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Center for Advanced Infrastructure & Transportation
Rutgers, The State University of New Jersey

PROJECT OVERVIEW REPORT

- 1. Center Identifying Number**
NJTPK RU9340
- 2. Project Title**
New Jersey Turnpike and Garden State Parkway Traffic Simulation Model
- 3. Principal Investigator**
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- 4. Sponsor Principal**
Barbara Burns
New Jersey Turnpike Authority
Interchange 9 and Route 18
East Brunswick, NJ 08816
- 5. Project Objective**
To develop, calibrate and validate the Garden State Parkway (GSP) network and integrate it with the fully calibrated NJ Turnpike (NJTPK) simulation model.
- 6. Project Abstract**
Develop, calibrate and validate the Garden State Parkway (GSP) network and integrate it with the fully calibrated NJ Turnpike (NJTPK) simulation model. Build this portion of the network in a phased approach, coordinating with NJ TPK staff to identify priority segments, starting with GSP Interchange 135, Clarke Traffic Circle and connecting local network. Closely collaborate with Vollmer Assoc. Inc. to support the in-depth analysis of the alternative proposed for the Interchange 135, Clarke traffic circle. (A small portion of the local network and traffic circle will be modeled to capture the interaction between the circle and the traffic signals and other local traffic.)
- 7. Task Descriptions :**
Task 1 - Create Garden State Parkway Traffic Simulation Network, phased
Develop, calibrate and validate the Garden State Parkway (GSP) network and integrate it with the fully calibrated NJ Turnpike (NJ TPK) simulation model. Build this portion of the network in a phased approach, coordinating with NJ TPK staff to identify priority segments, starting with GSP Interchange 135, Clarke Traffic Circle and connecting local network. Closely collaborate with Vollmer



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Assoc. Inc. to support the in-depth analysis of the alternatives proposed for the Interchange 135, Clarke traffic circle. (A small portion of the local network and traffic circle will be modeled to capture the interaction between the circle and the traffic signals and other local traffic).

- Task 2 - Complete GSP network in phases. Develop next segments or phases of GSP network based on the priority sections determined by the Authority needs, including coding the network using geographic information systems data, satellite pictures and other data available through the Authority and NJDOT. Develop origin and destination demand matrix using NJDOT planning model, E-ZPass and other GSP specific data available through the Authority and its consultants. Calibrate the model using actual traffic counts. Integrate the two divisions into a fully functional simulation model, to the extent possible in 12 months timeframe. The integrity of each division will be maintained. The complexity of this custom application will require ongoing fine tuning and continued calibration of the whole network.
- Task 3 - Develop and apply custom traffic analyses. Facilitate and arrange best use of the TPK traffic simulation model for the Authority by developing up to four (4) custom traffic analyses applications in 12 months. Applications, to be agreed upon with TPK staff, can include evaluation of lane closures/delays; optimal location of ITS devices; evaluation of traffic impact of various lane configurations at toll plazas; evaluation of various incident management strategies; evaluation of various geometric changes/additions; evaluation of before and after impacts of toll plaza removals/reconstructions. Estimates for the designing additional analysis applications can be provided upon request.
- Task 4 - Technology transfer, training and support. Assist and support the Authority to implement and use the TPK Traffic Simulation model at its facilities, including training and support for staff through technology transfer activities on site and on Rutgers campus. Develop protocols and procedures for network maintenance, updates, upgrades etc. Develop a plan for sharing and continued use and support.

8. Milestones/Dates

Task 1: Create GSP Traffic Simulation Network	09/2005
Task 2: Complete GSP network in phases	09/2006
Task 3: Develop and apply custom traffic analyses	09/2006
Task 4: Technology transfer, training and support	12/2006



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9. Yearly and Total Budget

	Year One	
NJ Turnpike Authority Sponsorship	(09/01/05-12/31/05)	\$50,002
	Year Two	
NJ Turnpike Authority Sponsorship	(01/01/06-12/31/06)	\$100,064
	Total	
NJ Turnpike Authority Sponsorship	(09/01/05-12/31/06)	\$150,066

10. Student Involvement

One (1)-Post-Doc Research Associate
One (1)-Graduate Student

11. Relationship to Other Research Projects

- 129 RU6544 Operation Improvements at Traffic Circles

12. Technology Transfer Activities

Assist and support the Authority to implement and use the Turnpike Traffic Simulation model at its facilities, including training and support for staff through technology transfer activities on site and on Rutgers campus. Develop protocols and procedures for network maintenance, updates, upgrades etc. Develop a plan for sharing and continued use and support.

13. Potential Benefits of the Project

Fully calibrated and validated GSP Interchange 135 Traffic Circle Simulation and report documenting production.

14. TRB Keywords

Traffic Circle, Simulation, Traffic Simulation, Interchanges

15. TRB Code Words

Pmrcpjfc, Ubms, Btfs, Pmrcpjs