concrete monument.

This monument is one of the corners of the National Rectangular Cadastral Survey System inaugurated in 1785, that has aided the development and orderly settlement of the public lands of the western states. From these monuments, State and Local Governments and private citizens are provided with easily identifiable boundaries. Such monuments serve as a base for the work of private surveyors in making accurate land sub-divisions and descriptions.

Erected by the Kiwanis clubs of Rock Springs, WY, and Craig, CO and the Lions club of Daggett County, UT in cooperation with the Bureau of Land Management, and dedicated on August 21, 1966. Imbedded in the concrete base of this monument are some of the original stones which marked the location in 1879.

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having a SPC control monument to tie into. This is possible using astronomic observations, Laplace correction, and computation of convergence angle. This has been the case for over 60 years.)

Summary and Conclusion

Remember, the earth is not flat! We cannot pretend that it is. Only the mathematics of map projections can be employed to make it flat over limited zone areas. This requires scale factors. There are no exceptions to this requirement. The earth is round everywhere! God made it that way. We cannot do much about it, except deal with it. The NGS chose to use the ellipsoid fitted to the geoid as a geodetic reference surface, which is at zero ellipsoid height. This necessitates accounting for our height above the ellipsoid. If distance are not transferred from ground elevation to the ellipsoid and then to a surface that can be rolled out into a place, we do not have our departure and latitude components reduced to the grid. Thus any coordinates computed from such departures and latitudes cannot be SPC coordinates. We must get off the ground and onto the grid!

Using SPC, ground distances simply do not match grid distances. Nor, will grid areas be the same as SPC areas. My only concern over this is a big "so what?". As long as we understand that we can simply get ground distance by dividing an inversed grid distance by the grid factor, and ground area by dividing the SPC area by the square of the average grid factor for the tract of land, there is no problem. We have much bigger problems to deal with every day than to fret over these minor inconveniences.

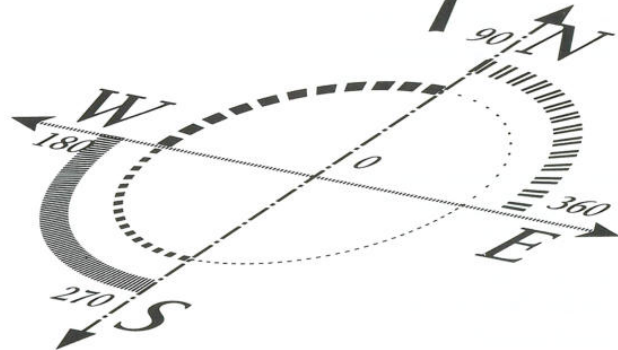
Every surveyor using this system must accept the facts regarding our round earth and work with the system as it is developed. Attempts at changing it can only cause future problems. If ties to SPC are made and coordinates are calculated where ground distances are used instead of grid distance (or one of the two factors is either neglected or averaged too freely), where reference surfaces are modified, where accurate SPC values are altered by dividing them by average grid factors for so-called "local" survey purposes, or where other such corruptions of the system are made, its values as explained in the first paragraph of this article are essentially lost. Furthermore, mistakes and misuses are bound to occur with arbitrary and individualized modifications, and in time, we will have a mess. Especially when coordinates are used and published which approximate the true SPC, confusion is created. I strongly feel it is better to train all surveying personnel as to the proper use of the system than to compromise its integrity. Doesn't this make sense regarding any procedures, surveying or otherwise? Should ignorance of anything control its use and application?

We "plane" surveyors might wish that the earth is flat, but it simply is not. The geodesists and mathematical cartographers have created a wonderful system for surveyors to use, so as to employ plane surveying calculations instead of geodetic calculations on the spheroidal earth. It is ingenious in its conception and nature. We should use it correctly or not use it at all.

Dr. Ben Buckner is owner and principal instructor of Surveyor's Educational Seminars, a private school offering continuing professional development for surveyors. He is currently President of the Northeast Chapter of TPAS. He can be reached for comment at 1904 Alpine Road, Johnson City, TN 37604; Phone/Fax (423) 929-3215.

Reprinted from the *Gem State Surveyor*, Winter 1996.

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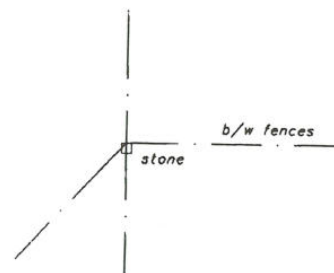
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S.O.S. CORNER RECORD COMPETITION

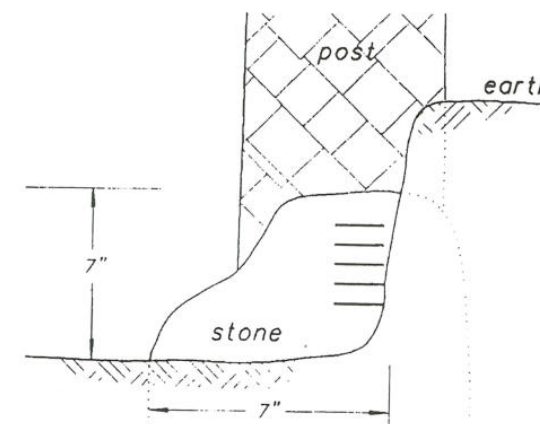
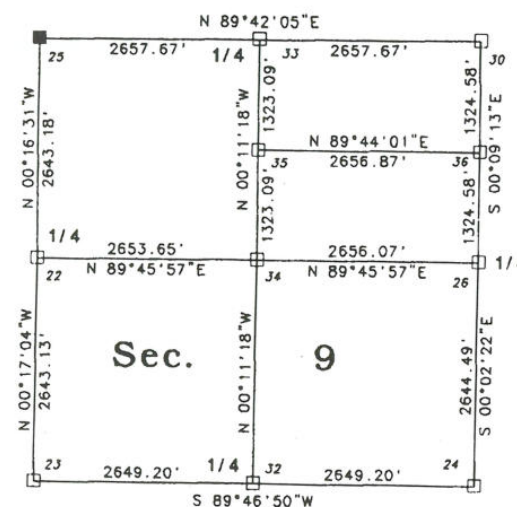
Thank you for your continued support of the PLSW **Save Our Surveyor (S.O.S.)** Corner Record Competition. We had a total of five entries and 24 votes were cast during the voting at the recent W.E.S. convention. An entry by Sklar V. Wilson, Wilson Land Surveying, Pinedale, WY, was chosen by populous vote as the winner. He will receive an honorarium of \$100.

FOUND: Well-set granite stone, 5 notches on south face. East face unexposed, this survey.
Located at 4-way fence intersection.

SET: Nothing.



T34N-R111W



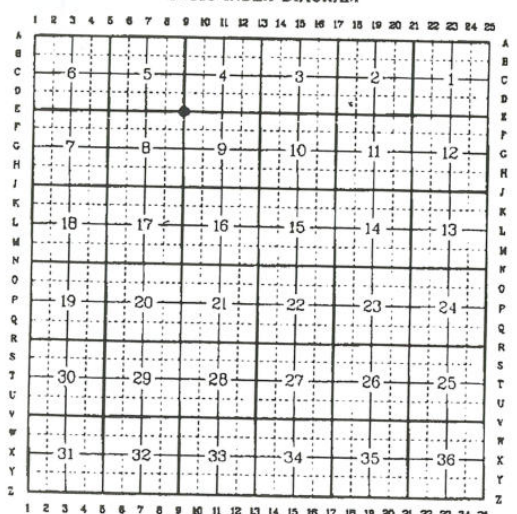
View of Stone (looking north)

POINT	NORTHING	EASTING	DESCRIPTION
22	825447.8710	491531.3261	W1/4 S.9 (MLS J.25" AC)
23	822804.7728	491544.4538	SW1/4 S.9 (STONE)
24	822825.0739	496842.8200	SE COR S.9 (STONE)
25	828091.0170	491518.6268	NW COR S.9 (STONE)
26	825469.5635	496840.9973	E1/4 S.9 (MLS J.25" AC)
30	828118.7195	496833.8936	NE COR S.9 (MLS BC)
32	822814.9234	494193.6369	S1/4 S.9 (MLS J.25" AC)
33	828104.8683	494176.2602	N1/4 S.9 (MLS J.25" AC)
34	825458.7123	494184.9525	C1/4 S.9 (MLS J.25" AC)
35	826781.7903	494180.6083	CN1/16 S.9 (MLS J.25" AC)
36	826794.1415	496837.4455	N1/16 S9/S10 (MLS J.25" AC)

NOTE: Bearings, distances and coordinates shown are based on the Wyoming State Plane Coordinate System, NAD 29, West Zone, and modified by an adjustment factor of 1.0004.

Date of Field Work: 8/1/96 Office Reference: Bk 19-23 #96364

CROSS INDEX DIAGRAM



Firm/Agency, Address

Wilson Land Surveying

219 E. Pine Street

P.O. Box 938

Pinedale, WY 82941

Telephone Number: (307) 367-6417

259123

STATE OF WYOMING

Office of Clerk and Recorder

County of Sublette

This "corner record" was filed at 12:15 PM

on the 15 day of October, 1996

and was noted on the cross-index plat

Mary L. Lankford Tracy L. Hower

County Clerk Deputy

This corner record was prepared by me or under my direction and supervision.

SEAL & SIGNATURE



cc: Page

NOTICE

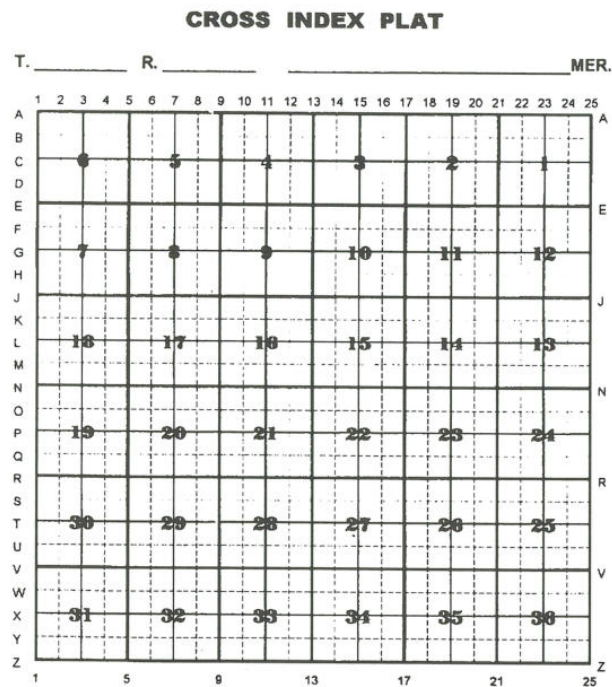
TO ALL MEMBERS OF PLSW AND OTHER WYOMING LAND SURVEYORS

The updated version of the "Cross Index Plat", used in conjunction with the "State of Wyoming Corner Record", has been printed by PLSW and is now available. The form, used to indicate recordings within individual townships, measures 8½" by 14", is printed on dark yellow card stock and drilled along the top with two holes for insertion into standard filing systems. See the accompanying facsimile for particulars.

Copies of the form are available from Rick Hudson, PLSW Vice President, P.O. Box 784, Thermopolis, WY 82443, at the following rates:

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- LEGEND**
- Certificates filed under this cross index plat.
 - ⊕ Certificates filed in adjoining township as indicated by solid quadrant(s).

INSTRUCTIONS

- 1) Each corner certificate is identified by an alphabetical - numerical coordinate number which is derived from the system shown on the above township diagram. For example, the quarter corner common to Sections 5 and 6 is identified as Corner or Cross-Index No. C-5.
- 2) Corners such as meander corners or subdivision corners which are not located at intersecting lines on the above diagram will be identified by reference to the nearest applicable coordinate lines, thus: AB-1, M-1-2, VW-19-20.
- 3) Corners common to adjoining townships will be identified by coordinates of the townships in which the certificates are to be filed.
- 4) Within each township record, the certificates will be filed in alphabetical - numerical sequence.

COUNTY T. R. MER.

PLSW, 01/97, correct



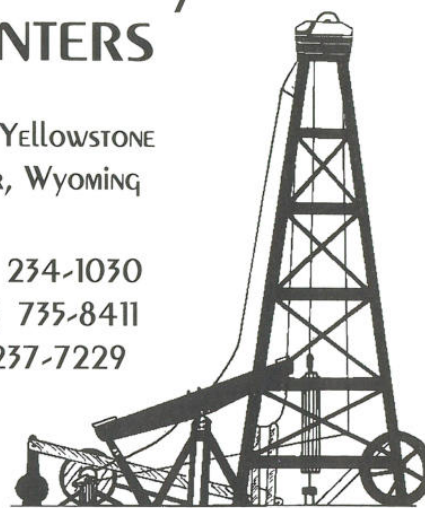
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(Continued from Page 12)

are referred to the geoid. The height above the geoid is the term used in the equation for the elevation factor. This, $h = H + N$ where h = ellipsoid height, h = orthometric height (bench mark elevation) and N = geoid height. The geoid height is approximately -100 feet throughout most of the states east of the Mississippi River. An accurate value for it is given on control data sheets. It can be determined anywhere simply by keying the approximate latitude and longitude into the NGS computer model called GEOID93. How accurate it must be is one of several questions the surveyor must ask. The answer is found within the theory of significant figures and round-off errors, something which any professional surveyor should thoroughly understand and be able to analyze in each situation.

For a fairly flat terrain and/or relatively short lines, an average elevation factor can be used for a survey project. Frequently, the extent of the survey and/or the precision requirements dictate calculating a separate elevation factor for each line in a survey. There is no simple rule of thumb on this. Again, the decision is one of measurement analysis related to precision and significant figures which affect the calculated ellipsoid distances, something the surveyor must analyze for each project.

The Scale Factor

A simplified definition of the scale factor is the ratio of the grid distance to the ellipsoid distance. The grid distance is the length of the survey line on that imaginary cone or cylinder after it is rolled into a plane. The cone or cylinder is made to intersect the earth slightly, at different locations, creating and embracing each zone of the system. This causes the scale factor to be exactly "1" at the lines of intersection of the cone or cylinder with the ellipsoid (called "standard lines"), less than "1" between these lines, and greater than "1" beyond the standard lines.

The equation for scale factor is not as simple as the one for the elevation factor. The NGS furnishes either projection tables, where the factor is easily interpolated or computed, or "approximate" equations which are satisfactory for most surveying. Accurate calculations can, of course, be made using the detailed equations based on the ellipsoid and the projection constants for a zone, but if maximum accuracy is desired for the scale factors, the NGS software called SPC83 is suggested. Various others have also programmed the equations, including this writer (on HP42S).

As with the elevation factor, the average scale factor can be used if the survey is relatively small extent and/or accuracy requirements are not high. In the Lambert system, the scale factors remain constant along any east-west line, so the north-south extent of the survey is all that needs to be investigated in this regard. For the Transverse Mercator system, it is the other way around. Again, the choice between determining an accurate scale factor at the midpoint of each line and using an average for the entire survey, relates to simple significant figures theory, with consideration for the accuracies needed.

Grid Factor and Grid Distance

The grid factor is not another separate factor, but simply the product of the elevation factor times the scale factor for the line (or averages for the survey if appropriate). It is sometimes called the "combination factor" or "grid combination factor". It is merely an algebraic shortcut or convenience since we are not really interested in the ellipsoid distance anyway. Our goal is to go from ground distance to grid distance and it makes no difference whether this is done by considering the factors separately or in a

combined sense. The final result in either case is the grid distance (projection distance). This is the distance that will be used for the measured line, in order to compute departure and latitude components on the state plane coordinate system.

Within these few sentences may lie the most important part of this article. One or both of the two variables determining grid factors is frequently confused, ignored, corrupted, or overlooked when attempting to reference surveys to the SPCS. Very simply the distances used to calculate the departures and latitudes for state plane coordinates must be imaginary distances on the grid projection surface - not on the ground, not on the ellipsoid, and not too greatly compromised by using average factors over large areas or long traverses.

Convergence Angle

All "true" north lines converge and meet at the poles of the earth. At latitude 45°, the convergence is almost exactly 1" per 100 feet of east-west distance. This amounts to nearly a minute of arc for an east-west line 1 mile long, throughout most of the United States. Thus, when using modern angle measuring instruments yielding angles within a few seconds of arc, we cannot even do an astronomic observation for azimuth any more and claim this as the reference meridian for a square mile tract, unless accuracy only to the nearest minute is being claimed and bearings shown likewise on plats. "True" north is not only an obsolete word, but also an obsolete concept in modern surveying where plane (either rectangular or polar) coordinates are being used. Grid north, preferably that of the SPC must be used, to take out the convergence of the meridians.

If the surveyor can tie into control stations having azimuth marks with published grid azimuths, or always sight some other SPC station from the starting and closing monuments, grid azimuth is known throughout the survey. But in the absence of such monumentation, usually an astronomic observation must be made for the azimuth. Once astronomic azimuth is determined, it must be corrected for the Laplace correction. This is a small correction and may be negligible in many places. It can be gotten from an NGS computer model called DEFLEC93, merely by entering the approximate latitude and longitude of the point into the program. Geodetic Azimuth = Astronomic Azimuth + Laplace Correction. Then, the SPC Grid Azimuth = Geodetic Azimuth - Convergence Angle. The convergence angle is called the "gamma" angle nowadays. In the old SPC27 systems, it was called either the "theta" angle or the "delta-alpha" angle. It is very easy to calculate. In the Lambert system it is the longitude of the central meridian of the zone minus the longitude of the point, multiplied by a convergency constant for the zone (actually the sine of the latitude of the central parallel of the zone). In the Transverse Mercator system, the difference in longitude is multiplied by the sine of the latitude of the station. That's all there is to it. For points east of the central meridian, grid azimuths are less than geodetic azimuths. The opposite is true when west of the central meridian. This provides a way of checking to be sure the correct sign has been determined for the convergence angle.

Once a grid azimuth is determined in one of the above ways, angles are measured and adjusted, just as in any plane survey, and when combined with the starting azimuth, grid azimuths results for all lines.

(As a side point to the above, it should be pointed out the SPC grid azimuth can be determined for any survey without ever

(Continued on Page 14)

Proper Use of the State Plane Coordinate System

Submitted by: Dr. Ben Buckner

After teaching seminars on the state plane coordinate system (SPCS) in several states recently, I have observed some confusion among many surveyors and their technicians concerning the system. Many seem to have started using the system fairly recently, through the global positioning system (GPS) and through performing radial surveying using total stations, and lack background on some of the historical and theoretical aspects of SPC.

The SPCS is not something new, created at the same time as the North American Datum Readjustment of 1983 (NAD83); nor is it something unique to GPS, as some surveyors seem to think. SPC can be determined by many methods, including GPS, but also by ties to existing NGS or other horizontal control stations using traditional ground surveying methods of traverse, triangulation, trilateration, and radial surveying. SPC and GPS are not synonymous. One can understand SPC and know nothing about GPS, as has been the case for over 60 years.

The SPCS is a mathematical system relating geoid positions (latitudes and longitudes) on the ellipsoid to plane coordinates on a projection surface such as a cone or cylinder. Such a procedure is the best way known for transferring positions from a spherical earth to a plane. The earth is not flat. Mathematical map projections must be used if we want to survey more than a few hundred feet on a plane system without encountering sizable errors due to the earth's curvature and its effects on distance and meridian convergence. In the "old days" when we were using 1-minute transits and steel tapes, we could go a few miles without worrying about the curved earth reality. Now, with more accurate equipment and computational methods, and the fact that we are surveying over much wider areas and attempting to create meaningful land information systems, the old ways of thinking must be discarded.

When performing surveys properly using the SPCS, the resulting plane coordinates (X and Y or Easting and Northing) are not on the ground, but on imaginary cones or cylinders rolled into planes across many zones. This is one of the most crucial facts to realize, lest the system be misused. Once this is understood, it becomes clear why ground distances cannot be used directly in SPC calculations and why distances and areas computed from SPC must be adjusted back to the ground for measurement and description purposes. With increasing use of the systems, it is essential that all users be properly trained as to the most basic aspects of SPC.

The SPCS is an extremely useful tool for indirect measurement, preservation of land survey evidence, establishment of basic control for construction projects and mines, engineering planning and design, and a framework for land information systems. Its usefulness will be greatly hampered unless it is used properly. This article is intended to encourage and briefly explain the proper application of the basic "factors" of the system, lest we create a confusing hodge-podge of coordinate data comparable to the mess we now stumble over daily in trying to evaluate monument evidence for property boundaries.

Background of the SPCS

were created for each state by the Coast and Geodetic Survey. Each state has one or more zones, depending on the size and shape of the state. The purpose of the system is to allow the surveyor to use plane Cartesian coordinates (departures and latitudes, etc.) on the curved earth. The ability to use plane coordinate calculations on a spherical shaped earth is provided by what are called "map projections" where by the ellipsoidal distances are transferred (projected) to surfaces which can be rolled out ("developed") into planes. There are two surfaces used – one is a cone and the other is a cylinder. Thus, there are actually two systems, mathematically speaking, not one.

Using cones or cylinders as projection surfaces, rather than a plane, the "scale factors" can be controlled to change in only one direction (either east-west or north-south). In reality, there are as many systems as there are zones since most of the zone constants vary for every zone. Except for these simple numeric differences, however, the procedures for employing the systems are the same in each of the two Projection systems. Once a surveyor understands the conical system (called Lambert Conformal), he or she can make the calculations or use the system in any Lambert zone in any state. Only a few constants and numbers in tables change. The equations do not. Likewise, once the cylindrical system (Transverse Mercator) is learned, a surveyor can use it anywhere the system exists, employing the proper zone constants in the equations. The mathematics related to the conversion of a geodetic position (latitude and longitude) to a plane coordinate (X, Y or E.N) is rather complex, as it involves both geometric geodesy and mathematical cartography. However, like a lot of other things in surveying, a complete understanding of the mathematics is not required to use the system properly or understand it conceptually. The NGS provides projection tables, simplified equations, and computer software to make conversions. The surveyor seldom has to make a conversion anyway since the plane coordinates are given on data sheets for each control station in the national network.

The surveyor, as a user of the system, generally only needs to be concerned with three variables. These are: (1) the elevation factors, (2) the scale factors, and (3) the convergence angle. To use the system properly these variables cannot be ignored.

The Elevation Factor

The elevation factor (formerly called "sea level factor") is used to project a horizontal ground distance to the ellipsoid used for geodetic calculations. It is simply the ratio of the distance on the ellipsoid to the horizontal ground distance. From similar triangles, this is the same as the ratio of the earth's radius to the radius plus the mean elevation of the survey line above the ellipsoid (ellipsoid height). The earth's radius can be taken as $r = 20,906,000$ feet or $6,372,150$ meters for this calculation since exactness is unimportant when using a number this size in the ratio. Prior to the NAD83 readjustment the elevation (actually, more properly called "orthometric height") was considered to be the same as the ellipsoid height and it was sufficient to just take the benchmark elevation and plug it into the equation r divided by $r + h$. This is because the geoid was made to coincide with the ellipsoid (Clarke Spheroid of 1866) in the old (NAD27) geodetic reference system. However, with the new GRS89 ellipsoid used in NAD83, the height of the ellipsoid above the geoid must be considered since this new ellipsoid doesn't fit the geoid so well in North America. Elevations (orthometric heights)

Memorandum of Understanding

*between National Society of Professional Surveyors and
International Right of Way Association*

I. Purpose

This Memorandum of Understanding (MOU) is entered into between the National Society of Professional Surveyors (NSPS) and International Right of Way Association (IRWA) for the purpose of stating the terms of a mutual agreement between the organizations.

II. Organization of the National Society of Professional Surveyors. The National Society of Professional Surveyors is a professional non-profit corporation which serves the land surveying community. Its mission is to advance and foster the public interest and the general welfare of the surveying profession by educating the public on the benefits of quality surveying services, acting as a liaison for affiliated organizations at the state level encouraging members to adopt and adhere to the highest standards of ethical and professional behavior and to maintain high levels of qualifications through continuing education and professional development, promoting good business practices among members, monitoring national and state laws and regulations affecting the profession, and encouraging recognition and improvement of university and college curricula for the teaching of surveying.

III. Organization of the International Right of Way Association. The International Right of Way Association is an organization made up of people engaged in the acquisition, management, or disposition, of real property or interests therein, in connection with public, quasi-public, or private activities. Its mission is to unite the efforts of its members toward individual development, improved service to employers and the public, and improvement in the body of knowledge related to the professional tasks of its members. To achieve these goals, the Association provides a Code of Ethics and Rules of Professional Conduct, a forum for the exchange and advancement of ideas, education courses and seminars and a program of professional development.

IV. Recognition. The National Society of Professional Surveyors recognizes that the International Right of Way Association is the pre-eminent source of training for and contact among right of way professionals, including specialists in law, surveying and engineering, negotiation appraisal, property management, environment, and relocation.

The International Right of Way Association recognizes the National Society of Professional Surveyors as the principal organization representing the interests of Professional Land Surveyors in the United States.

V. Principles of Cooperation

In recognition of their common objectives, the National Society of Professional Surveyors and the International Right of Way Association hereby agree to cooperate in promoting membership in both organizations, appointing a member of each organization to serve as liaison to the other, and offering member rates for educational courses, seminars, and other activities to members of either organization.

VII. Amendment Procedure

This Memorandum of Understanding may be amended at any time in the following manner:

- Amendments requested by the President and Board of Directors of NSPS shall be forwarded to the President of IRWA for consideration by the Executive Committee at its next regular meeting.

- Amendments requested by the President and Executive

Committee of IRWA shall be submitted to the President of NSPS for consideration by the Board of Directors at its next regular meeting.

Once all parties have reached agreement on the proposed amendment, the MOU shall be and the amended provision marked with an asterisk in the left margin and REVIEW followed by the date at the bottom of the page. The identification need remain only until the page is again amended.

- The amendment shall become effective on the last date shown on the amendment when signed by both parties to the original MOU.

VII. Mutual Hold Harmless and Indemnity Agreement

Each party agrees to indemnify and hold the other harmless from any and all claims, demands, liabilities, charges, and causes of action, of any type or nature whatsoever, arising out of or in any way related to the intentional or unintentional acts or omissions of its officers, directors, members, employees, servants, agents, and representatives.

VIII. Effective Date

This MOU shall become effective on the last date shown below when executed by both parties hereto. This MOU is valid and binding until termination by either party upon 60 days written notice.

Signed: President, NSPS and President, IRWA



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