



## TECH BRIEF 2010-2

# TRAFFIC SAFETY PRIMER FOR LOCAL ELECTED OFFICIALS

### *SOME THINGS TO THINK ABOUT BEFORE YOU SEEK TRAFFIC SAFETY SOLUTIONS*

**ELECTED OFFICIALS** are viewed by the public as “people of action.” On a daily basis, elected officials are forced to make numerous decisions that have significant impact on the community they represent. The public expects a skilled elected official to collect information, weigh the consequences, and make the best decision for their community. Because of the broad nature of decisions that elected officials face, they frequently find themselves working in areas outside of their “comfort zone.” Traffic safety is one of those areas. There are even aspects of traffic safety that encourage a false sense of security for elected officials, such as:

- **Counter-intuitive nature:** Many traffic safety decisions are counter-intuitive. For example, installing a stop sign to control vehicle speed can actually increase vehicle speeds as drivers accelerate to “make up” lost time.

- **Roads are a public asset:** The vast majority of roads are in the public trust. Because of this, many people feel that they

have an interest in deciding the operation and function of roads in their community, which is true to an extent.

However, when the general public begins to dictate design and operation factors without an understanding of their impact, the chance is high that there will be a negative consequence to safety.

- **Roads viewed as “commonplace”:** The public has come to view roads as ordinary, simple features of the landscape. This desensitization to the subtle design features of a road and the complex relationships that exist within roadway infrastructure, lead to the belief that good, safe roads are “simple.” When it comes to road safety, it’s anything but simple.



## FACTORS THAT MAY CONTRIBUTE TO THE NUMBER OF CRASHES ON LOCAL ROADS

Many local roads have characteristics that pose safety challenges differently than state and interstate highways:

- **Lane width:** State highways and freeways typically have wider lanes than local roads. In addition, many of these higher “functional class” roads also have wide paved shoulders. Research has shown that wider lanes and shoulders result in a decrease in the number of crashes, but may also lead to an increase in speeds—a different problem.

- **Curve and grade geometry:** Contrary to state highways and freeways, local roads generally have more locations where geometric design exceptions have been made around curves and hills. Local roads often have sharper curves and steeper grades because the cost of correcting the geometric problem may not be feasible based on the number of vehicles that use the road.

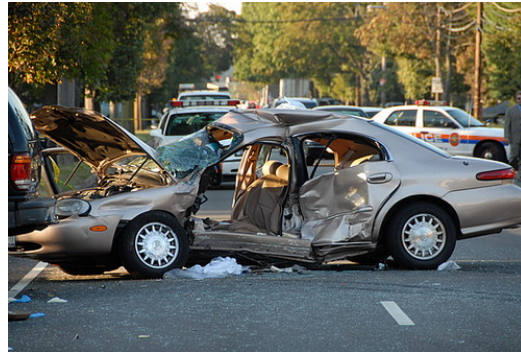
- **Signing and paint striping:** Generally speaking, local agencies do not have the budgets necessary to maintain signs and pavement markings on local roads to the same level as higher functional class roads. In some cases, poor markings and a lack of signing can influence the number of crashes that occur.

- **Roadside obstructions:** Higher functional class roadways (freeways and highways) typically have a wide, relatively flat, clear area outside the driving lanes where drivers who run off the road can recover and get their vehicle back on the road or stop without causing a traffic crash. It is not uncommon for local roads to have little, if any recovery area or to have obstructions directly adjacent to travel lanes.

- **Number of driveways:** Research has shown that an increase in the number of crashes comes with an increasing number of

driveways. Local roads are primarily for local property access, and as such, have a significant number of driveways.

Higher functional class roads typically do not have as many driveways or have active “access management” programs to control driveway access.



## FACTORS THAT CONTRIBUTE TO THE NUMBER OF CRASHES ON ALL ROADS

### *DRIVER CONDITION*

- **Reflexes** – how quickly a driver can respond to a situation
- **Attentiveness** – Is the driver paying attention?
- **Experience** – A less experienced driver has an elevated crash risk.
- **Alcohol & drug use**
- **Driver aggressiveness** – Aggressive or frustrated drivers take more chances or are more likely to drive beyond their limit of control.

### *HUMAN FACTORS*

- **Visibility** – How well can an object be seen? Humans have a cone of vision 15 degrees around the center of their focal point where items of interest will likely be noticed.
- **Expectancy** – Drivers use an understanding of past situations to lessen the mental workload of driving. For

example, drivers in the Midwest expect that if they don't see a stop sign at an intersection they can proceed without stopping. In Western states this is not always the case—there are many uncontrolled intersections without any signs or traffic signals.

- **Consistency** – When designs for roads and traffic control are applied consistently in the same situation, drivers have an easier time driving which results in fewer crashes.
- **Workload** – When a driver becomes overloaded with driving inputs they lose the ability to process information. An overloaded driver is actually impaired for a short period of time after the overload occurs. Overload situations include negotiating a complex, busy intersection, presence of billboards, etc. Overloaded drivers may also suffer from a temporarily reduced field of vision (tunnel vision).

### ***VEHICLE CHARACTERISTICS***

- **Handling Characteristics** – Newer vehicles have improved handling characteristics that include reduced stopping distance due to anti-lock brakes, traction and skid control, and better cornering behavior. Older vehicles do not.
- **Maintenance** – Lack of vehicle maintenance such as poor brakes can lead to crashes, however the total percentage of crashes attributed to vehicle malfunction is very low – less than 5 percent of all crashes.

### ***ROADWAY CHARACTERISTICS***

- **Geometry** – How roadway features are designed has a major impact on safety. Everything from the radius of a curve, or the grade that a road takes through a hill, to the slopes leading into and out of the ditches can influence traffic safety. Geometric features should be reviewed whenever major road work is planned or when there is a high incidence of crashes at a specific location.
- **Maintenance** – Upkeep of roadside features such as shoulders and signs can impact traffic safety.

- **Surface Condition** – Maintaining a smooth, high friction road surface can reduce the incidents of traffic crashes.

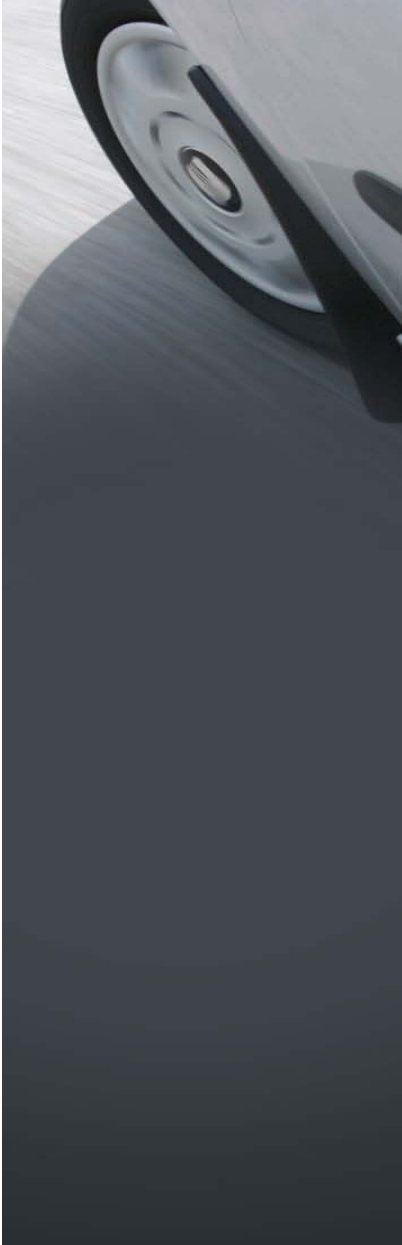
### ***ENVIRONMENTAL CONDITIONS***

- **Rain / snow / fog**
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### ***WORKING WITH ENGINEERS***

In seeking solutions to traffic safety problems in your jurisdiction, you will be working with engineers. Engineers are guided by federal, state and local regulations, national and state guidance, and professional engineering judgment in making recommendations. Engineers are trained to make technically sound recommendations that are legally defensible, conservative and based on data. As part of this training, engineers depend on a “language” that is precise, full of jargon and esoteric. Many engineers do not view translating technical information to nontechnical audiences as part of their job. This is common with people involved in technical fields. As a result, a barrier to communication can develop that separates engineers from nontechnical audiences. So if your traffic engineer tells you that the LOS is C at the peak-hour of the traffic generator, and you don't know what that means and how it may affect your decision making, ask for clarification until you do!





## Controlling Speeds

### Speed Limits:

Research has shown that drivers typically drive a speed that “feels” safe. Speed limits outside of residential areas are based on the 85<sup>th</sup> percentile speed – the speed that 85 percent of drivers do not exceed. Research has shown the 85<sup>th</sup> percentile speed to be near the optimum speed for safety. Traffic safety studies have also shown that driving too slow with respect to the average speed can put drivers at the same risk as driving too fast.

### Stop Signs Are NOT For Speed Control:

Stop signs should not be used for speed control. Over 20 research studies have concluded that stop signs are not effective for speed control and in many cases increase the speeds between the signs.

### Traffic Calming:

Traffic calming techniques can be utilized to reduce speeds and mitigate some of the negative aspects of motor vehicle use on the pedestrian and bicycle users. Traffic calming techniques typically revolve around making physical improvements to transportation facilities or rely on education to change driver behaviors.

*Excerpted and adapted with permission from an article in the Fall, 2009 Kansas LTAP Newsletter, a publication of the Kansas Local Technical Assistance Program.*

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