Cycle Track
Lessons Learned
Presentation Overview

- Bicycling trends
- Cycle track lessons learned
- What is a “Cycle track”?
- Essential design elements of cycle tracks
  - Separation
  - Width
  - Crossing driveways & low-volume streets
  - Signalized intersections
Trend in kilometers cycled per year in the Netherlands and the UK (1952 – 2006, relative to 1950 level)

Sources: Department for Transport (2007); Netherlands Ministry of Transport (2007)

Pucher and Buehler, 2008
Trend in kilometers cycled per inhabitant per day in the Netherlands and the UK (1978-2005)

Sources: Danish Ministry of Transport (2007); Department for Transport (2007); German Federal Ministry of Transport (2007); Netherlands Ministry of Transport (2007)

Pucher and Buehler, 2008
Trend in cycling fatalities in the USA, the UK, Germany and the Netherlands (1970-2005, relative to 1970 levels)

Sources: Danish Ministry of Transport (2007); Department for Transport (2007); German Federal Ministry of Transport (2007); Netherlands Ministry of Transport (2007); U.S. Department of Transportation (2007)
Inverse trend in cycling fatality rates and annual kilometers cycled per inhabitant in the Netherlands (1950-2005)

Source: Netherlands Ministry of Transport (2007)

Pucher and Buehler, 2008
What is a cycle track?

- Combines the user experience of a separated path with the on-street infrastructure of a bike lane
- Provides space exclusively for bicycles
- Separated from vehicle travel lanes, parking lanes and sidewalks

Cycle tracks are located on the outside of on-street parking
Cycle tracks in Portland

NE 44th & Hancock
- Contra-flow cycle track
- Bike symbol painted on sidewalk

Airport Way
- Two-way cycle track
- Long, busy road with few cross-streets
Cycle tracks in the U.S. – New York

9th Avenue, New York

Photo courtesy of houze
Cycle Tracks in the U.S. – Cambridge, MA

Vasser Street, on MIT Campus
European Bike Fleet

- Utilitarian bikes
- Many cruisers
- Fat tires - less danger of getting caught in tracks
- Slower speeds
Cargo Bikes

- Require more room for maneuvering
Separation – from motorists and pedestrians

Channelized cycle track, Amsterdam

Pavement markings and bollards, Sweden

Mountable curb, Copenhagen
Width

- 5’ minimum for cycle tracks at intersections
- 6.5’ minimum cycle track width
- 7’ typical cycle track width
- 8’ desirable cycle track width for new construction
- Up to 10’ to provide additional capacity
- 2’ buffer on vehicle side is desirable, required if cycle track width is less than 7’

*Source: Niels Jensen, Copenhagen Traffic Department*
Width

**Section with on-street parking**

- Varies
- Parking
- 2'
- 7'

**Section without on-street parking**

- Varies
- Varies
- 2'
- 7'
Driveway Crossings

- Continue the cycle track through the crossing
- Use pavement markings and grade separation to indicate that the cycle track has the right-of-way
Increasing Visibility at Signalized Intersections

- Drop the cycle track to a bike lane ~16’ before intersection
- Move vehicle stop-bar back ~16’
- Stripe the cycle track as it becomes a bike lane, potentially through the intersection, as a “crossbike”
- Remove parking directly before the intersection
Crossbike

- Parallel to crosswalk
- Uses pavement markings to separate pedestrians and bicyclists
Protected Signal Phases

• Prohibit right-turn on red by cars and left turns by bicycles

• Provide an advance or separate green signal for bicycles

• Use bicycle-differentiated signal heads
  ➢ Bicycle icon
  ➢ Smaller signal
  ➢ Located on near-side
  ➢ Countdown to red/green
  ➢ Longer signal phase
Right turning movements

- Can separate automobile right-turn phase from straight-ahead bicycle movements
- Right-turn-past-red: slip lane enables cyclists to pass red signals
- “Expanded cycle stacking lane” for right turn option
The ‘Copenhagen Left’

- Cycle track drops to street-level before the intersection
- Bicyclists turn right into intersecting street
- Position bicycle in front of cars
- Cyclists can go straight on next signal phase
Alternative Left Turns

Bike-only signal, Switzerland

Jug-handle left, Sweden
Yield Controls, not Stop Signs

Yield markings at facility transition, Copenhagen

Yield sign at ‘Copenhagen Left,’ Amsterdam
Two-Way Cycle Tracks

Bike markings, Frankfurt

Two-way cycle track, Stockholm

Divided two-way cycle track, Amsterdam
The ‘Green Wave’

- No red lights at 20 km/hr (12 mph)
- 36,000 bicycle trips per day
Transit Conflicts

Cycle track crossing street car tracks with yield markings
Cycle track passing between bus stop and sidewalk

- Cross at as close to 90 degree angle as possible
- Yield signage or pavement markings
- Minimize conflicts between disembarking transit passengers and cyclists in the cycle track
Green Bicycle Route
Transition to Neighborhood Street

- Regulatory signage
- Pavement change and yield markings
- Bicycle speed bump
- Rumble-Strip pavement markings and curve
Bikeway Signage
Bicycle Escalator & Wheel Gutters

Access to bike parking, Amsterdam

Wheel gutter, Frankfurt

Detail of wheel gutter, Amsterdam
Bike Bridge
Other Innovations

- Angled bicycle refuge
- Retractable bollards
- Cycle track sweeper
- “Watch for blind spots”
Cycle Track Lessons Learned

- One-way each side of a street
- Minimum 6.5’ clear; 7’-8’ preferred; 10’ in higher-demand situations
- 2’ buffer required if width less than 7’, otherwise preferred
- Cycle track located between sidewalk & on-street parking
- Driveways and low volume side streets yield to cycle track, which is unbroken
  - European standard is to use yield control pavement markings, not stop signs at low volume intersections
  - Driveways and low volume side street crossings can be marked, colored, textured
  - Motorists must mount curb to cross
Cycle Tracks Lessons Learned 2

- Cycle tracks at intersections
  - Separate signal cycles for right-turning motorist versus through bike traffic
  - Stop line for motorists pulled back 16’ (can use bike box or pulled back stop line)
  - Can drop cycle track to bike lane 16’ back
  - Use color in bike lane starting 16’ back can use color through intersection
  - Advance green
  - Use of yellow warning before green (2 secs)
  - No right turn on red for any movements
  - No parking at intersections (16’ back)
  - Two-step left turn in many situations

- Buses stop outside cycle track and can be separated - cyclists in cycle track yield to disembarking passengers

- Wayfinding/naming signage should accompany the system
Mia Birk  
Alta Planning and Design  
503.230.9862 or miabirk@altaplanning.com

Robert Burchfield  
City of Portland Traffic Engineer  
503 823 5175 or robert.burchfield@pdxtrans.org

Jay Graves  
President, Bike Gallery  
503.282.3455x203 or jaygraves@bikegallery.com