**ACCESS SPACING**

**Signal Spacing**

Increasing the distance between traffic signals improves the flow of traffic on major arterials, reduces congestion, and improves air quality for heavily traveled corridors. The appropriate spacing between signals for a particular corridor depends on the speed and flow of traffic, but any increase greater than two signals per mile is likely to have a significant impact on congestion and safety.

A major synthesis of research on access management found that adding one additional signal over two per mile (i.e., a one-half mile signal spacing) increases travel time by over six percent. [4]

**Related Techniques**

Business Concerns

Installing raised medians often raises serious concerns by the business community. An ongoing study in Texas found that at a ten mile four-lane arterial with one-half mile signal spacing, increased speed of 335,000 gallons would be reduced delay, compared to quarter mile signal spacing. [14]

**Driveway Spacing**

Appropriate driveway spacing presents another major access issue. Large numbers of driveways increase the potential conflicts on the road. Fewer driveways spaced further apart allow for more orderly merging of traffic and present fewer challenges to drivers. The congestion impacts of reduced driveways are fairly clear. It is impossible for a major arterial or highway to maintain free-flow speeds with numerous access points that add slow-moving vehicles. A research synthesis found that roadways speeds were reduced an average of 2.5 miles per hour for every 10 access points per mile. [4] With higher numbers of access points, congestion will increase significantly.

An overabundance of driveways also increases the rate of car crashes. A review of crash data from seven states demonstrated that the crash rate increased substantially with additional signals per mile. [4] This partly relates to access spacing, which is presented next.

**Right Turns**

Right-turn lanes typically have a less substantial impact on crashes and roadway capacity than other types of turn strategies, because there are fewer limitations on right turns. Though there are fewer studies of these impacts, there is a clear relationship between the number of vehicles attempting a right turn in a through traffic lane and its delay to through traffic. This relationship is exponential - each additional car that must wait for a right turn will increase the delay more than the previous car. At intersections with substantial right-turn movements, a dedicated right-turn lane segregates these cars from through traffic and increases the capacity of the road.

**Roundabouts**

Roundabouts represent a potential solution for intersections with many conflict points. Though not appropriate for all situations, roundabouts reduce vehicle conflicts and delays across traffic. Only a few studies have examined the safety benefits of roundabouts. One study of four intersections that were replaced with roundabouts in Maryland found a drop in crashes between 18 and 29 percent and a reduction in injury crashes between 63 and 88 percent. The cost of crashes at these locations, one measure of severity was also reduced by 68 percent. Overall crashes on roundabouts were more minor than those at left turn locations. [8]

**Median Treatments**

Medians

Medians for roadways represent one of the most effective means to regulate access, but are also the most controversial. The two major median treatments include two-way left turn lanes (TWLTL) and raised medians.

The safety benefits of median improvements have been the subject of numerous studies and syntheses. Studies of both particular corridors and comparative research on different types of median treatments indicate the significant safety benefits from access management techniques. According to an analysis of crash data in seven states, raised medians reduce crashes by over 40 percent in urban areas and over 60 percent in rural areas. [4]

A study of corridors in several cities in Iowa found that two-way left-turn lanes reduced crashes by as much as 70 percent, improved level of service by one full grade in some areas, and increased lane capacity by as much as 36 percent. [5]

Raised medians also provide extra protection for pedestrians. A study of median treatments in Georgia found that raised medians reduced pedestrian-involved crashes by 45 percent and fatalities by 78 percent, compared to two-way left-turn lanes. [12]
WHAT IS ACCESS MANAGEMENT?

Access management is a set of techniques that state and local governments can use to control access to highways, major arterials, and other roadways. Access management includes several techniques that are designed to increase the capacity of these roads, manage congestion, and reduce crashes.

- Increasing spacing between signals and interchanges;
- Driveway location, spacing, and design;
- Use of exclusive turning lanes;
- Median treatments, including two-way left-turn lanes (TWLTL) that allow movement in multiple directions from a center lane and raised medians that prevent movements across a roadway;
- Use of service and frontage roads; and
- Land use policies that limit right-of-way access to highways.

State, regional, and local governments across the United States use access management policies to preserve the functionality of their roadway systems. This is often done by designating an appropriate level of access control for each of a variety of facilities. Local residential roads are allowed full access, while major highways and freeways allow very little. In between are a series of road types that require standards to help ensure the free flow of traffic and minimize crashes, while still allowing access to major businesses and other land uses along a road.

FOR MORE INFORMATION

http://www.accessmanagement.gov
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