

Modeling the future of island traffic in Trinidad and Tobago

On an island, traffic problems can quickly spiral out of control. Alternative routes are limited and traffic is usually concentrated on urban centers close to road-restricting coastlines. On the southwestern peninsula of the Caribbean island of Trinidad, roads are becoming overloaded more than most. The narrowing coastline to the north and south sandwiches between it several urban regions: Debe, Penal, Siparia, Fyzabad, La Romaine, Oropouche, La Brea and Point Fortin. Road building in the region is seen as essential, and some improvements have already been carried out. Now, a local activist group (LAG) has developed a plan for where the next essential arteries should be constructed. Transportation planning consultant Dr Rae J Furlonge used TSS-Transport Simulation Systems' Aimsun software to model exactly what effects the proposed improvements will have.

Getting active

The LAG has presented its Optimum Connectivity Proposal to the National Infrastructure Development Company Limited. The LAG wants to capitalize on improvements to the main coastal highway (the South Trunk Road) by joining it up to the inland population center of Debe, using further road improvements. It is necessary, it says, to adjust the new arterial system to be closer to the urban centers from which the high traffic is generated.

The Optimum Connectivity Proposal includes a new four-lane highway and two-lane connecting road, which would be partly constructed by improving existing roads.



Need to know

Features of Aimsun 8 Expert's new four-step demand modeling

- Transportation modeling projects can now be started from scratch with raw geographical and socioeconomic data
- New objects include transportation modes, time periods, vectors, areas, generation/attraction and distribution data sets
- New visualization modes required by the traffic-demand modeling community

Assessing the impact

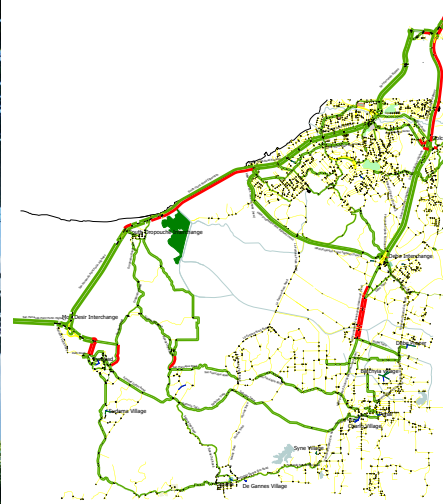
Aimsun software was used for travel-demand forecasting, as well as traffic macroscopic network modeling and analysis.

The software was able to: determine the functional road network requirements of the study area; build and edit the spatial network, including road, intersection and interchange types, as well as lane widths, number of lanes and other geometric features; determine the lane and intersection operational attributes; create traffic centroid nodes and compute OD traffic data matrix by mode, from data taken from traffic surveys collected in 2012; determine the link directional capacity and speed values; run the model using the Frank-Wolfe Method for Equilibrium Traffic

Assignment; and display results on a map, showing traffic volume to capacity ratios.

Aimsun modeling established that the LAG proposals will lead to very high volume/capacity ratios (above 1.0) on key parts of the network and also significant and unnecessary overuse of the South Trunk Road expansion.

As a secondary conclusion the modeling also concluded that road hierarchy is not readily recognized by motorists in Trinidad and Tobago, with the primary consequence that they feel they should be allowed to use any roadway, in their quest for short-cuts. This practice, if permitted to continue, is likely to have dangerous consequences, such as the degradation of the quality



(Left) Trinidad's urban centers are concentrated close to coastlines, which presents particular challenges when it comes to managing traffic
(Above) Aimsun software was used to model the potential effects of new road building on traffic flows in southwest Trinidad over the next 20 years

of life for local residents and severe road safety implications.

Despite the drawbacks of the LAG proposal, the Aimsun models concluded that an urban primary arterial system is indeed urgently needed on Trinidad's southwestern peninsula to improve accessibility to the major urban centers in the region. And it will be necessary to adjust the new arterial system to be closer to urban centers from which the high traffic is generated. ○

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