

St. Louis County
At Grade Bicycle Path /
Roadway Crossing Guidelines



St. Louis County
Department of Highways & Traffic
Operations Division

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INTRODUCTION

In the future, the number of bicycle shared-use paths will continue to increase throughout the St. Louis County region. The popularity of these paths has attracted users ranging from bicycle enthusiasts to families with small children. In addition to the bicyclists, joggers, and walkers using the paths, patrons also include individuals on roller blades, babies in strollers, and children on bicycles with training wheels.

Field observations at existing bicycle path/roadway crossings revealed that the volume of path users is quite high when weather conditions are favorable. Random counts on weekends have confirmed volumes of more than 200 path users per hour, when temperatures are moderate and there is no precipitation in the forecast.

IMPORTANCE OF TRAFFIC CONTROLS FOR ALL AT GRADE BICYCLE PATH / ROADWAY CROSSINGS

In light of the diverse nature of path users and the variety of non-motorized vehicles using the paths, standard traffic control devices shall be implemented for all at grade bicycle path/roadway crossings by using these guidelines to enhance the safety of all path patrons and motorists. It has always been our policy to maintain uniformity in the application of traffic controls on the County's road system. It should be noted that these guidelines do not address grade separated bicycle path/roadway crossings at this time.

When designing a bicycle path, consideration shall always be given to the type of existing traffic controls located within 300 feet of a proposed bicycle path/roadway crossing. These existing controls may affect the location of a proposed path/roadway crossing, possibly requiring the route of the bicycle path to be realigned on each side of the crossing.

APPROVED TRAFFIC CONTROLS AT BICYCLE PATH / ROADWAY CROSSINGS

The types of traffic control used at bicycle path/roadway crossings shall be similar to the proven standard types of control currently in place at more than 750 County maintained marked crosswalk locations. Therefore, the types of traffic control devices **approved** by the County for use in conjunction with bicycle path/roadway crossings are:

- Mid-block traffic signals, with pedestrian signal heads for path users.
- Intersection traffic signals, with pedestrian signal heads for path users.
- Minor street stop control at intersecting roads, where there is a path/roadway crossing at the intersection.
- Multi-way stop control at intersecting roads, where there is a path/roadway crossing at the intersection.
- Mid-block marked crosswalks at path/roadway crossings, with stop control only for path users.

UNAPPROVED TRAFFIC CONTROLS AT BICYCLE PATH / ROADWAY CROSSINGS

The types of traffic control devices **not approved** by the County for use in conjunction with bicycle path/roadway crossings are:

- Flashing yellow beacons along roadways, either in advance of or at path/roadway crossings, activated by push buttons or microwave detection. The full time operation of these type beacons is also not approved by the County.
- In-roadway yellow strobe lights at path/roadway crossings, activated by push buttons or microwave detection.
- Mid-block four-way stop control, with full time stop control for both motorists and path users at path/roadway crossings (regardless of whether there are flashing red beacons along the roadway at the crossings).
- Portable or turn-type (temporary) stop control.
- Raised pedestrian crosswalks across roadways at path/roadway crossings.
- Center medians on roadways at path/roadway crossings.
- Narrower pavement sections (chokers) on roadways at path/roadway crossings, unless used where there are marked parking lanes and a safe refuge area can be created without affecting the travel lane alignment.

CONCERNS REGARDING UNAPPROVED TRAFFIC CONTROLS AT BICYCLE PATH / ROADWAY CROSSINGS

Proposals for the installation of actuated flashing beacons and in-roadway strobe lights for bicycle path/roadway crossings would cause a liability concern for the County. The flashing lights could be confusing to motorists when used in the proximity of traffic signals. Many path users and motorists would not understand the meaning and function of the lights. Path users might assume they would always have the right-of-way when the beacons or strobe lights are activated. However, Section 1209.020 of the St. Louis County Traffic Code states the following regarding pedestrians' right-of-way in crosswalks:

"No pedestrian shall suddenly leave a curb or other place of safety and walk or run into the path of a vehicle which is so close that it is impossible for the driver to yield".

Therefore, we believe path users would be given a false sense of security if they entered a marked crosswalk with beacons or in-roadway strobe lights flashing. If motorists receive no advance warning and are suddenly confronted with flashing beacons or in-roadway strobe lights, drivers may not be able to yield to path users who might walk/ride indiscriminately into the crosswalk, believing they would be protected by the flashing lights. For beacons and in-roadway strobe lights activated by push buttons, the duration of the equipment's flash operation is pre-timed. If a button has been pushed and path users continue to gather before crossing, the path users are not aware of the time remaining before the equipment will stop flashing. For beacons and in-roadway strobe lights activated by microwave detection, the equipment will flash when path users are waiting to cross the roadway. For those path users who are at the crossing and are either resting or awaiting others, the equipment will continue to flash when no one is actually ready to cross the road. Also, if the road being crossed is part of a coordinated signal system and flashing beacons or in-roadway strobe lights are activated when a coordinated platoon of traffic approaches the path crossing, the entire progression of traffic

would be required to yield, causing congestion and creating the potential for rear-end type collisions.

In addition, the installation of full time flashing beacons along roadways at bicycle path/roadway crossings would indicate to motorists the presence of a special condition. We believe that over time, drivers would become accustomed to flashing beacons installed at such crossings and the beacons would ultimately have no effect upon the yield rates of approaching motorists. As a result, unwarranted flashing beacons, installed in this type of indiscriminate manner, would reduce the effectiveness of all beacons.

The installation of mid-block four-way stop control at bicycle path/roadway crossings would cause unnecessary inconveniences and delays for motorists when no path users are present. Past experience has shown, that under this type of control, many path users do not abide by the "Stop" signs facing them. They assume approaching motorists will stop and remain stopped at the crossings. Therefore, path users often continue to walk/ride across the roadways without stopping. We believe this behavior of path users is difficult to control and is a safety concern.

Portable or turn type (temporary) "Stop" signs are not permitted for normal roadway use, as indicated in the **Manual on Uniform Traffic Control Devices (MUTCD)**, which is published by the Federal Highway Administration. These type "Stop" signs produce a level of uncertainty which causes confusion for motorists, thereby increasing the potential for accidents. These type "Stop" signs also create an administrative problem with any unauthorized moving/turning of the signs.

The construction of traffic calming roadway features, such as raised pedestrian crosswalks, center medians, and narrower pavement sections (chokers) at bicycle path/roadway crossings, would impose negative impacts upon both path users and motorists. All of these features would cause changes in either vertical or horizontal roadway alignments, which some motorists would not readily perceive, thereby giving path users a false sense of security. We believe that once the novelty of these types of traffic calming features subsides, the features would have little to no effect upon the behavior of motorists accustomed to traveling the roadway.

The installation of raised pedestrian crosswalks would provide a continuous vertical alignment across the roadway, giving path users the sense of having the right-of-way. We believe the raised crosswalks would detract from our objective of making path users aware that they are crossing a roadway and that there may be approaching motorists very near the crossing who would have the right-of-way. Also, raised pedestrian crosswalks would result in the County being potentially liable for accidents involving unsuspecting motorcyclists and bicyclists losing control when traveling over the raised crosswalks. In addition, the construction of raised pedestrian crosswalks could create drainage problems.

The construction of center medians and narrower pavement sections (chokers) would create changes in horizontal travel lane alignments. The limited area within the medians and narrower pavement sections would not provide a safe refuge for path users. Inattentive motorists might strike these protruding horizontal roadway features, thereby increasing the County's liability for serious personal injuries. In addition, any landscaping in these medians and narrower pavement sections could restrict drivers' visibility of small children wanting to cross the roadway. An exception to the installation of chokers would be where there are marked parking lanes and a safe refuge area can be created within a parking lane area without affecting the travel lane alignment.

TRAFFIC CONTROL CRITERIA FOR BICYCLE PATHS CROSSING THROUGH / COLLECTOR TYPE STREETS

Through Streets primarily serve as links to other major roads and highways.

Collector Streets provide access to local streets and neighborhoods within residential, commercial, and industrial areas. The following Conditions shall be used as the criteria for determining the type of traffic control to be implemented for each bicycle path crossing a through/collector type street. The Conditions shall be analyzed in the following priority:

Condition 1

If the proposed path/roadway crossing is within 300 feet of an existing mid-block or intersection traffic signal, the path/roadway crossing shall be located at the existing traffic signal.

Condition 2

If the proposed path/roadway crossing is within 300 feet of an existing intersection, with stop control for motorists on the roadway, the path/roadway crossing shall be located at the existing intersection and include stop control for path users. (Note: There will also be stop control for drivers on the cross street if the existing intersection is under multi-way stop control.)

Condition 3

If the proposed path/roadway crossing is 100 feet minimum, or can be located to 100 feet minimum, from an adjacent cross street/public entrance (where that street/entrance has no traffic signal or stop control for motorists on the roadway), a new mid-block traffic signal shall be installed at the proposed crossing.

Condition 4

If the proposed path/roadway crossing cannot be moved to 100 feet minimum from an adjacent cross street/public entrance (where that street/entrance has no traffic signal or stop control for motorists on the roadway), the path/roadway crossing shall be located at the adjacent cross street/public entrance and a new intersection traffic signal installed.

The required 100-foot minimum distance, from a new mid-block traffic signal at a proposed path/roadway crossing to an adjacent cross street/public entrance, shall be determined as follows:

Measure the distance from the location of the driver's eye exiting the cross street/public entrance to the farthest traffic signal head at the proposed new signalized mid-block crossing.

TRAFFIC CONTROL CRITERIA FOR BICYCLE PATHS CROSSING LOCAL TYPE STREETS

Local Streets link collector streets and primarily serve as direct access to residential properties. The following Conditions shall be used as the criteria for determining the type of traffic control to be implemented for each bicycle path crossing a Local type street. The Conditions shall be analyzed in the following priority:

Condition 1

If the proposed path/roadway crossing is within 300 feet of an existing mid-block or intersection traffic signal, the path/roadway crossing shall be located at the existing traffic signal.

Condition 2

If the proposed path/roadway crossing is within 300 feet of an existing intersection, with stop control for motorists on the roadway, the path/roadway crossing shall be located at the existing intersection and include stop control for path users. (Note: There will also be stop control for drivers on the cross street if the existing intersection is under multi-way stop control.)

Condition 3

If the proposed path/roadway crossing is within 150 feet of a cross street/public entrance (where that street/entrance has no traffic signal or stop control for motorists on the roadway), the path/roadway crossing shall be located at the cross street/public entrance intersection. Either new or existing stop control shall be posted for drivers on the cross street/public entrance and new stop control posted for path users crossing the roadway at the intersection.

Condition 4

If the proposed path/roadway crossing is more than 150 feet from a cross street/public entrance (where that street/entrance has no traffic signal or stop control for motorists on the roadway), install a new mid-block crossing with stop control only for path users crossing the roadway.

SIGNAGE AND STRIPING AT BICYCLE PATH / ROADWAY CROSSINGS

All final roadway signage, pavement markings, and striping on County roadways for bicycle path crossings will be furnished and installed by the County. At each of these crossings, the signing and striping will be in accordance with the **MUTCD**. All signing and striping on bicycle paths shall be furnished and installed by the Agency(ies) responsible for the paths.

Crosswalk markings at intersections for bicycle path/roadway crossings will consist of two white parallel lines. Crosswalks at mid-block path/roadway crossings will consist of large white block markings.

Fluorescent yellow-green combined "Bicycle / Pedestrian Advance" warning sign assemblies with supplemental "Ahead" plaques will be installed in advance of each bicycle path/roadway crossing facing approaching motorists. If the crossing does not have a traffic signal or "Stop" signs controlling approaching roadway traffic, fluorescent yellow-green combined "Bicycle / Pedestrian Crossing" warning sign assemblies with supplemental "Downward Arrow" plaques will be installed at each path/roadway crossing facing approaching motorists. County personnel will also fabricate and install street name signs at each bicycle path/roadway crossing, depicting the names of the bicycle path and intersecting road(s).

COUNTY'S CONTRIBUTION TOWARD SIGNALIZATION OF BICYCLE PATH / ROADWAY CROSSINGS

If, in accordance with these guidelines, a new mid-block or intersection traffic signal is required at a bicycle path/roadway crossing, the County will review the signal plans and issue a Special Use Permit for the signal installation. All mid-block traffic signals and most intersection traffic signals shall have advance vehicle detector loops embedded in the roadway to enhance traffic flow and reduce the potential for rear-end type accidents. Signal interconnect conduit and cable shall also be installed if the signal will be part of an interconnected system.

As indicated previously, the County is committed to promoting safe bicycle path/roadway crossings. As part of this commitment, signalization will be required at many future path/roadway crossings. The County will incur all costs for furnishing (not installing) the above ground signal equipment needed for each new traffic signal required at a path/roadway crossing. The above ground signal equipment will include the following:

- Signal controller
- Signal power supply
- Signal mast arm assemblies
- Signal post assemblies
- Vehicular signal head assemblies
- Pedestrian signal head assemblies with push buttons

The Agency responsible for developing and constructing a bicycle path with signalized path/roadway crossing(s) shall be responsible for furnishing all other signal materials (including pull boxes, signal bases, conduit, embedded vehicle detector loops, and wiring). The Agency shall also be responsible for constructing the traffic signal in its entirety prior to the County's final inspection and acceptance of the signal for maintenance.

SUMMARY

The County has always strived to maintain uniformity in the application of traffic controls on its road system. The guidelines herein are for at grade bicycle path/roadway crossings across County maintained roads. Only standard type traffic control devices are approved at these crossings and will serve to enhance the safety of all path patrons and motorists.

The traffic control criteria imposed for bicycle paths crossing County maintained roads is based upon whether the type of roadway crossed is a through street, collector street, or local street.

If a bicycle path crosses a through or collector street, the type of traffic control for the path/roadway crossing shall be either:

- An existing nearby mid-block or intersection traffic signal, with pedestrian signal heads for path users.
- The use of a nearby intersection, with existing stop control for the roadway and new stop control for path users.
- A new mid-block or intersection traffic signal, with pedestrian signal heads for path users.

If a bicycle path crosses a local street, the type of traffic control for the path/roadway crossing shall be either:

- An existing nearby mid-block or intersection traffic signal, with pedestrian signal heads for path users.
- The use of a nearby intersection, with existing stop control for the roadway and new stop control for path users.
- The use of a nearby intersection, with existing or new stop control for the side street and new stop control for path users.
- A new mid-block crossing, with stop control only for path users.

In so far as traffic signals will be required at many future bicycle path/roadway crossings, the County is committed to incur all costs for furnishing the above ground signal equipment. We believe this commitment will help defray other Agencies' signal costs.