

# **Evaluating adequacy of traffic optimization models under local traffic conditions**

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Civil Engineering

May 2007

Abstract

The growth of in urban traffic congestion has been recognized as a serious problem in all large metropolitan areas in Saudi Arabia. Therefore, improving traffic signal operation and reduction of vehicle-operating costs by optimizing signal timing plans is one of the most important solutions. Arterial signal optimization models were developed to assist traffic engineers in coordinating traffic signal settings along urban arterials and around networks.

Each model was developed with different backgrounds and different algorithms. Each model has its strengths and weaknesses and it's not ideal for every situation. Therefore, the analyst should select the program that satisfies the project objectives and the traffic conditions for a particular study. Also, the analyst should ensure that appropriate changes of default parameters are made based on the field measured data and not only on engineering judgment.

The main objective of this study is to evaluate the adequacy of the state-of-the-art TRANSYT-7F and Synchro to the local traffic conditions of Eastern Province, Saudi Arabia. To achieve this main objective TRANSYT-7F and Synchro were checked whether they could be calibrated to yield accurate queue length. Also, optimal signal timing plans were developed using TRANSYT-7F and Synchro. Each optimal signal timing plan was simulated using TRANSYT-7F and SimTraffic. The main results of this study indicated that queue length calibration process was carried successfully in TRANSYT-7F but queue length in Synchro could not be calibrated in a meaningful way to the field conditions. Signal timing plan resulted by Synchro improves the system performance more than signal timing plan resulted by TRANSYT-7F. This was true when the plans were simulated by TRANSYT-7F and SimTraffic.