

This guidance should be used for street retrofit bike lane projects where implementing protected intersections is not feasible and mixing zones are required.

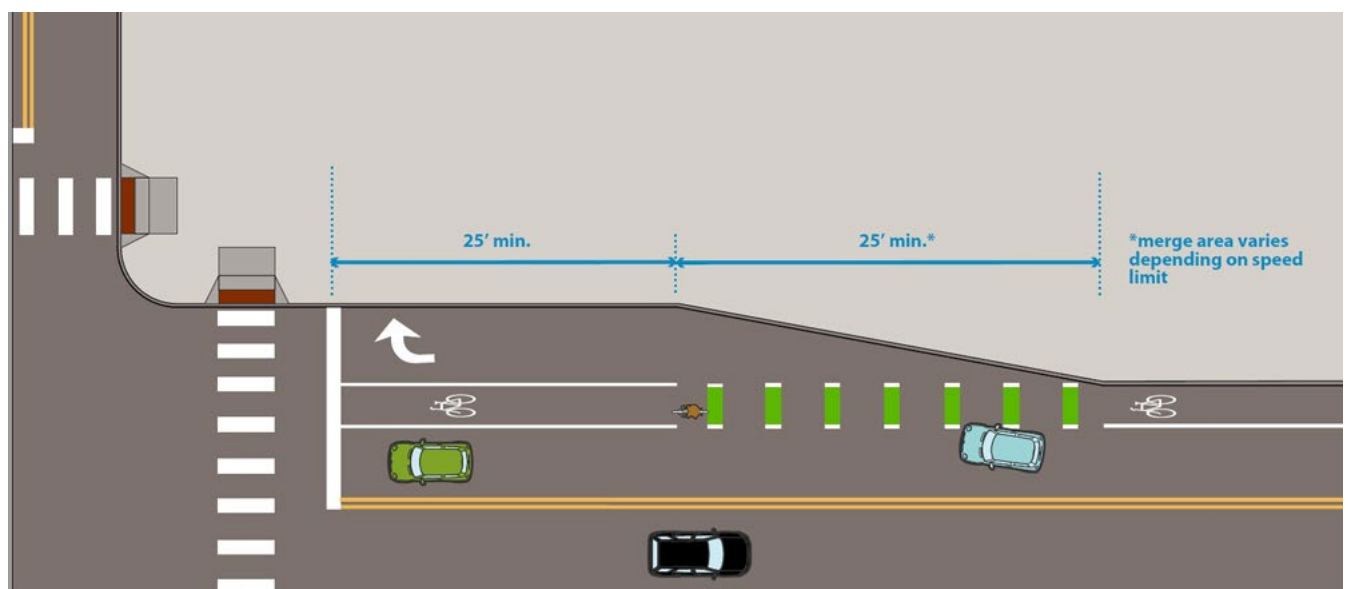
INTRODUCTION

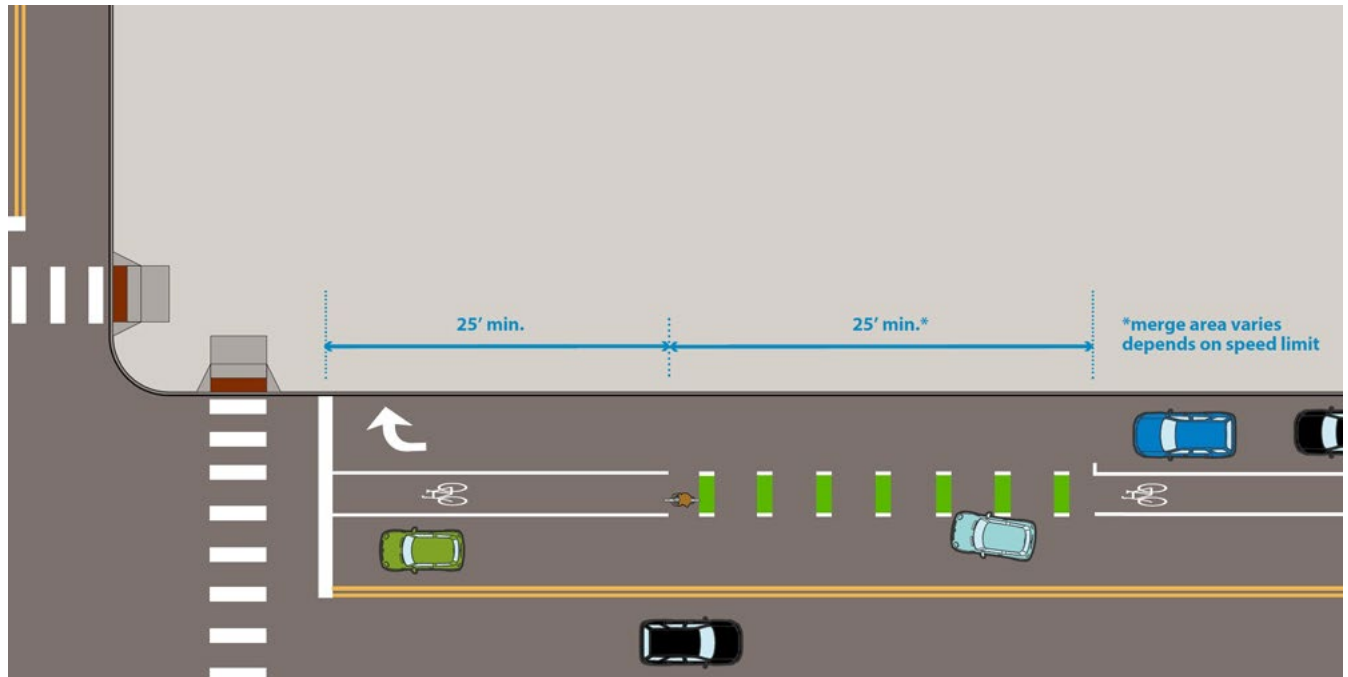
This guidance should be used for street retrofit bike lane projects where implementing protected intersections is not feasible and mixing zones are required. This guidance is not intended for use with street reconstruction projects.

BIKE LANE ADJACENT TO DEDICATED TURN LANES

At intersections with dedicated turn lanes, provide separate space for the bike lane and turn lane whenever feasible. At intersection approaches, drivers must yield to bikes in the mixing area to enter the turn lane.

Figure 3.7E.7: Bike lane adjacent to dedicated turn lane





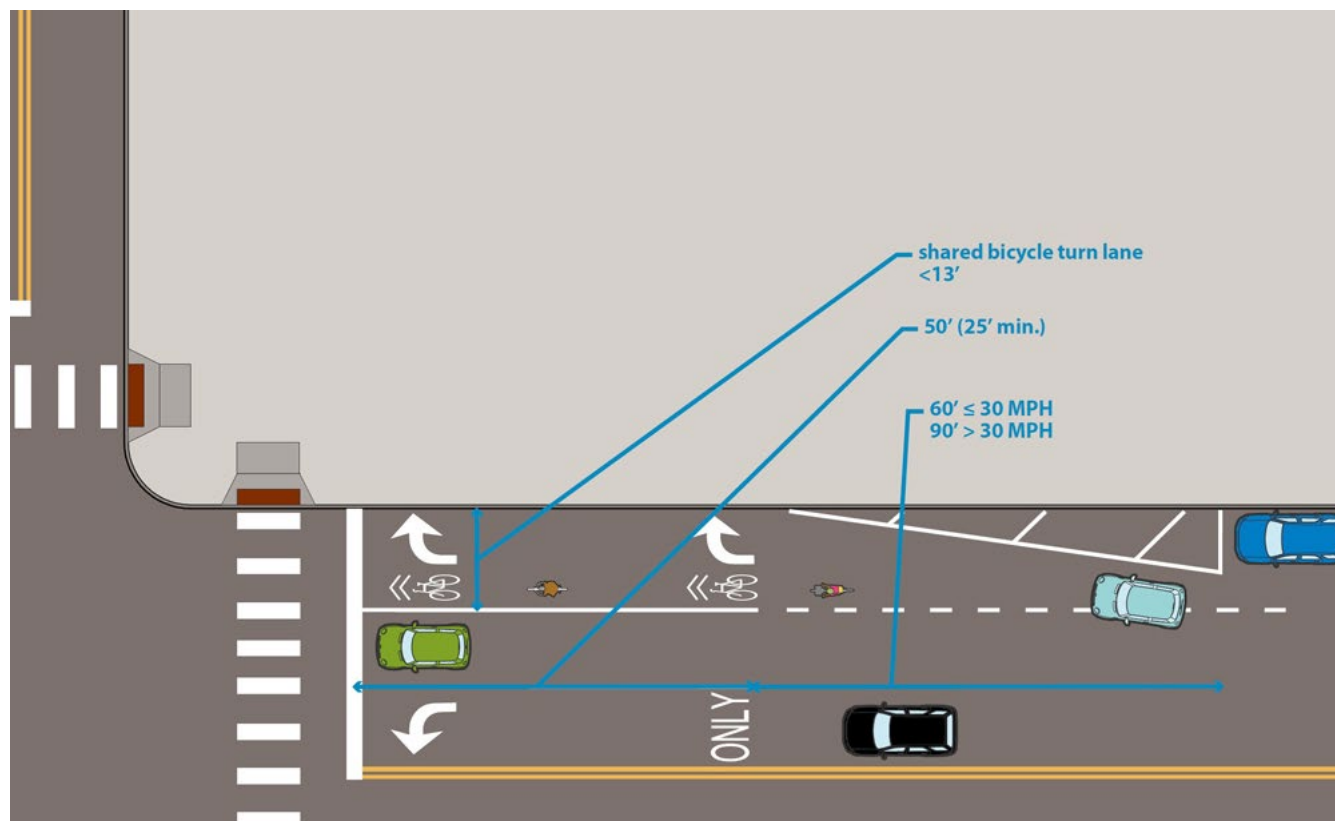
DESIGN CONSIDERATIONS

A. Bike lane location	<ol style="list-style-type: none"> 1. The bike lane should generally be located to the left of the right-turn lane, or to the right of the left-turn lane. 2. If a protected intersection is being implemented in coordination with an intersecting protected bikeway, the bike lane can be moved to the right of the right-turn lane.
B. Merging location	The merge location should be located a minimum 30 feet in advance of the intersection.
C. Mixing zone dimensions	Mixing zone length should be determined by the posted speed limit.
D. Signage	BEGIN RIGHT-TURN LANE YIELD TO BIKES (R4-4) should be installed at the beginning of mixing zones.
E. Striping	Green conflict zone markings are recommended for the mixing area to indicate the preferred bicycle travel path and to increase driver awareness.
F. Parking	Parking should be prohibited a minimum of 10' in advance of the beginning of the motor vehicle taper.

SHARED BICYCLE RIGHT-TURN LANE

In space-constrained locations with a dedicated right-turn or left-turn lane, bike lanes may share the turn lane space to continue through the intersection. Since shared lanes are not as comfortable as dedicated bike lanes, they should only be pursued with street retrofit projects where all other bike lane intersection design options are exhausted.

Figure 3.7E.8: Shared bicycle right-turn lane



Design Considerations

A. Pavement markings

1. A right turn arrow may be located in the mixing zone to alert drivers to the presence of the turn lane and the preferred location to merge
2. Shared lane pavement markings or green conflict zone markings may be striped to indicate the preferred bicycle travel path through the turn lane and to increase the visibility of people biking to drivers.

B. Signage

1. BEGIN RIGHT-TURN LANE YIELD TO BIKES (R4-4) should be installed at the beginning of mixing zones.
2. An "EXCEPT BIKES" plaque should be posted beneath any mandatory turn lane signs to permit through travel by bicycles

BIKE LANE AT INTERSECTIONS WITHOUT A TURN LANE

Most intersections throughout Minneapolis lack dedicated turn lanes. Bike Lane mixing zones are typically employed upstream of unprotected intersections to indicate where drivers should merge into the bike lane to complete a turn.

Design Considerations

A. Dimensions	Mixing zones are typically 60' in length and are striped upstream of intersections or in advance of transit stops.
B. Striping	<ol style="list-style-type: none"> Mixing zones may be striped with either dotted white lines or green conflict zone markings. Dotted white lines and green conflict zone markings shall be 2' in length with a 6' gap (8' cycle) (Minneapolis Pavement Marking Notes, Colored Conflict Zones Standard Plate) Dotted white lines or green conflict zone markings may be continued across the intersection to indicate the preferred bicycle travel path and increase driver awareness At intersections with one-way streets where turning movements are prohibited, continue solid bike lane striping to the intersection

ONE-WAY PROTECTED BIKE LANE WITH MIXING ZONE

Protected intersections are preferred but not always feasible with protected bike lane retrofit projects. As a result, protected bike lanes may be design with mixing zones when space constraints preclude protected intersections.

Figure 3.7E.9: Bike lane without turn lane

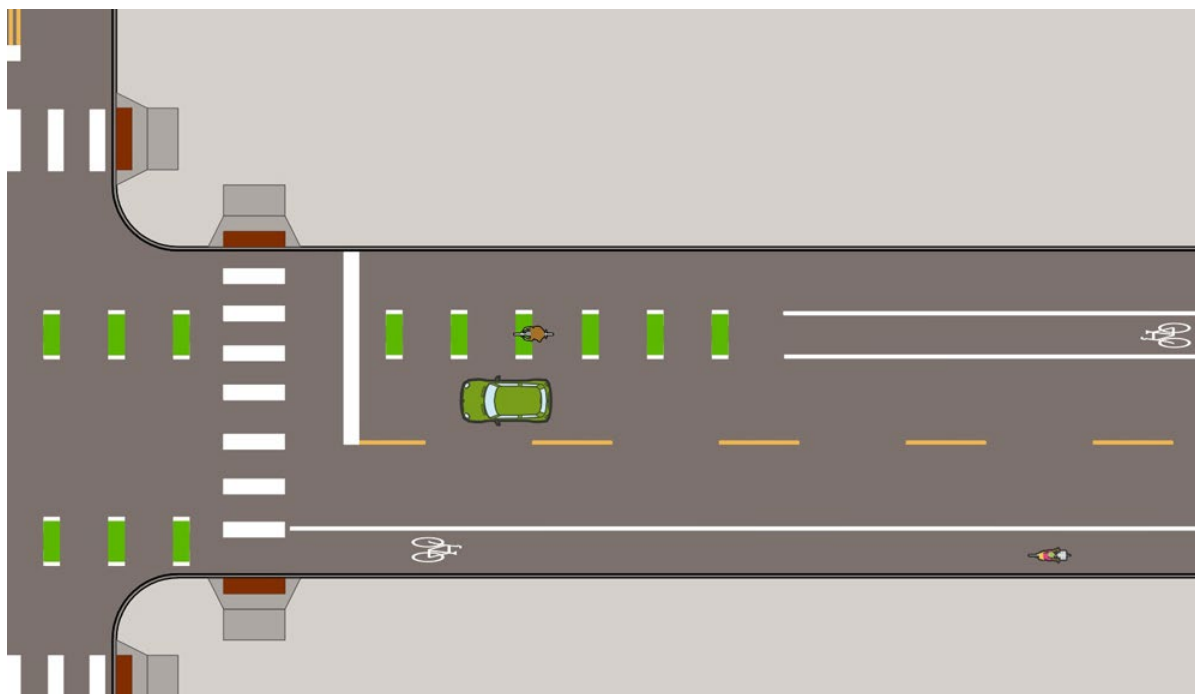
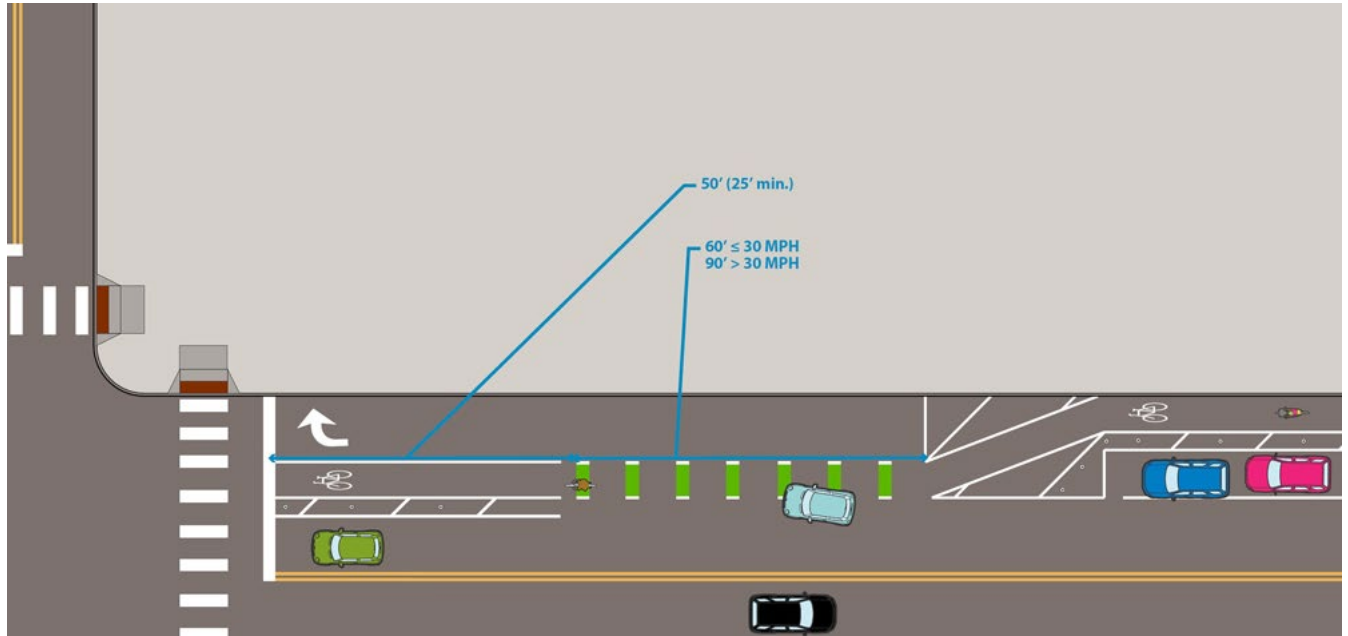


Figure 3.7E.10: One-way protected bike lane with mixing zone



Design Considerations

A. Mixing Zones

One-way protected bike lanes may incorporate mixing zones to accommodate dedicated right-turn lanes. Follow details in “Bike lanes adjacent to a dedicated turn lanes” guidance.

B. Vertical delineation

One-way on-street protected bike lanes should extend vertical delineation to the intersection whenever possible.

C. Bike lane taper

When transitioning the protected bikeway from adjacent to the curb to the left of a dedicated turn-lane, locating the bike lane taper in advance of the mixing zone is preferred.