



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

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Policies and Procedures for Local Bicycle Facilities

**COUNTY ENGINEERS/SUPERINTENDENT OF HIGHWAYS
MUNICIPAL ENGINEERS/DIRECTORS OF PUBLIC WORKS
CONSULTING ENGINEERS**

#97-7

Attached is a copy of "Policies and Procedures for Local Bicycle Facilities". This document was developed to provide guidance to those involved in the planning and design of local agency bikeways, including those in conjunction with highway projects.

Policies and procedures contained in this document include and make reference to the August 1991 edition of the "Guide for the Development of Bicycle Facilities", which is published by AASHTO. It is recommended that this publication also be utilized when developing a bicycle plan.

Very truly yours,

A handwritten signature in black ink, appearing to read "R. L. Hinton".

Robert L. Hinton, P.E.
Engineer of Local Roads and Streets

bike3

POLICIES AND PROCEDURES FOR LOCAL BICYCLE FACILITIES

November 14, 1997

The purpose of these policies and procedures is to establish guidelines for determining if bicycle facilities should be provided on Federal-Aid and MFT-funded local roads and streets projects, and if needed, what type of facilities should be provided.

1.00 OVERVIEW

It is the Bureau of Local Roads and Streets' policy to consider the travel needs of all users of a transportation corridor when planning transportation improvements. If, during the planning phase of the project, it is determined that volume and character of existing and potential bicycle travel in the vicinity of the project justifies provision of bicycle facilities, appropriate accommodations should be provided.

2.00 POLICIES

The policies and procedures contained herein shall be applied to Federal-aid projects and should be used for MFT projects when feasible.

- (1) Consideration will be given to accommodating bicycle traffic on both Federal-aid and MFT highway projects. Accommodations, if provided, should be based on anticipated demand and traffic safety considerations.

The following IDOT warrants may be used as guidelines to determine if bicycle facilities should be provided.

- (a) The highway or street is designated as a bikeway on a regionally or local adopted map as a recommended bike route.
- (b) The projected two-way bicycle traffic volume will approximate 25 ADT or more during the peak three months of the bicycling season and where the current traffic volume on the highway or street exceeds 1000 ADT. The bicycle ADT projection should be based on 5 years from the completion of the project.
- (c) The route provides primary access to a park, recreational area or other significant destination.

- (d) The route provides unique access across a natural or man-made barrier, i.e., bridges over rivers, roadways or railroads or under access-controlled facilities and roadways.
- (e) The highway project negatively affects the recreational or transportation utility of an independent bikeway or trail. Highway projects will negatively affect at-grade paths and trails when they are severed, when the projected roadway traffic volumes increase to a level that prohibits safe crossing at-grade or when the widening of the roadway prohibits sufficient time for safe crossings.

Provisions may also be necessary for safely accommodation bicycle traffic on highways where bridge decks are being replaced or rehabilitated and where bicycles are permitted to operate at each end.

3.00 ELIGIBILITY

3.01 Federal-Aid Projects

1. The implementation of pedestrian and bicycle accommodations may be authorized for Federal-aid participation as either incidental feature of highways or as independent projects where all of the following conditions are satisfied.
 - a) The safety of the motorist, bicyclist, and/or pedestrian will be enhanced by the project.
 - b) The projects is initiated or supported by the appropriate State and local highway agencies and/or the federal land management agency. Projects are to be located and designed pursuant to a plan, which provides due consideration for safety and contiguous routes.
2. Independent bicycle projects, incidental bicycle projects, and non-construction bicycle projects must be principally for transportation rather than recreational use and must meet the project conditions for authorization where applicable.
3. A public agency has formally agreed to:
 - a) Accept the responsibility for the operation and maintenance of the facility.
 - b) Ban all motorized vehicles, other than maintenance vehicles or snowmobiles, where permitted by State or local regulations, from pedestrian walkways and bicycle paths.
 - c) Ban parking, except in the case of emergency, from bicycle lanes that are contiguous to traffic lanes.
4. The estimated cost of the project is consistent with the anticipated benefits to the community.
5. The project will be designed in substantial conformity with the latest official design criteria.

From 23 CFR Part 652

3.02 MFT Projects

Counties with a population over 500,000 may use MFT funds allotted to them for the construction and maintenance of bicycle routes along county highways or along State highways by agreement with the Department. While the statutes prohibit expenditure of MFT fund for bike facilities in counties of under 500,000 population, they do allow local funds, including MFT funds to pay the counties' share of project costs. Also, the Bikeway Act contains provisions that allow the expenditure of MFT funds in counties of over 500, 000 population for construction and maintenance of bikeways along public utility or railroad right-of-way (605 ILCS 30/2).

Municipalities may use MFT funds for the construction and maintenance of bicycle paths, lanes, or bicycle parking facilities within the municipality (605 ILCS 5/7-202.20).

4.00 DESIGN GUIDELINES

The current edition of AASHTO's "*Guide for the Development of Bicycle Facilities*" is the primary source of planning and design guidance.

4.01 Definitions

- 1) *Bicycle*. A vehicle having two tandem wheels, propelled solely by human power, upon which any person or persons may ride.
- 2) *Bikeway*. Any road, path, or way which in some manner is specifically designated as being open to bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes.
- 3) *Bicycle Path* (Bike path). A bikeway physically separated from motorized vehicular traffic by an open space or barrier and either within the highway right-of-way or within an independent right-of-way.
- 4) *Bicycle Lane*(Bike Lane). A portion of a roadway which has been designated by striping, signing, and pavement markings for the preferential or exclusive use of bicyclists.
- 5) *Bicycle Route*(Bike Route). A segment of a system of bikeways designated by the jurisdiction having authority with appropriate directional and informational markers, with or without a specific bicycle route number.
- 6) *Shared Roadway*. Any roadway upon which a bicycle lane is not designated and which may be legally used by bicycles regardless of whether such facility is specifically designated as a bikeway.
- 7) *Independent Bicycle Construction Project* (Independent Bicycle Project). A project designation used to distinguish a bicycle facility constructed independently and primarily for use by bicyclists from an improvement included as an incidental part of a highway construction project.
- 8) *Incidental Bicycle or Pedestrian Walkway Construction Project* (Incidental Feature). One constructed as an incidental part of a highway construction project.
- 9) *Non construction Project*. A bicycle project not involving construction which enhances the safe use of bicycles for transportation purposes.
- 10) *Bicycle Facilities*. A broad term which includes bikeways as well as shared roadways, shoulder which may be use of bicyclists, traffic control devices, shelters, and parking facilities for bicycles.
- 11) *Multi-use* The shared use of a bike path by bicyclists as well as pedestrians, handicapped persons in wheelchairs, or other non-motorized modes of transportation. This would exclude horses and other animals, and animal-drawn conveyances.
- 12) *Recreational use* Primarily for pleasure, exercise, etc.
- 13) *Transportation use* For travel from an origin to a destination.

4.02 Separated Bicycle Paths and Warrants

The minimum paved width of a bike path is 1.5m (5 ft.) for one-way and 2.4 m (8ft) for two-way usage. However, this minimum width should be used only when: (1) bicycle traffic is low, (2) pedestrian use is only occasional, (3) good alignment is provided for safe and frequent passing opportunities. The desirable width for two-way bike paths is 3.0 m (10 ft.) but bike paths up to 3.6 m (12 ft.) in width may have to be provided under certain conditions such as heavy bike traffic, mixed usage with pedestrians and roller bladers, hilly terrain, etc. In addition, 600 mm (2ft.) shoulders need to be provided on both sides.

Anticipated volumes should be taken into consideration when bicycle path widths are determined. For less than 100 users during the peak hour a width of 1.5 m (5 ft.) for one-way and 2.4 m (8 ft.) for two-way traffic is adequate. For 100-300 users, peak hour widths of 1.8 m (6 ft.) for one-way and 3.0 m (10 ft.) for two-way should be provided. If there are more than 300 users during the peak hour, widths of 2.1 m (7 ft.) for one-way and 3.6 m (12 ft.) for two-way traffic should be provided. For multi-use facilities it may be desirable to provide separate bike and pedestrian paths when bike volumes exceed 300 during the peak hour.

Figures 1 and 2 are typical cross-sections for multi-use paths:

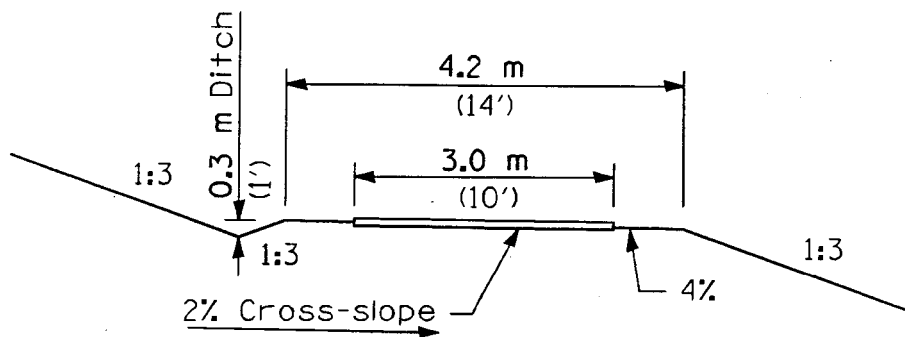


Figure 1: Typical bike path for average multi-use

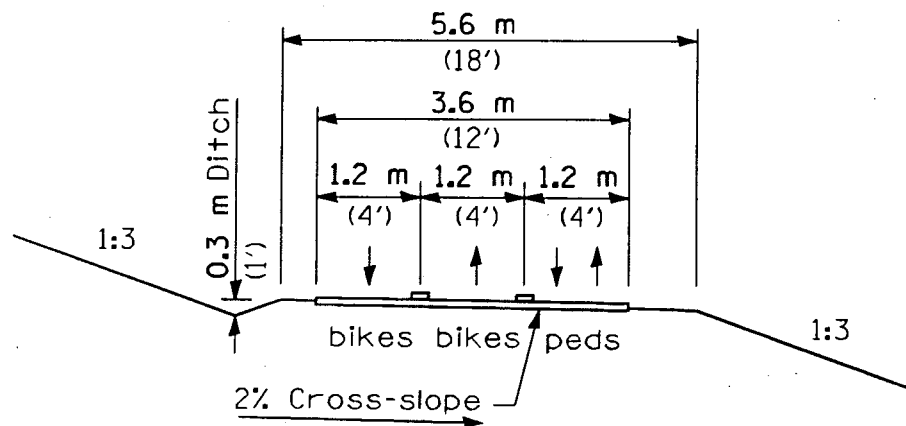


Figure 2: Typical bike path for substantial multi-use

When a two-way bike path is physically located within the highway right-of-way, it must be separated horizontally from motorized traffic. An example is shown in Figure 3. For rural sections, the bike path must be located off the shoulder. This separation should be as wide as practical and still allow the bicyclist to be visible by the motorist, but should be no less than 1.5 m (5 ft.). However, when bikeways cannot be located at least 1.5 m (5 ft.) from the edge of pavement (rural) or from face of curb (urban) they should be protected by a 1.4 m (4.5 ft.) high barrier and a 1.1m (3.5 ft.) high rub rail.

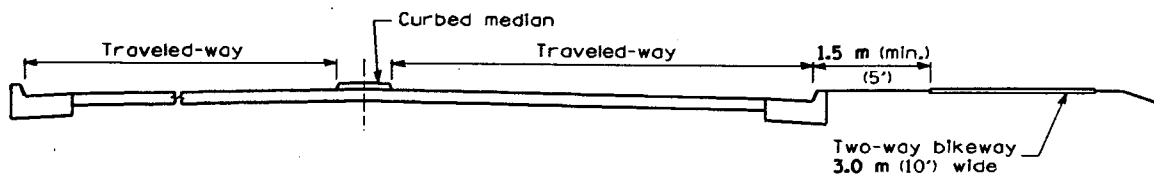


Figure 3: Approaching four-lane section with adjacent two-way bikeway

4.03 Accommodating On-Road Bicycle Travel

4.03.1 Bicycle Facilities on Rural Cross Sections

Bicycle accommodations on rural cross-sections consist of paving a portion of the shoulder. Paved shoulders offer benefits beyond accommodations for cyclists, such as added safety, reduced maintenance, and a hard surface off the traveled way for mail delivery vehicles.

Paved shoulders marked as bikeways should be smooth and maintained to provide a desirable riding surface. Shoulder widths should be a minimum of 1.2 m (4ft.) when intended for bicycle travel. Additional width may be necessary in locations with vehicle speeds in excess of 70 km/h (45 mph) if traffic includes a significant number of trucks and recreational vehicles. Also, additional width may be necessary if fixed objects such as traffic signs are located too close to the bicycles then pavement markings should be provided. Fences with rub rails are needed where a bicyclist could fall over obstacles such as guardrails.

Roads with shoulders less than 1.2 m (4 ft.) wide normally should not signed as bikeways.

4.03.2 Bicycle Facilities on Urban Cross-Sections

4.03.2A Marked Bicycle Lanes

Bicycle lanes marked on curbed streets serve to separate bicycle traffic from motor vehicle traffic. They should always be one-way facilities and carry traffic in the same direction as adjacent motor vehicle traffic. The minimum bicycle lane width should be 1.2 m (4 ft.), not including gutter flag, or 1.5 m (5 ft.) adjacent to monolithic curb and gutter or curb parking.

The following are minimum cross-section requirements:

- 1) On curbed streets without parking, the bicycle lane is located next to the gutter, as shown in Figures 4 and 5

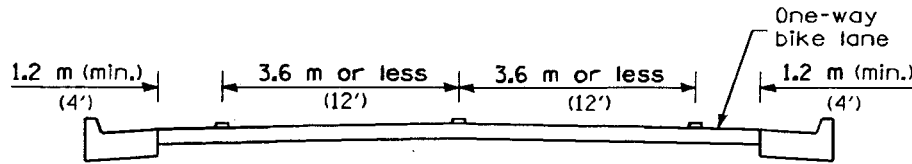


Figure 4: Two-lane roadway with marked bicycle lanes, where parking is prohibited

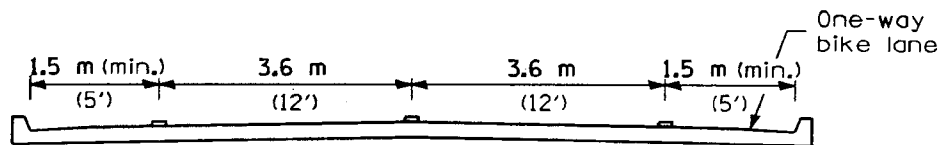


Figure 5: Monolithic curb and gutter pavement for two-lane roadway with marked bicycle lanes, where parking is prohibited

- 2) Where parking is permitted the bicycle lane should always be located between the parking lane and the through traffic lanes, as shown in Figures 6 and 7.

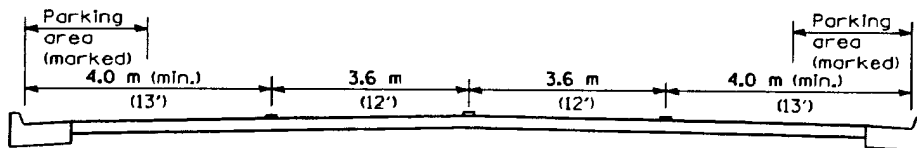


Figure 6: Combined bicycle and parking use areas bicycle traveled area is unmarked

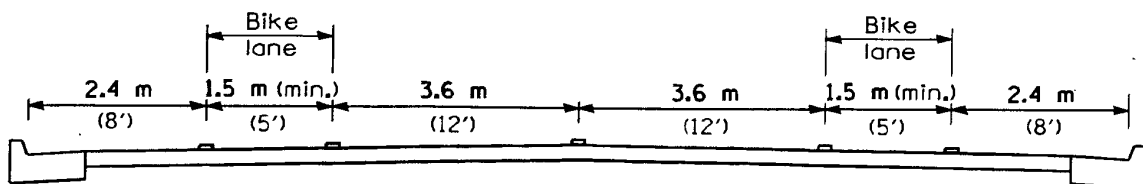


Figure 7: Marked bicycle lanes with marked parking

4.03.2B Shared Roadways

On a shared roadway facility, bicyclists and motorists share the same travel lanes without a striped separation. The majority of urban cross-sections fall into this category. Shared roadways have particular application where physical constraints such as buildings, narrow sidewalks, or environmentally sensitive areas prevent widening a street to provide bike lanes.

Most shared roadways are unmarked, allowing bicyclists to share the outside lane with motor vehicles, as allowed by Illinois Statutes. In some instances it may be advantageous to sign some urban and rural roadways as bicycle routes when providing continuity to other bicycle facilities or when establishing a touring route.

Ideally, lanes on 2 lane-2 way roadways should be 4.2 m (14 ft.) wide, excluding gutter flags, to accommodate both vehicular and bicycle traffic on streets where parking is prohibited. However, a width of 4.0 m (13 ft.) is satisfactory. These same widths should be used in the outer lanes of multilane highways where bicycle traffic is allowed.

Where parallel curb parking is permitted but a parking lane is not provided, the combination lane, intended for both motor vehicle parking and bicycle use, should be a minimum of 3.6 m (12 ft.) wide. If parking volume is substantial or turnover is high, an additional 300 or 600 mm (1 or 2 ft.) of width is desirable.

4.04 Bike Paths Versus Sidewalks

Sidewalks are generally not designed, nor recommended for bicycle travel, primarily because of their narrow width and multiple opportunities for conflicts with driveways and commercial entrances. Some suburban sidewalks, however, may be preferable to on-road located on both sides of the roadway. In contrast, bicycling on storefront sidewalks in urban areas or in residential areas with multiple driveways should be strongly discouraged.

4.05 Bikeways On Highway Structures

Bicycle accommodations on approach roadways should be carried across structures using the same width as the approach roadway. The width of new highway structures should, as a minimum, equal the width of the approach roadway plus the width of approaching bicycle lanes and/or sidewalks. Consideration should also be given to the possible need for bicycle lanes in the future.

Figure 8 shows a typical cross-section of marked bike lanes continued across a bridge with two traffic lanes.

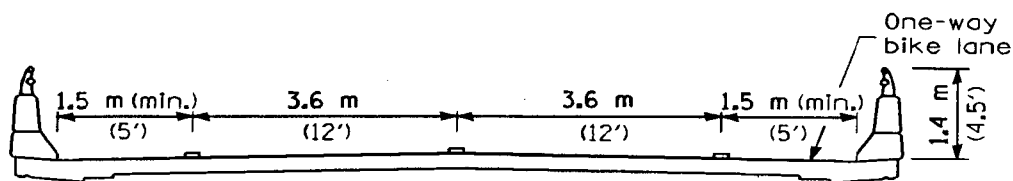


Figure 8: Marked bike lanes continued across bridge

4.06 Bikeway Structures

On new structures, the minimum clear width should be the same as the approach paved bicycle path and the desirable clear width should include the minimum 600 mm (2 ft.) wide clear areas. In no case shall the width of the structures be less than the paved width of the approach. Overall width may also be governed by access requirements for emergency, patrol and maintenance vehicles. Also, vertical clearance may be dictated by occasional motor vehicles using the path. A minimum vertical clearance of 2.4 m (8.0 ft.) should be provided, however, where practical, a vertical clearance of 3.0 m (10 ft.) is desirable.

Railings, fences or barriers on both sides of a bicycle path structure should be a minimum of 1.4 m (4.5 ft.) high. Smooth rub rails should be attached to the barriers at handlebar height of 1.1 m (3.5 ft.)

Bridge design should take into account vehicle and live pedestrian loading. The vertical clearance over highways is 5.3 m (17 ft. 3 inches) and 7.0 m (23 ft.) over railroads.

The "AASHTO Guide Specification for Design of Pedestrian Bridges" provides information that is applicable to bikeway structures.

4.07 Bike Paths/Highway Crossings

Where bicycle paths cross roadways, the safety of potential crossings should be assessed. Part IX of the Manual on Uniform Traffic Control Devices provides guidance about proper marking and signing. If adequate gaps in vehicular traffic are not available, some form of crossing control is warranted. Control can include flashing lights, signals or a grade separation. Re-routing of the path to a nearby signalized intersection should also be considered. However, any use of re-routing that causes excessive redundant travel may be perceived as a barrier and not be used. Designers should use engineering judgement to decide when such safety measures are necessary and cost effective by considering traffic volumes, motor vehicle speeds, and anticipated usage.

4.08 Additional Considerations For Accommodations On Existing Roadways

Bicycle accommodations can also be adopted to a roadway by marking or remarking the pavement to increase the width of the curb lane or to add bike lanes. For example, it may be feasible to:

- 1) reduce the width of inside traffic lanes in accordance with AASHTO.
- 2) reduce median width (especially with the removal of raised medians).
- 3) remove parking (possibly in conjunction with providing off-street parking).
- 4) reduce the number of traffic lanes. This option may be appropriate, for example, if one-way couples are created or if a parallel roadway improvement reduces the traffic demand on an adjacent street that is more suited for bicycle travel.

4.9 Incidental Design Factors

Regardless of the type of improvement being developed, the following items should always be considered:

- 1) Drainage grates and utility covers can be hazardous to bicyclists. All current IDOT drainage grate designs are suitable for bicycle travel. In addition, grates and utility covers located in the cyclists' expected path should be flush with the pavement. With pavement overlay projects, utility covers and non-conforming drainage grates should be replaced and adjusted flush with the new surface. As a less preferred alternative, the pavement should be designed and constructed to taper into drainage inlets to prevent an abrupt edge at the inlet.
- 2) Bicyclists should be able to cross railroad tracks at or near a right angle to minimize the potential for a bicyclist's front wheel to be trapped in the flangeway, which would cause loss of steering control. When the crossing angle is less than 45 degrees, consideration should be given to widening the outside lane, shoulder or bicycle lane to improve the angle of approach. The bicycle portion of the pavement surface should be at the same elevation as the rails. The bicycle crossing surface should be consistent with the vehicular crossing surface and shoulder widths should be carried over the crossing.
- 3) Bicycle trails should be designed to cross railroad tracks at right angles. A crossing surface should be provided that is consistent with the bicycle trail surface. Maximum visibility should be provided to aid the cyclist in noticing approaching trains. Railroad Advance Warning sign should be erected no less than 50 feet in advance of the tracks and crossbuck signs should also be erected no less than 50 feet in advance of the tracks and crossbuck signs should also be erected at the crossing. All signing should be in conformance with the Manual on Uniform Traffic Control Devices and the Illinois Supplement.
- 4) When a grade crossing of a bicycle trail is proposed, the railroad should be contacted early in the project.
- 5) If bollards are installed across a bike path where it intersects with a street, an adequate clear zone shall be provided between the bollards and the street.
- 6) Analysis of the environmental effects of bicycle accommodations should be accomplished and documented along with the environmental analysis for the associated highway project.

4.10 Signing, Marking, and Traffic Control

Bicycle routes should be marked if they meet standards contained in the AASHTO publication "Guide for the Development of Bicycle Facilities," are continuous, and they are at least one mile long. It may be appropriate to mark shorter bicycle routes if they intersect with another marked bike route.

Marking and signing of bikeways should be in accordance with *MUTCD, Part IX, Bicycle Facilities* and applicable local ordinances.

Pavement markings and signing are especially important at the approaches to intersections and at the end of bike lanes. Where a bike lane ends, bicyclists may be required to merge with motor vehicle traffic. Bicyclists should be encouraged with the appropriate striping to make lane changes in advance of the intersection.

At signalized intersections, bicyclists should be provided an opportunity for a green signal phase, either with timed signals, push-button actuation, or approved detection devices, such as infrared, video, sonar or wired detection. This opportunity should be provided whenever a marked bikeway crosses the project corridor. Other crossing locations to consider include potential bicycle travel from schools or parks or other significant destinations described in the *Checklist of Bicycle Travel within Highway Projects* (Exhibit A).

Signal timing usually does not need to be lengthened to allow adequate time for bicycle crossing. The ASSHTO Guide recommends calculating clearance intervals using a bicycle speed of 15 km/h (10 mph) and a perception/reaction/braking time of 2.5 seconds. With extremely wide intersections, however, median refuge areas 2 m (6 ft.) wide minimum should be provided if signal timing would prohibit crossing time.

5.00 MAINTENANCE

Responsibility for maintenance of bikeway facilities should be determined and agreed upon in the planning process.

EXHIBIT A

SAMPLE CHECKLIST FOR BICYCLE TRAVEL WITHIN HIGHWAY PROJECTS

This checklist shows what might be included in all project reports where evaluation of the potential for bicycle accommodations is necessary. Projects that provide adequate bicycle accommodations may provide a descriptive statement to that effect in lieu of this *Checklist*.

A-1 BICYCLE TRAVEL GENERATORS IN PROJECT VICINITY

Potential bicycle travel generators in the vicinity of this project, such as those below, should be reviewed and recorded. Not on the list below, the types of generators within 2 kilometers (1.2 miles) of the project corridor. Attach a map of this area with these generators shown. Sections of municipal or township maps are acceptable, as well as photocopies of aerial photos.

Generators	Yes	No	Generators	Yes	No
Residential Areas	<input type="checkbox"/>	<input type="checkbox"/>	Shopping Centers	<input type="checkbox"/>	<input type="checkbox"/>
Parks	<input type="checkbox"/>	<input type="checkbox"/>	Hospitals	<input type="checkbox"/>	<input type="checkbox"/>
Recreation Areas	<input type="checkbox"/>	<input type="checkbox"/>	Employment Centers	<input type="checkbox"/>	<input type="checkbox"/>
Churches	<input type="checkbox"/>	<input type="checkbox"/>	Government Offices	<input type="checkbox"/>	<input type="checkbox"/>
Schools	<input type="checkbox"/>	<input type="checkbox"/>	Local Businesses	<input type="checkbox"/>	<input type="checkbox"/>
Libraries	<input type="checkbox"/>	<input type="checkbox"/>	Industrial Plants	<input type="checkbox"/>	<input type="checkbox"/>
Existing Bicycle Trails	<input type="checkbox"/>	<input type="checkbox"/>	Public Transportation Facilities	<input type="checkbox"/>	<input type="checkbox"/>
Planned Bicycle Trails	<input type="checkbox"/>	<input type="checkbox"/>	Other (_____)	<input type="checkbox"/>	<input type="checkbox"/>

The map will serve to indicate where bicyclists will cross or ride along the corridor. It will also serve to indicate the absence of any of the above destinations and thus provide the justification for the exclusion of accommodations for bicycle travel.

A-2 PUBLIC COORDINATION

Note whether the following organizations have been contacted to assess nearby bicycle travel or planned development of recreational trails or other generators.

Generators	Yes	No	Generators	Yes	No
Metropolitan Planning Organization (if Applicable)	<input type="checkbox"/>	<input type="checkbox"/>	League of Illinois Bicyclists ¹	<input type="checkbox"/>	<input type="checkbox"/>
Local Municipalities	<input type="checkbox"/>	<input type="checkbox"/>	Illinois Department of Natural Resources ²	<input type="checkbox"/>	<input type="checkbox"/>
Park or Forest Preserve Districts	<input type="checkbox"/>	<input type="checkbox"/>	Illinois Trails Conservancy ³	<input type="checkbox"/>	<input type="checkbox"/>

Documentation of these written contacts and replies should be included in the project reports.

¹ League of Illinois Bicyclists, 2935 Barberry Court, Aurora, IL 60504

² Illinois Department of Natural Resources, Division of Planning, One Natural Resources Way, Springfield, IL 62702-1271

³ Illinois Trails Conservancy, P.O. Box 10, 144 West Main Street, Capron, IL 61012

A-3 ASSESSMENT OF BICYCLE TRAVEL

Based on the above indicators (attach additional information of appropriate):

1. Where would bicyclists cross the project? _____

2. Where would bicyclists need to ride parallel to the project? _____

a) Does the project provide unique or primary access:⁴

1) across a river, railroad, highway corridor or other natural or man-made barrier?

2) into or out of a residential or commercial development?

3) between communities or other likely significant destinations (e.g. university campus or recreational facility)?

b) Are there any secondary roads parallel to the project that could reasonably be used by cyclists as alternatives to access these destinations?⁵

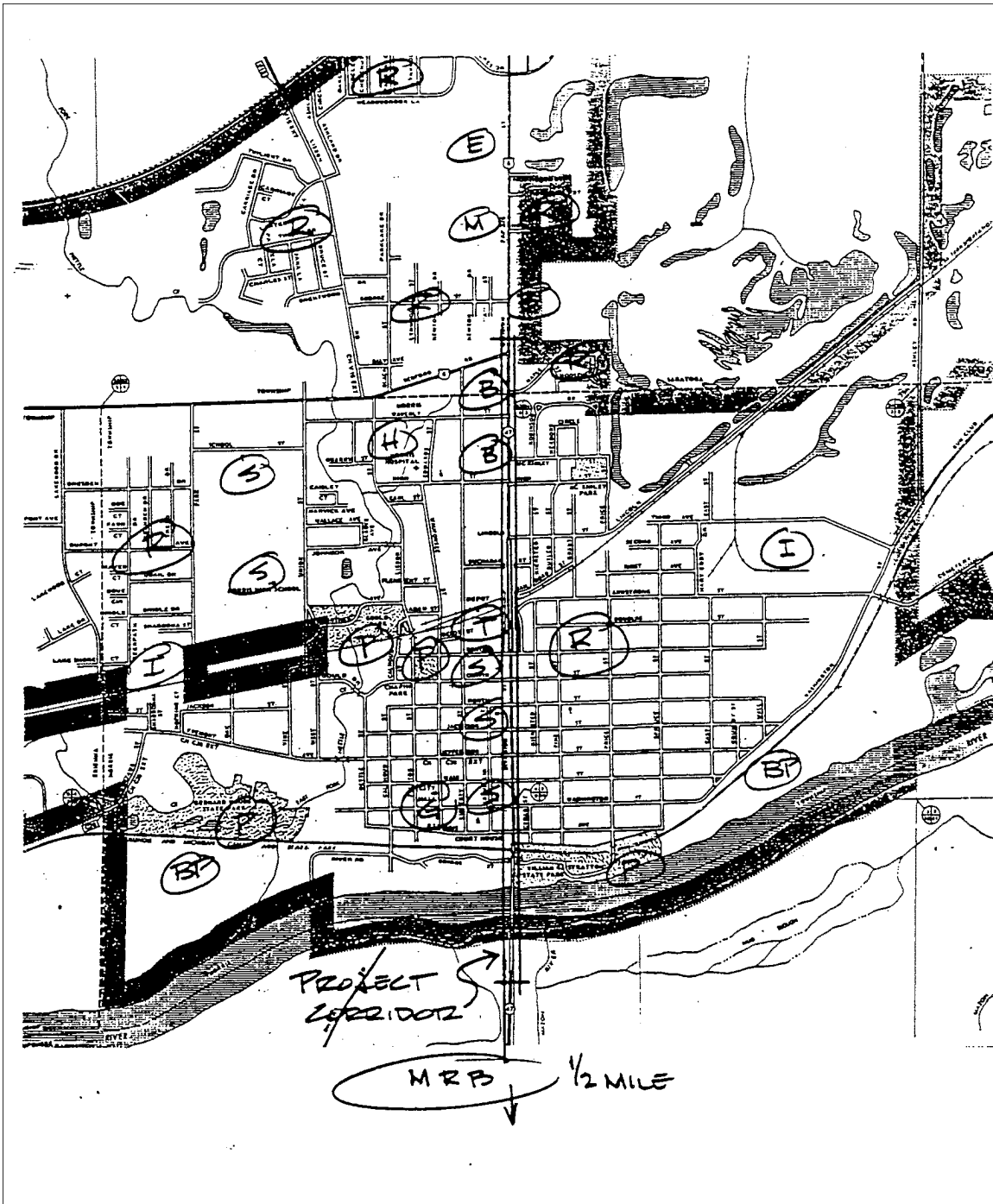
If so, how far from the corridor are these roads? (A key consideration with parallel roads is whether there are significant destinations located on the project corridor that bicyclists would need to access.)

3. Do local governmental entities other organizations have plans for bicycle facilities or generators, such as a park or recreational area that could affect this project or generate additional travel in the project corridor?

⁴ Unique or primary access is defined as access not otherwise available within a reasonable riding distance of 2 km (1.2 mi.).

⁵ Secondary roads that could be used as alternative routes are usually within 2-3 blocks of projects in urban areas, within 1 km (0.6 mi.) in suburban areas and within 2 km (1.2 mi.) in rural areas.

A-4 LOCATION MAP



EXAMPLE OF MAP TO ACCOMPANY CHECKLIST FOR BICYCLE TRAVEL

KEY:

R	Residential Areas	BP	Existing Bicycle Trails	G	Government Offices
P	Parks	PBP	Planned Bicycle Trails	B	Local Businesses
P	Recreational Areas	M	Shopping Centers	I	Industrial Plants
C	Churches	H	Hospitals	T	Public Transportation Facilities
S	Schools	E	Employment Centers		