UTC PROJECT DESCRIPTION

PROJECT NUMBER:
02217

PROJECT TITLE:
Traffic Simulation Software Comparison Study

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

ABSTRACT:
Currently, many planning agencies rely on a regional transportation models 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 anticipated 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. They should also 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 models: CORSIM (version 4.32), SimTraffic (version 5.0), and GETRAM (version 4.0). Each simulation package will be evaluated using the following four corridor “types:” Interstate, Denied Access Principal Arterial, Signalized Principal Arterial, and Urban Collector. Each package will be evaluated according to system requirements, ease of
Task Descriptions:

1. Perform a literature review to identify any previous studies relevant to that proposed herein.
2. Finalize the selection of the four corridors to be modeled — initial input from RPCGB has indicated that the following corridors are appropriate:

   - Northern Beltline From I-459 to I-59 near Argo (52 Miles, 15 Interchanges)
   - Corridor X From Walker County Line to I-59 east of Birmingham (16 Miles, 9 Interchanges)
   - US-31 From Elton B. Stephens Expressway to SR-25 in Calera (26 Miles, 4 Interchanges and XX Intersections)
   - Chalkville Mountain Rd. (Jefferson CR-10) From Springville Rd (Jefferson CR-30) to Poplar St. in Trussville (2 Miles, 1 Interchange, 12 Intersections)

3. Finalize evaluation criteria. Develop a system (quantitative and qualitative) to compare capabilities among simulation packages.
4. Identify data needs/sources and begin compiling 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 the UTCA. With respect to the UTCA obligation to RPCGB, it is expected that twelve complete model sets (one CORSIM, one SimTraffic, and one GETRAM) for each corridor will be delivered to RPCGB electronically.

Milestones and Dates

1. Sep-Oct 2002
2. Sep-Oct 2002
5. Sep 2002 - Jan 2003

YEARLY AND TOTAL BUDGET:
One-year project, UTCA share $34,574; matching $34,574; total budget $69,148.

STUDENT INVOLVEMENT
One graduate student from the CEE Department at UAB and one from UAH will be involved in this study.

RELATIONSHIP TO OTHER RESEARCH PROJECTS:
This will be a partner project to UTCA project 02413, which is being conducted at the University of Alabama in Huntsville, using funding provided by the RPCGB.

TECHNOLOGY TRANSFER ACTIVITIES:
It is anticipated that this research effort will result in several technology transfer products: (1) a final report to be made available to RPCGB and other interested parties throughout the State (e.g., ALDOT, other MPO’s, and consultants interested in traffic simulation), (2) two or more technical articles in trade journals (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, MPO’s, consultants, etc.).

POTENTIAL BENEFITS OF THE PROJECT:
The proposed research directly supports the “management” aspect of the UTCA theme. The results of research will provide direct guidance regarding the applicability of traffic simulation models for transportation alternatives analyses. This guidance will be useful to the Alabama Department of Transportation, other agencies throughout the State that perform transportation planning, as well as a foundation for direction of consultants performing alternative analyses. The project will also support technology transfer, as the final report will provide information to individuals and organizations with less experience in the area of traffic simulation. The project also builds (and expands) the technical capacity at both UAB and UAH to develop and deliver training courses on traffic simulation as required by agencies throughout the State. Also, it is expected that the research team will pursue publication of project results in both trade and scholarly journals.

TRB KEY WORDS:
simulation, ITS, operations, transportation planning, alternatives analysis