New Lines on the Road:  
Canada’s Guidelines for the  
Design and Application of  
Bikeway Pavement Markings

Norma Moores, P.Eng.  
ProWalk/ProBike 2008
Transportation Association of Canada:

• National member organization providing Canadians with road infrastructure and urban transportation knowledge.
1998 Bikeway Traffic Control Guidelines

- +7 years
- Regulatory, warning and information signs
- 31 typical pavement marking applications
2008 Guidelines for Bikeway Pavement Markings

- 3 studies
- 4 years
- 13 measures
- 6 signs

Transportation Association of Canada
December 2007
• Bicycle signage recognition testing

• Coloured bicycle lanes simulator testing
Measures

- Shared use lane markings
- Bicycle crossing marking
- Roundabouts
- Coloured bike lanes
- Bike box
- Bicycle loop detector marking
- Other recommended measures and signs
Shared Use Lane Marking

- 100 mm
- Spacing 75 m
Shared Use Lanes – Side-by-side

No on-street parking

Not wide enough for a bike lane

≤ 60 km/h

Share the Road Sign and Tab
Shared Use Lanes – Side-by-side

- Full-time on-street parking
- Not wide enough for a bike lane
- $\leq 60$ km/h

Share the Road Sign and Tab

Notation: $\leq$ means less than or equal to.
Shared the Road Ends?
Shared Use Lanes – Single File

Lane < 4.0 m wide

Approaching roundabouts

≤ 50 km/h

Short roadway sections < 500 m

Single File Sign and Tab

Centre of Lane
# Shared Use Lane Single File Sign

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Positioning at Intersections – Right-turn Lane

Insufficient width for bike lane at intersection
Position of marking in lane depends on width of lane
Bicycle Crossing

- Legislation in many provinces do no allow cyclists to ride in a pedestrian crosswalk
- Multi-use trail crossing where both pedestrians and cyclists cross, and cyclists only

**ELEPHANT’S FEET**
Multi-use Trail Crossing at Intersection

Separate Bike Crossing

Cyclists

Pedestrians

Trail Crossing Side Street
Warning Sign and Tab
Multi-use Trail Crossing at Intersection

Combined Crossing

Trail Crossing Side Street Warning Sign and Tab
### Trail Crossing Side Street Warning Sign

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## Trail Crossing Side Street Warning Sign

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Roundabouts

Single lane roundabout:
• End bike lane before roundabout approach
• Bicycle traffic merges with traffic stream
• Add shared use lane marking in centre of lane
• Shared path by-pass optional
Multi-lane roundabout:

- Provide shared path by-pass
- Optional integration into traffic stream with shared use lane markings
Multi-Lane Roundabout

Bicycle By-pass, optional shared use markings

- Pedestrian Crossing
- Cyclist Crossing
- Ramp Down to Bicycle Lane
- Shared Use Path
- Zebra Crosswalk
- Elephant's Feet Bicycle Crossing
- Ramp Up from Bicycle Lane
Roundabout Signs

Route Guidance

Multi-lane Lane Guidance
Coloured Bike Lanes

- In conflict areas
- University of Calgary Driving Simulator at the Cognitive Ergonomics Research Laboratory
  - Driver simulator testing
  - Comprehension testing
  - Preference testing
Coloured Bike Lanes

Blue dashed

White dashed

Blue solid

Sharrows
(bicycle symbol and double chevrons)
Coloured Bike Lanes

- Test drive: Driver speed and standard deviation in lane position not affected by treatment
- Comprehension:

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- Preference: 16 of 30 preferred sharrows
Coloured Bike Lanes

Recommendation:

• **White dashed markings** for carrying a bike lane through a conflict zone

• Potential optional treatment in areas of particular concern: **white “sharrow”** (bicycle symbol with double chevron) with dashed guiding lines on each side
Bike Box

• Area for cyclists to wait and, when the signal turns green, proceed ahead of motor vehicle traffic
• High volume of left-turning cyclists
• Bike lane to “feed” bike box
• Advance left-turn signal phase
• Prohibit right-turn on red
Bike Box Marking

Colouring bike box is optional
Bike Box Vancouver BC

Union and Main
Bike Box Vancouver BC - Before
Bike Box Vancouver BC - After
Bicycle Loop Detector Marking

- Bicycle Loop Detector Marking
- 50 mm
- 500 mm
- 75 mm
- 500 mm
- 75 mm
- 500 mm
- 250 mm
### Bicycle Loop Detector Marking

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Other Measures

- Directional arrows for bikeways
- Bicycle lanes through intersections
- Contra-flow bicycle lanes
- Bicycle lane markings at interchanges
- Bikeway markings at traffic calming devices
- On-street bicycle parking
Other Signs Tested

- Interchange ramp crossing sign
- Contra-flow warning sign
Sponsors

- Alberta Infrastructure and Transportation
- Nova Scotia Department of Transportation and Public Works
- Greater Vancouver Transportation Authority (TransLink)
- City of Hamilton ON
- City of Calgary AB
- City of Moncton NB
- City of Winnipeg MB
- City of Toronto ON
- City of Montreal PQ
- City of Ottawa ON
- City of Mississauga ON
- City of Vancouver BC
- City of Saskatoon SK
- City of Windsor ON
- Regional Municipality of Halton ON
- Halifax Regional Municipality NS
- Regional Municipality of Waterloo ON
Project Steering Committee

- Dave Banks, JoAnn Woodhall, Nancy Button, Region of Waterloo ON
- Richard Chow, Alberta Infrastructure and Transportation
- Don Cook, City of Saskatoon SK
- Gavin Davidson, TransLink BC
- Claudio Corro DeThomasis, Mikhael Fahd, Wes Hicks, City of Windsor ON
- Wilf Koppert, City of Ottawa ON
- Dave McCusker, Halifax Regional Municipality NS
- Thomas Mulligan, Andy Harvey, City of Mississauga ON
- Marc Panneton, Ministere des Transport du Quebec PQ
- David Rawsthorne, City of Vancouver BC
- Edward Soldo, Region of Halton ON
- Hart Solomon, City of Hamilton ON
- Ed Wong, City of Calgary AB

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