

WHY WE MUST HAVE A FOUR YEAR BACCALAUREATE DEGREE IN A SURVEYING RELATED CURRICULUM

BY JUD ROUCH, President, Arkansas Society of Professional Surveyors
(reprinted with permission from Side Shots, May Journal 1992, Volume 23, Number 2.
Side Shots is the quarterly publication of the Professional Land Surveyors of Colorado Inc.)

The first and foremost reason is that the apprentice method of learning surveying is no longer capable of covering the magnitude of the required knowledge needed to be a complete professional surveyor. Secondly, we are not recognized as, and will not be recognized as, equal professionals with others that we interface with until we require the requisite degree for entrance into the profession. I will expand on these concepts in the paragraphs that follow. I have related some of these notions before in previous writings but will cover them here again as justification of our need for the baccalaureate degree.

How do we determine the necessary level of formal education that should be required for entrance that into the profession? We make that determination based on the necessary knowledge base needed to practice surveying today.

Prior to about 1960, adequate hours in surveying subjects were included in the typical baccalaureate program in civil engineering to properly prepare those who chose to make surveying their vocation. In the three decades that have followed, surveying courses have been eliminated from these civil engineering curricula. During this same time period, the techniques and instrumentation of surveying have changed completely. Training as a civil engineer no longer prepares one to be a surveyor!

While surveyors of a few years ago could make their needed measurements with a theodolite and steel tape, they now must understand the use and application of electronic distance measurements, total stations, and global position system receivers. Previously, they could prepare their

plats with simple drafting instruments. Now they must be knowledgeable in computer aided design and geographic information systems. Boundary record data is now often stored in magnetic medium and accessible through computer systems where it was formerly recorded in volumes of record books. The necessary application of random error propagation is becoming more important all of the time.

The majority of the surveyors with the engineering degrees granted during the era when surveying subjects were included in their curricula are at retirement age. In the intervening years, an apprentice route into the surveying profession has been followed. This system does not often prepare a person to perform at the professional level needed in today's complex vocation of surveying, unless it is combined with a rigorous routine of self study or evening professional schooling. In most instances, this apprentice system creates technicians rather than professional surveyors. While surveying will continue to need technicians, it also must have an input of properly educated people or it will not continue to be a viable profession. We in the surveying profession are moving rapidly from being collectors of data to being managers of both data and business. We will continue to make intricate measurement and evaluate boundary evidence, for which we will need sound technical education, but we will also have to exhibit superior management skills. Are we prepared?

Historians of the future will refer to this era as the beginning of a new "age"; some say that it will be called the Information Age? Will surveyors

be among the leading professions in this Information Age. The surveying profession should have taken the lead in geographic information systems technology. We didn't do it! Why not? It was due to the lack of training in a most important aspect of a surveyor's education; the aspect of good business management.

In addition to the necessary usual technical topics, surveyors must learn the diversity needed in management, in business principles, in interpersonal relationships, and in communication for the Information Age.

Today, we need surveyors who are educated in the technical and evidence research and evaluation areas, and also proficient in such skills as communications, oral and written presentations, business principles, management, marketing, and leadership. Surveyors should know how to price their services so they can survive and prosper in a competitive society. We need to produce not only technical surveyors but also surveyors with a total professional potential.

Many surveyors aspire to be practitioners in the private arena. The management of a business is a task that few are prepared for. About 90% of the surveying firms started in the United States fail with the first few years. Is it because the surveyor in charge was not technically qualified? No, it was because he or she was not prepared in the management area. The solution is a four year degree tailored to modern surveying!

Communication skills are a must
In addition to technical engineering related subjects, surveyors need courses in communications, both written

FOUR YEAR cont'd

and oral. This includes aesthetic writing, to put forth our thoughts and to make a presentation in written form so that someone else can very clearly understand what decisions we have made and how we arrived at them. Oral communication is also important. We often need to make verbal presentations, but that is an area of communication training that often is usually lacking in the apprentice system. Another area that is usually very weak without formal training is interpersonal relations. Where do we do much of our work? In small group situations; in direct relationships between ourselves and our clients; one-on-one, or often two or three of us from a surveying firm with three or four representatives from the client firm. A lot of our effort has to go into presentations for various committees such as planning commissions and zoning boards. We must also learn the necessity of a valid contract and the principles of accounting, finance, and the other aspects of basic business management. We must know basic personnel management techniques in order to communicate well with our employees.

A significant amount of what we call general education should be included in the surveyor's baccalaureate degree. Our effectiveness and image are enhanced when we make informed ethical decisions and participate in solutions to humanity's needs. This profession needs to apply its particular expertise to the problems of the modern society. Subjects such as sociology and political science will enhance our abilities to interface with the other professions involved in the solution of these problems.

The needed level of content in future professional development training will mandate that the surveyor have a four year technical degree, or its equivalent, to understand the material being presented. As an example, one must have an adequate background in math and physics to understand the necessary theory of global positioning systems and geographic information systems.

Some in our associated professions such as civil engineering, law, and urban planning think that surveyors are, and should be, subordinate technicians to their professions. As long as we continue to use the apprentice system, they will prevail in that concept. To be recognized as the separate and equal profession that we are, we must mandate a baccalaureate degree for entry into the profession! Of course, we must include the requisite experience factor along with the degree requirement. In a related matter, we should change the LSIT designation to something that denotes internship rather than "in training". Perhaps SI for "surveying intern". And we must treat this experience as an internship, rather than the apprenticeship that it often turns out to be. Among other things, that means that we must payout interns enough that they and their families can afford to stay in the profession!

Another factor to consider is employment opportunities. Most, if not all, federal agency professional positions require that the employee have a baccalaureate degree.

This is also true for professional level employment with most state agencies. Many private professional positions throughout the country do also. The National Society of Professional Surveyors (BSPS), which we are an affiliate of, has declared that the future entry into the surveying profession requires that the baccalaureate degree and the requisite experience be required. If we do not require the same level of preparation as other states do, they will consider our young surveyors to be supporting technicians rather than professionals. We would be doing these young surveyors a great disservice if we allow that to happen!





GPS FOR SURVEYORS

TELEfix Canada is an authorized distributor for Sercel GPS and Magellan GPS and carries a complete line of GPS receivers.

- **SERCEL** GPS Base Stations and Portables (accuracy to sub-centimetre)
- **MAGELLAN** Hand Held GPS Receivers (accuracy to sub-metre)
- Real Time Differential GPS Systems
- GIS Software and Data Collectors
- Dealers across Canada for better service (call for the dealer nearest you)

FREE 6-PAGE GPS NEWSLETTER, CALL OR FAX

TELEfix GPS Ph. (416) 889-9534 Fax (416) 889-9552
155 West Beaver Creek Road, Unit 4,
Richmond Hill, Ontario L4B 1E1

