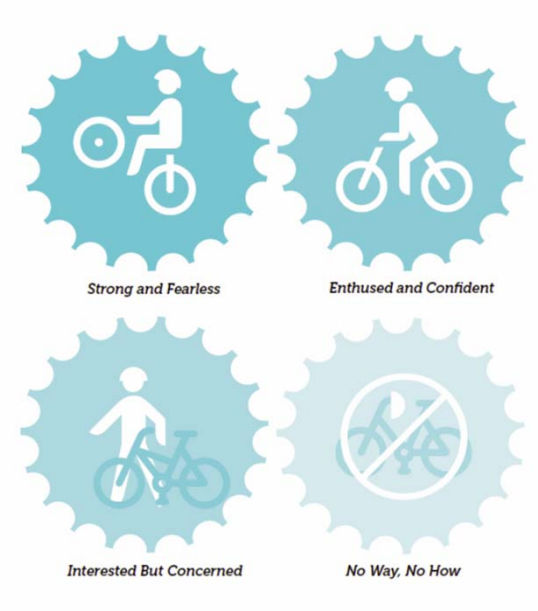
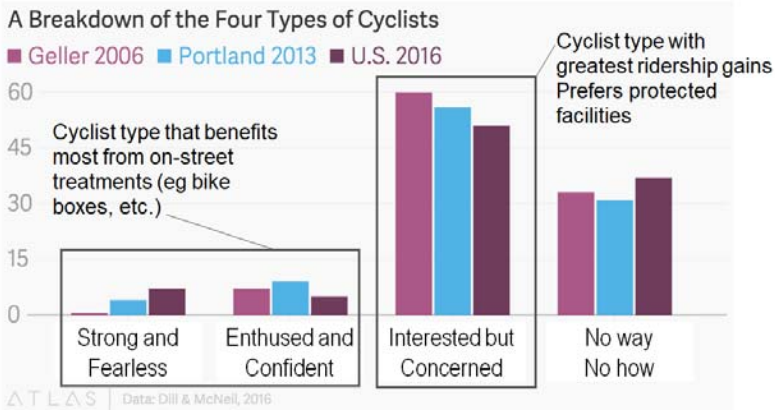
Four Types of Cyclist



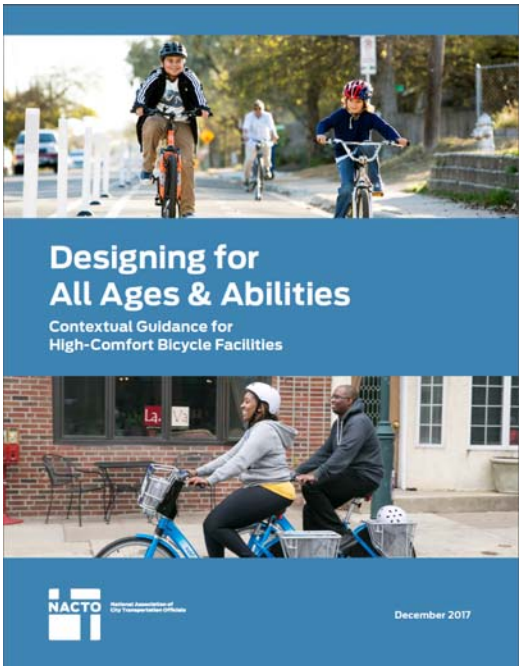


Types of Cyclist

Developed by Roger Geller at the City of Portland, OR, the "Four Types of Bicyclists" help guide efforts in assessing — in broad terms — what certain segments of a population desire in a bikeway facility. Geller suggested that Portland's population could be categorized into the following four groups:

1) Strong and Fearless - People willing to bicycle with limited or no bicycle-specific infrastructure
2) Enthused and Confident - People willing to bicycle if some bicycle-specific infrastructure is in place
3) Interested but Concerned - People willing to bicycle if high-quality bicycle infrastructure is in place
4) No Way, No How - People unwilling to bicycle even if high-quality bicycle infrastructure is in place

These typologies help identify which segments of the population need lower stress facilities to try bicycling or to bicycle more often.



All ages and abilities bike facilities are:

Safe

More people will bicycle when they have safe places to ride, and more riders mean safer streets. Among seven NACTO cities that grew the lane mileage of their bikeway networks 50% between 2007–2014, ridership more than doubled while risk of death and serious injury to people biking was halved. Better bicycle facilities are directly correlated with increased safety for people walking and driving as well. Data from New York City showed that adding protected bike lanes to streets reduced injury crashes for all road users by 40% over four years

Comfortable

Bikeways that provide comfortable, low-stress bicycling conditions can achieve widespread growth in mode share. Among adults in the US, only 6–10% of people generally feel comfortable riding in mixed traffic or painted bike lanes. However, nearly two-thirds of the adult population may be interested in riding more often, given better places to ride, and as many as 81% of those would ride in protected bike lanes. Bikeways that eliminate stress will attract traditionally under-represented bicyclists, including women, children, and seniors

Equitable

High-quality bikeways expand opportunities to ride and encourage safe riding. Poor or inadequate infrastructure—which has disproportionately impacted low-income communities and communities of color—forces people bicycling to choose between feeling safe and following the rules of the road, and induces wrong-way and sidewalk riding. Where street design provides safe places to ride and manages motor vehicle driver behavior, unsafe bicycling decisions disappear, making ordinary riding safe and legal and reaching more riders.

The following chart provides guidance in choosing a bikeway design that can create an All Ages & Abilities bicycling environment, based on a street's basic design and motor vehicle traffic conditions such as vehicle speed and volume. This chart should be applied as part of a flexible, results-oriented design process on each street, alongside robust analysis of local bicycling conditions as discussed in the remainder of this document.

Users of this guidance should recognize that, in some cases, a bicycle facility may fall short of the All Ages & Abilities criteria but still substantively reduce traffic stress. Jurisdictions should not use an inability to meet the All Ages & Abilities criteria as reason to avoid implementing a bikeway, and should not prohibit the construction of facilities that do not meet the criteria.

Contextual Guidance for Selecting All Ages & Abilities Bikeways

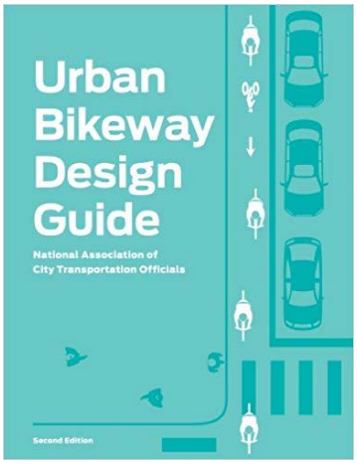
Roadway Context				All Ages & Abilities Bicycle Facility
Target Motor Vehicle Speed*	Target Motor Vehicle Volume (ADT)	Motor Vehicle Lanes	Key Operational Considerations	
Any		*Any*	*Any of the following:* high curbside activity, frequent buses, motor vehicle congestion, or turning conflicts‡	**Protected Bicycle Lane**
< 10 mph	Less relevant	No centerline, or single lane one-way	Pedestrians share the roadway	**Shared Street**
≤ 20 mph	≤ 1,000 – 2,000		< 50 motor vehicles per hour in the peak direction at peak hour	**Bicycle Boulevard**
≤ 25 mph	≤ 500 – 1,500			
	≤ 1,500 – 3,000	Single lane each direction, or single lane one-way	Low curbside activity, or low congestion pressure	**Conventional or Buffered Bicycle Lane, or Protected Bicycle Lane**
	≤ 3,000 – 6,000			**Buffered or Protected Bicycle Lane**
	Greater than 6,000			**Protected Bicycle Lane**
	Any	Multiple lanes per direction		
Greater than 26 mph†	≤ 6,000	Single lane each direction	Low curbside activity, or low congestion pressure	**Protected Bicycle Lane, or Reduce Speed**
		Multiple lanes per direction		**Protected Bicycle Lane, or Reduce to Single Lane & Reduce Speed**
	Greater than 6,000	*Any*	*Any*	**Protected Bicycle Lane**
High-speed limited access roadways, natural corridors, or geographic edge conditions with limited conflicts		*Any*	High pedestrian volume	**Bike Path with Separate Walkway or Protected Bicycle Lane**
			Low pedestrian volume	**Shared-Use Path or Protected Bicycle Lane**

* While posted or 85th percentile motor vehicle speed are commonly used design speed targets, 95th percentile speed captures high-end speeding, which causes greater stress to bicyclists and more frequent passing events. Setting target speed based on this threshold results in a higher level of bicycling comfort for the full range of riders.

† Setting 25 mph as a motor vehicle speed threshold for providing protected bikeways is consistent with many cities' traffic safety and Vision Zero policies. However, some cities use a 30 mph posted speed as a threshold for protected bikeways, consistent with providing Level of Traffic Stress level 2 (LTS 2) that can effectively reduce stress and accommodate more types of riders.

‡ Operational factors that lead to bikeway conflicts are reasons to provide protected bike lanes regardless of motor vehicle speed and volume.

Through Route Accommodations



Bike Lanes

Buffered Bike Lanes

Left side Bike

Contra Flow Bike Lanes

Separated Bike Facilities
(cycle track)

Separated Bike Facilities
(cycle track)

Separated Bike Facilities
(raised cycle track)

Separated Bike Facilities
(two-way cycle track)

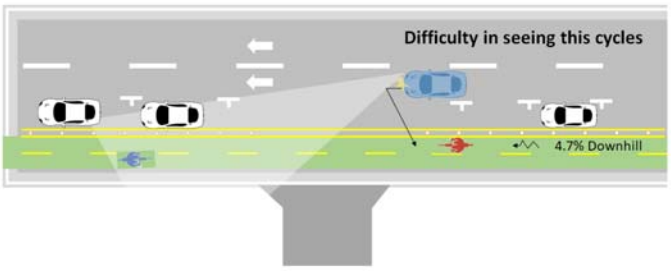
Typical Two-way Cycle Track Applications

- On streets with few conflicts such as driveways or cross-streets on one side of the street.
- On streets where there is not enough room for a one-way cycle track on both sides of the street.
- On one-way streets where contra-flow bicycle travel is desired.
- On streets where more destinations are on one side thereby reducing the need to cross the street.
- On streets with extra right-of-way on one side.

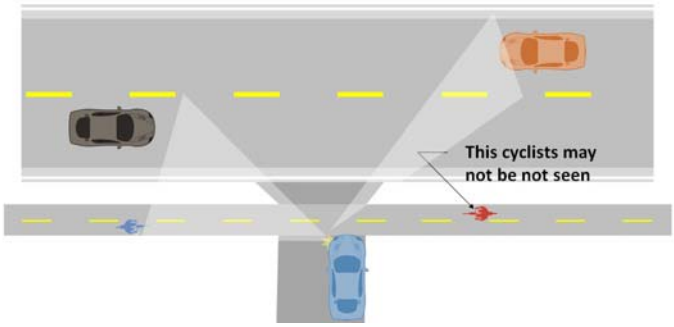
Cycle Track Considerations (Wisconsin Bicycle Design Guide)

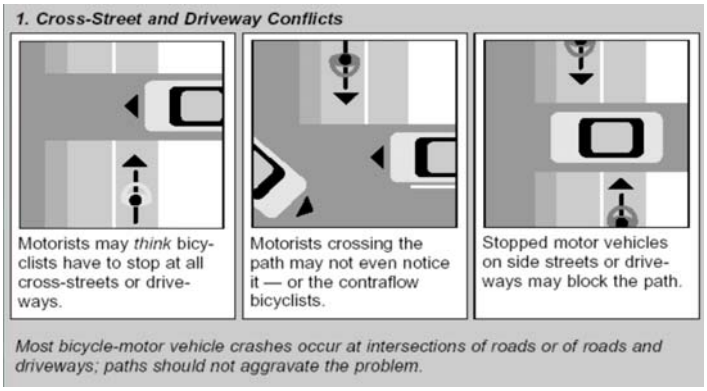
Note, other design guidance provides less detailed discussion on these conflicts

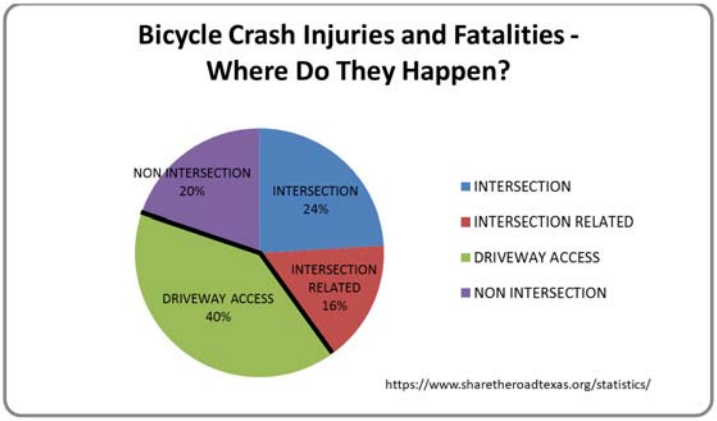
Sidepaths/Cycle Track Vision



Sidepath/Cycle Track Vision







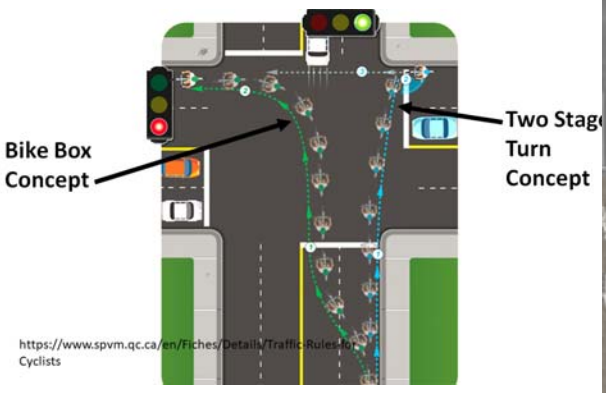
Recent guidance manuals, such as one prepared for Massachusetts, advocate for providing ample sight distance (parking restrictions) in these situations.

Bicycle Boulevard

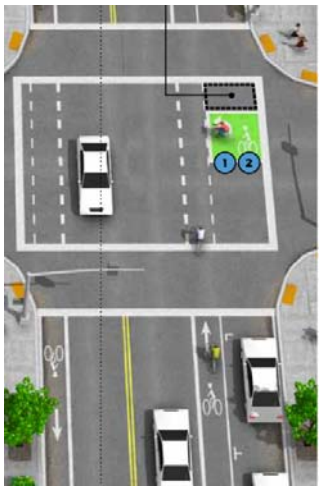
Motor Vehicle Speeds and Volumes

Streets formally designated as bicycle boulevards should meet strict targets of fewer than 3,000 motor vehicles per day (1,500 preferred) and an 85th percentile speed of no more than 25 mph (20 mph preferred). Traffic conditions, including motor vehicle speeds and volumes and bicyclist delay, should be monitored before implementation and on a regular basis after implementation. Should conditions exceed the target thresholds, additional speed and/or volume management treatments should be implemented.

Intersection Treatments



Bike Box



Two-stage Turn Box

Bike Box

A bike box is a designated area at the head of a traffic lane at a signalized intersection that provides bicyclists with a safe and visible way to get ahead of queuing traffic during the red signal phase.

Typical Applications

- At signalized intersections with high volumes of bicycles and/or motor vehicles, especially those with frequent bicyclist left-turns and/or motorist right-turns.
- Where there may be right or left-turning conflicts between bicyclists and motorists.
- Where there is a desire to better accommodate left turning bicycle traffic.
- Where a left turn is required to follow a designated bike route, access a shared-use path, or when the bicycle lane moves to the left side of the street.
- When the dominant motor vehicle traffic flows right and bicycle traffic continues through (such as a Y intersection or access ramp).

Two-Stage Turn Box

Two-stage turn queue boxes offer bicyclists a safe way make left turns at multi-lane signalized intersections from a right side cycle track or bike lane, or right turns from a left side cycle track or bike lane. Two-stage turn queue boxes may also be used at unsignalized intersections to simplify turns from a bicycle lane or cycle track, as for example, onto a bicycle boulevard. At midblock crossing locations, a two-stage turn queue box may be used to orient bicyclists properly for safe crossings. Multiple positions are available for queuing boxes, depending on intersection configuration.

Typical Applications

- Typical Applications
- At signalized intersections.
- Along multi-lane roadways.
- Along roadways with high traffic speeds and/or traffic volumes.
- Where a significant number of bicyclists turn left from a right side facility.
- Along cycle tracks.
- To safely navigate streetcar tracks.

Intersection Crossing Markings

Intersection crossing markings indicate the intended path of bicyclists. They guide bicyclists on a safe and direct path through intersections, including driveways and ramps. They provide a clear boundary between the paths of through bicyclists and either through or crossing motor vehicles in the adjacent lane

Typical Applications

- Across signalized intersections, particularly through wide or complex intersections where the bicycle path may be unclear.
- Along roadways with bike lanes or cycle tracks.
- Across driveways and Stop or Yield-controlled cross-streets.
- Where typical vehicle movements frequently encroach into bicycle space, such as across ramp-style exits and entries where the prevailing speed of ramp traffic at the conflict point is low enough that motorist yielding behavior can be expected.
- May not be applicable for crossings in which bicycles are expected to yield priority, such as when the street with the bicycle route has Stop or Yield control at an intersection.

Examples from Minneapolis-St Paul

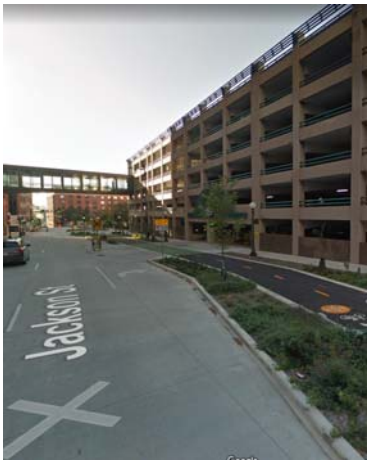
MinnPost

StarTribune

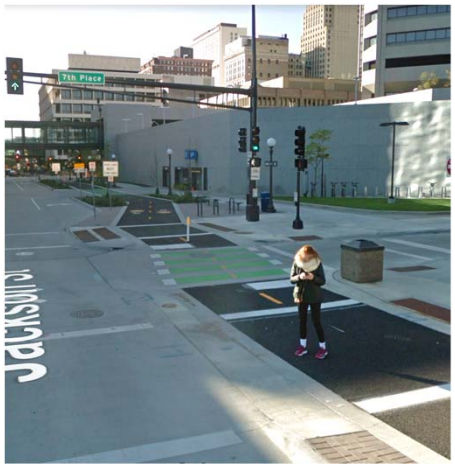
StarTribune

Pinterest

Des Moines Register



Google Street View



Google Street View

Google Street View

Examples from Other Locations

Contraflow - Philadelphia

Contraflow - Manhattan

Contraflow - Santa Cruz