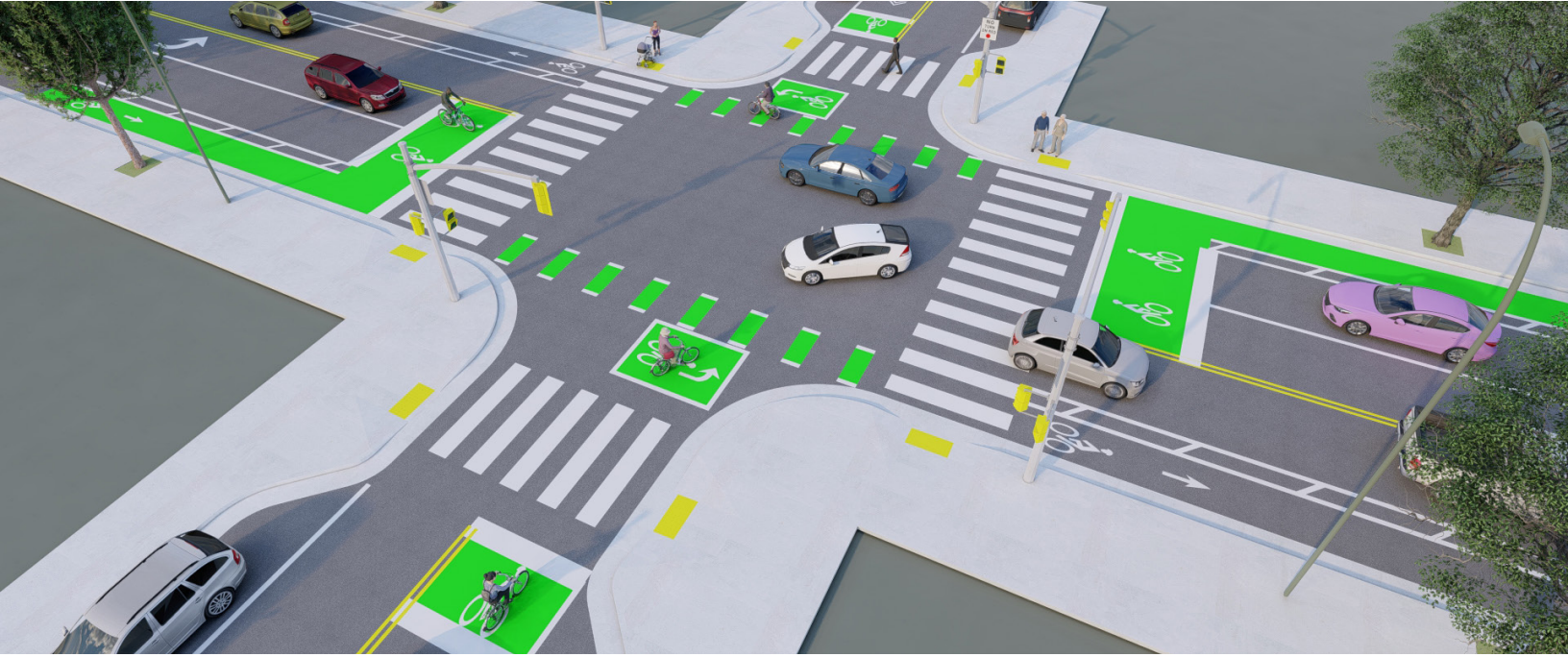




Bike Boxes & Two-Stage Left-Turn Boxes



DESCRIPTION

- A bike box is a designated area placed ahead of a travel lane at a signalized intersection in which bicyclists can safely get ahead of stopped traffic during a red light.
- Bike boxes help to prevent conflicts between bicyclists and right-turning vehicles and increase the visibility of bicyclists at intersections by facilitating better left-turn positioning and giving bicyclists a head start when the signal changes.
- A two-stage left-turn box is a marked area in an intersection in which bicyclists can safely wait and prepare to make a two-stage left-turn.
- Two-stage left-turn boxes can also help facilitate transitions from cycle tracks or shared use paths and prevent the need for cyclists to merge into traffic or across several travel lanes to make a left-turn.

CONTEXT

- Bike boxes are typically installed at signalized intersections with frequent bicyclist left-turns, motorist right-turns, or where a bicycle lane transitions to the left-side of the street.
- Two-stage left-turn boxes are typically installed at signalized intersections where at least one intersecting road has more than one lane.

BENEFITS

- ✓ **Improved safety**
- ✓ **Increased efficiency**
- ✓ **Improved comfort**



Charlottesville, VA

POLICY AND DESIGN GUIDANCE

- Bike boxes are formed by two transverse lines, often the crosswalk line on one side and an advanced stop line on the other, indicating the point behind which motorists are required to stop.
- Bike boxes may extend across multiple travel lanes or just the right-most lane.
- An ingress lane should be used to define the bicycle space ahead of the bike box and an egress lane may be used to clearly define the bicycle space through the intersection.
- Two-stage left-turn boxes shall be placed in a protected area, buffered by either a cycle track, parking lane, or crosswalk setback. At midblock locations, a “jughandle” configuration can be used to integrate the queue box into the sidewalk space.
- Right-turns on red shall be prohibited to prevent motorists from entering the bike boxes.
- Green pavement markings are often used as a background color to increase visibility and compliance.
- Pavement marking materials range from \$2 - \$20 per square foot, depending on material and expected performance. Bicycle lanes may range from \$85,000 - \$320,000 per mile (high end assumes continuous application of green pavement markings in conflict areas.)

For more information on **Bike Boxes, Two-Stage Left-Turn Boxes** and other bicycle and pedestrian treatments, visit virginiadot.org/programs/bikeped/bicycle_and_pedestrian_treatments.asp

RESOURCES

Treatment applications and general design guidance:

[NACTO](#)

[AASHTO](#)

[VTRC](#)

Geometric design guidance for Virginia:

[VDOT Road Design Manual](#)

Pavement markings, signage, and spacing:

[MUTCD](#)

[MUTCD Interim Approval IA-18](#)

[MUTCD Interim Approval IA-20](#)

[VDOT 2016 Road and Bridge Standards](#)

[Virginia Supplement to the MUTCD](#)

Material Guidance:

[Oklahoma DOT](#)

Guidelines are provided for informational purposes only. For detailed design guidance, please refer directly to design manuals and standards.

