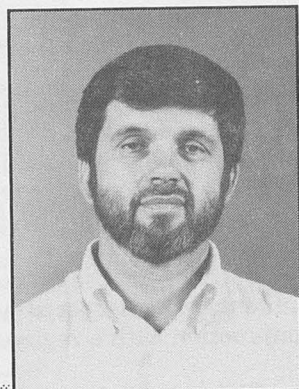


**Dr. James D. Stevens** came to the University of Kentucky in 1988 and is an Associate Professor of Civil Engineering. Prior to that, he was an Associate Professor of Environmental Design at King Fahd University of Petroleum and Minerals in Saudi Arabia from 1985. He also has taught civil engineering at Auburn University, the University of Oklahoma, and served as visiting professor at the University of Washington.

Dr. Stevens earned his B.S., M.S., and Ph.D. degrees from the University of Washington.



GENERAL SESSION  
Friday, September 6, 1991

James D. Stevens  
Professor of Civil Engineering  
University of Kentucky

## CONSTRUCTION ENGINEERING AND MANAGEMENT OPTION AT THE UNIVERSITY OF KENTUCKY

The Construction Engineering and Management Option (CEM) at UK is an area of specialization in the Department of Civil Engineering that is available to undergraduates and graduates alike.

The goals of CEM are to provide construction education through teaching, to extend construction knowledge through research, and to assist economic development through service. These goals benefit the Commonwealth and the construction industry, which has so generously supported the program. CEM has very close ties to the construction industry. Without these ties the program would not exist.

### *How did we get started and what have we accomplished?*

In 1984, Robert McDowell (UK Civil Engineering Class of '35) realized a need for an engineering-based construction program in Kentucky. He gave a gift that would provide funds in late 1991 to endow a chair in civil engineering. This chair would be called the Terrell-McDowell Chair in Construction Management (named after Bob McDowell and Dean Terrell, a former dean of Engineering). Also, in 1984, a construction advisory board was established to provide advice and support, and to raise additional funds for the construction option at UK.

This advisory board now consists of 30-plus contractors from all across Kentucky, representing all areas of the construction industry, plus members from the Corps of Engineers and the Kentucky Transportation Cabinet, and associate members from various trade organizations.

In 1984, Dr. Garey White (then chairman of White and Congleton Construction Company), the first chairman of the Construction Advisory Board, began teaching occasional courses in construction as an adjunct faculty member. In 1985, the Civil Engineering Department integrated a required construction course into their accredited program. From 1985 until 1988, Dr. White and Dr. Jerry Rose taught courses on various aspects of construction.

In 1988, UK and the Construction Advisory Board hired me as a visiting professor for the 1988-89 school year, using funds raised by the industry. I was to help determine how UK could best meet the needs of Kentucky's construction industry and to help focus the advisory board's fund-raising efforts by establishing a timetable for implementation of a construction option in civil engineering. The plan was a success in that it generated interest in construction education and increased financial support from industry.

We were officially recognized as a civil engineering option in fall '89.

Another milestone was reached in 1990 when Ollie Raymond (UK Civil Engineering Class of '54) and Mrs. Anne Hart Raymond pledged \$500,000 toward a second construction chair. This chair will be called the Raymond-Shaver Chair, named after their son, the late William L. Raymond, and Dean Shaver, a former dean of Engineering. The Raymonds' gift is to be matched up to the limit of the pledge. Currently, about \$150,000 has been matched, with \$350,000 more needed to reach the goal of \$1,000,000.

### *Where are we now?*

We now offer technical electives for undergraduates and a range of courses for graduate students pursuing master of science in civil engineering (MSCE), master of civil engineering, and doctor of philosophy (Ph.D.) degrees.

Currently, we offer (on an annual recurring basis) one required undergraduate course in construction, graduate/undergraduate elective courses, and graduate-only courses.

Undergraduates in civil engineering have one required construction course and three technical electives to take for the BSCE. Those choosing the construction option can take all of their technical electives in

construction. Many of the highway scholarship students are doing just that. Courses in the undergraduate construction option are:

- CE 303 Introduction to Construction Engineering (required)
- CE 404 Construction Methodology
- CE 503 Construction Estimating
- CE 505 Construction Planning and Management

This semester, we have 35 undergraduates in the required course and 40 in the two elective courses offered (CE 503 and CE 505).

Courses in the graduate option are:

- CE 503 Construction Estimating
- CE 505 Construction Planning and Management
- CE 601 Construction Equipment
- CE 602 Construction Administration
- CE 709 Computer Applications in Construction

We have 13 graduate students enrolled, 12 master's, and one Ph.D. student. Also, we have one Ph.D. student in the joint UK/UL program.

Other elective courses are offered when available faculty and student interest allow.

In all of these courses, we try to look at construction from several viewpoints—those of owners, designers, and constructors in both heavy/highway and building construction. We emphasize ethics, professionalism, and quality, and try to pay special attention to improving communication skills.

All of our construction graduate courses are offered in the evening. This allows students who work full time to pursue advanced degrees. In addition to the construction courses, students need to take several courses in a related field. We have CEM students taking business, computer science, and math courses, plus graduate courses in other areas of civil engineering such as transportation, structures, and geotechnical.

We have had two CEM students in the Advanced Transportation Institute—one last year and one this year.

Two M.S. students (both Kentucky residents) graduated last year. This year, we expect to have eight M.S. students graduate, four of whom work for the Transportation Cabinet. Our undergraduates are much harder to keep up with, but we have had about 50 students who have chosen the construction option. Of those who have graduated, over half

have gone into the construction industry. Unfortunately, many of the best have gone to work out of state.

We have several research projects under way. One project, "Quality Performance Measurement Systems," is being funded by the Construction Industry Institute. Other non-funded research projects are being conducted by our graduate students.

We are offering a short course, "Engineering Management," through continuing education in early November in conjunction with UK homecoming.

### ***Where are we going?***

We expect the Terrell-McDowell Chair in Construction Management to be filled during this academic year. When this happens, we will be able to increase our efforts in teaching, research, and service.

We hope to fill the Raymond-Shaver Chair within three years, giving us three full-time faculty positions in CEM. In addition to being able to further increase our teaching, research, and service in civil engineering, we hope to be able to offer a new degree for those from academic backgrounds other than engineering—such as architecture, construction technology, and business.

There is currently a large demand for a construction-related M.S. degree, which we cannot meet because accreditation requirements for the MSCE require an undergraduate degree in engineering. With three full-time faculty, we can apply to offer a separate, non-engineering degree—the master of science in construction management. This step will open up the program to many more students, especially those graduates from the four-year technology programs at Kentucky's regional universities. With three faculty members, we also can expand our offerings in short courses and extension programs.

### ***How does CEM benefit transportation programs in the state?***

Benefits of this program to the Kentucky Transportation Cabinet are significant. It provides a source of entry-level engineers who have some knowledge of construction. It provides an opportunity for current highway engineers to further their education in construction through evening courses. It offers opportunities for research in highway construction and multi-disciplinary research in transportation. And, it will provide short courses and extension programs of interest to many in the field of transportation.

As we grow, I feel that a closer tie between CEM and the Transportation Cabinet is very important. The Cabinet has taken a step in establishing that tie by authorizing two scholarships for graduate students in construction engineering and management. I feel confident that CEM's involvement with the Transportation Cabinet will continue to grow, especially as first the Terrell-McDowell Chair and then the Raymond-Shaver Chair are filled.