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JENNIFER M. GRANHOLM
GOVERNOR



STATE OF MICHIGAN
GOVERNOR'S TRAFFIC SAFETY
ADVISORY COMMISSION
LANSING

ROBERT MORRIS
CHAIR

January 11, 2008

The Honorable Louise Schilling
City of Troy Mayor
500 West Big Beaver Road
Troy, MI 48085

Dear Mayor Schilling:

Congratulations! The Governor's Traffic Safety Advisory Commission (GTSAC) is honoring your city with a traffic safety award for the city wide upgrade of traffic signals, specifically to address intersection safety. This award recognizes the outstanding contributions this program has provided for the safety and well being of Michigan's motorists in addressing intersection crashes. Your project was nominated by Mr. David Morena, FHWA office, on behalf of the GTSAC Intersection Safety Action Team.

You, or a representative, are invited to accept the award at a luncheon scheduled during the 13th Annual Michigan Traffic Safety Summit on Thursday, March 13, 2008, at the Kellogg Hotel & Conference Center in East Lansing. You are welcome to bring up to four guests. **Attached is a form to be faxed to the Office of Highway Safety Planning (OHSP) by February 1, 2008.** This form is intended to verify that correct spelling and accurate information are imprinted on the plaque. **You should plan to be at the Summit registration desk by 10:50 a.m. on the day of the luncheon for an award recipient reception with the members of the GTSAC.**

In case you are unfamiliar with the GTSAC, it was created by a Governor's Executive Order in 2002, and includes the representatives from the state departments of Community Health, Education, State, State Police, and Transportation, and the Office of Highway Safety Planning, Office of Services to the Aging and three local agency representatives. Each year individuals and groups are honored by the GTSAC for their special involvement and dedication to traffic safety.

Once again, congratulations on your achievement. Should you have any questions, please feel free to contact Debbie Sonnenberg of OHSP at 517/333-5301. We look forward to seeing you at the Traffic Safety Awards Luncheon.

Sincerely,

A handwritten signature in cursive script that reads "Robert K. Morris".

ROBERT K. MORRIS, CHAIR

RKM:ds

Enclosure

cc: John Abraham, City Engineer
Phil Nelson, City Manager
David Morena, FHWA

Robert Morris, Governor's Office • Michael Prince, Office of Highway Safety Planning • Linda Scarpetta, Community Health
Dwight Sinila, Education • Anne Corgan, State • Capt. Robert Powers, State Police • John C. Friend, Transportation •
Pamela Hall, Office of Services to the Aging • Sheriff Allen Byam, Local Representative
Steven Puuri, Local Representative • Chief David Stamm, Local Representative

Nomination Summary for: Intersection Safety Award

City of Troy

City-wide upgrade of traffic signals to install ITE recommended yellow and all-red clearance intervals

Issue: During the operation of a traffic signal, a clearance interval is provided, following the green display, to allow traffic already in the intersection to proceed safely through the intersection, prior to release of cross-traffic. This clearance interval always includes the yellow (amber) display, and may include a portion of the red display (during which time the cross-traffic is also facing red, so this occurrence is called an "all-red" interval). Traffic control standards governing these intervals are somewhat flexible, and there are conflicting schools of thought in this country as to whether use of an all-red period is desirable. From inception of the traffic signal program in Michigan, most signals statewide have been timed with a clearance interval that includes a relatively long yellow period and a brief, nearly non-existent (0.1 sec.) all-red period.

There is national guidance on this issue. The national Institute of Transportation Engineers has provided guidance for agencies that want to include all-red in their clearance intervals. Several studies across the country have indicated that a clearance interval designed with site-specific yellow time, based on speed of approaching vehicles and all-red interval based on width of intersection has been shown to reduce intersection crashes, and specifically, red light running crashes.

Summary: John Abraham, Traffic Engineer for the City of Troy, was aware of the national guidance, and also of some similar work performed here in Michigan, by Wayne State University. Dr. Abraham requested that timing on all 145 traffic signals in Troy be revised to include the calculated ITE yellow and all-red interval. This request was made along with calculated clearance interval timings as per ITE formula to the Road Commission for Oakland County, maintainer of the Troy signals, who then revised the timings on all the signals during mid 2003 to late 2004. The revised timings included all-red intervals of 1.0 to 2.5 seconds for all of the signals – a significant difference from the existing timings.

Fund source: The Road Commission for Oakland County accomplished the revised timings with funding from traffic signal maintenance funds, shared by RCOC and Troy. No federal funds were used. The RCOC share came from the local agency funds received by the local agencies through the State formula (Public Act 51 of 1951). Troy funds were from the City of Troy General Fund.

- Timing calculations – Were done by John Abraham, City of Troy.
- Physical retiming of controllers – approx \$22,000. The RCOC crews installed timings, costing around \$150 per intersection (cost of one crew for an hour at each intersection).

Impact: The intent of the retiming was to reduce the amount of intersection crashes that occur at cycle changes, when traffic from two approaches at a 90-degree angle would try

to occupy the intersection at the same time. These crashes are called “angle” or “T-bone” crashes, and they are generally the most severe of all intersection crash types.

In an effort to analyze the safety impact of the retiming, Dr. Abraham analyzed crash history for the city's 20-highest crash intersections, using crash data for two years before and two years after the date of each signal's modification. The result: for these top 20 intersections, in the 24 months following signal retiming, Troy experienced

- an average reduction of 95 crashes per year (15% reduction in total crashes), and
- an average reduction of 18 angle crashes per year (19% reduction in targeted crashes).

The National Safety Council provides estimates of the costs involved with traffic crashes, including wage and productivity losses, medical expenses, administrative expenses, motor vehicle damage, and uninsured employer costs. For 2005, the NSC estimates the following costs for a motor vehicle crash:

- death - \$ 1,150,000
- disabling injury - \$ 52,900
- property damage / non-disabling injury - \$ 7,500

Given these estimates, the average 95 crashes per year reduced at just the top 20 Troy intersections translates into a benefit of approximately \$1.4 M per year, in the two years, a 6400% yearly return on the \$22,000 citywide investment. The other 125 intersections in Troy also have experience an overall reduction in crashes.