Bicycle Facility Topics

• Preferred facility type
• Two-way vs. one-way
• Flushed bicycle and pedestrian facilities
• Protected vs. buffered
Conceptual Bridge Width

Option 1

Option 5

Option 6
Conceptual Bridge Width
Bicycle Facilities - Cycle Track

• Exclusive bike facility
• Physically separated from vehicular traffic, parking lanes, and sidewalks
• Provides space intended to be exclusively or primarily used by bicycles
• May be one-way or two-way
• May be at street level, at sidewalk level, or at an intermediate level
• Offers higher level of security than bike lanes

Source: NACTO Urban Bikeway Design Guide
Conceptual Bridge Width

OPTION 2

41' - 0"

Belmont BRIDGE
Bicycle Facilities - Buffered Bike Lane

- Exclusive bike facility
- Includes dedicated buffer space separating the bike lane from vehicular traffic but no physical separation
- Typically runs curbside if no parking is present
- Provides space intended to be exclusively or primarily used by bicycles
- Typically run in the same direction of traffic
- May be distinguished using color, lane markings, and signage

Source: NACTO Urban Bikeway Design Guide
Bicycle Intersection Treatments

**Bike Boxes**
- Designated safe and visible area at the head of a traffic lane
- Allows bicyclists to get ahead of queuing traffic during red signal phase
- Typically used with bike lanes, can be used when cycle tracks terminate at an intersection approach

**Pros**
- Increases visibility of bicyclists
- Reduces signal delay for bicyclists
- Facilitates bicyclists left turning position during red signal indication
- Helps prevent ‘right hook’ conflicts with turning vehicles at the start of green indication

**Cons**
- Vehicle right turn on red restrictions

Source: NACTO Urban Bikeway Design Guide
Bicycle Intersection Treatments

**Two-Stage Turn Queue Boxes**
- Designated area to hold queuing bicyclists
- Formalizes two-stage turn maneuvers
- Can be used with cycle tracks or bike lanes

**Pros**
- Improves ability and comfort to make left-turns
- Provides formal queuing space
- Reduces turning conflicts between bicyclists and vehicles
- Separates turning bicyclists from through bicyclists

**Cons**
- Increased delay for bicyclists
- Vehicle right turn on red restrictions

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Two-Stage Turn Queue Box
Source: NACTO Urban Bikeway Design Guide

University Avenue at Rugby Road, Charlottesville, VA

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Two-Stage Turn Queue Box
Numbers represent the path of left-turning bicyclists

Belmont Bridge
**Bicycle Intersection Treatments**

**Protected Intersection**
- Protected space for bicyclists to queue when crossing and turning
- Can be used with cycle tracks or bike lanes

**Pros**
- Protected space for bicyclists to queue when crossing and turning
- Shortened roadway crossing distance
- Less clearance time for bicyclists and pedestrians
- Provides more reaction time for all users to detect and correct mistakes due to lower speeds

**Cons**
- Increased delay for bicyclists
- Bicyclists must yield to pedestrians with right-of-way
- Requires more space in the immediate vicinity of the intersection
- May require specialized sweeping and snow removal to clear snow and debris

Source: Evolution of the Protected Intersection (Alta Planning and Design, December 2015)
Bicycle Intersection Approach – Dedicated Right Turns

**Bicycle Signal Phase**
- Dedicated bicycle signal phase can eliminate conflict between turning vehicles and bicyclists

**Mixing Zone**
- Combined bike lane/turn lane encourages vehicles and bicyclists to negotiate the space within the travel lane in advance of the intersection

**Through Bike Lane**
- Maintains the bike lane to the left of a right-turn only lane positions road users to avoid right-hook collisions

Source: NACTO Urban Bikeway Design Guide

a) Bike signal phase  
b) Mixing zone  
c) Through bike lane

Source: NACTO Urban Bikeway Design Guide