

Comparison of Raised Medians and Two-Way Left-Turn Lanes

Because raised medians are the most restrictive access management treatment, building a raised median along an arterial is often very controversial among business and property owners. Two-way left-turn lanes (TWLTL) are much less so. Business persons and property owners feel that installation of raised medians will have a large, negative impact on their customers, sales, and property values. Therefore, TWLTLs are often suggested as a compromise solution. However, TWLTLs also represent a safety compromise when compared to raised medians. They should be used with care.

When should raised medians be used and why?

When the average annual daily traffic (AADT) volume on an arterial roadway is projected to exceed about 28,000 vehicles per day during the next 20 years, including a raised median is prudent.

Arterial roadways with raised medians are safer and operate better than any other access management cross-section configuration. Research indicates that raised median roadways are 25 to 30 percent safer than undivided roadways in urban areas.

When should two-way-left-turn lanes be considered?

In general, TWLTL projects function well when traffic levels are moderate, the percentage of turning volumes are high, and the density of commercial driveways is low. TWLTLs will function well on most arterials with low to moderate commercial driveway density and where the AADT is in the range of 10,000 to 28,000 vehicles per day.

TWLTLs can also work very well in places where the number of driveways per block or mile is high but where the land use does not produce many turning movements per hour—for example, an arterial through a predominantly residential area.

When should two-way-left-turn lanes be avoided?

TWLTLs begin to lose their effectiveness when traffic volumes on a roadway are high. A Georgia Tech University study indicates operating degradation occurs between an AADT of 24,000 to 28,000 vehicles per day. This is a relatively high level of traffic level for many Iowa cities.

TWLTLs are also much less effective in situations where commercial driveway densities are high and these driveways are closely spaced. In such a situation, the number of conflict points is high and this will be reflected in crash rates. Research from many states indicates that raised median roadways are *always* safer than TWLTL roadways (see table). If TWLTLs are considered, driveway density and driveway spacing *must* be managed aggressively.

Access Points per Mile	Undivided Roadway (Painted Centerline)	TWLTL	Raised Median	Accident Rate Reduction for Raised Median vs. TWLTL
Fewer than 20	3.8	3.4	2.9	-0.5
20 to 40	7.3	5.9	5.1	-0.8
40 to 60	9.4	7.4	6.5	-0.9
Over 60	10.6	9.2	8.2	-1.0

Source: National Cooperative Highway Research Program Report 3-52.

Note: Representative accident rates per hundred million vehicle miles traveled.

Where are raised medians preferable to TWLTLs?

The use of a median is also a more prudent road design in situations where it is difficult to predict future traffic volumes. For example, a rapidly growing suburb with a large potential for new retail development should probably design or retrofit its arterial streets with raised medians in anticipation of high future traffic volumes.

TWLTLs are also not recommended in situations where there are more than four through traffic lanes (e.g., two through lanes in each direction). Several states in the southeastern United States have constructed seven-lane urban arterials where one lane is a TWLTL. These roadways have accident rates as high as 11 accidents per hundred million vehicle miles. These are similar to the rates of an undivided roadway with a high number of access points per mile. Many of the accidents on these roads occur because drivers may have to cross as many six or seven lanes (with traffic moving in several directions) to enter or exit a business. This represents too complex a situation for many drivers to manage. When there are six or more through traffic lanes, a raised median is essential.



Five-lane arterial with a TWLTL, 50th Street in West Des Moines, Iowa.



Four-lane arterial with raised median, Ankeny Boulevard, Ankeny, Iowa.