



TRAFFIC TIPS

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COMPREHENSIVE SERVICES

Hubbell, Roth & Clark, Inc. is a

professional organization providing comprehensive engineering

services. Our Transportation and Traffic Engineering expertise allow us to address problems of urban traffic congestion, traffic safety, and highway design. We provide assistance in transportation planning, design and operation. Other services of the firm include:

- ◆ Municipal Engineering
- ◆ Civil & Site Engineering
- ◆ Wastewater Treatment
- ◆ Underground Storage Tank Replacement Engineering
- ◆ Water Treatment & Distribution
- ◆ Industrial Waste Treatment
- ◆ Industrial Engineering
- ◆ Storm Water Control
- ◆ Surveying & Mapping
- ◆ Electrical Engineering
- ◆ Street & Parking Lot Lighting



FUNCTIONAL CLASSIFICATION AND SPEED

The Federal Highway Administration classifies our nation's roadways by *road function*. Each function is based on the type of service the road provides to the motoring public, and the designation is used for transportation planning purposes. Functional classification is a consideration in determining the proper road funding category. The following information illustrates the four major road function classifications:

The Interstate System is the highest classification of roadways in the United States. These arterial roads provide the highest level of mobility and the highest speeds over the longest uninterrupted distance. Interstates nationwide usually have posted speeds between 55 and 75 m.p.h.. Interstate highways represent:

- 46,084 miles of public road
- 1.2% of total public road mileage
- 23.8% of the annual vehicle-miles traveled
- 14.3% of speeding-related fatalities
- 0.30 persons killed in speeding-related crashes per 100 MVMT (MVMT= Million Vehicle Miles of Travel)

Other Arterials include freeways, multi-lane highways, and other important roadways that supplement the Interstate System. They connect, as directly as practicable, the nation's principal urbanized areas, cities, and other industrial centers. Posted speed limits on arterials usually range between 50 and 70 m.p.h.. Arterial highways, not including the Interstate, represent:

- 387,957 miles of public road
- 9.9% of total public road mileage
- 48.2% of the annual vehicle-miles traveled
- 38.7% of speeding-related fatalities
- 0.40 persons killed in speeding-related crashes per 100 MVMT

Collectors are major and minor roads that connect local roads and streets with arterials. Collectors provide less mobility than arterials at lower speeds and for shorter distances. The legal speed on collectors is usually between 35 and 55 m.p.h.. Collector roads represent:

- 792,619 miles of public road
- 20.3% of total public road mileage
- 14.8% of the annual vehicle-miles traveled
- 24.1% of speeding-related fatalities
- 0.80 persons killed in speeding-related crashes per 100 MVMT

Local roads provide limited mobility and are the primary access to residential areas, businesses, farms, and other local areas.

Local roads, with posted speed limits usually between 20 and 45 m.p.h., constitute the majority of roads in the U.S.A.. Local roads represent:

- 2,679,632 miles of public road
- 68.6% of total public road mileage
- 13.1% of the annual vehicle-miles traveled
- 23% of speeding-related fatalities
- 0.86 persons killed in speeding-related crashes per 100 MVMT

When are Traffic Signals Needed?

As traffic volumes increase beyond the capability of lesser controls such as a four-way stop, it may be necessary to install a traffic signal. Before installing a traffic signal at an intersection, established minimum criteria must be satisfied. A review includes:

- The amount of vehicular and pedestrian traffic
- The need to provide interruption to the major for side street vehicles and pedestrians
- Special conditions - hills and curves
- The accident history of the intersection

- The proximity of schools

Advantages of Traffic Signals

Signals offer maximum control at intersections. They relay messages of both what to do and what not to do. The primary function of any traffic signal is to assign right-of-way to conflicting movements of traffic at an intersection. This is done by permitting conflicting streams of traffic to share the same intersection by means of time separation.

By alternately assigning right-of-way to various traffic movements, signals provide for the orderly movement of conflicting flows. They may interrupt extremely heavy flows to permit the crossing of minor movements that could not otherwise move safely through an intersection.

When properly timed, a traffic signal increases the traffic handling capacity of an intersection, and when installed under conditions that justify its use, a signal is a valuable device for improving the safety and efficiency of both pedestrian and vehicular traffic. In particular, signals may reduce certain types of accidents, most notably right-

angle (broadside) collisions.

Disadvantages of Traffic Signals

While many people realize that traffic signals can reduce the number of right-angle collisions at an intersection, few realize that signals can also cause a significant increase in rear-end collisions. Normally, traffic engineers are willing to accept an increase in rear-end collisions for a decrease in the more severe right-angle accidents; however, when there is no right-angle accident problem at an intersection and a signal may not be needed for traffic control, there is no safety benefit and the installation of traffic signals can actually cause a deterioration in the overall safety at the intersection. Traffic signals are not a cure-all for traffic problems. The primary goal of the traffic engineer is to attain the safest and most efficient overall traffic flow possible. In addition to an increase in accident frequency, unjustified traffic signals can also cause excessive delay, disobedience of signals, and diversion of traffic to residential streets.

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