M A S S

INTERCHANGE

Volume 18, Number 2 Spring 2004

Crosswalk Markings

for Better or Worse?

Pedestrian Fatality Facts:

- Pedestrians account for 12% of all traffic fatalities.
- Over three-quarters (78%) of all pedestrian fatalities occur at non-intersections, and over half (54%) of these are on roads without cross walks.
- Of the pedestrian fatalities at intersections, over 40% are at intersections with no marked crosswalk.
- About 30% of all pedestrian fatalities are related to improper crossing of the roadway or intersection.

Will marking crosswalks save lives?

In considering how to provide safer crossings for pedestrians, the question should NOT simply be: "Should there be a marked crosswalk or not?" Instead, the question should be: "What are the most effective measures that can be used to help pedestrians safely cross the street?" Providing marked (painted) crosswalks is only one of the many measures that may be used at a pedestrian crossing to improve safety. Appropriate measures will depend on site conditions.

Crosswalk Controversy:

There is considerable controversy in the U.S. over whether providing marked crosswalks will increase or decrease pedestrian safety at crossing locations not controlled by a traffic signal or stop sign. Public opinion generally holds that a marked crosswalk is a tool that works to enhance pedestrian mobility and safety. Markings are viewed as proof that pedestrians have a legitimate right to share the roadway. However, by legal definition, crosswalks may exist whether they are marked or not. Crosswalks, legally are defined as existing at all public street intersections; marked crosswalks are only required at mid-block locations. People

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LTAP Local Technical Assistance Program

(413) 545-2604 http://www.ecs.umass.edu/baystate_roads

New Master Roads Scholar from Wrentham

Baystate Roads is happy to announce the achievement of a new Master Roads Scholar. Robert J. Reardon, the public works superintendent at the Town of Wrentham, has successfully fulfilled requirements for this award by attending a minimum of twenty-two training workshops. His interest in further education has continued since he earned a Bachelor's degree from Cornell University in 1983 followed by a Master of Business Administration from Nichols College in 2000. In 1997 he became a Baystate Roads Scholar and was awarded a certificate, T-shirt and letter of commendation. Bob always tries to attend one of the snow and ice control workshops presented by Baystate Roads each year because he has found these to be especially helpful.

Bob has held his current position at Wrentham DPW since 1995. As superintendent, he oversees 20 employees and 72 miles of local roads -- a typical combo for many towns in the Commonwealth. He says, "Fiscal challenges to deliver quality services with continuing cutbacks are his main concerns but that these problems currently plague most towns. I constantly strive to provide a quality product with fewer and fewer resources."

As a member of the American Public Works Association, Bob also contributes to the Legislative Advocacy Task Force, a presidentially appointed committee.

Bob resides in Wrentham with his wife Tracy and children Joe and Samantha. In his spare time, he enjoys running plays as the head coach of the football team at King Philip Regional High School.

Mr. Reardon will receive a Wearguard jacket of his choice, an engraved brass plaque and letter of congratulation from our program manager. Please acknowledge his achievement when you see Bob Reardon at the next Baystate Roads workshop.

NATIONAL HIGHWAY CONSTRUCTION SPECS ON WEB
www.fhwa.dot.gov/construction

Specifications for highway construction and design are constantly in flux, which presents problems for engineers and transportation professionals needing the latest information to build safe and cost-effective transportation systems. With 50 State Departments of Transportation (DOTs) and other national transportation agencies constantly changing, updating and issuing new specifications on an as-needed basis, tracking specifications for new ideas, concepts, and processes becomes an implementation challenge.

The Federal Highway Administration (FHWA) and the American Association of State Highway and Transportation Officials (AASHTO), has launched a National Highway Specification website, providing state-of-the-art methods to electronically access and search specifications from National Transportation Agencies (NTAs), all State DOTs, AASHTO, the District of Columbia, the Territory of Puerto Rico, and many highway-related organizations. The site contains the most current approved specifications from across the country, emerging specifications utilizing innovative contracting practices, knowledge-based web pages with discussion forums, and related industry links.

The group envisions the website as a clearinghouse and electronic library for searching, reviewing, cross-referencing, and downloading the most up-to-date specification information. Features include:

□ National Highway Specifications website -- select "Massachusetts"

□ Construction Program Guide -- intended to provide fast, easy access to Federal-aid construction program regulations, policy, guidance, and training. All construction related information is consolidated under key subject areas, with links to related information. The website provides a consolidated source for Federal and State construction personnel to find updated information about FHWA's construction progams.

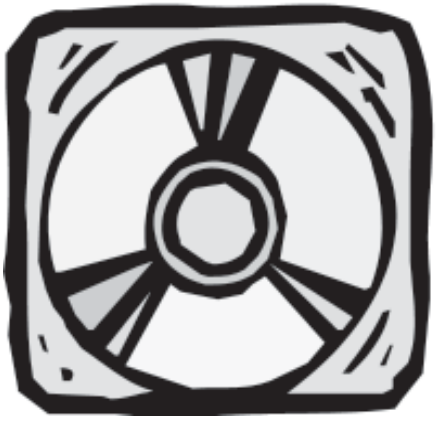
□ MUTCD - Official Rulings Database -- a resource for information about FHWA interpretations, experimentations, and MUTCD changes.

□ Utility Coordination Video

□ Construction Management Contacts

□ OSHA Directive -- Inspection policy and procedures for OSHA's steel erection standards construction

□ Generic Construction Related Review Guidelines -- Developed to provide the FHWA Division Offices and State DOTs with examples of process and in-depth reviews that have been undertaken by various field offices. These generic "samples" should be modified as appropriate to meet your specific program needs.



Crosswalk Markings

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tend to "feel" safer crossing in a crosswalk; many assume that drivers will be able to see the crosswalk markings equally as well as pedestrians, making it safer to cross between the lines.

When citizens request the installation of marked crosswalks, some engineers and planners still refer to the 1972 study by Bruce Herms as justification for not installing marked crosswalks at uncontrolled locations. Herms' study found an increased incidence of pedestrian collisions in marked crosswalks, compared to unmarked crosswalks, at 400 uncontrolled intersections in San Diego, California. Questions have been raised about the validity of that study, and the study results have sometimes been misquoted or misused. The study did NOT conclude that all marked crosswalks are "unsafe." Other studies have tried, unconclusively, to address this same issue since the Herms study, however, disagreement and confusion remain.

New Findings on Crosswalk Markings

A recent, landmark study undertaken by the University of North Carolina at Chapel Hill for the Federal Highway Administration (FHWA), yields fresh results about crosswalks and pedestrian safety at uncontrolled intersections. This study is based on 5 years of pedestrian accident data at 1,000 marked crosswalks and 1,000 matched, unmarked crossing sites. All of the sites were uncontrolled (had no traffic signal or stop sign on the approaches).

According to this study, under no condition did the presence of a marked crosswalk alone at an uncontrolled location result in a significantly lower pedestrian accident rate when compared to the pedestrian accident rate of an unmarked crosswalk. Furthermore, on multi-lane roads with traffic volumes greater than 12,000 vehicles per day, having a marked crosswalk alone (without other substantial improvements) was actually associated with a higher pedestrian accident rate when compared with an unmarked crosswalk. Therefore, *the addition of a marked crosswalk alone, with no engineering, enforcement, or education enhancement, did not reduce pedestrian accidents for any of the conditions included in*

University Drive and Fearing St., Amherst, MA

the study. The type of crosswalk marking (e.g. parallel lines, solid bar, zebra or ladder striped) and the condition of the crosswalk marking (e.g. excellent, good, fair or poor) had no significant effect on pedestrian accident rates.

In addition to crosswalk markings, this study also found several other factors were associated with pedestrian accidents. Traffic and roadway factors such as higher pedestrian volumes, higher traffic volumes (ADT), and greater number of traffic lanes were related to a higher frequency of pedestrian accidents. Suprisingly, after controlling for other factors, speed limit was not significantly related to pedestrian accident frequency. One possible explanation for this is that pedestrians may be more careful when crossing streets with higher speeds, avoiding short gaps between oncoming vehicles. However, as expected, higher speeds were associated with greater severity of injury to the pedestrian.

Installation of marked crosswalks at uncontrolled pedestrian crossing locations should not be regarded as a magic cure for pedestrian safety problems. However, marked crosswalks should also not be considered as a negative measure that will increase pedestrian accidents in all cases. Marked crosswalks are appropriate at some locations to help channel pedestrians to preferred crossing locations, but in many cases should be accompanied by other improvements.

REFERENCES

Herms, B. "Pedestrian Crosswalk Study: Accidents in Painted and Unpainted Crosswalks." Record No. 406, Transportation Research Board, Washington, DC, 1972.

Shankar, Umesh. *Pedestrian Roadway Fatalities*. Report No. DOT-HS-809-456, National Highway Traffic Safety Administration, Washington, DC, April 2003. Executive summary at: http://www.-nrd.nhtsa.dot.gov/pdf; nrd-30/NCSA/Rpts/2003/809-456.pdf.

Zegeer, C.V., Seiderman, C., Lagerwey P., and Cynecki, M. *Pedestrian Facilities User's Guide: Providing Safety and Mobility*. Federal Highway Administration, Washington, DC, 1999.

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" OUR FIRST MISTAKE "

Baystate Roads Program would like to thank **Daniel McCormack, PE, of Purcell Associates** for bringing to our attention a discrepancy and possible point of confusion concerning **Tech Note #33 – SIGHT DISTANCE AT UNSIGNALIZED INTERSECTIONS**. This article deals with the safe design of intersection approaches and various methods for safety enhancement. The discrepancy is in regard to eye and object height when calculating stopping sight distance (SSD) and intersection sight distance (ISD). In both cases the eye height of the driver is assumed by AASHTO to be 3.5 feet. With regard to object height, 2 feet is to be used when calculating SSD with 3.5 feet being used for ISD. It was not clearly defined in the article that the topic being discussed on page 2 was ISD and not SSD. A future Tech Note will focus solely on the requirements for Stopping Sight Distance. Watch for it.

As a reward for finding this error Don will receive either an entire box of extra copies of Tech Note #31 or a safety vest.

HIGHWAY SAFETY FACT SHEET:

How Road & Bridge Improvements Save Lives

excerpt from the TRIP Web Site

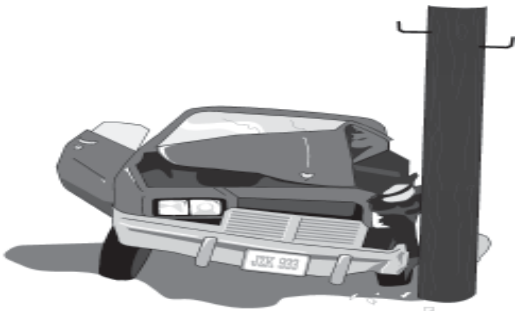
www.tripnet.org/hsfactsheet.htm

Approximately 42,000 people are killed in highway crashes each year in the U.S., and 3.5 million are injured. Highway crashes are the leading cause of death of people ages six to 28 and are the cause of more permanent impairments than any other type of accident. Highway fatalities nationwide have increased by 7% since 1992.

Statistics show that increased investment in road and bridge improvements save lives. Making road lanes and shoulders wider, adding medians and improving bridges are just a few of the improvements which have been shown to cut fatalities significantly. This highway safety informatoin is based on data obtained by the Road Information Program (TRIP) from the Federal Highway Administration (FHWA) and the National Highway Traffic Safety Administration. Data are the latest available.

Listed are key road and bridge improvements evaluated over a 20-year period by FHWA and the related reduction in fatality rates.

- Every $100 million invested in highway safety improvements will result in approximately 145 fewer traffic fatalities over a 10-year period.
- Approximately 500 people are killed annually in crashes at rail-highway crossings.
- About 12,000 people are killed annually in traffic crashes involving collisions with a fixed object such as a tree, guardrail, utility pole, curb, or light or support pole.



Improvements at Intersections	Reduction in Fatality Rate
Turning lanes & traffic channelization	47 percent
Sight distance improvements	56 percent
New traffic signals	53 percent

Bridge Improvements	Reduction in Fatality Rate
Widening a bridge	49 percent
New bridge	86 percent
Upgrade bridge rail	75 percent

Roadway Improvements	Reduction in Fatality Rate
Construct median for traffic separation	73 percent
Widen or improve shoulder	22 percent
Realign roadway	66 percent
Groove pavement for skid treatment	33 percent

Roadside Improvements	Reduction in Fatality Rate
Upgrade median barrier	66 percent
New median barrier	63 percent

Commercial Drivers' Licenses

The Motor Carrier Safety Improvement Act of 1999 added restrictions to the Commercial Drivers License (CDL). Regulations were effective September 30, 2002 but states were given until September 30, 2005 to make the changes and show that they are enforcing them.

Changes in the CDL process are designed to make the roadways safer. They do this by making the requirements to obtain and keep the license stricter. A good portion of the changes are directed to the issuing entity, but the following items directly affect the operator:

- Punishments for driving a Commercial Motor Vehicle (CMV) while under the influence of alcohol are more severe (BAC of 0.04 or greater).
- Disqulifying offenses are taken more seriously and violations may lead to a lifetime disqualification.
- The definition of a "Serious Traffic Violation" has been expanded to include three additional offenses:
  1. Driving a CMV without obtaining a CDL
  2. Driving a CMV without a CDL in the driver's possession
  3. Driving a CMV without the proper class of CDL and/or endorsement.
- A School Bus endorsement, "S", has been added. A school bus is defined as a vehicle capable of carrying 16 or more passengers and is used to transport pre-primary, primary, or secondary students from home to school, from school to home, or to and from school sponsored events.
- Record sharing between states has been enhanced. All violations will be entered into a national database and may be accessed through the licensing bureau or enforcement agency.

By adhering to stricter conditions, the Federal Motor Carrier Safety Administration (FMCSA) hopes to reduce the number of accidents and make the roadways across America safer for everyone. For more information and exact wording for the CDL requirements, please contact your local licensing agency or the FMCSA web site:

http://www.fmcsa.dot.gov/.

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CHECK OUT TRAINING VIDEOS FROM THE BAYSTATE ROADS VIDEO LIBRARY

BACKHOE LOADERS

M0-166	Operational Tips & Techniques
M0-215	Pre-Start Inspection
M0-216	Safe Operating Techniques
M0-217	Maintenance & Transport
M0-220	How Attachments Improve Versatility

CRAWLER EXCAVATORS

ST-170	Safe Operating
ST-171	Maintenance & Transport
M0-214	Pre-Start Inspection

MOTORGRADERS

M0-141	Operating Daily Maintenance
M0-233	Using Snow Plows on Motorgraders

Congratulations to the newest Baystate Roads Scholars on your fine achievement. Keep saving those certificates and you, too, could be listed here!

Baystate Roads Scholars!

Tom Green
Town of Bridgewater
Thomas Canoni
Town of Natick
Charles Coleman
Town of Barnstable
Michael Curtin
City of Brockton

in this issue...

The Baystate Roads Program, which publishes *Mass Interchange* each quarter, is a Technology Transfer (T2) Center created under the Federal Highway Administration's (FHWA) Local Technical Assistance Program (LTAP). This newsletter is prepared in cooperation with MassHighway and the United States Department of Transportation Federal Highway Administration. FHWA is joined by Mass Highway, College of Engineering at the University of Massachusetts/Amherst, and local public works departments in an effort to share and apply the best in transportation technologies.

In addition to publishing *Mass Interchange*, the Baystate Roads Program facilitates information exchange by conducting workshops, providing reports and publications and videotapes on request, and offering one-to-one technical assistance on specific roadway issues. Because the program relies on input from many sources, inquiries, articles, and ideas are encouraged.

LTAP Local Technical Assistance Program

To contact the Baystate Roads Program call (413) 545-2604 or FAX 413-545-6471.

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