

St. Louis County **Bicycle Facilities Plan**



Department of Transportation
St. Louis County, Missouri

February 1, 2014

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Introduction

The growing interest in cycling and demand for mode choice has caused an increase in the number of bicyclists using our roadway system. According to the Federal Highway Administration, there are 103 million bicyclists in the United States. St. Louis County has found the need for guidelines that allow bicyclists and motorists to coexist safely on the same roadway, in accordance with the County's Complete Streets Policy.

- 1) **Purpose** - The purpose of these guidelines is to create a framework that will improve field conditions and enhance the safety of bicyclists on St. Louis County's road system, while still maintaining the effective movement of vehicles. Some of the affected roads are shown on Great Rivers Greenway's (GRG's) Gateway Bike Plan at: <http://stlbikeplan.com/plan-documents/>.
- 2) **Overview** - The St. Louis County Departments of Transportation, Parks, Health, and Planning recognized the importance of safe bike routes on our streets. The St. Louis County Bike Task Force was formed in December of 2002. This Task Force developed guidelines and requirements for design, construction, and the operation of bicycle facilities throughout St. Louis County, with the goal of creating a safe coexistence between multi-modal traffic. These updated guidelines and requirements reflect the current policies of the Department of Transportation. These guidelines and requirements will be considered for arterial and collector type roadways maintained by St. Louis County when pavement alterations, right-of-way dedications, and / or preservation projects are contemplated in or for St. Louis County right-of-way.
- 3) **Definitions**

AASHTO - American Association of State Highway and Transportation Officials.

Bicycle Facilities - A general term denoting improvements and provisions made by public agencies that accommodate or encourage bicycling, including parking and storage facilities, and shared roadways not specially defined for bicycle use.

Bicycle Lane - A portion of a roadway that has been designated by striping, signing, and pavement markings for the preferential or exclusive use by bicycles.

Bicycle Pocket – A section of bicycle lane that has a lane for vehicles on either side as the result of inserting a right-turn lane to the right of the bicycle lane.

Bikeway - A generic term for any road, street, path or way which in some manner is specifically designated for bicycle travel, regardless of whether such facilities are designated for exclusive use of bicycles or are to be shared with others transportation modes.

Bike Path - A path segregated from motorized traffic for the use of bikes, sometimes shared with pedestrians.

Bike Route - A system of bikeways designated by the jurisdiction having authority with appropriate directional and informational route markers, with or without

specific bicycle route numbers. Bike routes should establish a continuous routing, but may be a combination of any and all types of bikeways.

MUTCD - Current "Manual on Uniform Traffic Control Devices". (*U.S. Department of Transportation - Federal Highway Administration*)

Pedestrian -

- a) A person on foot; or
- b) A person using any means of conveyance propelled by human power other than a bicycle; or
- c) A person using an electrical personal assistive mobility device; or
- d) A person operating a self-propelled wheelchair, motorized tricycle, or motorized quadricycle, and by reason of physical disability, is otherwise restricted in movement or unable to move about on foot.

Right-of-Way - The right of one vehicle or pedestrian to proceed in a lawful manner in preference to another vehicle or pedestrian.

Shared Use Path - A bikeway physically separated from motorized vehicular traffic by an open space or barrier and either within the highways right-of-way or within an independent right-of-way. Shared use paths may also be used by pedestrians, skaters, wheelchair users, joggers, and other non-motorized users.

Shoulder - The portion of the roadway contiguous with the traveled way for accommodation of stopped vehicles, for emergency use and for lateral support of sub-base, base and surface courses.

Signed Shared Roadway - A shared roadway that accommodates both bicycle and motor vehicle travel and has been designated by signing as a preferred route for bicycle use. On County maintained roadways, "Bike Route" guide signs may be installed where the shared lane is a minimum of 13 feet wide and the roadway has a posted speed limit of 35 MPH or less.

Wide Shared Lane - A wide shared lane is an outside lane with a minimum width of 14 feet if created under new construction; 13 feet is acceptable until a road is reconstructed or widened. The roadway must have a posted speed limit of 35 MPH or less to be considered for a wide shared lane.

Planning

1) **Bicycle Level** - There are different skill levels of bicyclists. The type of cyclist will determine what the roadway needs are to accommodate him / her. The majority of bicyclists can be categorized into three types:

- a) **Recreational Bicyclists** - Typically, these are casual riders who tend to utilize their bikes for the purpose of exercise and / or leisure. This group would be categorized in the low to medium skill level. The routes chosen by this particular group consist of less traveled roads or bicycle paths; they are less likely to ride great distances. The avoidance of congested roadways could be contributed to the lack of experience with large numbers of motored vehicles and the added distraction of outside interferences which lessens the rider's ability to focus on the traffic.
- b) **Commuter Bicyclists** - This group tends to be a more confident rider. They are more inclined to ride on major roads and for longer distances. This group would have a higher skill level and would use cycling as a primary means of transportation.
- c) **Children** - Cyclists who are not licensed motorized vehicle drivers. These cyclists use their bicycles, on their own or with their parents, for the purpose of transportation to different locations as well as commuting to and from school. This group would be classified more in the low skill level.

2) **Method of Travel**

- a) **Bicycle Lanes** - Bicycle lanes can be advantageous to define available space between bicyclists and motorists. Bicycle lanes generally are constructed on the right side of the street as one-way facilities, guiding bicyclists in the same direction as the bordering motored traffic. For roads without curbs and gutters, 4 feet is the minimum width for a bicycle lane. A minimum of 5 feet is mandated if curbs, guardrail, or other barrier are present or parking is allowed; placing the bicycle lane between the parking vicinity and traffic lane. A minimum of 5 feet is also required for a bicycle pocket at an intersection.
- b) **Bike Paths** - Bike paths are off-road facilities, separated from motor vehicle traffic, either by a barrier or space. They are sometimes called "multi-use paths" and are used by a variety of non-motorized travelers, such as walkers, skaters, and joggers, etc., as well as for cyclists. Bicycle paths are useful facilities for some trips, particularly recreational uses in parks, but have limited usefulness for most commuter trips. (Source: *Bicycle Facilities - Path and Road Markings, and Bicyclinginfo.org*). The St. Louis County Parks Department uses bike paths extensively for recreational trails within many of their parks.

- c) **Wide Shared Lanes** - Roadways with wide shared lanes are a good alternative to striped bicycle lanes. Wide shared lanes do not have painted stripes to delineate separate places for bicycles and motor vehicles, thereby accommodating bicycle traffic along with motored traffic side by side. In order to accommodate bicyclists and motorists, the wide outside lane width must be a minimum of 13 feet. However, an outside lane width of 14 feet to 15 feet is preferred.
- 3) **Safety** - Dangerous situations result from the lack of understanding of traffic laws by both bicyclists and motorists. For example, bicyclists not following the traffic laws for vehicles, or motorists not allowing ample riding space for cyclists, create safety issues. Understanding the rules of the road is an important aspect in riding a bicycle or driving a motor vehicle. Being familiar with safety regulations and following these rules are a good way to help prevent accidents and conflicts. Resources on bicycle safety, such as the U.S. Department of Transportation - Federal Highway Administration and the Great Rivers Greenway (GRG), provide additional pertinent information concerning traffic safety methods and actions.

St. Louis County Design Framework for On-Road Facilities

Context friendly design is an integral component for safe bicycle travel. The addition of new facilities and the improvement of existing facilities on County maintained arterial and collector roads benefit all road users.

The following text describes our areas of focus for design and permit issuance:

- 1) **Chosen Bicycle User - Commuter Bicyclist** - One who uses his / her bicycle for commuting to specific locations on a regular basis and uses the streets to do so.
- 2) **Chosen Methods of Travel**
 - a) **Wide Shared Lane** - The wide shared lane is an easily understandable method to accommodate both bicyclists and motorized vehicles.
 - b) **Bicycle Lane** - Bicycle lanes create a dedicated lane for bicyclists to travel at their own pace without interfering with motorists or pedestrians. Bicycle lanes also guide cyclists in a manner consistent with good operation where they are visible and drivers can predict their movements. They can be used when sufficient pavement is available and it is desirable to provide separate road space for bicyclists and motorists.
- 3) **Design Traffic Speed** - Bicycle lanes are meant for higher type roadways such as through streets and arterials, and the design speed of the roadway is not a factor. However, the speed of the traffic plays an important role when motor vehicles and bicycles share the same space. Roads in which the speed exceeds 35 MPH are not recommended for shared travel, especially for the inexperienced bicyclist. Novice bikers tend not to feel comfortable on such roadways and the likelihood of accidents caused from lack of experience is higher. *(Source: U.S. Department of Transportation - Federal Highway Administration)*
- 4) **Lane Striping** - Longitudinal pavement markings will be used to define bicycle lanes. The "Helmeted" bicycle symbol and arrow marking will be placed at the beginning of a bicycle lane and at periodic intervals along the bicycle lane based on engineering judgment. (See **Figure 1** on page 8.)

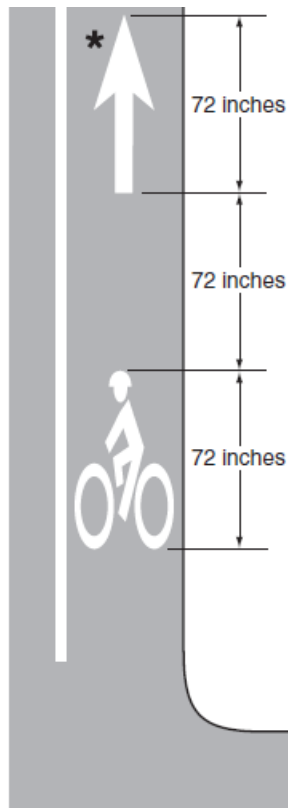


Figure 1 - Helmeted Bicyclist Symbol with Arrow (MUTCD Figure 9C-3)

5) Pavement Structure

- a) **Pavement Surface Quality** - The condition of a riding surface affects the comfort, safety, and speed for both the motorist and bicyclist. To the extent practical, a riding surface should be free of wide cracks, holes, bumps and debris.

- b) **Lane Widths** – For a roadway to be considered a wide shared lane bicycle facility, the outside lane must be wide enough to accommodate both motor vehicles and bicycles. A wide shared lane width of 14 feet minimum will be incorporated into new construction projects which intend to implement a signed bike route. The minimum shared lane width of any signed bike route will be 13 feet when implemented along existing roadways. Any 13 foot wide shared lane will be widened as construction and funding allows. The County has implemented these minimum signed bike route width requirements to encourage bicyclists to utilize routes that accommodate bicycles and motor vehicles safely. A width of 14 feet allows a motor vehicle to safely pass a bicyclist without having to cross into the adjacent travel lane. Where on-street parking is provided, 14 feet allows enough width for bicyclists to avoid conflicts with car doors. Wide shared lane widths should not exceed 15 feet, as this enables vehicles to pass other vehicles on the right. It is important that the width of the gutter not be included in the shared lane width. (See **Figure 2** on page 9.)

On roadways with more than one lane in each direction, inside through lanes will not be reduced to less than 11 feet and center turn lanes will not be reduced to less than 12 feet.

On-street parking can increase the risk of hazardous situations between motor vehicles and bicycles. If on-street parking exists along the roadway, a parking width of 8 feet should be permitted for said parked vehicles. This distance is in addition to the width required for the bicycle lane or wide shared lane. The 8 foot parking width includes the gutter.

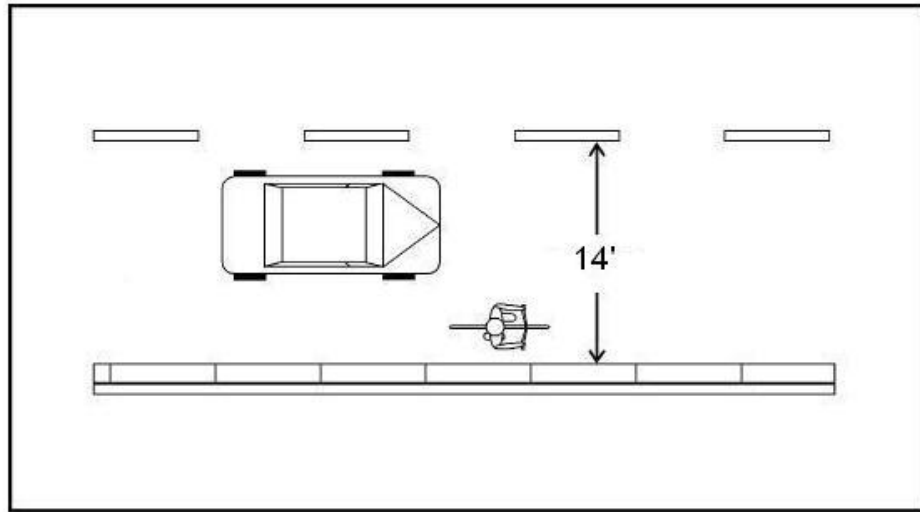


Figure 2 - Shared Lane Striping (Urban Systems-Modified Drawing)

- c) **Grade** - Grades for bicycle facilities will be controlled by the roadway design grades.
- d) **Sight Distance** - Sight distance on bicycle facilities will be controlled by the roadway design, and should be designed with adequate stopping distance using the same "Stopping Sight Distance" criteria as for vehicles.
- e) **Horizontal Alignment** - Horizontal alignment on bicycle facilities will be controlled by the roadway design.
- f) **Grates and Inlet Sumps** - Grate locations will be designed and placed in a manner that will minimize swerve and/or frequent maneuvering of bicycles. Grates installed on new roads or replaced on existing roads will accommodate bicyclists.

For all new construction along designated bicycle facilities, a modified inlet sump design will be used.

- g) **Signage** - "Bike Lane" regulatory signs (2009 MUTCD - Sign R3-17) will be installed to designate bicycle lanes. "Bike Route" guide signs (2009 MUTCD - Sign D11-1) will be installed along all arterial and collector type roadways with a minimum 13-foot wide shared outside lane greater than ½ mile in length. (See **Figure 3** below.) The locations and spacing of all bicycle facility related signs will be determined in the field by the County's Signing Engineer. Please note that "Share The Road" signs will not be installed along County maintained roadways, except at the termination of a bicycle lane where bicyclists must share a lane with other traffic. (Source: AASHTO)

Bicycle facility signs will be furnished and installed by the St. Louis County Department of Transportation. The signs will be maintained by the Department and replaced when determined necessary.



R3-17
30" x 24"



D11-1
30" x 24"

Figure 3 - "Bike Lane" Regulatory Sign and "Bike Route" Guide Sign (MUTCD)
Note: Signs will have high intensity prismatic reflective sheeting.

- h) **Funding and Maintenance** - To guarantee the continual use of bicycle facilities, preservation of these facilities is a necessity. The cost of proper upkeep should receive as much thought during budget discussions as in the preliminary construction and installation costs.
- i) **Public Information** - For in-depth information on bicycling safety and facilities, please refer to East-West Gateway's St. Louis Regional Bicycling and Walking Transportation Plan and the American Association of State Highway and Transportation Officials (AASHTO). For information on bicycle trails in St. Louis County, please reference The St. Louis County Department of Parks, detailing valuable maps of parks and bicycle trails.

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