AN ABSTRACT

APPLICATION OF COMPUTER-BASED TRAINING TOOLS IN
TRAFFIC ENGINEERING EDUCATION

by

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The dissertation intends to explore how expert systems and
other computer-oriented tools can aid traffic engineering
education, particularly in situations in which instructional
staff is limited (in number or experience) or in which the range
of skills of the students varies widely.

To do that, the dissertation addresses the problem by using
two expert system "modules" in addition to the Time-Space Diagram
and Highway Capacity Manual (HCM) computer programs to determine
whether the outcome is indeed effective in training the students
and enhancing the traffic engineering education.

The permanent interaction of students with computer-based
training tools will aid them to understand better the different
aspects of traffic engineering, also it helps in the
retention/qualification of students, in the flexibility in self-matching of skills and student self-paced learning, in addition to learning by doing.

The computer tools which were implemented in the dissertation did match to purpose, since the intentions were to maximize student involvement in essence of lesson to be learned and to match instructor and computer resources available to students.

The focus of the dissertation was on Signalized Intersection, through the development of two expert system programs dealing with Phasing and Sizing aspects. The purpose of the application of phasing was to address problems which involve more judgement and options through decision-making, the T-S Software emphasized the need of students to focus on essence rather than learning computer, while the HCM program demonstrated the ability to remove the burden of learning computation.