Some Thoughts on Surveying Engineering

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I would like to respond to Professor Burkholder's article in the last issue of Benchmarks. Professor Burkholder talks about the panel discussion at the recent North American Surveying and Mapping Teacher's Conference. Being a member on the panel, I had several different perspectives than those presented in the article. I would like to stress that these views are my own and are not necessarily the views of the Surveying Engineering program at New Mexico State University much as the views expressed by Professor Burkholder are also his personal views.

A question was raised to the panel about the role of ABET Engineering Accreditation among Surveying Engineering programs. Some discussion, as expressed in the previous article, was about whether students in a Surveying Engineering program should be required to get a full engineering education. The perspective I presented was that students in Surveying Engineering programs should be given the OPPORTUNITY to get a full engineering education along with a full surveying education. Given the restrictions on allowable credits toward a degree now instituted at most state colleges and universities, it would be near impossible to do both and stay within those restrictions.

Using the Surveying Engineering program at NMSU as an example, I feel that the program offers a full surveying education. Within the degree are several options. There are a total of 5 electives , 3 of which must come from engineering classes. Those 3 engineering classes can include more Surveying Engineering coursework which is the option that a majority of Surveying Engineering students take. However, a Civil Engineering graduate could use 3 civil engineering courses to meet the same requirements. Those students getting a dual degree in Civil and Surveying Engineering usually choose that option. A Surveying Engineering student who is not also a Civil Engineering student could take the same 3 civil engineering courses toward his or her degree. The remaining 2 electives can be taken in engineering, business or science/math. Because the Surveying Engineering degree is EAC accredited, the mathematics and science requirements are comparable to those in Civil and other engineering programs. Should a Surveying Engineering major take the appropriate sequence of engineering courses as electives, he or she should have to the basic engineering knowledge needed to pass the Fundamentals of Engineering exam.

This flexibility makes it easier for those students wishing to go into both surveying and engineering to do so. Under this system, a student seeking a dual surveying and civil engineering degree can complete that degree with one addition year of coursework. I see much of the same flexibility built into other Surveying Engineering programs across the country. Some Surveying Engineering programs do required specific engineering coursework but that is primarily because surveyors can perform specific engineering tasks, such as drainage design, in those states.

There is a suggestion that since the Surveying Engineering program is now a partner with the Engineering Technology program that the Surveying program should become a technology program. This would give Civil Engineering Technology students a better chance at getting a second degree in Surveying

Technology. This could have some advantages and might open the door to even more dual degree students. However, it should be pointed out that the TAC criteria are not as stringent as the EAC criteria. The most glaring difference is the number of faculty normally deemed to be essential in presenting a program. Most 4 year TAC surveying programs have only 2 professors. Most ASAC and EAC surveying programs have a minimum of 3 professors. There is more emphasis on complex problem solving at the EAC level and more emphasis of routine surveying tasks at the TAC level. This is not to say that both levels are not needed, but each surveying program across the county must find its niche among the ABET criteria and choose the criteria that seem best for its constituents: the students in the program and the people who will hire them.

Like almost all ABET accredited programs, the NMSU Surveying Engineering program has an advisory group (called the Surveying Engineering Industrial Advisory Committee) that meets periodically with the faculty to discuss needs and other issues, such as ABET accreditation. Most of the people on the SEIAC board hire or are looking to hire NMSU Surveying Engineering graduates. We give great weight to the suggestions of the SEIAC and are constantly revisiting our program to see that their concerns are being met. The SEIAC has repeatedly expressed their contentment with the NMSU Surveying Engineering accreditation commitment. We recently asked the SEIAC for feedback on the required knowledge and skills that graduates should attain in the Surveying Engineering program. I did not note any knowledge or skills that were other than surveying related.