

## Dedicated Left and Right Turning Lanes

One of the major concerns of transportation engineers and planners in cities and suburban areas is keeping through traffic moving at a smooth and even pace. When traffic can't move at an even pace, delays and congestion are the result. This frustrates motorists and creates opportunities for "fender-bender" crashes. One of the simplest ways to accomplish smooth and even traffic is to remove the turning traffic from the through traffic flow at road intersections and near busy driveways. Often, dedicated turning lanes are provided to serve that purpose. Many times turning lanes are used in conjunction with raised medians and medians at intersections to provide additional safety by protecting turning traffic.

### Why are turning lanes used?

In the past, many arterial and collector roads and streets in Iowa were constructed with either two or four undivided lanes. All of the lanes served both through traffic and turning traffic. When there is a considerable amount of turning traffic, undivided multilane roads become more and more difficult to drive on because of what traffic engineers call "side friction." Turning traffic reduces the capacity of lanes to carry through traffic. Congestion and delay both rise. Types of crashes associated with turning vehicles become more common; these include rear-end collisions and broadside crashes.

Dedicated turning lanes allow through traffic to keep moving, thus avoiding some potential for rear-end collisions. The combination of medians and turning lanes provides protection for turning traffic, thus reducing the number of broadside collisions.

### Where can turning lanes best be used?

Designated turn lane designs can be effectively used in situations where there are moderate to high levels of through traffic yet concerns exist about conflict points and crashes caused by turning traffic. 4th Avenue SW in Mason City carries about 10,000 vehicles per day very efficiently. Left and right turn lanes are ideal where right-of-way width is not greatly limited because of existing land development or other constraints.

Designated turning lanes can either be designed that way originally or can be created by widening an existing two or four-lane route. Raised medians can be added along the entire roadway or at and near intersections with other roads to provide additional safety.

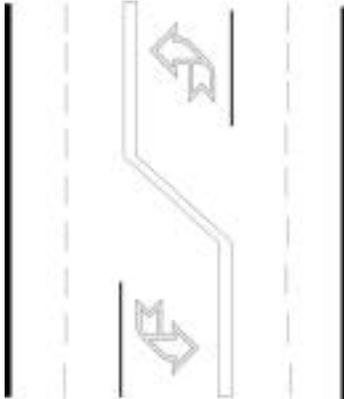
### What are the main benefits of turn lanes?

- Improved traffic safety
- Increased travel speed, reduced delay, and reduced congestion

A good example of the impact of adding dedicated turning lanes and limited raised medians is on 4th Avenue SW near Pierce Avenue in Mason City, Iowa. The crash rate on 4th Avenue SW was reduced by some *40 percent* simply by adding the left-turn lanes and medians to protect the traffic using them. The improved road was also able to carry

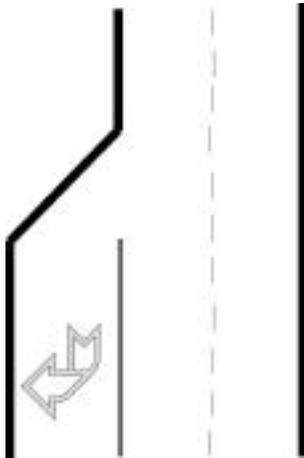
16 percent additional traffic while providing the same level of service to motorists in terms of travel time, delay, and congestion. This project is very popular with the motorists who use it daily.

### Left Turn Lanes



Left-turn lanes and raised medians on Lincoln Way in Ames, Iowa.

### Right Turn Lane



Right-turn lane at a major commercial driveway on US 69 (Duff Avenue) in Ames, Iowa.

### Are there related issues that should also be considered?

The following issues may impact dedicated turn lane decisions: speed differential between turning vehicles and through traffic, conflict points, raised medians at intersections, continuous raised median, continuous two-way left turn lanes, functional areas of intersections, and corner clearance.