

LOOP RAMPS REDUCING LEFT TURNS

Description

Localized bottlenecks can be created when large volumes exiting a freeway want to turn left at the intersecting cross street. Retiming the signal at the intersection to address the left-turn congestion may worsen congestion for the other intersection streets. One solution to reduce delay and queuing is to keep the left-turn traffic on a collector-distributor road past the cross street and then have the traffic use a loop ramp to access the cross street.

The loop ramp configuration is a viable alternative when sufficient right-of-way is available to accommodate the loop roadway. The loop design converts a stop or signal-controlled left-turn movement at the ramp terminal into a merge or yield-controlled movement on a loop ramp. Loop ramps are often used in conjunction with collector-distributor roads along the major road to minimize switching lanes on the major road and to provide a safe speed change for vehicles traveling between the intersecting streets.



Aerial photograph is of Westbound IH 20 to Southbound FM 157/Cooper Street (initial exit) or Northbound FM 157/Cooper Street (second exit to collector-distributor road and then loop ramp) in Arlington, TX. Source: Google Earth™ Mapping Service.

Cost:	●●●●○
Time:	Medium/Long
Impact:	Spot/Corridor
Who:	City/State
Hurdles:	Right-of-Way

How Will This Help?

- Increase safety by reducing the number of conflict points.
- Improve efficiency of turning movements.
- Reduce delay, improve capacity through shorter cycle lengths, and simplify signal timing.

Success Stories

- Example locations include FM 157 at IH 20 and SH 360 at Pioneer Parkway (Spur 303) in Arlington, TX.
- The AASHTO *Highway Safety Manual* reports that crashes associated with merging areas within an interchange or between adjacent interchanges can be reduced by redesigning the interchange to provide collector-distributor roads; however, the available research is not sufficient to develop a numerical crash reduction estimate.

Implementation Issues

The additional right-of-way and paved surfaces required to construct collector-distributor roads and loop ramps will have a substantial influence on cost. Adequate signing for road users is important to its operational success. The use of collector-distributor roads can add complexity to exiting and entering decisions, and the lack of signing and marking can negatively affect driver's decisions. The anticipated speeds, along with available sight distance on the approach to and within the merging section, should be considered during design.