

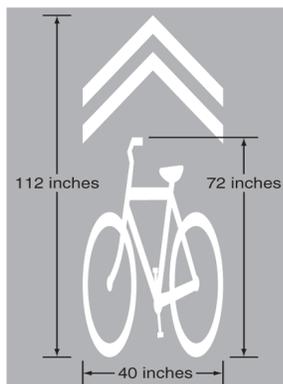


Bicycle Enhancements

General Information

ODOT, like the American Association of State Highway and Transportation Officials (AASHTO), considers cycling an important transportation mode. According to the AASHTO *Guide for the Development of Bicycle Facilities*, “bike lanes and paved shoulders result in more consistent separation between bicyclists and passing motorists.” There are also countermeasures that can remind drivers that there are bicyclists either in the roadway or in a bike lane. There are also traffic calming techniques to increase comfort of the cyclists, that can be used where appropriate. Some of the countermeasures are listed below:

- ✓ Advanced Warning Signs- These signs are similar to the advanced warning signs used for pedestrians.
- ✓ Green Bike Lanes at Conflict Points- These are painted (or other material) sections of bike lanes that are used to bring conspicuity to the bike lane. They are a visual reminder to drivers that cyclists are also in the intersections.
- ✓ “Sharrows”- These have multiple uses. They inform bicyclists where to ride in the lane, warn drivers where bicyclists are likely to be in the roadway, encourage safe passing distances by vehicles, and reduce incidences of wrong-way riding.
- ✓ Bike Pavement Stencils at Conflict Points- These are roadway stencils to bring attention to bike lanes and location of cyclists.



Credit: Figure 9C-9 from 2009 MUTCD, Part 9, Traffic Control for Bicycle Facilities and from singlespeedseattle.com

By the Numbers

Cyclists are considered to be vulnerable road users. Because of this ODOT takes care to create a safe riding experience. Listed below are the crash reduction factors associated with the above countermeasures.

- ✓ Advanced Warning Signs: 4% reduction in all crashes and 15% reduction in bicycle crashes.*
- ✓ Green Bike Lanes at Conflict Points: 39% reduction in vehicle/bicycle crashes.
- ✓ Bike Pavement Stencils at Conflict Points: not fully studied but accepted that it reduces crashes.
- ✓ “Sharrows”: not fully studied but accepted that they reduce crashes. They are on the CMF Clearinghouse most wanted list.

The cost to install these countermeasures varies greatly between types. It depends on the materials used as well as the location of the installation. The list below contains the cost of the countermeasures detailed on this sheet:

- ✓ Advanced Warning Signs: \$500-\$700 per sign, installed on a wood post
- ✓ Green Bike Lanes at Conflict Points**: \$1.50/sq. ft to \$10.00/sq. ft, depending on material used, the cheapest being paint, and the most expensive being thermoplastic.
- ✓ Bike Pavement Stencils at Conflict Points: \$300-\$700 per legend
- ✓ “Sharrows”: \$300-\$700 per legend

Helpful Resources

- ✓ AASHTO *Guide for the Development of Bicycle Facilities*, 2012
- ✓ MUTCD, 2009, Part 9, Traffic Control for Bicycle Facilities
- ✓ *Highway Safety Manual* Chapter 13
- ✓ Crash Modification Clearinghouse
<http://www.cmfclearinghouse.org/>

* Advanced Warning Signs for bikes do not have a studied CRF associated with them. Advanced warning signs for pedestrians are similar in type, and it is accepted that advanced warning signs for bikes are likely to have an influence similar to that for pedestrian warning signs.

**Portland has been averaging around \$8.50/sq. ft. installed thermoplastic markings.