tool kit

Designing for Bicycles
On Strategic Regional Thoroughfares

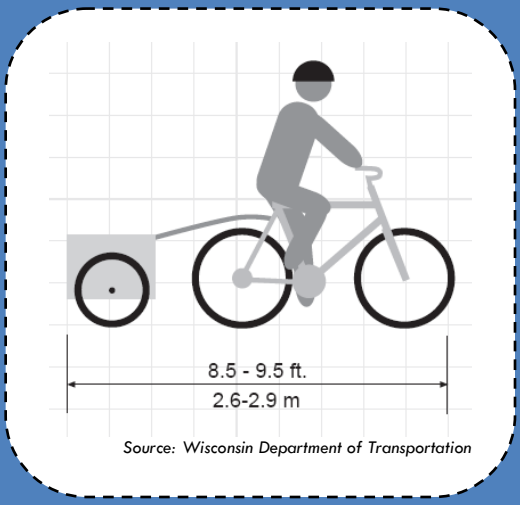
Purpose

For bicycling to become a valid travel option in the Atlanta region, bicycle networks should connect neighborhoods key activity centers and popular uses such as schools, parks, and entertainment areas. Designing for bicycles on strategic thoroughfares should include well-connected bicycle facilities and safe and direct travel routes. Bicylce lanes are recommended on major thoroughfares with target speeds of 30 mph or more. The *Atlanta Region Bicycle Transportation & Pedestrian Walkways Plan* identifies thoroughfares in the Atlanta area that require special design treatment for bicyclists.

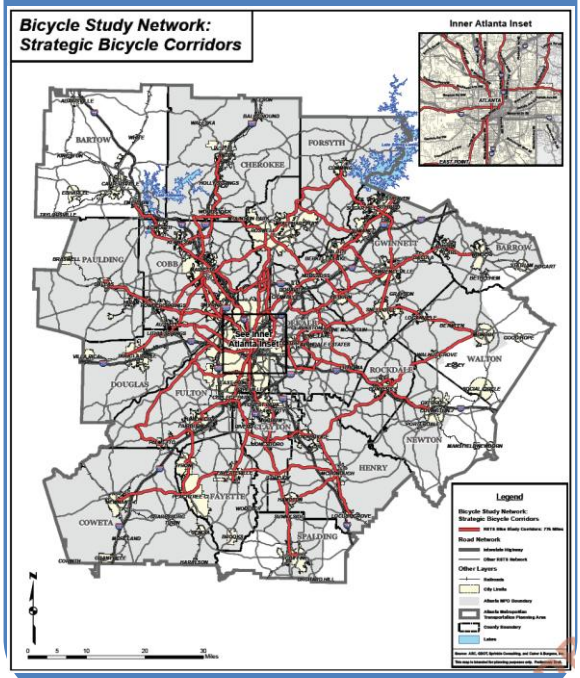
Designing for bicycles should consider the different types of cyclists that are on the road –experienced versus casual riders and those pursuing transportation versus leisure trips. Casual riders behave differently then experienced riders and typically are not as comfortable riding on the street with cars as experienced riders. Cyclists commuting to work or other specific locations will likely prefer a direct route on busier streets while leisure riders will prefer a lengthier but less busy route. Primary bicycle lane users on regional thoroughfares are experienced riders. This factor should influence design.

TYPICAL BICYCLE SIZE

Space required up by the bicycle and the rider is a key factor that should be considered in designing for bicycles. Bicycle width typically range from 2 ft. to 2.5 ft. from one end of the handlebar to the other with tricycles or bicycle trailers increasing the width to between 2.7 ft and 3.3 ft. wide. The length ranges from 5.8 ft. to 9.5 ft. with a bicycle trailer.



Source: Wisconsin Department of Transportation



Design Techniques

Designing for bicycles should first and foremost consider the size of the bicycle. Bicycle lanes should be a minimum of 4 feet wide, with 5 to 6 feet in width as the most desirable size. They should be located between the outside travel lane and the buffer, which may include on-street parking. When on-street parking and the bicycle lane are adjacent, the lane should be no less than 13 feet wide as provided in Section 3.4 of the SRTP Design Guidelines.

Bicycle lanes should be provided for corridors that are identified as bicycle routes in the Atlanta Region Bicycle Transportation and Pedestrians Walkway Plan. In cases where this is not possible, it is recommended that the outside travel lane be widened to at least 14 feet.

Design Recommendations

Important considerations for bicycle design are the treatment of intersections, turn lanes, and signage. The SRTP Design Guidelines provide details regarding the design of these elements.

Right hand turns pose a particular challenge to bicyclists due to motorists who may intrude in the bicyclist's path when turning right. To avoid this, when possible, it is recommended that right turn lanes be installed to the right of the bicycle lane.

Coloring bicycle lanes with a different color along with providing signage can help alert other thoroughfare users of potential bicyclists, ultimately creating a safer and more complete street.

New Versus Existing Thoroughfares

New and existing roadways should be treated differently. Depending on how the road is designed, and its primary purpose, it may be best to allow bikers to share a travel lane with automobile drivers. On the other hand, an unnecessarily wide existing street may perform better for all users if it is put on a diet. A road diet redistributes excessive automobile lane width to bike lanes on either side of the road or other beneficial streetscape elements such as wider sidewalks, planted buffers or sidewalk amenity zones.

Delay Reduction

Reducing delay is important to cyclists since it is difficult to start back up once a bicyclist is stopped. Designers can minimize stopping by incorporating roundabouts and bike sensitive signal detectors into thoroughfare design. Signal detectors identify the arrival of traffic at a stoplight, signaling the light to change. It is important that such detectors be programmed as to detect bicycle presence. Introduction of delay reduction techniques can be an effective strategy in areas looking to revitalize themselves.

Potential Design Issues

It is critical that bicycle design be considered from the beginning of a corridor design process and that likely long-term needs extending beyond the current timeframe are included. Several design issues may interfere with the incorporation of bike facilities along thoroughfares, including the following:

- Limited right-of-way (ROW)
- Excessive costs of construction & ROW
- Opposition from area property owners
- Intersection design that conflicts needs of bicyclists
- Conflicts between bicycle needs and traffic calming/transit design; for example, transit infrastructure and on-street parking can intrude in a bicycle's travel lane, posing safety issues

A sharrow signals to driver that the roadway is intended for both bicycles and motorists.

Tools

Several tools can help facilitate bicycle travel within appropriate areas.

- *Sharrow* – painted sections on a street or road indicating portions of roads that can be shared by bicyclists and cars
- *Bike Boxes* – dedicated space in front of vehicles at an intersection approach that allow cyclists to better position themselves for turn movements – increasing visibility by motorists
- *Cycle Track* (NY, DC, Boston) – a physically separated bicycle lane (see photo below)
- *Inductor Loop* - a coil of wire embedded in a thoroughfare to detect a bicycle and prioritize the intersection signal
- *Safe street surfaces* – quickly patching potholes and installing "bicycle-safe" drainage grates
- *Bike paths with an extra lane for turning or passing* - may become necessary in areas with heavy bicycle traffic

Land Use and Transportation Connection

Key coordination elements between bicycle design on thoroughfares and land use includes access management and bicycle parking/storage.

- Bicyclists entering and leaving the public right-of-way require a safe entrance to their destination.
- Cyclists require a secure location to store bicycles. Local development regulations can provide regulations for locations of bicycle racks and allow appropriate outside storage facilities for bicycle.

Urban Areas

Urban areas are often limited in the amount of right-of-way available for new bike facilities. Road diets can help accommodate traffic calming goals while also provide for additional space for bicycle lanes.

Suburban Areas

Suburban areas typically have high-speed arterials designed only for cars. As subdivisions continue redevelop, they should adopt complete street policies in activity centers such as LCIs. Complete streets approach recommends a road diet that narrows lanes to allow for bike lanes and provides better signage and markings to indicate that the motorists and bicyclists share the road.

Rural Areas

In rural areas where bicycle lanes are unfeasible, paved shoulders in new construction and reconstruction projects. The paved shoulder provides an area for bicyclists to operate.

Case Study

New York City along with the Cities of Portland, Cambridge, and Boulder (to name a few) have installed cycle track as a part of their bicycle network, which physically separate bicyclists from motorists. Bicycle tracks are more attractive to a broader range of potential bicyclists and provide a safer haven to those pedaling as a buffer now exists between bicyclists and cars and trucks. Denver, like NYC, is among communities creating safer connections between distinct bike routes by providing a cycle track to safely connect the routes.

Cycle track in New York City
Photo Credit: BeyondDC

Resources

SRTP Management and Design Guidelines. Atlanta Regional Commission. *Sections 2.3 & 3.4 Design Considerations for Bicycle Corridors*

Atlanta Bicycle Coalition: www.atlantabike.org
Advocacy guidance for bicyclists in the Atlanta region.

Manual on Uniform Traffic Control Devices. Federal Highway Administration.
Standards used for road managers nationwide - details on bicycle lane and turn lanes with bicycles.

Urban Bikeway Design Guide. NACTO.
Solutions to create complete streets that are safe and enjoyable to bicyclists.

PATH Foundation. www.pathfoundation.org
Developer of off-road trails for cyclists, skaters, runners, and walkers in Georgia.

www.bicyclinginfo.org
hosted by Pedestrian and Bicycle Information Center
National clearinghouse for bicycle design and related resources.

Signage is a critical element to smart design for bicycles.

Bike Planner Lingo

- *Contra-flow bicycle lane*: a designated bike lane marked to allow cyclists to travel against the flow of traffic.
- *Buffered bicycle lane:* a bike lane separated from vehicular travel lanes or parking lanes or both by striped pavement markings which function as a buffer.
- *Peg-a-track:* parallel dashed pavement markings that continue a bicycle lane through an intersection.
- *Bicycle box:* a section of pavement designed to give cyclists using a bike lane a head start at signalized intersections. A bicycle box (synonym: *advance stop line)* is often colored and includes a standard white bicycle pavement marking. It makes it easier for motorists who are turning right to see cyclists who are traveling through the intersection.
- *Diverter:* a design intervention that limits cars and trucks from entering all or part of a thoroughfare but enables bicycles to pass through.
- *Shy zone:* a painted buffer between parked cars and a bike lane.
- *Bicycle inductor loop:* a coil of wire embedded in a thoroughfare surface that detects the presence of a bicycle and prioritizes an intersection signal for it.
- *Bicycle boulevard*: "a thoroughfare with shared vehicular lanes that introduces traffic calming and wayfinding solutions to give movement priority to bicycles." A roadway where the traffic volumes are low; non-local motor vehicle traffic is discouraged; traffic control helps bikes cross major arterial roads; and there is a distinctive look or ambience, alerting everyone to the fact that the roadway is a priority route for cyclists.

Source: *New Urban Network*.
Bike module: Encouraging cycling while upholding urbanism.