

RAMP CONFIGURATION

Description

Access ramp design is one key way to manage a freeway network. Changes to ramp configuration can help manage traffic flows at key junctions in order to maximize operational performance. Some transportation departments effectively implemented new ramps, braiding pairs of ramps by physical grade separation or even closing ramps at problem locations.

Some agencies approached the issue by modifying configurations via ramp relocations and ramp reversals (a ramp reversal is a replacement of an entrance ramp with an exit ramp or vice versa), often for the purpose of reducing vehicle queues at critical locations. The “X” ramp design has become popular in Texas as the alternative to the traditional diamond because of the potential for economic development, operational, and safety benefits. Each of these improvements seeks to maximize vehicular movement while minimizing cost.

Target Market

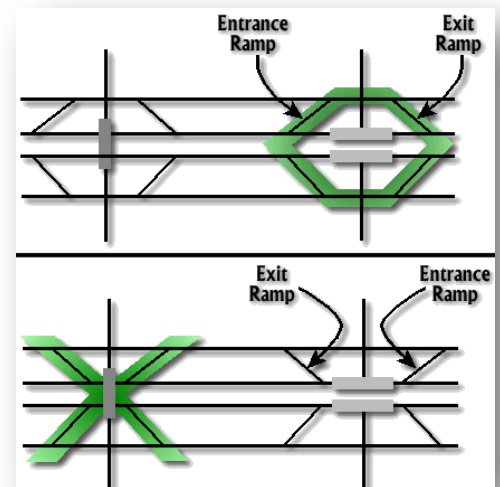
Reconfiguring entrance and exit ramps works well on freeways with significant development along the frontage roads.

How Will This Help?

- Increase direct access along the frontage road.
- Improve safety because of optimized traffic flows at key junctions.
- Reduce congestion caused by ramp queue spillback onto main freeway lanes.

Implementation Issues

Changes to ramp configuration require careful traffic analysis to determine if the changes will result in positive outcomes without unintended consequences. For Interstate facilities, this analysis means completion of a formal Interstate Access Justification (IAJ) study.



Cost:	●●●○○
Time:	Moderate
Impact:	Spot
Who:	City/State
Hurdles:	New Access

Success Stories

- **Single Ramp:** IH 30 “Canyon” ramp reversal in Dallas—The eastbound Harwood exit ramp was converted to an entrance ramp in a problem weaving area. The project significantly reduced delay and had a 9:1 benefit-cost ratio and injury crashes dropped 31 percent.
- **Ramp Pair:** IH 20 at Cooper Street in Arlington—A reversal of the entrance and exit ramps enabled a 400,000 square foot expansion at the Parks Mall directly adjacent to the improved access. Crashes on the frontage road decreased by 41 percent, and queue spillback on the freeway was eliminated.
- **“X” Ramp Corridor:** South Padre Island/SH 358 in Corpus Christi— Most ramps along the busy retail corridor were reversed, alleviating common queue spillbacks and frequent main lane congestion.