整合路口衝突延滯之號誌時相與時制設計分析

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摘要

This study develops an analysis process to integrate signal phases and timings design. The experimental design is used to establish factors and levels for simulation analysis by software packages. The design of the minimum vehicle delay is determined. Since the signal design software cannot analyze the conflict delay between a left-turn movement vehicle and a through movement vehicle, this study further conducts a field survey to analyze the conflict delay and then develops related random variates. The Monte Carlo simulation is used to analyze the average vehicle conflict delay in various road and traffic conditions. The average vehicle conflict delay is added to the results of the analysis software packages. Results show that the average vehicle delay in two- phase signal design significantly increases. However, it is still the optimal signal design. The average vehicle delay increases significantly when the traffic flow increases. In addition, the average vehicle delay in the separate-movement phase design is bigger than that in the left-turn protection phase design, and the average vehicle delay in the left-turn protection phase design is bigger than that in the two-phase design.

關鍵字：Signal, Phase, Timing, Conflict Delay, Simulation.