PROJECT DESCRIPTION

PROJECT NUMBER:
02413

PROJECT TITLE:
Comparison of Traffic Simulation Software for Analysis of Transportation Alternatives

PRINCIPAL INVESTIGATOR:
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PROJECT OBJECTIVE:
The purpose of this project is to conduct a review and comparison of three commercially available traffic simulation software packages. The methodology and results of the study will be documented and a recommendation regarding the applicability of each package to various types of analyses will be forwarded to the Regional Planning Commission of Greater Birmingham (RPCGB) and other interested entities throughout the State.

PROJECT ABSTRACT:
Currently, many planning agencies rely on a regional transportation model for analysis of transportation system alternatives. To examine the impacts of system alternatives in greater detail (e.g., highway access, interchange configuration, lane geometry), the RPCGB has expressed an interest in exploring the use of microscopic traffic simulation models. It is intended that the performance measures generated from such simulation models, as well as their visualization capabilities, will allow detailed operational analyses of key corridors in the area and will assist in determining the effectiveness of potential access management practices. This project consists of a comparison and review of three commercially available traffic simulation software packages: CORSIM (version 4.32), SimTraffic (version 5.0), and GETRAM (version 4.0). Each simulation package will be evaluated using the following four types of corridors: Interstate, denied access principal arterial, signalized principal arterial, and urban collector. Each package will be evaluated according to the following criteria: system requirements, ease of coding, data requirements, relevance/accuracy of performance measures reported in the output; interoperability of input/output with other traffic analysis packages (e.g., Transyt, Highway Capacity Software), and versatility/expandability (ITS evaluations, incident management, HOV facilities, ramp metering, etc.).

PROJECT TASK DESCRIPTIONS:
1. Perform a literature review to identify similar previous studies.
2. Finalize the selection of the four corridors to be modeled.
3. Finalize evaluation criteria. Develop a system (quantitative and qualitative) to compare capabilities among simulation packages.
4. Identify data needs/sources and compile data (geometry, traffic control, volumes, etc.).
5. Code the interstate corridor into each of the simulation models (CORSIM, SimTraffic, GETRAM). Run simulations and compare results.
6. Present initial results to RPCGB.
7. Code the denied access principal arterial corridor into each of the simulation models. Run simulations and compare results.
8. Code the signalized principal arterial corridor into each of the simulation models. Run simulations and compare results.
9. Code the urban collector corridor into each of the simulation models. Run simulations and compare results.
10. Compile results of all comparison and develop recommendations for application of simulation packages.
11. Summarize all project efforts in a final report for submittal to UTCA and RPCGB.

MILESTONES AND DATES:
The project should begin on October 1, 2002 and end on September 30, 2003.
Tasks 1-4 are estimated to take five months.
Tasks 5-6 are estimated to take three months.
Tasks 7-9 are estimated to take two months.
Tasks 10-11 are estimated to take two months.

TOTAL BUDGET:
One-year project; Regional Planning Commission of Greater Birmingham $35,818.

STUDENT INVOLVEMENT:
The students hired to work on this research project will be responsible for developing the simulations for the selected corridors in the Birmingham area.

RELATIONSHIP TO OTHER RESEARCH PROJECTS:
This project is a companion to UTCA project 02217 (Traffic Simulation Software Comparison Study), which will perform an evaluation of simulation software in Birmingham.

TECHNOLOGY TRANSFER ACTIVITIES:
The technology transfer activities related to this proposal will be evident through the results of this project, as the recommended software is intended to be used for future traffic analysis with in Birmingham, and potentially, statewide.

POTENTIAL BENEFITS OF THE PROJECT:
It is anticipated that this research effort will result in (1) a final report to be made available to RPCGB and other interested parties throughout the State (e.g., ALDOT, other MPO’s, consultants interested in traffic simulation, (2) two or more technical articles in a trade journal (e.g., ITE Journal, Traffic Technology International) detailing specific lessons gleaned during the research, (3) an academic paper describing the methodology and results of the research, and (4)
the basis for a subsequent project to develop and administer a series of short courses on the chosen simulation package(s) to audiences statewide (ALDOT, MPOs, consultants, etc.).

TRB KEYWORDS:
Traffic Simulation, Alternatives Analysis