

### Eliminating and Redesigning Slip Lanes

#### Description

Slip lanes (also known as right-turn channels, with the corners islands sometimes referred to colloquially as pork chops) are separated lanes at intersections that allow right-turning vehicles to enter a cross street without passing through the intersection. This intersection design includes a raised concrete island, which pedestrians must reach as a first stage of crossing the intersection. Slip lanes reduce drivers' awareness of crossing pedestrians because they are led to focus on the traffic stream into which they are merging, and also impair visibility of the traffic stream because of the angle of approach. The design increases crash risks by encouraging faster speeds during a complex manoeuvre. Slip lanes also greatly increase crossing complexity for pedestrians and cyclists, by increasing total crossing distance, requiring judgement about crossing fast-moving traffic without the benefit of a traffic signal, and potentially requiring several signal phases to complete the crossing. Slip lanes may discourage these active modes of transportation. Pork chops islands can have significant impact on capacity, which may or may not have an adverse impact on safety.

This measure works best by eliminating the slip lane and regularizing the intersection to classic perpendicular crossing geometry. A compromise may be to redesign slip lanes so that vehicles enter the cross street at a sharper angle (typically 70°). The latter measure is known as the "Urban Smart Channel." This measure is best accompanied by a **raised crossing** across the slip lane to clarify right-of-way and slow right-turning vehicles.

#### How it Works

Eliminating slip lanes obliges drivers to pass through the intersection to execute the right-turn, resulting in reduced travel speeds, improved driver awareness of crossing pedestrians or cyclists, and improved driver sight lines of the traffic stream approaching from the left.

Reconstructing slip lanes along the "Urban Smart Channel" concept forces vehicles to enter the cross street at a sharper angle. This reduces the turning radius, which causes drivers to slow down to complete the turn. The sharper entry angle also means that more of the intersection and cross street is within the driver's immediate cone of vision. As a result, the driver does not need to do a sharp left shoulder check, which simplifies the turn. Finally, this layout also positions crossing pedestrians more directly in the line of sight of oncoming vehicles, which increases their visibility to drivers.

#### Evidence of Effectiveness

No CRFs were found for this measure. Research on slip lanes has documented substantial risks to pedestrians at intersections, particularly with high-speed turns. Evidence to date about smart channel design with a 70° angle of entry into the intersection points to a CRF of 56.3% reduction in overall collisions, based on a Full-Bayes analysis.

#### Typical Implementation Considerations

There may be concerns about accommodating large vehicles if a slip lane is removed and smaller turning radii implemented. However, intersection designs have often overlooked the "effective" turning radius, which can be greater than the corner radius if the right-turning lane is not immediately adjacent to the face of the curb (for example, where there are parking spaces). Newer engineering practices determine the effective radius by measuring the actual path that vehicles may follow into receiving lanes.