M A S S

INTERCHANGE

Volume 20, Number 1 Winter 2006

IMPROVING SIGNALIZED INTERSECTIONS

This intersection features lane-aligned signal heads (one signal head for each lane of traffic), with dual left-turn lanes, two through lanes, and a right-turn lane.

According to 2002 data compiled by the National Highway Traffic Safety Administration, 21 percent of crashes and 24 percent of all fatalities and injuries related to motor vehicle collisions occurred at signalized intersections. Research conducted by the Federal Highway Administration (FHWA), however, has shown that under the right circumstances installing traffic signals can reduce the number and severity of crashes. But signals that are not designed appropriately can have an adverse effect on safety, so traffic managers need to design, place, and operate them carefully.

Because traffic signals play a key role in enhancing safety, FHWA recently produced a comprehensive handbook that explains methods to evaluate the safety and operation of signalized intersections and that highlights tools to remedy deficiencies. *Signalized Intersections: Informational Guide* (FHWA-HRT-04-091) provides information and tools that can help traffic engineers, project managers, and other transportation professionals conduct insightful assessments of intersections and understand the tradeoffs from potential improvement measures.

"The state-of-the-art of intersection engineering has been greatly enhanced over the past 10 years, and what the guide does is deploy this new knowledge," says Fred Ranck, a safety design engineer at the FHWA Resource Center, who has taught workshops on intersection design and operation.

The guide includes examples of innovative treatments and best practices used by jurisdictions across the United States. These examples include low-cost measures such as improving signal timing and signs, and more expensive measures such as reconstructing intersections or grade separations. Although some treatments apply only to high-volume intersections, the guide provides solutions relevant to the entire range of traffic volumes.

The guide takes a holistic approach to signalized intersections and considers the safety and operational implications of a particular treatment on all system users, including motorists, pedestrians, bicyclists, and transit users. Also covered are intersection fundamentals, analysis methods, and solutions to intersection deficiencies.

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ADJUST MIRRORS TO ELIMINATE BLIND ZONES

Most of us have had the experience of trying to change lanes and being startled by a horn blast. After the adrenaline surge and quick reversal, we ask ourselves, "What happened? Why didn't I see that car?"

Many people make that mistake, sometimes with serious consequences. According to a 2003 study, the National Highway Traffic Safety Administration identified about 539,000 lane change crashes in its crash data base for 1999. Of these, more than 200,000 were "typical lane changes" like the scene just described. The majority involve drivers who did not see the other vehicle.

By changing the way you adjust your rear view and side mirrors you can easily shrink the size of the blind zone so a vehicle can't hide there. This simple approach was devised by George Platzer, a specialist in rear-view mirror design.

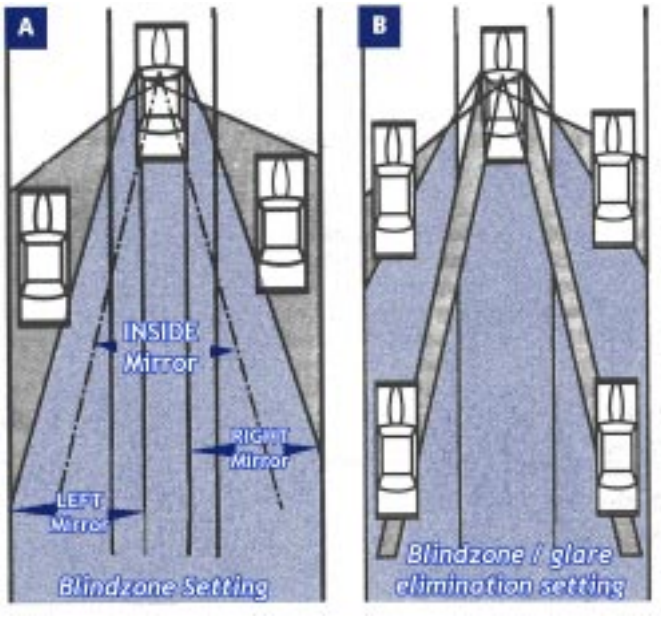
Drawing A shows what a driver can see when outside mirrors are set so that the sides of the car are just visible, as many of us were taught to do. The blind zones are big enough to hide a vehicle and the driver must turn and look into the blind zones when changing lanes.

Rotating the two outside mirrors outward about 15 degrees lets the driver glance briefly into the mirror to look into the blind zones instead of turning the head (**Drawing B**). There are now four mini-blind zones, all too small to hide a vehicle. This keeps the forward scene in your peripheral view. Turning your head completely eliminates the forward view, and at highway speeds, takes the eyes off the road for about 100 feet. Also, at night glare from the outside mirrors is virtually eliminated.

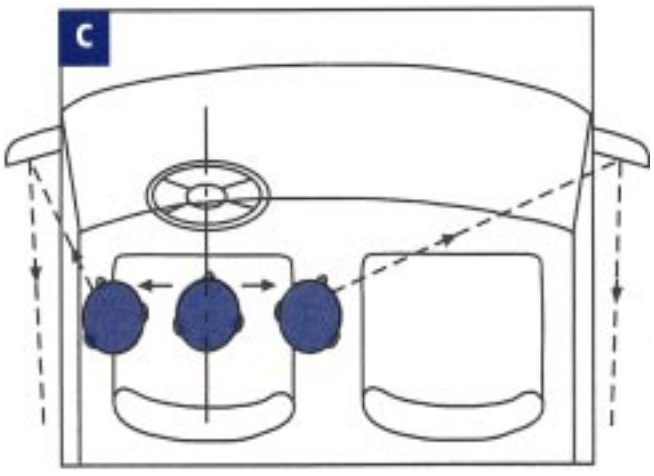
Setting Mirrors

For the driver's side mirror, place your head against the side window (**Drawing C**) then set the mirror to just see the side of the car. Do the same with the passenger's side mirror, but position your head at the middle of the car.

You should check to see that the blind zones are truly eliminated. From the normal driving position, watch a car as it passes you. It should appear in the outside mirror before it leaves the inside mirror, and it should appear in your peripheral vision before leaving the outside mirror. This is your proof that the blind zones have been eliminated and that your mirrors are correctly set.



When changing lanes with the new setting, first look in the inside mirror for vehicles approaching from the rear, then glance at the outside mirror to see if a vehicle is in the blind zone. It is safe to change lanes when you can see the entire front of the vehicle in the inside mirror, and that vehicle is not gaining on you. You may need to use the older, blind zone setting if the rear window is blocked by cargo, or in heavy stop-and-go traffic when a car on your bumper blocks your rear view to adjacent lanes.



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COMMUNICATING WITH THE MEDIA

As an employee of a transportation agency, you may already realize how much good (and bad) public relations can affect your job. When your agency has a positive reputation with the public, you can get your job done more easily and with fewer hassles than when your agency is constantly receiving negative criticism from the public or the media.

So, how do you develop good public relations? It takes a lot of work: always dealing with the media and the public courteously and professionally, developing and disseminating story ideas to positively promote your agency's image, writing effective news releases, working with elected officials, speaking to the public, and more.

When the media calls you

When a reporter calls you out of the blue, it will help you frame your answers and get the interviewer the information he/she needs if you know a few things before giving the interview.

① What is the reporter's name and organization?
② What is the reporter's deadline?
③ What is the reason for the interview request?
④ What is the nature of the story?
⑤ Who else has the reporter interviewed for the story?
⑥ Has the reporter done any other research?
⑦ How much time or space will the story have?

For broadcast media, find out if the interview will be live or taped. If it is live, make sure you are comfortable thinking on your feet. You might want to practice possible questions and answers beforehand.

If you would like some time to gather your thoughts and facts before granting an interview, tell the reporter you will call back at a specific time and be sure to do so. He or she is probably working on a deadline.

Keep your remarks short and to the point. Reporters love snappy quotes and lively turns of phrase. If you can speak with colorful frankness to reporters, you will become a sought-after source. Instead of saying "no comment," briefly explain why you can't answer a question.

Many reporters gather information over the phone. They are required by law to inform you if you are being recorded. If you're not sure, ask.

If you have supporting documents that may flesh out the story, offer to fax or email them to the reporter. This will help the reporter get the facts right.

Reprinted with permission from the Iowa Local Technical Assistance Program and drawn from "Get the Word Out: Public Relations Tips for Transportation Agencies."

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"None of us learns in school how it is in the real world -- where the tire hits the roads, so to speak -- so the guide provides that information," says Thomas Hicks, director of the Maryland State Highway Administration's Office of Traffic and Safety and a member of the committee that reviewed the guide. "You can read in a textbook about reaction time and how wide a lane should be, but the guide puts all the pieces together in terms that reflect what drivers actually see as they drive through an intersection."

Intersection Basics

Designing signalized intersections begins with knowledge of the fundamentals of road user needs, geometric design, and traffic design and illumination, all covered in separate chapters of the guide.

Road users, such as motorists, bicyclists, and pedestrians, are the operative players in the road system, and their perceptions and decisions affect their performance. In the 1980s, FHWA's Human Factors team began applying human factors-based knowledge to the design of roadways and signage. Termed positive guidance, the concept focuses on understanding how road users--primarily motorists--acquire, interpret, and apply information while driving.

The concept of positive guidance is simple: If drivers are provided with the information they need in a format they can read, understand, and react to in a timely fashion, then the chances of driver error will be reduced and safety will be improved.

"The idea is to give motorists the informaton they need at the time they need it," says FHWA's Ranck. "Intersections are complex meetings of roads, so it is crucial for the driver to get the right information as to what lane to be in and where to go."

A well-designed signalized intersection can improve traffic safety and mobility. Pavement markings, like those shown in this overhead photo, can be used to delineate travel lanes within wide intersections.

Traffic engineers apply knowledge of road user needs by designing and operating signalized intersections that inherently convey to various users what to expect. This information reinforces common expectations or communicates alternative information if uncommon elements are present, such as an emergency vehicle running a red light, allowing sufficient time for drivers to react.

Article reprinted with permission from the Department of Transportation--Federal Highway Administration, Public Roads, January/February 2005.
Signalized Intersections Informational Guide is available on loan from the Baystate Roads Program library - TRA-112.

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

Ronald E. Trudeau
Southbridge DPW

Michael Mauro
Old Colony Planning Council

Baystate Roads Scholars!

NEW PUBLICATIONS

Fax request: 413-545-6471
Phone request: 413-545-5403
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baystate_roads@hotmail.com

ASP-164 -- Distress Identification Guide
Local Technical Assistance Program

COC-138 -- Concrete Engineering of Streets & Local Roads
American Concrete Pavement Assn.

MAN-118 -- A Guide for Accommodating Utilities Within a Highway Right-of-Way
AASHTO

MAN-119 -- A Policy on the Accommodation of Utilities within Freeway Right-of-Way
AASHTO

MAN-122 -- Asset Management Systems for Roadway Safety
FHWA

SAF-147 -- ITSs in Work Zones -- A Cross-Cutting Study
FHWA

SAF-148 -- Common Sense Solutions to Intersection Safety Problems
FHWA Office of Safety

UNS-24 -- Guidelines for Geometric Design of Very Low-Volume Local Roads ADT (≤ 400)
AASHTO

Baystate Roads Program Advisory Board Meeting

December 7, 2005 - Marlborough, MA

Baystate Roads will begin the following three long-term activities designed to support the Commonwealth's Fix-It-First Initiative:

MUNICIPAL PAVEMENT PRESERVATION

The program will work with the advisory board, selected municipalities and EOT to promote the implementation of good pavement preservation at the local level. Correct treatments, selection of roadways, and scope of work are critical for rehabilitation choices. The thrust will be to sell pavement preservation rather than teaching how to do it. Potential classes include implementation strategy, resource commitments and marketing to elected officials.

INSPECTION & QUALITY ASSURANCE

The program has identified a need for training and skills transfer aimed at improving employee inspection skills. Working with selected municipalities, Baystate Roads will identify specific needs to be addressed through workshops, information exchanges, newsletter articles, technical notes and other outreach venues. Inspection training will consist of a prerequisite class on basics and hands-on instruction.

MANAGEMENT & LEADERSHIP

The program manager and advisory board members will investigate the need for management and leadership training for supervisors and middle managers. Based on the results of this study, workshops may be developed to provide the skills needed to create an organizational environment that allows implementation of new methods and technologies.

COMMERCIAL DRIVER'S LICENSE BASIC

There are three CDL class licenses:

Class A is any combination of vehicles with a Gross Combination Weight Rating (GVWR) of 26,001 or more pounds provided the GVWR of the double or triple trailers being towed are in excess of 10,000 pounds.

Class B is any single vehicle with a GVWR of 26,001 or more pounds, or any such vehicle towing a trailer **not** in excess of 10,000 pounds GVWR.

Class C is for vehicles transporting hazardous materials in placarded quantities in a vehicle having a GVWR of less than 26, 000 pounds, and may pull a trailer having a GVWR of less than 10,000 pounds: or a vehicle designated to transport 16 or more passengers.

Types of endorsements

T - combination vehicles with double/triple trailers

N - any vehicle intended for hauling liquids in bulk

P - passenger vehicles

H - hazardous materials

X - tank and hazardous materials

S - school buses

License Restrictions

B - corrective lenses must be worn while driving

L - limited to commercial vehicles which do not have air brakes

E - limited to vehicles with class automatic transmissions

S - limited to government plated vehicles

A driver must have at least a valid Class D license and a current medical certificate in accordance with MCSR regulations 49 CFR 391.41 - 391.49 to be eligible to apply for a commercial driver's license. Government employees will need a waiver from their agency if they don't have a medical card.

What other rules apply to drivers with a CDL license?

You cannot have more than one license. You must notify your employer of a conviction for any traffic violation. No one can drive a commercial motor vehicle (CMV) without a CDL.

You will lose your CDL license for 60 days if you have committed two serious traffic violations within 3 years. It is illegal to operate a CMV with a Blood Alcohol Concentration of .04% or more.

If you operate a CMV, you will be deemed to have given your consent to alcohol testing.

A copy of *Pass the CDL Exam -- Everything You Need to Know* is available on loan from the Baystate Roads Program. Please fax your request to 413-545-6471.

For more information on obtaining a CDL permit and license in Massachusetts, check out: **http://www.mass.gov/rmv/license/8cdl.htm**

NEWS FROM THE WORK ZONE

NEW PUBLICATIONS

Implementing the Rule on Work Zone Safety and Mobility (FHWA-HOP-05-065)

Construction has the potential to affect safety and mobility for motorists using a road under repair and nearby roads as well. All state and local governments that receive federal-aid funding are required to comply with the provisions of this rule no later than October 12, 2007. The final rule updates and broadens the former regulation (23 CFR 630 Subpart J) to address current issues and can be downloaded from: http://www.ops.fhwa.dot.gov/wz/resources/final_rule.htm.

This guide as well as three additional technical guidance documents covering specific aspects of the rule are available on the FHWA work zone website:

- Work zone public information and outreach strategies - FHWA-HOP-05-067
- Developing and implementing transportation management plans for work zones - coming soon
- Work zone impacts assessment - coming soon

A Guide for Reducing Work Zone Collisions

The National Cooperative Highway Research Program recently published Report 500 "Volume 17: A Guide for Reducing Work Zone Collisions." It is part of a Guidance series for implementation of the AASHTO Strategic Highway Safety Plan and available from: http://www.national-academies.org/trb/bookstore

NATIONAL WORK ZONE AWARENESS WEEK

April 3-9, 2006, Washington, DC
http://www.atssa.com

This national campaign increases public awareness of work zone safety. It also brings to the attention of the motoring public and the media the fact that nearly 1,100 men, women, and children are killed senselessly in work zones each year *(Source: FARS database)*. The American Traffic Safety Services Association (ATSSA) partnered with the Federal Highway Administration and the American Association of State Highway and Transportation Officials (AASHTO) in December 1999 to annually conduct this event. Local community activities help educate the nation on work zone related injuries and fatalities and the hazards and dangers that can be encountered and avoided when driving through a roadway construction zone. Scheduled events and activities can be found on the website above.

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It may take awhile to adjust to the new settings. Don't give up. The confusion will go away. Remember that the inside mirror is truly your primary mirror. Use the outside mirrors only to check the blind zones. "Perserverance will reward you with a new dimension in driving which will enhance your safety and comfort," says Platzer.

Reprinted from the Spring 2005 *Crossroads*, newsletter of the Wisconsin LTAP center, which adapted it from a story produced by the Society of Automotive Engineers (c) 1995 SAE International and reprinted by permission in *The Bridge*, the Michigan LTAP center newsletter.

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 The Executive Office of Transportation (EOT) and the United States Department of Transportation Federal Highway Administration. FHWA is joined by EOT, UMass Transportation Center 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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