

AN ABSTRACT OF A THESIS

REAL-TIME TRAFFIC SIGNAL DELAY ESTIMATION USING STATE-OF-THE-PRACTICE DETECTION TECHNOLOGY

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The objective of this thesis was to see if state-of-the-practice detection technologies could be used to gather real-time delay information at a signalized intersection. Three situations were tested using simulation and field data. The first was a roadway with an excessive number of loops placed on it, the second systematically reduced the number of loops along the roadway, and the third used two loop systems in which a loop is placed at the stop bar and another is located some distance upstream from the stop bar.

A simulation model was developed as a proof-of-concept. It was created using VISSIM, a microscopic traffic simulation model. The simulation models attempt to replicate real-life traffic operations and records the operational characteristics. The simulation proved delay estimation was possible using state-of-the-practice detection technology. The estimation did, however, deteriorate as the number of loops was reduced.

A field model was then developed. State-of-the-practice video detection was used to create the same situation as modeled in the simulation. The field tests were able to estimate delay with varying degrees of reliability. Again the estimation deteriorated as the number of loops was reduced, but the method does show potential for real-world applications.