

WHAT CAN TRAFFIC ENGINEERS DO TO REDUCE THE NUMBER OF REAR-END CRASHES?

A rear-end crash occurs when the front of a vehicle strikes the rear of a leading vehicle. In the US, each year there are approximately 1.9 million reported rear-end crashes with 1,900 fatal crashes and 600,000 injury crashes. In Florida, each year there are approximately 70,000 rear-end crashes with about 210 fatal crashes and 47,000 injury crashes. The number of rear-end crashes represents about 30% of the total crashes. Rear-end crashes are the most frequent type of crash.

Rear-end crashes are typically caused by driver error when following too closely in congested areas, bad weather, last minute lane changes and unexpected stops by motorists traveling at high speed. Each situation is unique; however, the following are some countermeasures by intersection type:

In order to reduce rear-end crashes at an unsignalized intersection or driveway the Traffic Engineer should consider the need for the following countermeasures:

- Install/improve advanced warning devices (i.e. signs, flashers) and pavement markings.
- Improve pavement condition with friction course overlay, improved drainage, or provide "Slippery When Wet" signs.

- Reduce speed limit on approaches (when appropriate).

- Relocate crosswalk, driveway or entrance road to reduce conflict and/or improve sight distance.

- Install and/or extend left and/or right turn lanes where needed. (Note: too often turn lanes are designed for the minimum requirements. Turn lane length can be a significant factor in rear-end crash frequency).

- Increase curb radii (the curved part of a roadway such as at street corners).

- Make sure that there are appropriate warning devices and/or transitions for lanes.

- Prohibit turns at critical locations.

- Remove median cuts that are in the influence area of the intersection.

- Apply Access Management principals to driveways and median openings. For more details see the FDOT web site: <http://www11.myflorida.com/planning/systems/sm/aceman/>

- Increase enforcement of existing traffic laws.

In order to reduce rear-end crashes at a signalized intersection or driveway the Traffic Engineer should consider the need for the above mentioned countermeasures plus the following where justified:

- Add additional signal heads including near side signals.

- Fine tune signal timings to minimize driver indecisiveness through the dilemma zone (advanced loops) and adjust amber phase or fix short initial interval.

- Provide progression through a set of signalized intersections.

- Install/improve signing and/or marking of pedestrian crosswalks.

- Remove unwarranted signals.

- Consider channelized U-turns through the medians for special case turn problems.

- Provide bus pickup areas that do not interfere with intersection operation.

- Provide advanced street name signs.

A traffic signal can reduce the number of angle crashes at an intersection but may increase the number of rear-end crashes. Good engineering judgment should be used when considering the use of any traffic control device or engineering technique.

New technologies can assist drivers and improve traffic safety. One of the most promising advanced new Intelligent Transportation Systems (ITS) technologies being tested to prevent or decrease the severity of rear-end crashes is called Adaptive Cruise Control (Intelligent Cruise Control). When perfected, this device could slow or stop a vehicle, reducing or eliminating rear-end crashes. For more details on ITS see the ITS America web site at: <http://www.itsa.org/>