

Safety Evaluations Phase XI

Project Started May 2019

Evaluation of three safety improvements:

- ▶ Wrong Way Driving Countermeasures
- ▶ Mini-roundabouts
- ▶ Bicycle Lane Configurations at Intersections

Each evaluation has its unique challenges!

Wrong Way Driving Countermeasures (WWD)

Challenges: a very wide field to choose from!

- ▶ Geometric design approaches
- ▶ Conventional TCDs (signs, markings, signals etc.)
- ▶ Enhanced TCDs
- ▶ ITS Alternatives (detection active warning, notification components)



Countermeasures (WWD) of Interest

- ▶ Narrow countermeasures and facility types
- ▶ Focus on most frequent applications to maximize potential number of sites:
 - ▶ Static and enhanced TCDs
 - ▶ Geometry-based treatments could be considered (e.g., access management, interchange designs)
 - ▶ ITS solutions are not being considered

Facility Types Countermeasures and Data Sources

▶ Divided Highways

- ▶ Leverage NCHRP Report 881 database. Under consideration:
 - ▶ DO NOT ENTER and WRONG WAY signs on the outside of a wrong way turn
 - ▶ Wrong Way Arrow Pavement Markings for the through lanes
 - ▶ Median crossing treatments

▶ Freeways (urban and rural)

- ▶ Pursue emerging databases
 - ▶ WWD events logs
 - ▶ LED embedded signs
 - ▶ Signs with Red RRFBs

Poll Question: Are you aware of any WWD safety databases in your state that we could use (including WWD events)?

Yes

No

PQ2. If you answered Yes, please provide your contact information. We will reach out to you

When survey is active, respond at **PollEv.com/tsc2018**

0 surveys done

 0 surveys underway

Start the presentation to see live content. Still no live content? Install the app or get help at PollEv.com/app

Mini Roundabouts (MR)

A promising intersection design! (Another presentation will provide more details)

Based on experience with roundabouts it is expected that maximum safety at MRs are achieved when:

- ▶ Single lanes are provided on all approaches well in advance of the MR
- ▶ Low operational speeds
- ▶ RRFBs are provided for pedestrians and bicyclists when operational speeds are moderate high (not all MR are created equal)



Mini Roundabouts (MR): Challenges

- ▶ Low speed environments tend to show few crashes, which would require a very large sample for a crash evaluation
 - ▶ Alternative methods may be needed for MR evaluation
- ▶ Because of expected low counts of crashes, at least 800 veh/hr at peak hour are sought

Mini Roundabouts (MR): Challenges

- ▶ Low speed environments tend to show few crashes, which would require a very large sample for a crash evaluation
 - ▶ Alternative methods may be needed for MR evaluation
- ▶ Because of expected low counts of crashes, at least 800 veh/hr at peak hour are strongly preferred
- ▶ Potential locations in MN, VA, MI

PQ3Av. Are you aware of any Mini Roundabout locations in your state that we could use in this study?

Yes

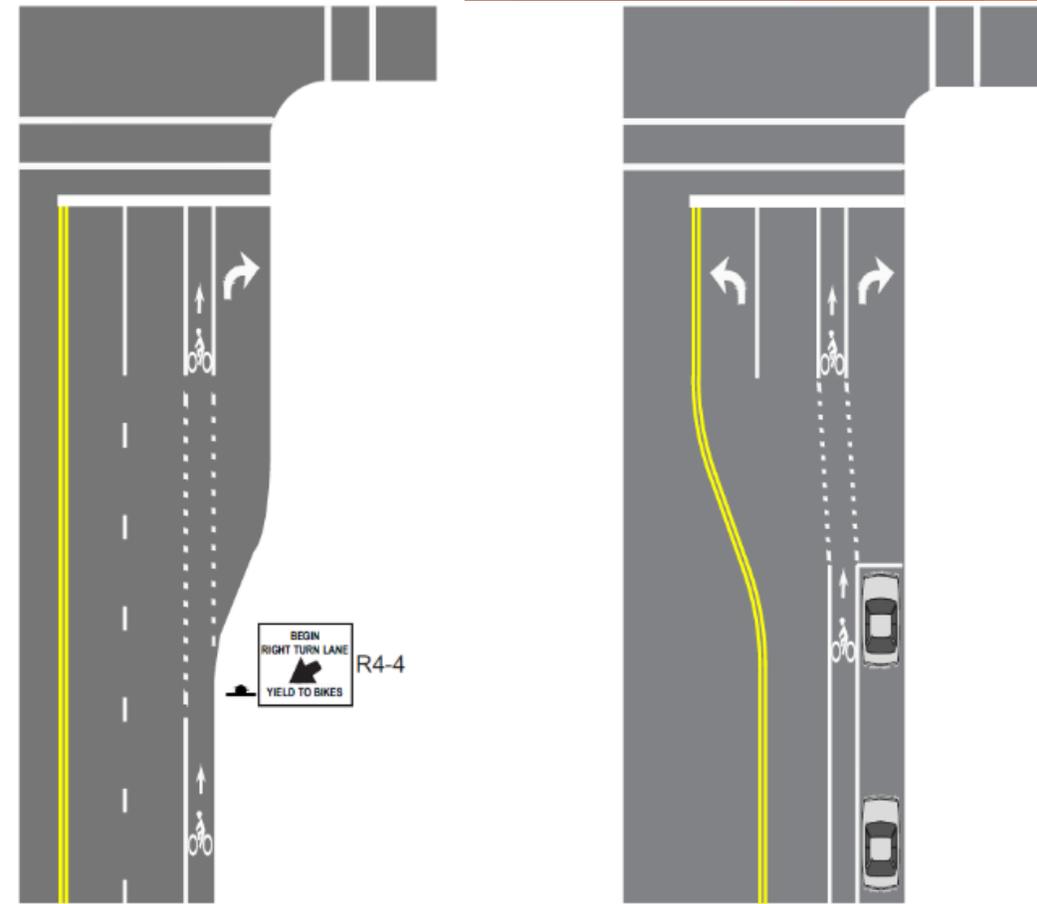
No



PQ4Av. If you answered Yes, please provide your contact information

Right Turn Configurations at Intersections for Bicycle Lanes

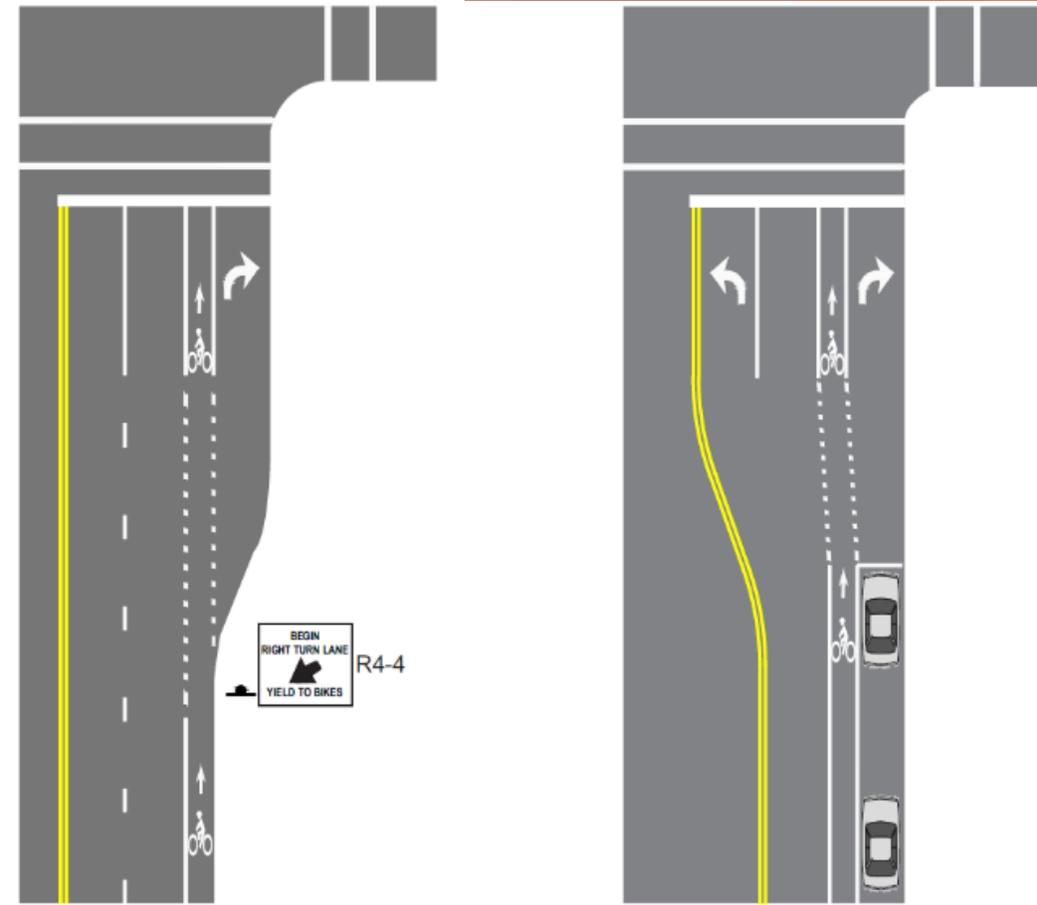
- ▶ Most crashes between bicyclists and motorized vehicles occur at the intersections
- ▶ To provide additional accommodation for bicycles, transportation agencies can place a bicycle lane on the left of the RTL



Bike Lane Approaching RTLs (AASHTO, 2012).

RTC Challenges

- ▶ Sufficient number of treated sites out there (good)
- ▶ Bicycle crashes still relatively rare, which potentially requires a bigger sample size
- ▶ The biggest challenge is finding enough sites with bicycle volumes
- ▶ Due to scarcity of bicycle volumes, before/after design specially challenging



Bike Lane Approaching RTLs (AASHTO, 2012).

PQ5Av. Are you aware of bicycle volume data we could leverage for this study?

Yes

No

PQ6Av If you answered Yes, please provide your contact information

Questions?

Raul Avelar

Texas A&M Transportation Institute

r-avelar@tamu.edu