

Right Turn Slip Lanes

CRASH REDUCTION STRATEGY SUMMARY

WHAT?

Right turn slip lanes are a type of channelized turn lane that decreases vehicle speed when making a turn. The difference between a standard channelized right turn lane and a right turn slip lane lies in the geometry. A right turn slip lane consists of a compound radius that results in lower vehicle speeds than a standard channelized right turn lane.

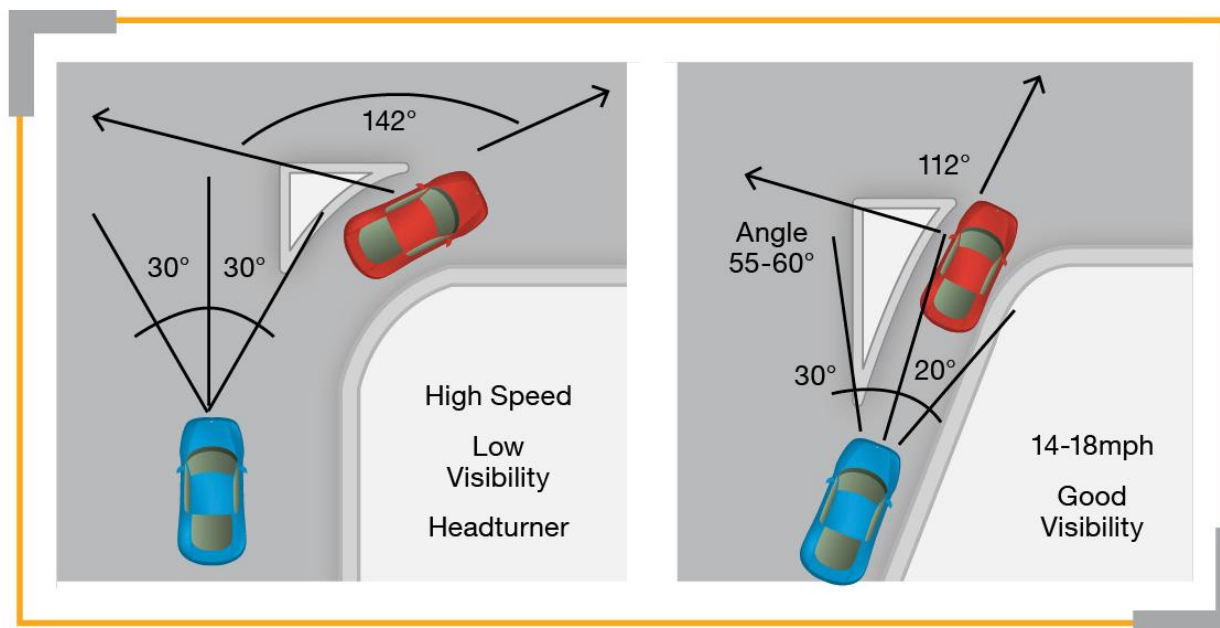
WHY?

The support of right turn slip lanes is twofold. With any channelized right turn lane, a vehicle need not enter the intersection to complete a right turn, though it must still yield to traffic from the intersection that has right of way. Most often, the increased throughput

on the intersection is cited as a benefit. Separation of turn movements can decrease queue lengths especially in the right-most lane(s). The current AASHTO Standard for any channelized right turn requires the driver to turn back to the left to view traffic from the intersection to which it must yield. A right turn slip lane design decreases this angle, and decreases the speed a vehicle can maintain while completing a right turn.

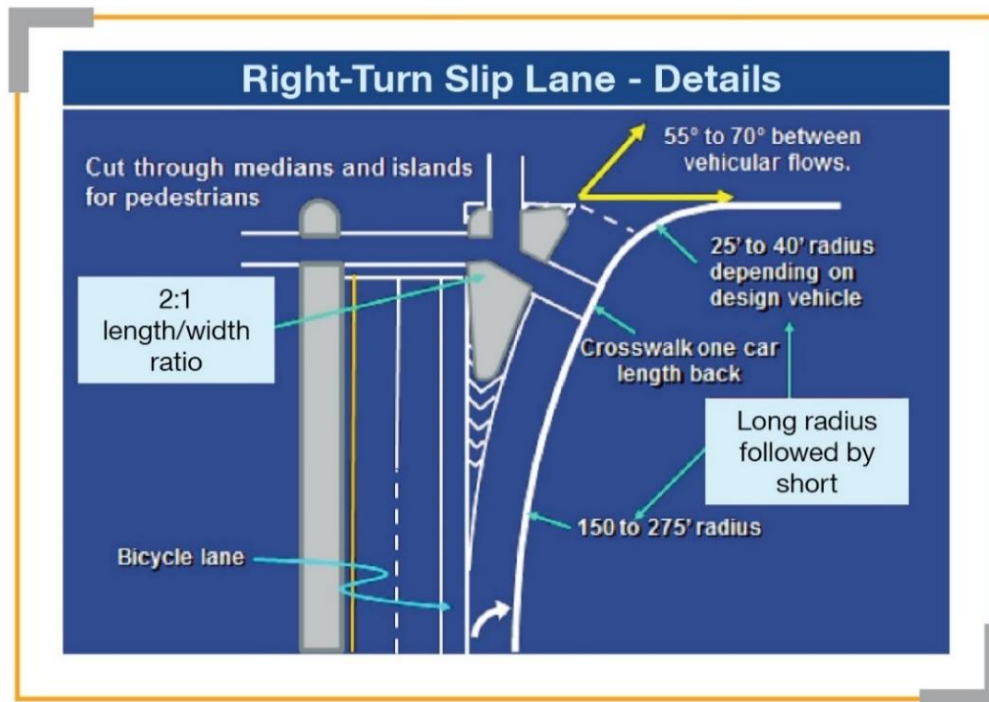
Right turn slip lane concerns exist around misinformation regarding priority for vehicles and pedestrians at the intersection. Pedestrians often assume that vehicles turning right must stop when the light is red. However, vehicles in a right turn slip lane usually focus on yielding to traffic flowing from the intersection, as opposed to pedestrians.

Figure 1 – Channelized Right Turn versus Right Turn Slip Lane



Source: Zegeer et al., 2002.

Figure 2 – Right Turn Slip Lane Details



Source: PEDSAFE, <http://www.pedbikesafe.org>.

SAFETY BENEFITS

The following table summarizes the safety benefits of the implementation of right turn slip lanes.

Table 1 – Summary of Safety Benefits

	Yes	No
FHWA Proven Countermeasure		X
Included in the HSM		X
Included in the CMF Clearinghouse *		X

* Note: CMFs with less than a 4 star rating, may not be reliable and are not to be used in crash reduction.

Other Safety Studies

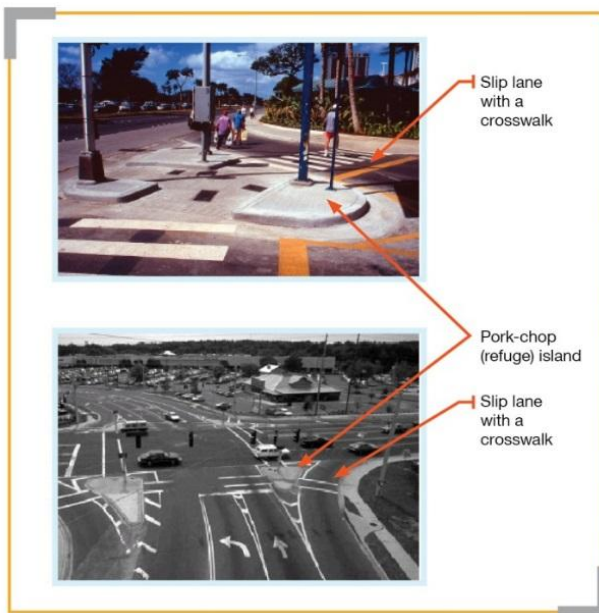
In addition to improving intersection throughput, intersections slip lanes have experienced crashes and injuries less than other intersections (8% less) (O'Brien et. al, 2012). Potts found in 2013 that channelized right turn lanes had a lower estimate of total crash frequency than conventional right turn lanes (a dedicated right turn lane with no island) but a higher estimate than shared

through and right turn lanes (Potts et al., 2013). Potts also found that, “conventional right turn lanes had substantially more pedestrian crashes (approximately 70% to 80% more) than approaches with channelized right turn lanes or shared through and right turn lanes.”

How?

Right turn slip lanes are most commonly found at higher flow signalized intersections particularly when a right turn movement has high demand. The slip lane allows separation of intersection movements which can reduce confusion for approaching vehicles. Although this situation is rare, a left turn slip lane is possible at the intersection of two one-way streets. Pedestrian safety at intersections is a significant concern. With right turn slip lanes, pedestrians crossing need to only watch for vehicles turning right after they reach an island and choose to exit the intersection area or if crossing the slip lane at the beginning, pedestrians only have to cross the single lane at one time.

Figure 3 – Slip Lane with Crosswalk



Source: Transportation Research Board and FHWA

The design of right turn slip lanes is of particular importance. A conventional right turn slip lane can be difficult for pedestrians if speeds are high for right-turning vehicles. A slip lane with a compound curve radius can provide the benefits to pedestrians of slower moving vehicles while keeping the larger radius where required for vehicles to decrease their speed. Furthermore, the standard channelized turn lane decreases driver visibility to the oncoming traffic from the intersection. A compound curve radius right turn slip lane decreases this angle and lets the driver view more of the vehicles coming from the intersection.

SUMMARY

Right turn slip lanes are a type of channelized turn lane. There is currently insufficient data to document the safety benefit of right turn slip lanes. However, compared to standard channelized turn lanes, slip lanes allow drivers a better field of view and decrease turning speeds providing a safer pedestrian environment. Right turn slip lanes are an option wherever a channelized right turn lane is appropriate and right-of-way is available.

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