NCHRP FY2002 STAGE 1 PROBLEM STATEMENT

1. PROBLEM TILE

PEDESTRIAN TIMING STRATEGIES IN COORDINATED SIGNAL SYSTEMS

2. RESEARCH PROBLEM STATEMENT

Pedestrian timing has always been an important consideration when developing signal timing for coordinated signal systems. There are two general practices on pedestrian time considerations while developing coordinated signal timing plans. The first alternative is called *timing based on vehicle minimum* where the phase split is determined solely based on vehicle demand. The second alternative is called *timing based on pedestrian minimum* where the phase split (concurrent vehicle phase) has to satisfy the pedestrian crossing time. For coordinated signal systems, the advantages and disadvantages of the two timing alternatives are as follows:

- Timing based on pedestrian minimum would keep the signal on-line all the time regardless whether there are pedestrian calls or not.
- Timing based on vehicle minimum could result in the signal to be out-of-synchronization or coordination, which would disrupt normal traffic progression.
- Timing based on pedestrian minimum will likely set up constraints on the minimum cycle length. Longer cycle length may result in excessive delays to non-coordinated movements.

Unfortunately, the selection of a timing alternative is now carried out primarily based on personal preferences. There are no specific guidelines on what timing alternative to choose based on certain system configurations as well as traffic and pedestrian flow characteristics. The lack of understanding of the potential effect on traffic operations has been profoundly noted among traffic engineers.

3. OBJECTIVES

The main objectives of this research include:

- Evaluate the timing alternatives with regard to pedestrian crossings
- Develop guidelines on appropriate selection of the timing alternative based on pedestrian volume threshold and system characteristics

4. ESTIMATE OF THE PROBLEM FUNDING AND RESEARCH PERIOD

The total time duration for the project is expected to be 18 months. The required funding for the project is approximately $250,000.
5. URGENCY AND PAYOFF POTENTIAL

Traffic engineers are in urgent need to have thorough understanding of the pedestrian impact on coordinated signal systems. Guidelines on pedestrian timing strategies would have immediate benefit to assist traffic engineers to develop more efficient signal timing plans, thus improve system efficiency and reduce vehicle delay, stops and environmental impact.

6. PERSONS DEVELOPING THE PROBLEM

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