



**JEFFERSONTOWN**  
GASLIGHT RECREATIONAL AND WORKPLACE  
BICYCLE AND PEDESTRIAN MASTER PLAN



*Small Town Values  
Enterprising Spirit*

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# Introduction

**Foreword**  
**Introduction**  
**Focus Group**  
**Author**

# Foreword

The Jeffersonstown's Gaslight Recreational and Workplace Bicycle & Pedestrian Master Plan's overall goal is to increase pedestrian and bicycle safety and mobility. From better crosswalks, sidewalks, and pedestrian technologies to expanding public educational and safety programs, the master plan strives to pave the way for a more walkable and bikeable Jeffersonstown.



***Thoughts come clearly  
while one walks.***  
~Thomas Mann



***Nothing compares to  
the simple pleasure of  
a bike ride.***  
~John F. Kennedy

# Introduction

Walking and biking is such a basic human activity that it has frequently been overlooked in the quest to build sophisticated transportation systems. Now people want to change that. They want to live in places that are welcoming, safe, and enjoyable. They want livable communities where they can walk, bicycle, recreate, and socialize.

Creating a pedestrian environment involves more than laying down a sidewalk or installing a signal. A truly viable pedestrian system involves both the big picture and the smallest details—from how a city is built to what materials are under our feet. Facilities should be accessible to all pedestrians, including those with disabilities. Accessible design is the foundation for all pedestrian designs; and, facilities need to be planned, designed, operated, and maintained to be usable by all people.

At a time when concerns about traffic congestion and air quality are mounting, there is an emerging realization that bicycling and walking are legitimate alternatives to motorized modes of transportation.

There are extensive policies, procedures, and funding mechanisms for highways, transit services, and other transportation systems at the federal, state and local levels. Before alternative non-motorized forms of transportation can become a viable option for Jeffersontown's community, numerous issues and concerns must be identified and solutions provided. This Jeffersontown Gaslight Recreational and Workplace Bicycle and Pedestrian Master Plan serves as a first step in establishing a community wide mission, vision, goals, objectives and action strategies for disseminating information and providing guidelines pertinent to the cyclist and walker.

Bicycling and walking are healthy, non-polluting, and fun forms of transportation. They do not consume natural resources and do not require a costly infrastructure to support since they can largely use the existing infrastructure if it is modified to meet their needs. Walking and bicycling are available to all segments of society, to people of all ages, and in every community across this country and state.

Increased levels of bicycling and walking can help to alleviate some of the negative effects of growth, including traffic congestion, air pollution, excessive noise, and degradation of the environment.

Because most of the work that will be done involves retrofitting existing places, improving the pedestrian environment will probably be done on a street-by-street, neighborhood-by-neighborhood basis and thus the creation of the bicycle and pedestrian corridors within this master plan.

This master plan was inspired by the City of Jeffersontown being awarded a grant through the Recreational Trails Grant Program administered by the Governor's Office for Local Development (GOLD). Expanding this initial vision to the entire community will create an asset to guide future efforts in promoting a bicycle & pedestrian friendly city.

**Residents**

Dina Green	Daryl Walls
Dennis Arnold	Kitty Martin
Evelyn E. Masters	Amy Derr
Lauren Hirst	Kathy Brown
Laurie Atherton	Bob Frizzell
Barbara Day, MS,.RE, CN	Ryan Wilfling
Louis & Patricia Buckel	Cheryl Dugan
Barbara Roberts	Bill DeGooyer

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Councilman Kevin Kramer – Louisville Metro District 11

**Agency Representative**

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Jeffersontown Economic Development Authority  
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Great thanks and appreciation goes to the Gaslight Recreational & Workplace Bicycle and Pedestrian Focus Group for their time, talent and ideas in shaping the goals, objectives, design elements and future bicycle and pedestrian corridors. Community involvement is paramount to developing a usable bicycle and pedestrian trail system.

A special thanks is also extended to Mayor Clay S. Foreman for his vision of improving the quality of life for all Jeffersontown citizens by creating a great place to live, work and play where the whole community benefits from a bicycle & pedestrian friendly city.

A special thanks is extended to the Jeffersontown City Council, for their generous appropriation of funds to construct Phase I of the “Gaslight Recreational & Workplace Bicycle & Pedestrian Trail System” as a model project.

# Chapter I

**Mission**  
**Vision**



## Mission

To enhance the quality of life within Jeffersontown by providing alternative means to the automobile and encourage physical fitness, family exercise and to create a link between where people live and work. Connecting the neighborhoods to the downtown, city parks, commercial corridors and the workplace will enhance accessibility throughout the city.



***Now shall I Walk  
Or shall I Ride?  
"Ride," Pleasure said:  
"Walk," Joy replied.  
~W.H. Davies***

## Vision

Jeffersontown will become a place where people choose to make walking or riding a bicycle a part of their everyday lives. Residents and visitors will be able to walk and ride with confidence, safety and security throughout the community. New and enhanced facilities and services will make the trip more pleasant, more convenient, without conflict with motorized modes, and with minimal barriers to the mobility impaired. Bicycle and walking will become a routine part of the transportation system and everyday trips.



# **Chapter II**

## **Goals, Objectives and Action Strategies**

**Goal 1: Transportation Facilities and Services**

**Goal 2: Land Use Planning and Development**

**Goal 3: Schools**

**Goal 4: Recreational Facilities, Parks and Trails**

**Goal 5: Safety, Security and Crime Prevention**

# **Goal 1: Transportation Facilities and Services**

**Goal**  
**Objective**  
**Strategies**

# Goal 1

## Transportation Facilities and Services

There are safe, easy and pleasant places for people of all ages to walk or bicycle using public streets and highways. A balanced system that includes transit, walking, bicycling and automobiles provides people with appropriate transportation choices. Most trips less than one mile are made by walking or bicycling.



### Objective 1.1 New Streets

Plan, design and construct all new streets and highways on which bicycles and pedestrians are permitted to accommodate bicycling and walking.

### Objective 1.2 Existing Streets

Retrofit existing streets and highways to accommodate bicycling and walking.

### Objective 1.3 Maintenance

Maintain streets and highways to ensure safe use for pedestrians and bicyclists, especially during winter months.

### Objective 1.4 Disabled Access

Design, build, and maintain pedestrian-type facilities to provide access for the disabled on all segments of the public rights-of-way on which pedestrians are permitted.

### Objective 1.5 Funding

Allocate transportation funds to ensure that (a) all projects include the funding needed for bicycling and walking facilities, and (b) an equitable share goes to eliminating the deficiencies in existing roads.

### Objective 1.6 Street Network

Lay out new streets and highways using a traditional “grid” pattern or more interconnected streets to provide more route choices, to reduce trip lengths, and to slow motor vehicles.

### Objective 1.7 Choices

Develop a coordinated system of public transit, pedestrian, and bicycling services and facilities to provide most people with a viable option to private motor vehicle use for most trips.

# Goal 1

## Transportation Facilities and Services (continued)



### Action Strategies

- AS 1.1** Require all new streets, and existing streets needing improvements to be constructed with sidewalks and accommodate either on-road or off-road bicycle lanes. Establish complete streets concept. Prioritized corridors first.
- AS 1.2** Develop partnerships with Metro Louisville and Kentucky Transportation Cabinet to provide sidewalks and bicycle lanes on state and Metro Louisville Roadways. Prioritized corridors first.
- AS 1.3** Provide for the continued funding of sidewalks and bicycle lanes on both existing and new streets. Maintain problem intersections for safe pedestrian and bicycle maneuvering. Seek state/federal grant monies to leverage available monies. Prioritized corridors first.
- AS 1.4** Construct all pedestrian and bicycle access to accommodate Americans with disabilities. Prioritized corridors first.
- AS 1.5** Develop increased TARC routes and corridors of opportunities to promote walking and biking to more neighborhood uses.

## **Goal 2: Land Use Planning and Development**

**Goal**  
**Objective**  
**Strategies**

# Goal 2

## Land Use Planning and Development



Development plans and practices focus on creating transit and pedestrian oriented communities where the majority of trips are made by a combination of walking, bicycling and transit. Most people walk or bike as part of their routine activities or specifically for recreation and health. Public health impacts and objectives are a regular, routine and guiding consideration in land-use planning decisions.

### Objective 2.1 Smart Growth

Integrate Smart Growth principles in all state and local programs affecting development.

### Objective 2.2 Community Development

Make public health impacts a priority objective in land-use planning and community development decision making.

### Objective 2.3 Traditional Neighborhood Development

Make traditional neighborhood development the standard for residential areas.

### Objective 2.4 Commercial Development

Design, build, and maintain pedestrian-type facilities to provide access for the disabled on all segments of the public right-of-way on which pedestrians are permitted.

### Objective 2.5 Trip Distance

Reduce typical trip distances.

### Objective 2.6 Trip Choices

Make bicycling, walking, and public transit the preferred transportation choices for the majority of trips.

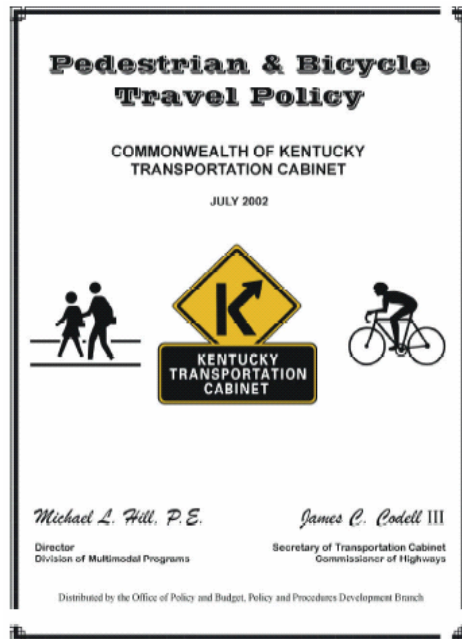


# Goal 2

## Land Use Planning and Development (continued)

### Action Strategies

- AS 2.1** Implement the goals and objectives of the current Cornerstone 2020 Comprehensive Plan and Land Development Code regulations as an effort to promote smart growth principles in Jeffersontown.
- AS 2.2** Promote interconnected streets to increase more direct routes for pedestrians and bicyclist to traverse the neighborhood and the surrounding areas. Explore ways to reduce trips to various uses throughout the city.
- AS 2.3** Develop unique and interesting routes that provide a representation of the heritage, character and history of Jeffersontown that will create an experience shared by all citizens.





## **Goal 3: Schools**

**Goal**  
**Objective**  
**Strategies**

## Goal 3

## Schools



Schools are of moderate size and are located in the neighborhood they serve. Most children walk or bike to school. School sites and facilities serve a wide range of community's services and needs.



### **Objective 3.1 Access**

Make it easy and safe for students to walk and bike to school.

### **Objective 3.2 Site Design & Location**

Design and develop bicycle-and pedestrian-oriented school sites and maintain schools within walking and bicycling distance of student population.

### **Objective 3.3 Control Cars**

Strictly control the operation of motor vehicles on and near school sites, at bus stops and along school routes.

### **Objective 3.4 Encouragement**

Encourage children to bike and walk to school.

### **Objective 3.5 Safe Routes to Schools & Community Centers**

Design and develop routes to schools that will increase the opportunity of children walking & bicycling to school. Plan, develop, and operate school sites and facilities as multi-purpose community centers.

# Goal 3

## Schools (continued)



### Action Strategies

- AS 3.1** Construct sidewalks and bicycle lanes to increase safe and easy routes for children to walk and bike to school.
- AS 3.2** Maintain strong local neighborhood schools that are within walking and bicycling distance to the student population.
- AS 3.3** Increase patrols and enforcement of motor vehicles around school sites and pedestrian access points. Explore traffic calming design measures around schools to create a safe and secure environment for children to walk and bike to school.
- AS 3.4** Create an educational training course for school aged children about the convenience and safety of walking and biking to school. Develop safe routes to schools and provide encouragement for children to walk and bike to school.

## **Goal 4: Recreational Facilities, Parks and Trails**

**Goal**  
**Objective**  
**Strategies**

# Goal 4

## Recreational Facilities, Parks and Trails



Basic park and recreation facilities are available in every neighborhood, and most users walk or bike to them. Other recreational facilities are easily accessible by transit. Most children can go to their neighborhood parks by themselves or with their friends. Most organized sports activities take place at parks or school sites located in or near the neighborhoods where the children live. Trail-type facilities are within walking distance of most residential areas.

### Objective 4.1 New Development

Provide neighborhood parks and recreational facilities in new subdivisions and developments as well as in-fill developments.

### Objective 4.2 Existing Neighborhoods

Provide neighborhood parks and recreational facilities in currently underserved residential areas.

### Objective 4.3 Access

Ensure that neighborhood park and recreation facilities are conveniently located so as to be easily and safely accessed by bicycle and pedestrians, especially children.

### Objective 4.4 Smaller Sites

Plan and utilize a variety of smaller sites for youth sports activities (vs. large-scale, regional facilities to which people must drive)

### Objective 4.5 Multipurpose Facilities

Utilize public facilities such as schools as “multipurpose” facilities, especially for recreation services.

### Objective 4.6 Trails

Develop a system of trails that is readily accessible to most people.



# Goal 4

## Recreational Facilities, Parks and Trails (continued)



### Action Strategies

- AS 4.1** Design and construct new parks close to neighborhoods and underserved residential areas, and create new smaller parks within existing neighborhoods that are easily and safely accessible by walking and biking.
- AS 4.2** Create a system of walking and biking trails/routes that will link the recreational parks to the neighborhoods as well as linking the smaller neighborhood orientated parks to the surrounding residential population.
- AS 4.3** Partner with the local schools to utilize the schools property for multipurpose facilities as an extension of the public walking/biking trail system and recreational services provided to the community.



## **Goal 5: Safety, Security and Crime Prevention**

**Goal**  
**Objective**  
**Strategies**



## Goal 5

### Safety, Security and Crime Prevention

Motor vehicle traffic no longer poses a serious threat to children in neighborhoods, or near schools and parks. Motor vehicle operation is strictly regulated and traffic laws are complied with by all users. Motor vehicle crashes, injuries and fatalities decline significantly. Crimes of all kinds decline, especially in residential areas. Parents are at ease with the notion of their children playing outside, unsupervised in their neighborhood. All ages feel safe to bicycle and walk around their neighborhoods. All citizens feel safe and secure to walk and bike to other areas of the community for such reasons as shopping, eating, recreation or to work.



#### Objective 5.1 Driver Behavior

Ensure that all drivers are careful and responsible.

#### Objective 5.2 Vehicle Speeds

Restrict motor vehicle speeds in neighborhood, school, and shopping areas.

#### Objective 5.3 Environmental Design

Plan and design neighborhoods to reduce the threat of crime.

#### Objective 5.4 Enforcement

Improve policing and enforcement to help prevent crime



# Goal 5

## Safety, Security and Crime Prevention (continued)



### Action Strategies

- AS 5.1** Install signage identifying safe routes for walking and biking to schools, parks, neighborhoods and other points of interest.
- AS 5.2** Educate the vehicular driver through public awareness announcements and educational literature in an effort to alter driver behavior around walking and biking facilities.
- AS 5.3** Design and construct traffic calming measures to reduce motor vehicle speeds in neighborhood, school and shopping areas in order to create a safe and secure walking and biking environment.
- AS 5.4** Increase police patrols of bicycling and pedestrian routes to create a safe, secure environment to prevent and discourage crime.



# **Chapter III**

## **City of Jeffersontown— Bicycle and Pedestrian Corridors (Proposed)**

- 1. Introduction**
- 2. Table Listing**
- 3. Maps of Routes**

# 1. Introduction

## Introduction

In evaluating the needs of the community the focus group considered many factors in establishing priority routes for bicycling and walking in Jefferson-town. Such factors as schools, parks, shops, work and other recreational elements were considered when identifying the routes in the following maps. Also, major arterial routes were strongly endorsed due to the amount of traffic that uses those corridors and the network of residential local streets that connect with the collector/arterial roadways. Given the fact that the arterial routes will yield the highest possible use for various routes and link the majority of identified primary uses that would benefit the neighborhoods, these were selected as high priority routes.

Also, as these routes are explored for future phases of a trail system every effort should be given to creating a separate path from the travel lanes of the various roadways. A separate path of approximately 8-10 feet wide would be preferred along these proposed routes unless cost prohibited or other safety or property considerations take precedence. Each of these proposed routes would be studied further and a feasibility cost analysis along with a safety analysis would be conducted prior to finalizing additional phases of bicycle and pedestrian corridors.

Also, a priority would be any gaps in existing bicycle and pedestrian corridors. These segments should be evaluated and a report generated to identify their feasibility of completion.

Following in this chapter are the prioritized corridors in tabular form as well as map form. Also, each map indicates per Coalition of Neighborhood the identified bicycle and pedestrian routes through that particular coalition.

This network of bicycle and pedestrian routes will build a base grid that will provide some key connections and establish Jeffersontown as a bicycle and pedestrian friendly city.

***If you are seeking creative ideas, go out walking. Angels whisper to a man when he goes for a walk.***

***~Raymond Inmon***

## **2. Table Listings**

- A. Major Arterial Routes**
- B. Coalition of Neighborhoods Routes**

# A. Major Arterial Routes

Collector/Major Arterial	From	To
S. Hurstborne Pkwy.	Shelbyville Road	Stony Brook Drive at Bardstown Road
Taylorsville Road	Stony Brook Drive	Chenoweth Run Road
Watterson Trail	Watterson Trail	Hurstbourne Pkwy.
Billtown Road	Ruckriegel Pkwy.	Fairground Road
Blankenbaker Pkwy.	I-64	Electron Drive/ Taylorsville Road

PRIORITY	
	HIGH
	MEDIUM
	LOW

## B. Coalition of Neighborhoods Routes

Collector	From	To
<b>COALITION OF NEIGHBORHOOD 1</b>		
Linn Station Road	Moser Road	S. Hurstbourne Pkwy.
Timberwood Circle	Linn Station Road	S. Hurstbourne Pkwy.
Whetstone Way	Timberwood Circle	Timberwood Circle
Florian Road	Timberwood Circle	Moser Road
Cambridge Station	Timberwood Circle	Shelbyville Road
Moser Road	Florian Road	Watterson Trail
<b>COALITION OF NEIGHBORHOOD 2</b>		
Stony Brook Drive	Taylorville Road	Six Mile Lane
Six Mile Lane	Taylorville Road	Stony Brook Drive
Old Six Mile Lane	Six Mile Lane	RR Crossing
<b>COALITION OF NEIGHBORHOOD 3</b>		
Plantside Drive	Bluegrass Pkwy.	Grassland Drive
Bunsen Pkwy.	Envoy Circle	Plantside Drive
Merioneth Drive	Taylorville Road	Tragaron Avenue
Tregaron Avenue	Merioneth Drive	Renown Drive
Janlyn Road	Renown Drive	Taylorville Road
Bluegrass Pkwy.	Embassy Square Blvd.	Plantside Drive
<b>COALITION OF NEIGHBORHOOD 4</b>		
Old Six Mile Lane	RR Crossing	Maple Road
Patti Lane	Old Six Mile Lane	Taylorville Road
Rowntree Road	Old Six Mile Lane	Galene Drive
Galene Drive	Stony Brook Drive	Maple Road
Six Mile Lane	Stony Brook Drive	Hurstbourne Pkwy.
Sue Helen Drive	Galene Drive	Ethelwood Drive
Willowwood Way	Longview Road	St. Edwards Drive
Longview Road	Willowwood Way	Watterson Trail
Charlene Pkwy.	Galene Drive	St. Edwards Drive
St. Edwards Drive	Charlene Pkwy.	Walnutwood Way
<b>COALITION OF NEIGHBORHOOD 5</b>		
Grand Avenue	Taylorville Road	Watterson Trail
College Drive	Taylorville Road	Watterson Trail
Ruckriegel Pkwy.	Watterson Trail	Watterson Trail
Old Taylorville Road	Watterson Trail	Double Stone Arch Bridge

## B. Coalition of Neighborhoods Routes (continued)

Collector	From	To
<b>COALITION OF NEIGHBORHOOD 6</b>		
Gutenberg Road	Stony Brook Drive	Rivanna Drive
Lacarem Drive	Cottagehill Road	Clarimar Road
Stony Brook Drive	Watterson Trail	Hursbourne Pkwy. *
Fairground Road	Villa Fair Road	Billtown Road
Colonnades Place	Billtown Road	Portico Court
Portico Court	Colonnades Place	Corinthian Drive
Rivanna Drive	Gutenberg Road	Watterson Trail
Lockridge Pkwy.	Gutenberg Road	Watterson Trail
Talitha Drive	Rivanna Drive	Lockridge Pkwy.
Villa Fair Road	Fairground Road	Gutenberg Road
Michaele Lane	Billtown Road	
Jolynee Drive	Talitha Drive	Morgan Jaymes Drive
Morgan Jaymes Drive	Watterson Trail	Jolynn Drive
Corinthian Drive	Portico Court	Rivanna Drive
Mulberry Row Way	Watterson Trail	Forestwood Drive
Forestwood Drive	Mulberry Row Way	Chambers Way
Chambers Way	Forestwood Drive	Michaele Lane

<b>COALITION OF NEIGHBORHOOD 7</b>		
Ruckriegel Pkwy.	Billtown Road	Pin Oak View Drive
Gaudet Road	Ruckriegel Pkwy.	St. Rene Road
Bayport Road	Billtown Road	Gaudet Road
St. Rene Road	Billtown Road	Chenoweth Run Road

<b>COALITION OF NEIGHBORHOOD 8</b>		
Bluegrass Pkwy.	Plantside Drive	Tucker Station Road
Plantside Drive	Bluegrass Pkwy.	Tucker Station Road
Bunsen Way	Plantside Drive	Watterson Trail
Electron Drive *	Watterson Trail	Blankenbaker Pkwy.

PRIORITY	
	HIGH
	MEDIUM
	LOW

\* Denotes portion of collector/major arteriole outside City of Jeffersontown jurisdiction. Metro Louisville and City of Jeffersontown collaboration recommended.



## **3. Maps of Routes**

- A. Community Wide Map**
- B. Coalition of Neighborhoods**
  - Coalition of Neighborhood 1**
  - Coalition of Neighborhood 2**
  - Coalition of Neighborhood 3**
  - Coalition of Neighborhood 4**
  - Coalition of Neighborhood 5**
  - Coalition of Neighborhood 6**
  - Coalition of Neighborhood 7**
  - Coalition of Neighborhood 8**
- C. Priority Ranking**

## **A. Community Wide Map**

# City of Jeffersontown

## Bicycle & Pedestrian Proposed Corridors



**Legend**

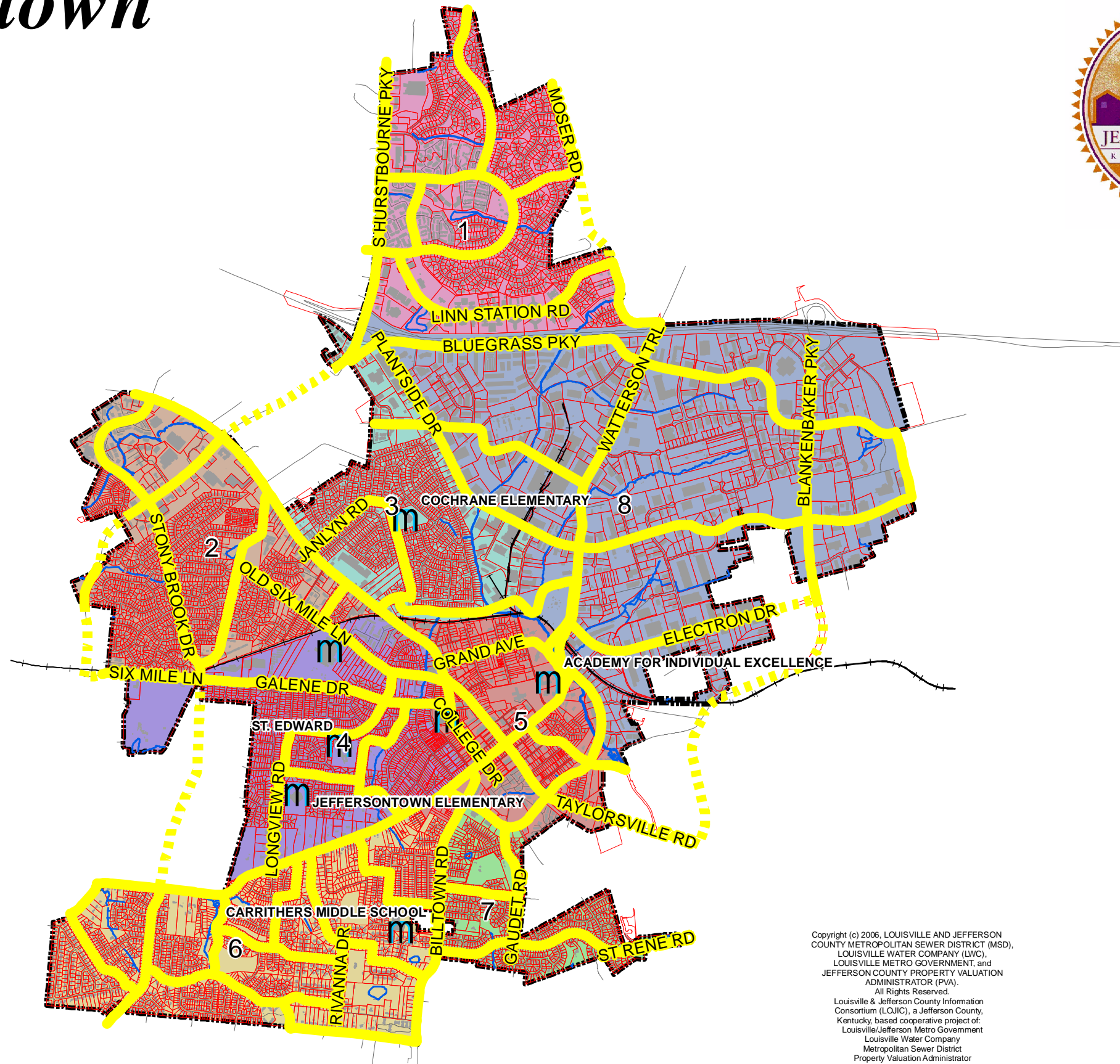
- Schools
- Parcels
- Streams
- Street Centerlines
- Railroad
- City Boundary
- Buildings

**Bicycle & Pedestrian Proposed Corridors**

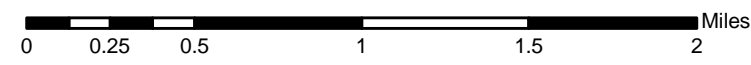
- Jurisdictional
- Nonjurisdictional

**Coalition**

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8



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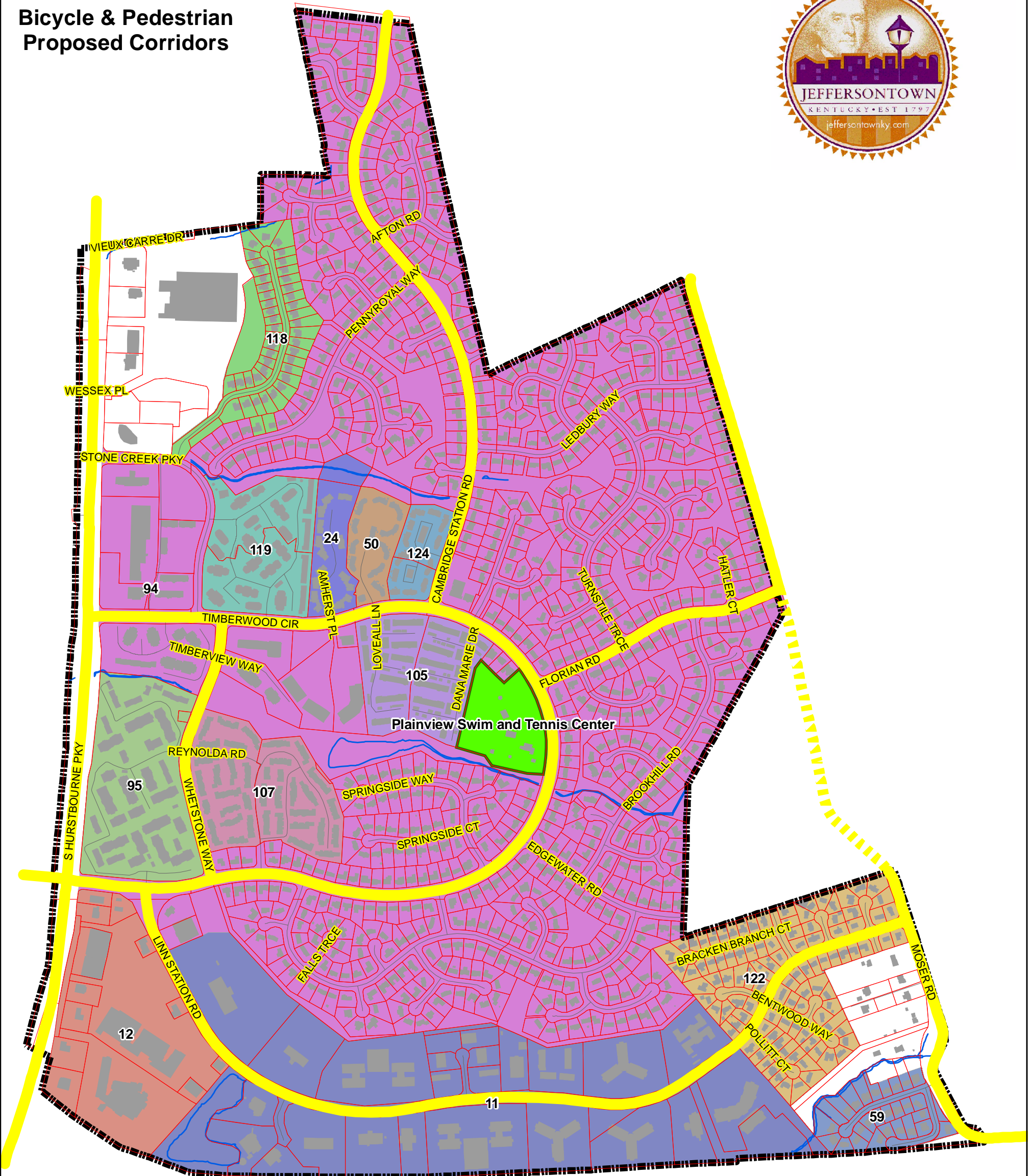
## **B. Coalition of Neighborhoods**

- Coalition of Neighborhood 1**
- Coalition of Neighborhood 2**
- Coalition of Neighborhood 3**
- Coalition of Neighborhood 4**
- Coalition of Neighborhood 5**
- Coalition of Neighborhood 6**
- Coalition of Neighborhood 7**
- Coalition of Neighborhood 8**



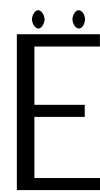
# Neighborhood Coalition 1

## Bicycle & Pedestrian Proposed Corridors

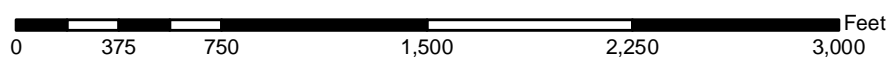


### Legend

- Street Centerlines
  - Streams
  - Railroad
  - ▭ Parcels
  - ▭ Buildings
  - ▭ Coalition Boundary
  - ▭ Parks and Recreational Facilities
  - Bicycle & Pedestrian Proposed Corridors**
  - ▬ Jurisdictional
  - ▬ Nonjurisdictional
- |                                 |                              |
|---------------------------------|------------------------------|
| ▭ 11, LINN STATION OFFICE PARK  | ▭ 94, PLAINVIEW              |
| ▭ 12, PLAINVIEW SHOPPING CENTER | ▭ 95, PLAINVIEW APARTMENTS   |
| ▭ 24, AMHURST PLACE             | ▭ 105, SYCAMORE              |
| ▭ 50, EASTHAMPTON               | ▭ 107, TIMBERWOOD            |
| ▭ 59, GRANDIN WOODS SUBDIVISION | ▭ 118, WILLOWHURST PLACE     |
| ▭ 118, WILLOWHURST PLACE        | ▭ 119, WILLOWS APARTMENTS    |
| ▭ 119, WILLOWS APARTMENTS       | ▭ 122, WOODCRAFT SUBDIVISION |
| ▭ 122, WOODCRAFT SUBDIVISION    | ▭ 124, YORKSHIRE             |



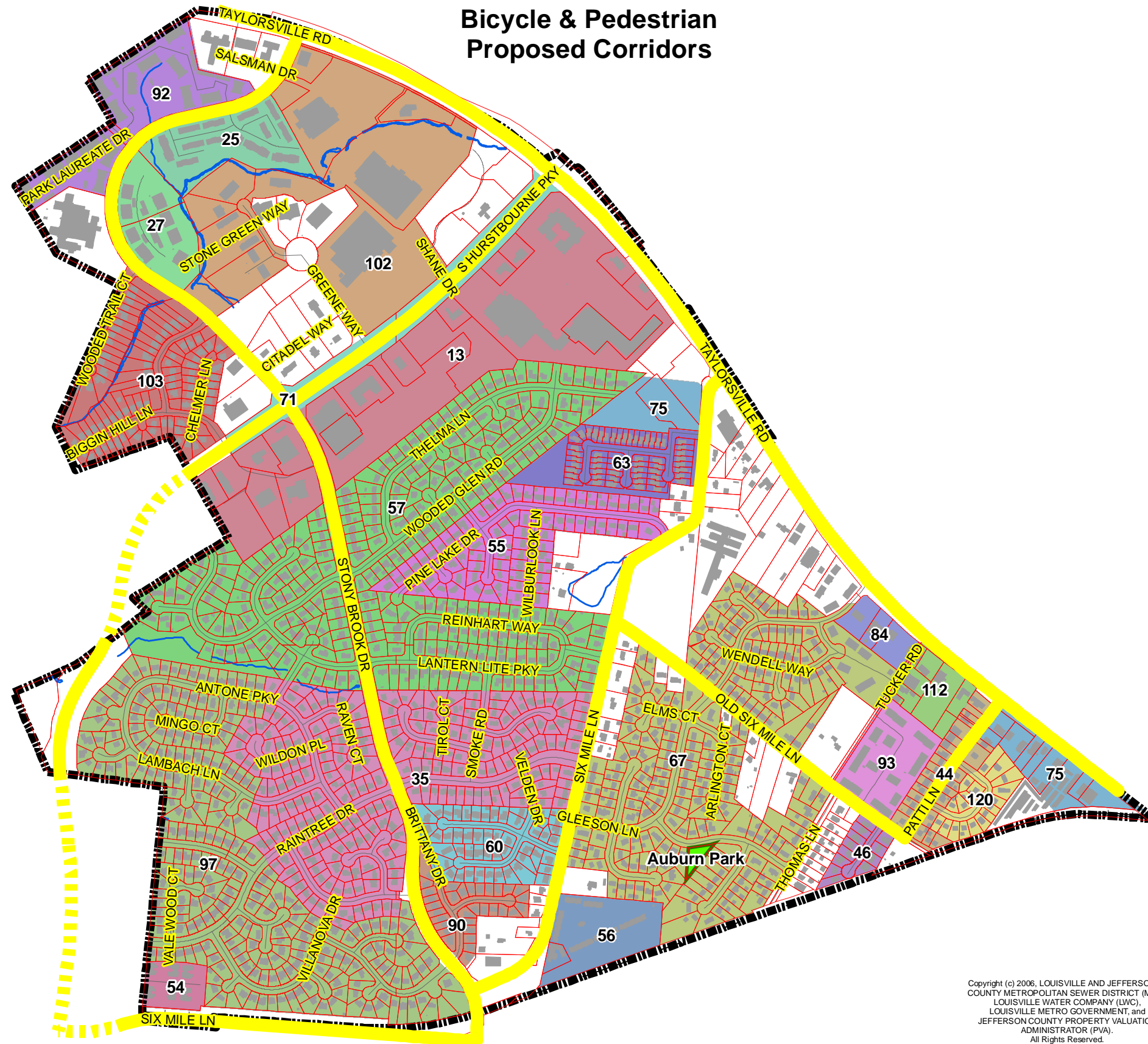
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# Neighborhood Coalition 2

## Bicycle & Pedestrian Proposed Corridors



### Legend

- Street Centerlines
- Streams
- Railroad
- Parcels
- Buildings
- Coalition Boundary
- Parks and Recreational Facilities

### Bicycle & Pedestrian Proposed Corridors

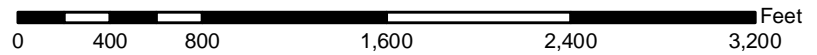
- Jurisdictional
- - - Nonjurisdictional

### Subdivisions

- 13, STONY BROOK SHOPPING CENTER
- 25, ARBOR PLACE
- 27, ATRIUM CONDOS
- 35, BRYAN ESTATES SECTION
- 44, CHERRYANN VILLAGE SECTION 1
- 46, CHRISTIANA WOODS SUBDIVISION
- 54, FENWICK PLACE APARTMENTS
- 55, GARDEN PARK SUBDIVISION
- 56, GARDEN PARK TOWN HOMES
- 57, GASLITE ESTATES
- 60, GREEN COVE
- 63, HAMPTON RIDGE
- 67, HIGHLAND HILLS
- 71, HURSTBOURNE PARKWAY
- 75, L.C. OWINGS SUBDIVISION
- 84, MILLER SUBDIVISION
- 90, OAK HAVEN
- 92, PARK LAURETE
- 93, PARLIAMENT SQUARE APARTMENTS
- 97, RAINTREE MEADOWS
- 102, STONY BROOK
- 103, STONY BROOK WOODS
- 112, W.A. WINAND TRACT SUBDIVISION
- 120, WINCHESTER VILLAGE SECTION 7B

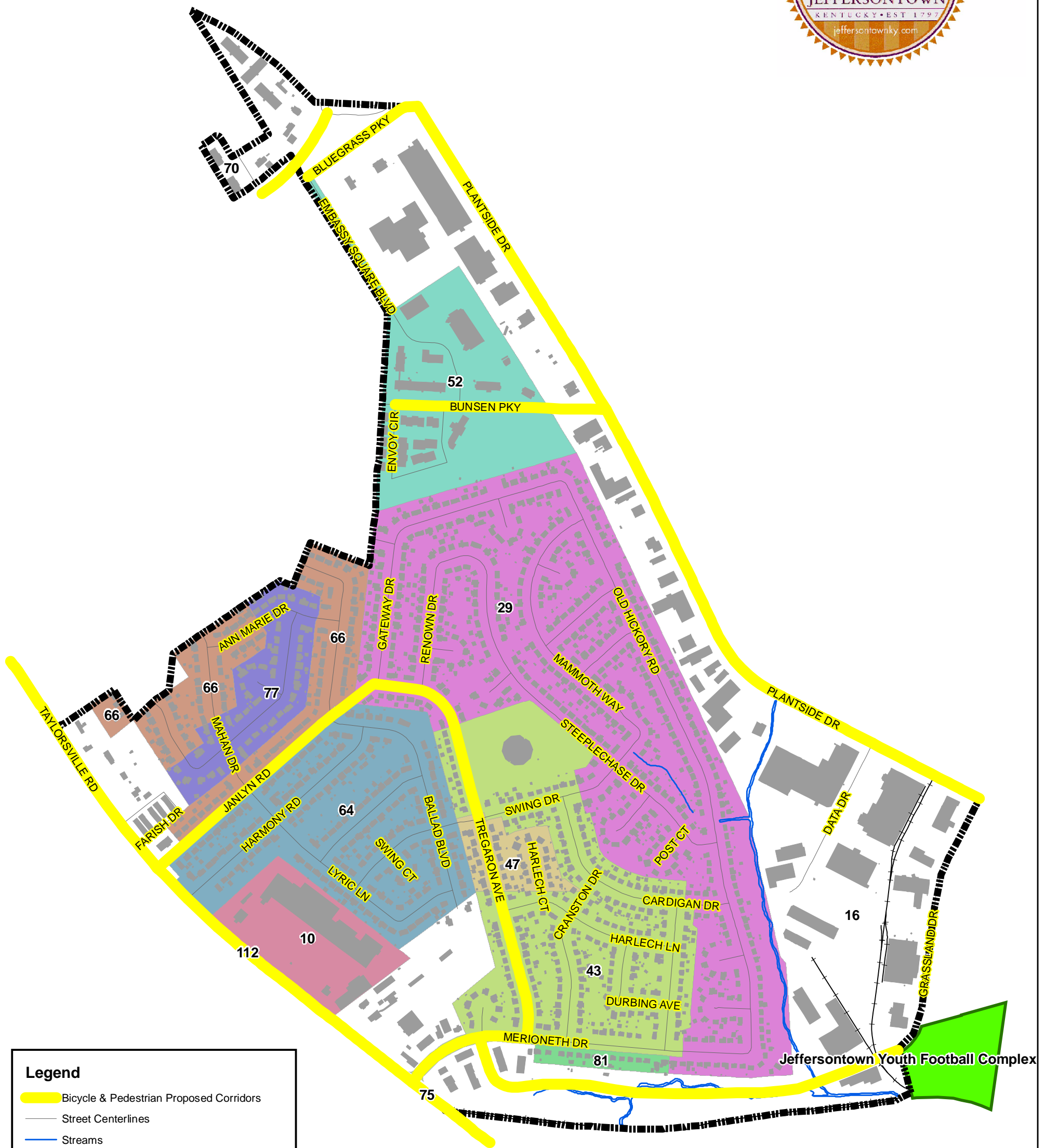


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# Neighborhood Coalition 3

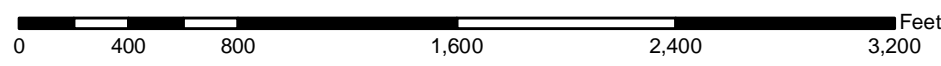
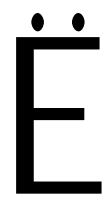
## Bicycle & Pedestrian Proposed Corridors



**Legend**

- Bicycle & Pedestrian Proposed Corridors
- Street Centerlines
- Streams
- Railroad
- Parcels
- Buildings
- Coalition Boundary
- Parks and Recreational Facilities
- 10, JTOWN COMMONS
- 29, BLUEGRASS ESTATES
- 43, CHENOWETH RUN
- 47, COLONIAL COURT SUBDIVISION
- 52, EMBASSY SQUARE SECTION 1
- 64, HARMONY ACRES
- 66, HIGHLAND BEECHES
- 77, LENCOTT SECTION 2
- 81, MARIE ANNA SUBDIVISION SECTION 3

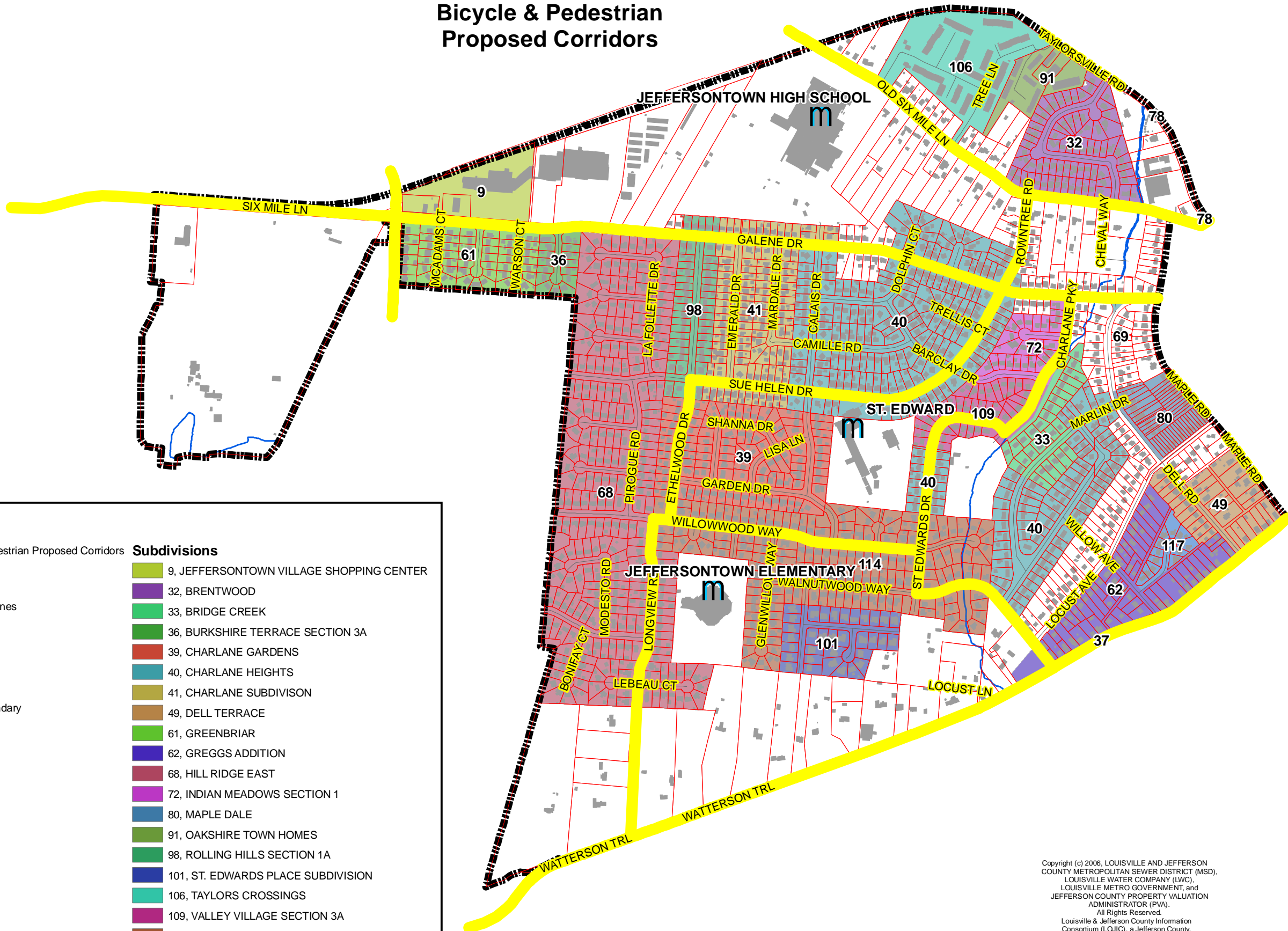
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# Neighborhood Coalition 4

## Bicycle & Pedestrian Proposed Corridors

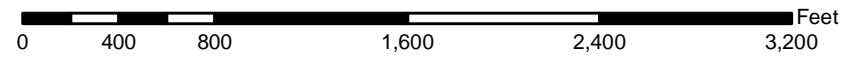
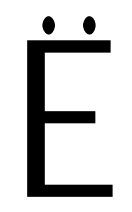


**Legend**

- Bicycle & Pedestrian Proposed Corridors
- Schools
- Street Centerlines
- Streams
- Railroad
- Parcels
- Buildings
- Coalition Boundary

**Subdivisions**

- 9, JEFFERSONTOWN VILLAGE SHOPPING CENTER
- 32, BRENTWOOD
- 33, BRIDGE CREEK
- 36, BURKSHIRE TERRACE SECTION 3A
- 39, CHARLANE GARDENS
- 40, CHARLANE HEIGHTS
- 41, CHARLANE SUBDIVISION
- 49, DELL TERRACE
- 61, GREENBRIAR
- 62, GREGGS ADDITION
- 68, HILL RIDGE EAST
- 72, INDIAN MEADOWS SECTION 1
- 80, MAPLE DALE
- 91, OAKSHIRE TOWN HOMES
- 98, ROLLING HILLS SECTION 1A
- 101, ST. EDWARDS PLACE SUBDIVISION
- 106, TAYLORS CROSSINGS
- 109, VALLEY VILLAGE SECTION 3A
- 114, WATTERSON LEA
- 117, WILLOW TERRACE



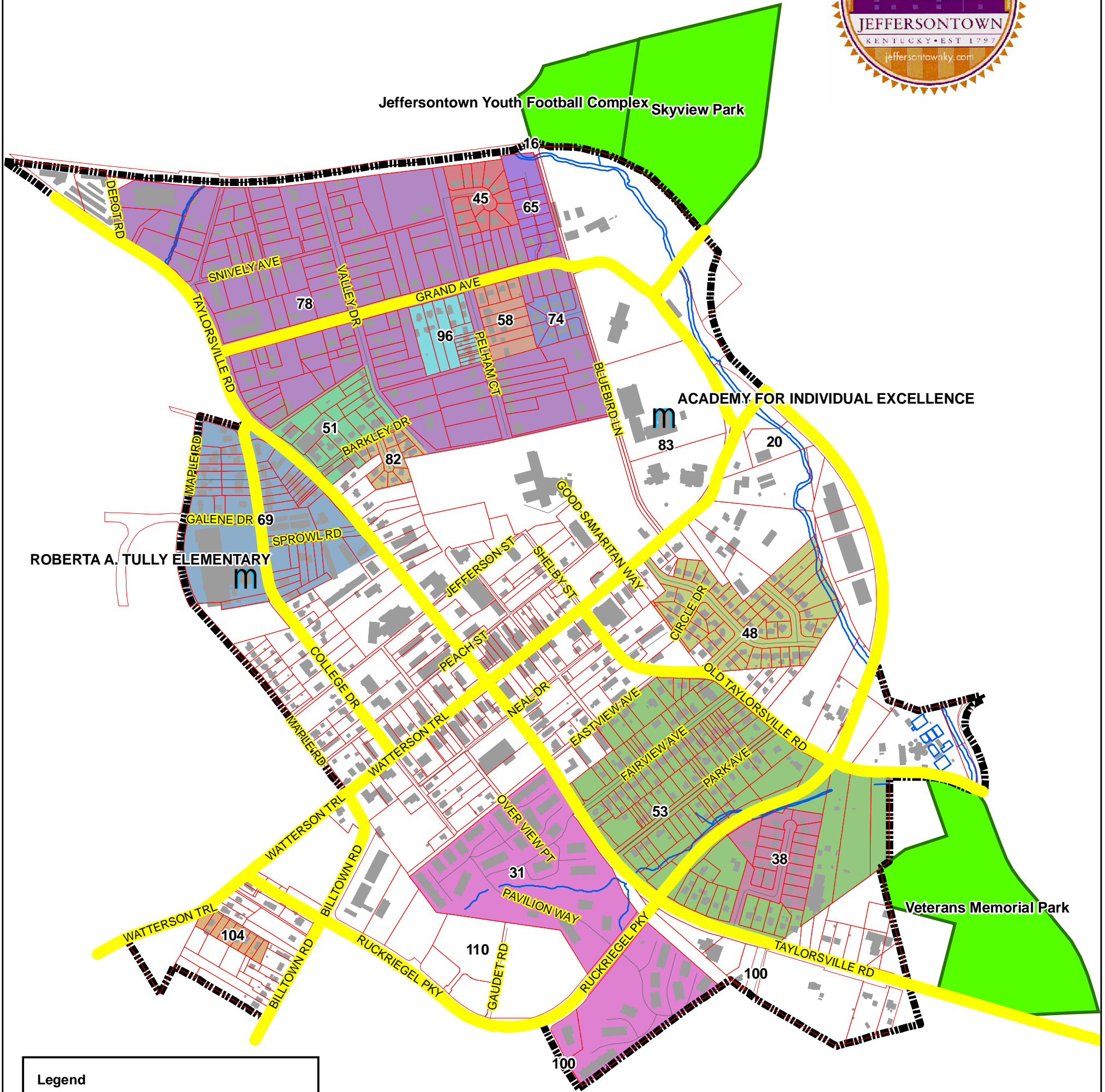
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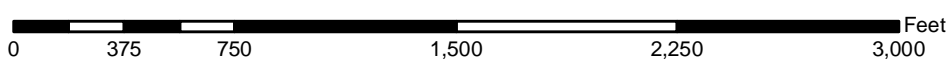
# Neighborhood Coalition 5

## Bicycle & Pedestrian Proposed Corridors



**Legend**

- Bicycle & Pedestrian Proposed Corridors
- Schools
- Street Centerlines
- Streams
- Railroad
- Parcels
- Buildings
- Coalition Boundary
- Parks and Recreational Facilities
- 31, BOULDER CREEK APARTMENTS
- 38, CANDLEWOOD
- 45, CHIMNEY RIDGE SUBDIVISION
- 48, DELL LANE SECTION 3
- 51, EDDLEMAN SUB
- 53, FAIRVIEW SUBDIVISION
- 58, GRAND AVE SUBDIVISION
- 65, HEWITT PLACE COURT
- 69, HOMELAWN TERRACE SUBDIVISION
- 74, JEFFERSON RIDGE SUBDIVISION
- 78, LIVINGSTON HEIGHTS
- 82, MCDANIEL TERRACE
- 96, PRELLS REVISED PLAT-LIVINGSTON HEIGHTS
- 104, SUNDERHAUF'S REVISION

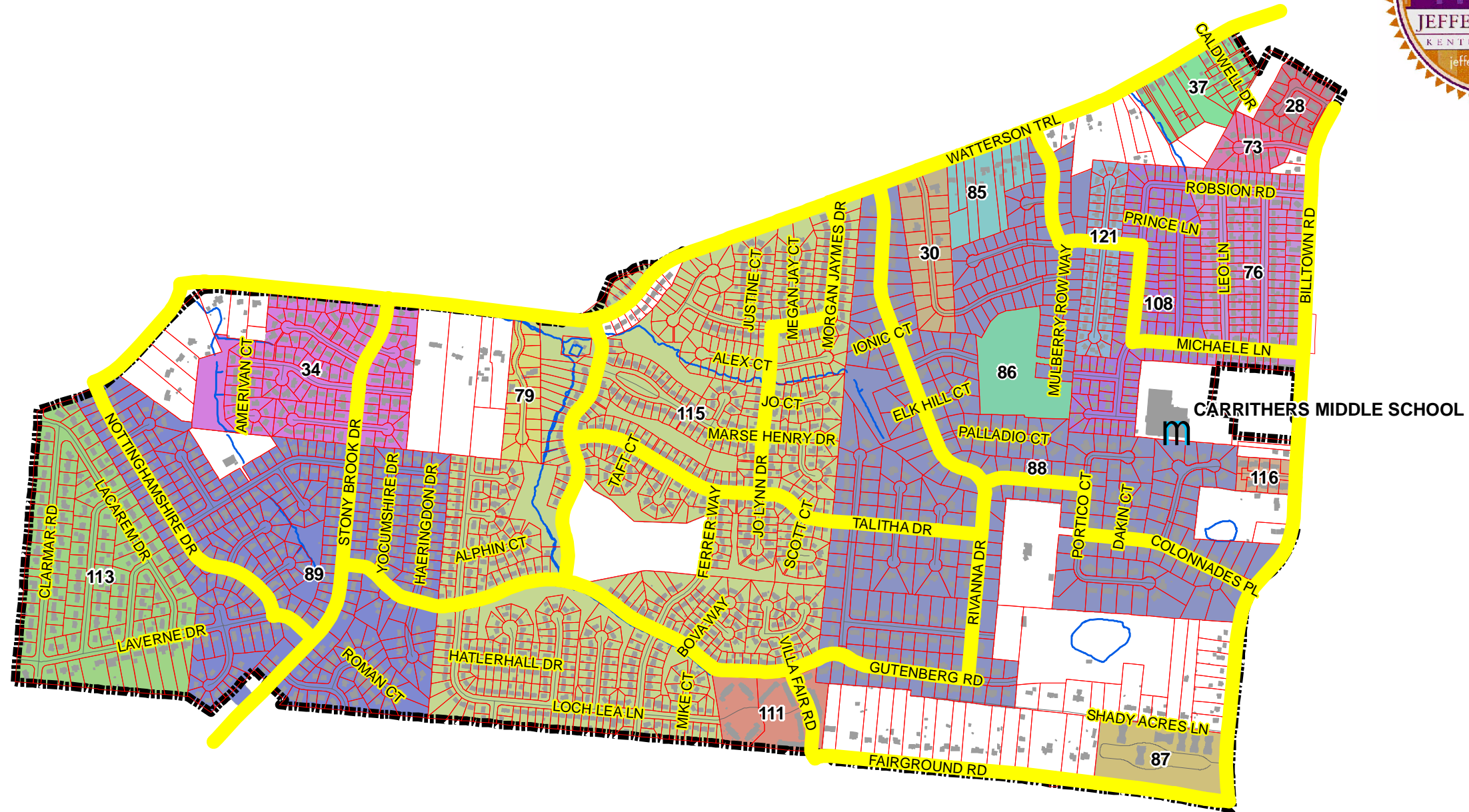


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# Neighborhood Coalition 6

## Bicycle & Pedestrian Proposed Corridors

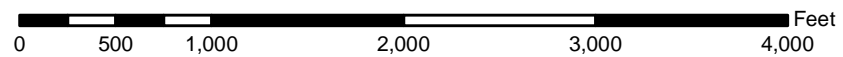


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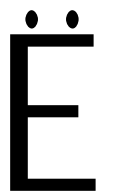
- Bicycle & Pedestrian Proposed Corridors
- Schools
- Street Centerlines
- Streams
- Parcels
- Buildings
- Coalition Boundary

**Subdivisions**

- 28, BELLTOWER VILLAGE
- 30, BOONES GROVE SUBDIVISION
- 34, BRONZEWING FARM
- 37, CALDWELL SUBDIVISION
- 73, JEFFERSON ORCHARD
- 76, LEJOBET SUBDIVISION SECTION 1
- 79, MANSFIELD ESTATES
- 85, MINOR PLAT
- 86, MINOR PLAT
- 87, MONTICELLO FOREST PATIO HOMES
- 88, MONTICELLO PARKE
- 89, NOTTINGHAM HILLS
- 108, VALLEY PARK
- 111, VILLA FAIR CONDOS
- 113, WATTERSON ACRES
- 115, WATTERSON WOODS
- 116, WILDFLOWER WOODS SUBDIVISION
- 121, WOOD VALLEY PARK



8/22/2005 J:\2005proj\LV2005049\_Jtown\CoalitionMaps\6\6CoalitionMap\_small.mxd



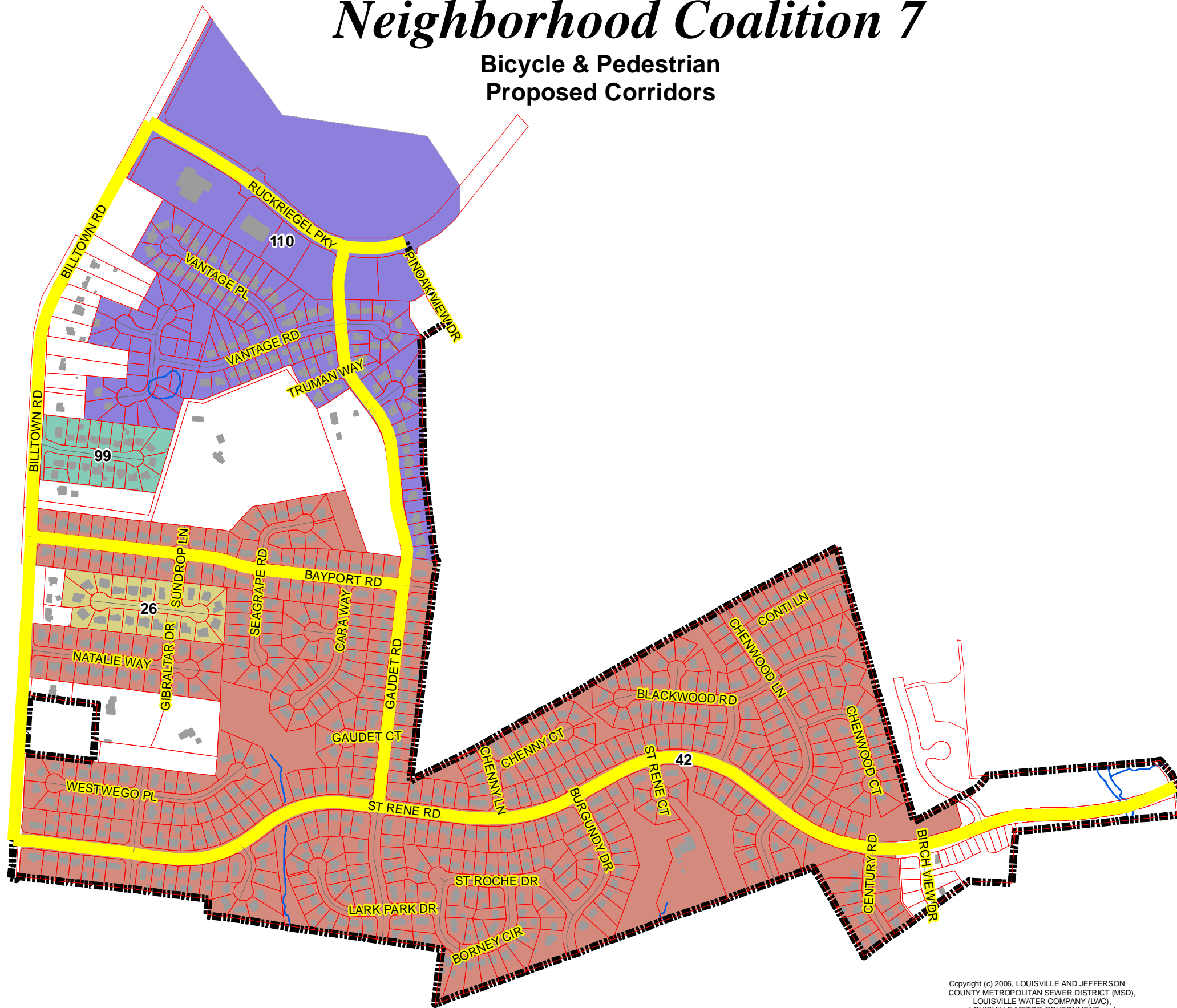
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# Neighborhood Coalition 7

## Bicycle & Pedestrian Proposed Corridors

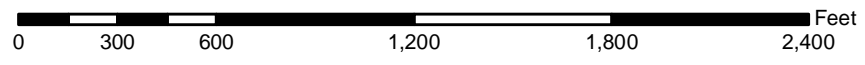


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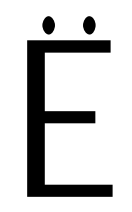
- Bicycle & Pedestrian Proposed Corridors
- Street Centerlines
- Streams
- Parcels
- Buildings
- Coalition Boundary

**Subdivisions**

- 26, ASHLEY PLACE SUBDIVISION
- 42, CHENOWETH HILLS SECTION
- 99, SETTLERS TRACE
- 110, VANTAGE POINT



5/22/2006 J:\2005proj\LV2005049\_town\Deliverables\CoalitionMaps\717Bike\_Route\_Map\_small.mxd

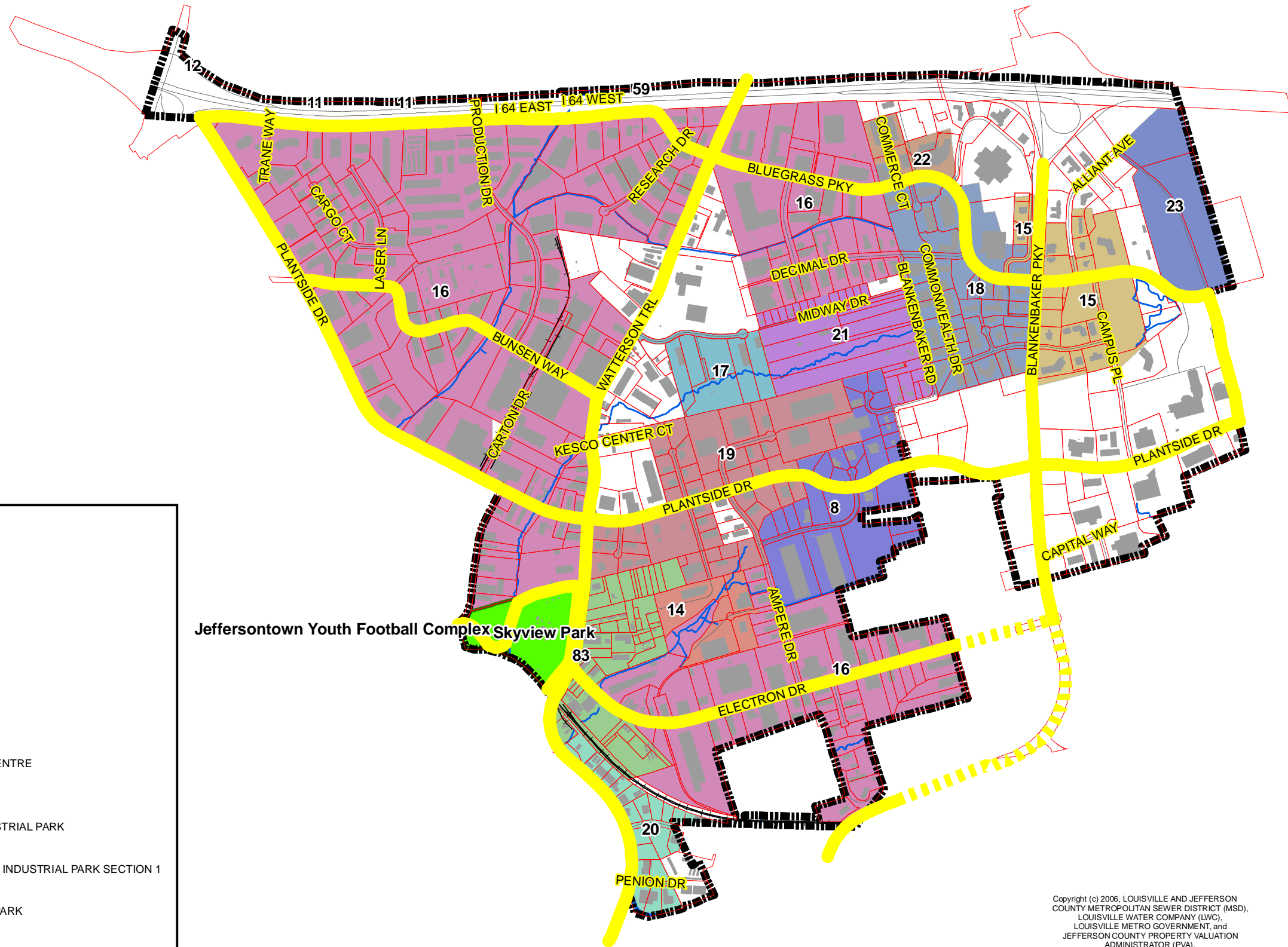


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# Neighborhood Coalition 8

## Bicycle & Pedestrian Proposed Corridors



**Legend**

- Street Centerlines
- Streams
- Railroad
- Coalition Boundary
- Parcels
- Buildings
- Parks and Recreational Facilities

**Bicycle & Pedestrian Proposed Corridors**

- Jurisdictional
- Nonjurisdictional

**8, BLANKENBAKER COMMERCE CENTRE**

**14, AMPERE COURT**

**15, BLANKENBAKER CROSSINGS**

**16, BLUEGRASS RESEARCH INDUSTRIAL PARK**

**17, BRANDEIS INDUSTRIAL PARK**

**18, COMMONWEALTH BLUEGRASS INDUSTRIAL PARK SECTION 1**

**19, HOLLOWAY INDUSTRIAL PARK**

**20, JEFFERSONTOWN BUSINESS PARK**

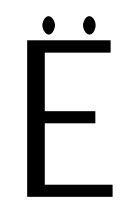
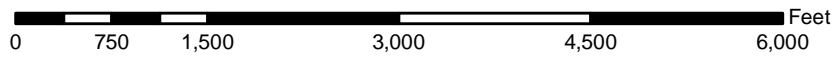
**21, MIDWAY FARM SUBDIVISION**

**22, NTS COMMONWEALTH BLUEGRASS INDUSTRIAL PARK**

**23, QUESTOVER SUBDIVISION**

**83, MIDWAY FARM**

Jeffersontown Youth Football Complex Skyview Park

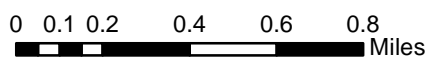
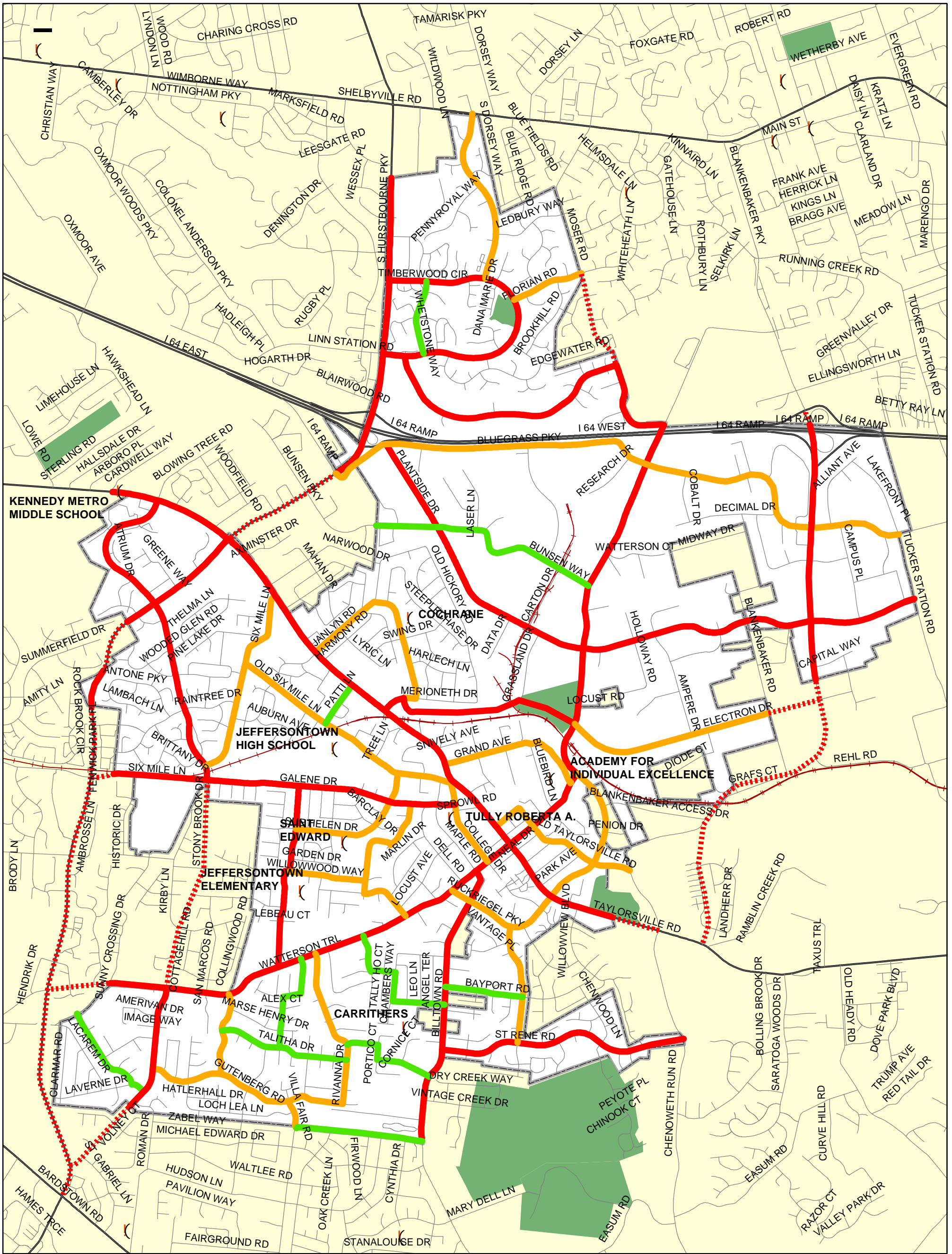


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## C. Priority Ranking





# City of Jeffersontown Bicycle & Pedestrian Proposed Corridors

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# Chapter IV

## Programs and Events

1. **Bike/Walk to Work Week in Jeffersontown**
2. **User Friendly Bicycle and Pedestrian Map**
3. **Bicycle Tour of Jeffersontown**
4. **Walking Tour of Jeffersontown**
5. **Midnight Bicycle Tour Of Jeffersontown and Neighborhoods**
6. **Midnight Walking Tour of Jeffersontown and Neighborhoods**
7. **Gaslight Bike Rack Community Art Program**
8. **Safe Route to School Program**

# 1. Bike/Walk to Work Week in Jeffersontown



- Promote bicycling and walking in our community
- Increase safety through education, traffic rules enforcement, and facilities
- Improved air quality and livability of our community
- Increased productivity and fewer injuries at work
  - Significantly reduced traveling costs

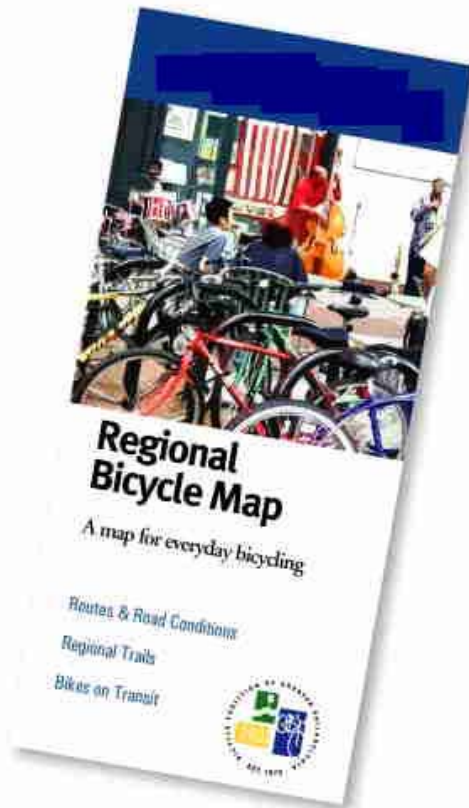


## 2. User Friendly Bicycle and Pedestrian Map

### User-Friendly Bicycle Map

A user-friendly bicycle map and a website will:

- Promote ridership
- Provide interactive maps/route locations
- Provide information of community events
- Provide updates on condition of paths



### 3. Bicycle Tour of Jeffersontown



#### A Day-Long/Half-Day Community Event!

- An annual event
- Consider dedicating some streets to bike lanes
- Bringing the community together on bicycles
- Celebrate the neighborhoods on bicycles



*It is by riding a bicycle that you learn the contours of a country best, since you have to sweat up the hills and coast down them. Thus you remember them as they actually are, while in a motor car only a high hill impresses you, and you have no such accurate remembrance of country you have driven through as you gain by riding a bicycle.*

*~Ernest Hemingway*

## 4. Walking Tour of Jeffersontown



### A Day-Long/Half-Day Community Event!

- An annual event
- Consider dedicating areas for sidewalks
- Bringing the community together by walking
- Celebrate the neighborhoods by walking and exploring



*There is nothing like walking to get the feel of a country. A fine landscape is like a piece of music; it must be taken at the right tempo. Even a bicycle goes too fast.*

*~Paul Scott Mowrer, The House of Europe*



## **5. Midnight Bicycle Tour of Jeffersontown and Neighborhoods**



- **Tour Jeffersontown neighborhoods on bicycle**
- **Traffic would be minimal - could temporarily suspend motor vehicles from some streets if necessary**
- **Participants would become more familiar with the Jeffersontown community**
- **There are successful midnight tours in other cities such as Chicago and Denver**

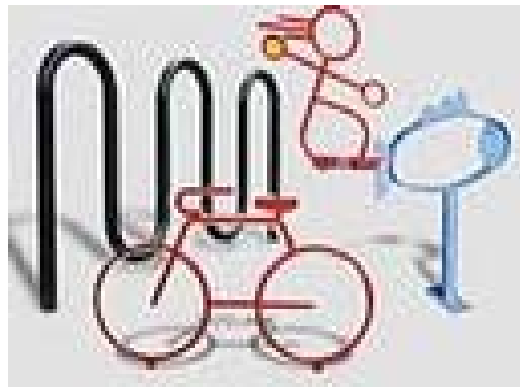
## 6. Midnight Walking Tour of Jeffersontown and Neighborhoods



*Nothing like a nighttime stroll to give you ideas.  
~J.K. Rowlings*

- Tour Jeffersontown neighborhoods on foot
- Accompanied by Jeffersontown Police
- Participants would become more familiar with the Jeffersontown community and what it has to offer

## 7. Gaslight Bike Rack Community Art Program



- Bike Rack program helps to install bike racks city wide
- If you promote bikes you need racks
- Racks can be attractive to a downtown or neighborhoods.





## 8. Safe Route to School Program



Provide safe and functioning facilities for walking and biking between homes and schools is an absolute necessity.

### SR2S

- Builds self confidence
- Promotes active living
- Creates a healthy social environment
- Enhances friendships

*Make your feet  
your friend.  
~J.M. Barrie*



# Chapter V

## Policies

1. **A “Complete Streets” Policy**
2. **Develop Educational Training of Trails**
3. **Develop Annual Revenue Stream for Maintenance of Facilities**
4. **Reliable and Adequate Funding for Bicycle and Pedestrian Facilities and Programs**
5. **Police Training for Accuracy and Completeness of Accident Reporting**
6. **Create Walkable and Bikeable Community**



# **1. A “Complete Streets” Policy**

- A. Street Design Standards Which Bicycle and Pedestrians are Accommodated on All New and Improved Roads**

## A. Street Design Standards Which Bicycle and Pedestrians are Accommodated on All New and Improved Roads



The “before” view is a typical arterial street designed primarily for automobile use. The “after” photo is a digital illustration that provides an example of how simple changes—access management, a raised median, bicycle lanes, sidewalks and landscaping—can make such spaces more safe and appealing for pedestrians and bicyclists.

# A. Street Design Standards Which Bicycle and Pedestrians are Accommodated on All New and Improved Roads (continued)

Street design standard which bicycle and pedestrians are accommodated on all new and improved roads.

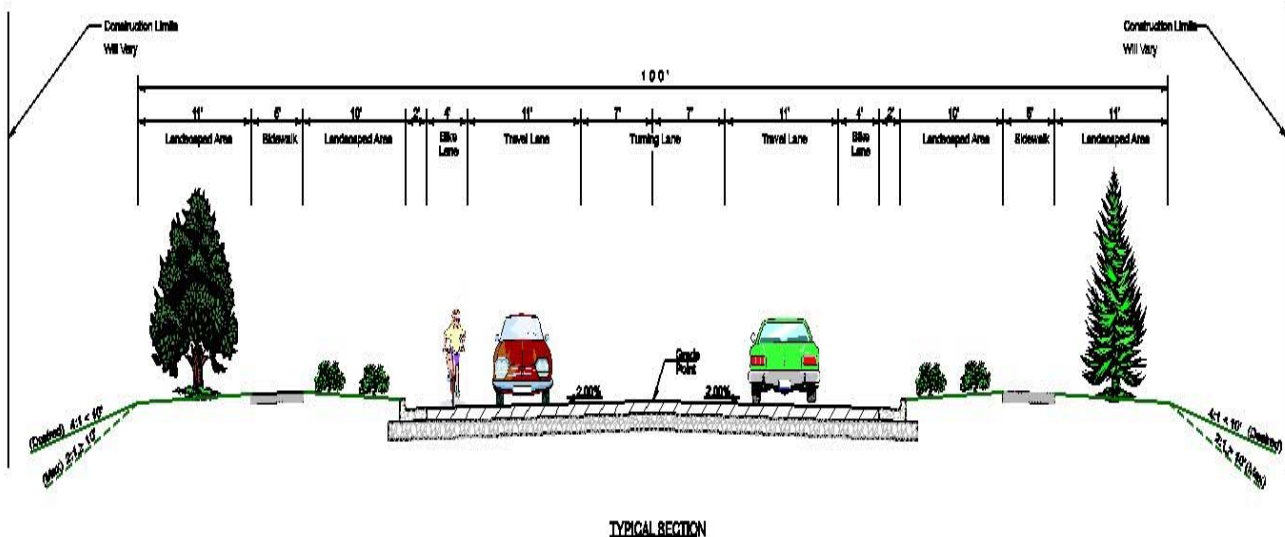
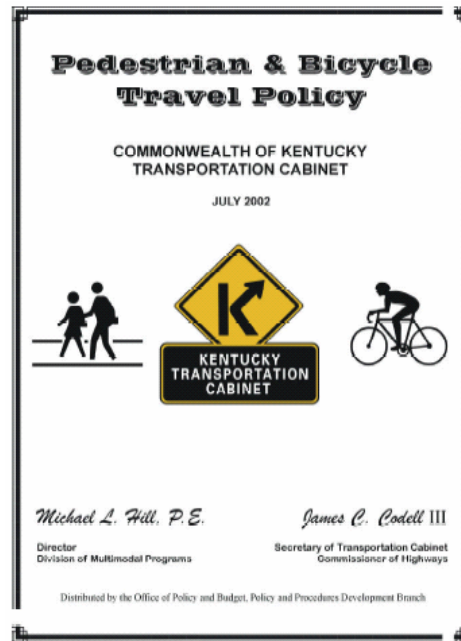
- All roadway projects in the future will include appropriate provisions to accommodate bicyclists and pedestrians.

## Existing

Pedestrian and Bicycle Travel Policy, adopted by Kentucky Transportation Cabinet, July 2002

- Requires only “consideration”
- Applies only to State roads

Louisville Metro has adopted a policy (Cornerstone 2020)



## **2. Develop Educational Training of Trails For:**

- A. Greenways/Watershed Planning Tool**
- B. Safety and Awareness for All Users (Drivers too)**
- C. Minority Training with Accessibility for Facilities**
- D. Physical Fitness and Exercise Opportunities**

## A. Greenways/Watershed Planning Tool

- Protect Environmental qualities
- Right-of-way preservation (for potential bicycle use)
- Build awareness
- Educate school children and public





## **B. Safety and Awareness for All Users and Drivers**



- **Develop programs to reduce sidewalk riding and other improper bicycle riding**
- **Develop a plan creating a safe environment for cars, cyclists and people in the build environment. The plan to address:**
  - Changing motorists attitudes
  - Changing bicyclists attitudes
  - Promotion/PR
  - Safe streets for ALL
- **Establish an effective educational program on bicycle safety and use for all ages**



## **C. Minority Training with Accessibility for Disabled**



- **Bilingual training and materials for immigrants**
- **Bicycle/drive education—one road for all**

## D. Physical Fitness and Exercise Opportunities

*A vigorous five-mile walk will do more good for an unhappy but otherwise healthy adult than all the medicine and psychology in the world.*

*~Paul Dudley*



- **Develop exercise and fitness trails to promote healthy living**
- **Promote an active and balanced lifestyle for physical fitness**



### **3. Develop Annual Revenue Stream for Maintenance of Facilities**

#### **Multi-Agency Responsibility**

- Jeffersontown Public Works
- Jeffersontown Permitting & Enforcement
- Metropolitan Sewer District (MSD)
- Jeffersontown Parks & Recreation
- The Chamber-Jeffersontown
- Jeffersontown Economic Development Authority (JEDA)
- Jeffersontown Police Department
- Louisville Metro

#### **Resource Commitments**

- Equipment
- Personnel
- Funding

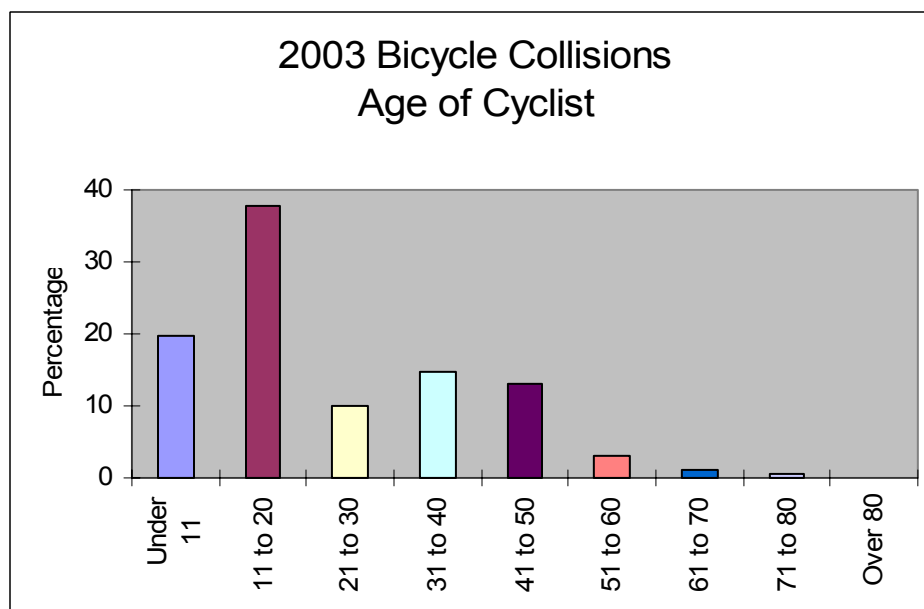
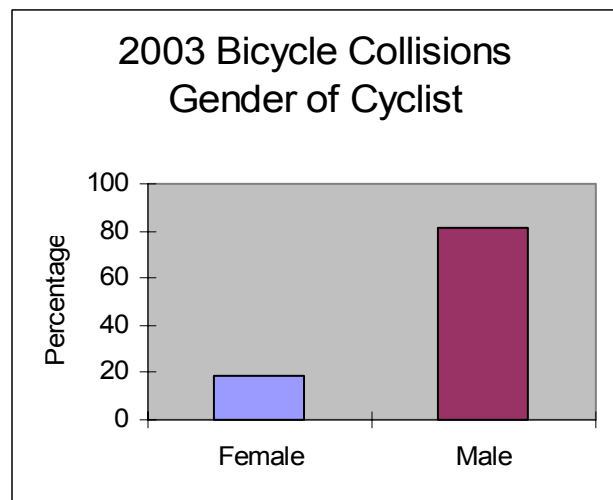
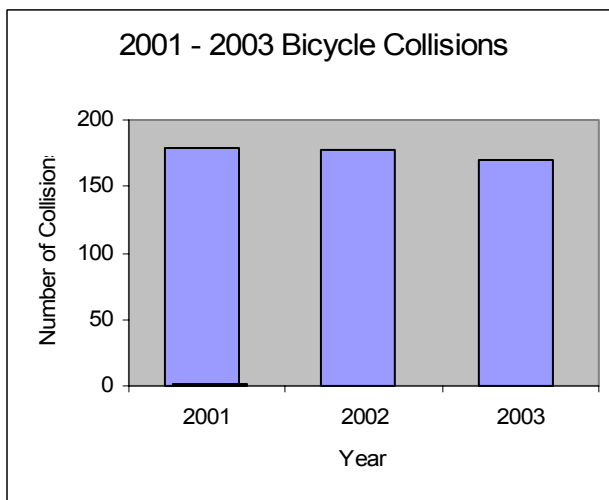
## 4. Reliable and Adequate Funding for Bicycle and Pedestrian Facilities and Programs

- City of Jeffersontown
- Metro Louisville
- The Chamber-Jeffersontown
- Recreational Trails Program
- Land and Water Conservation Fund Grant
- Transportation Cabinet
- CMAQ
- TIP



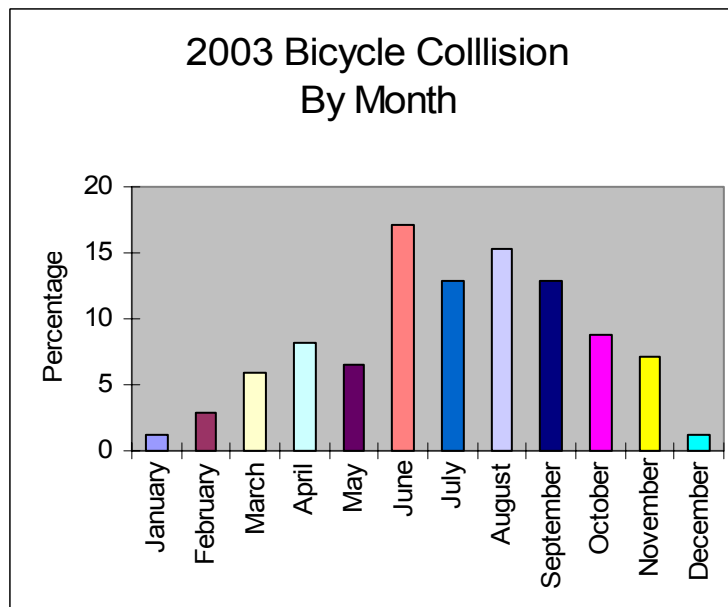
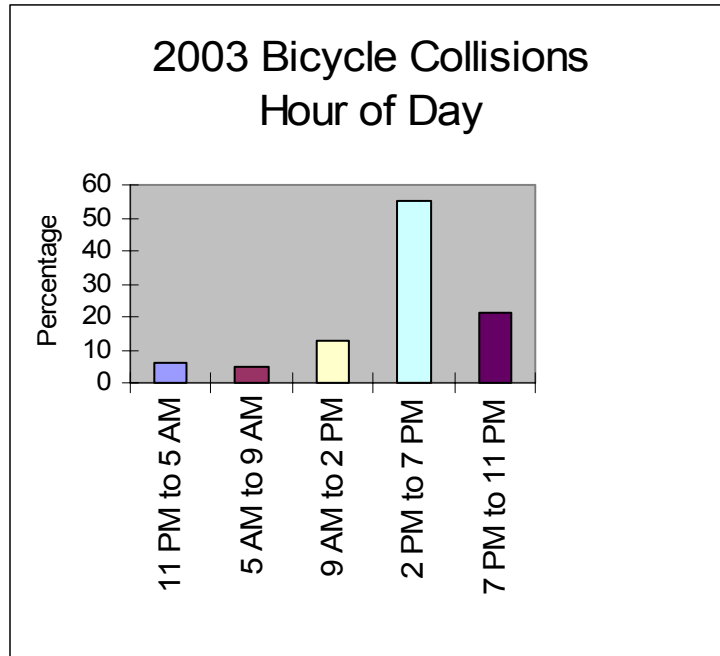
## 5. Police Training for Accuracy and Completeness of Accident Reporting

- In 2003, there were **170** bicycle-vehicle collisions in Jefferson County
- This is unfortunate, but accidents need to be reported completely and accurately to efficiently resolve any problems that may arise



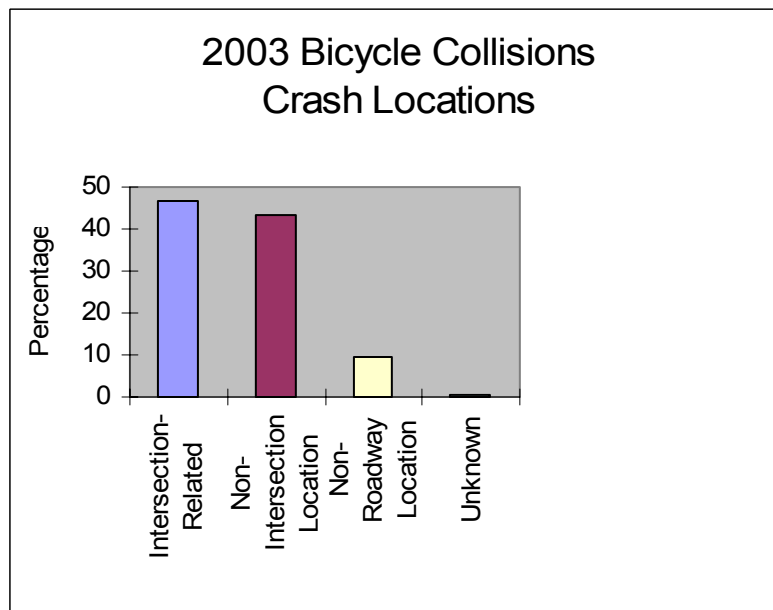
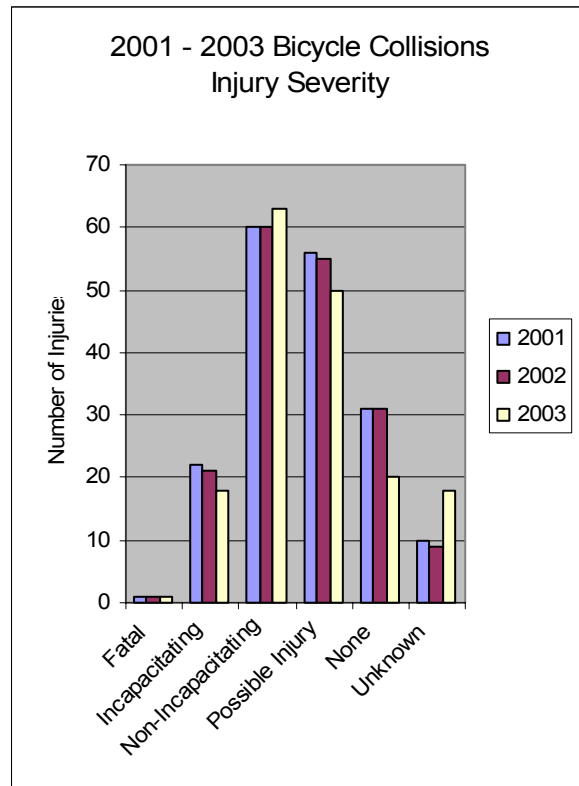
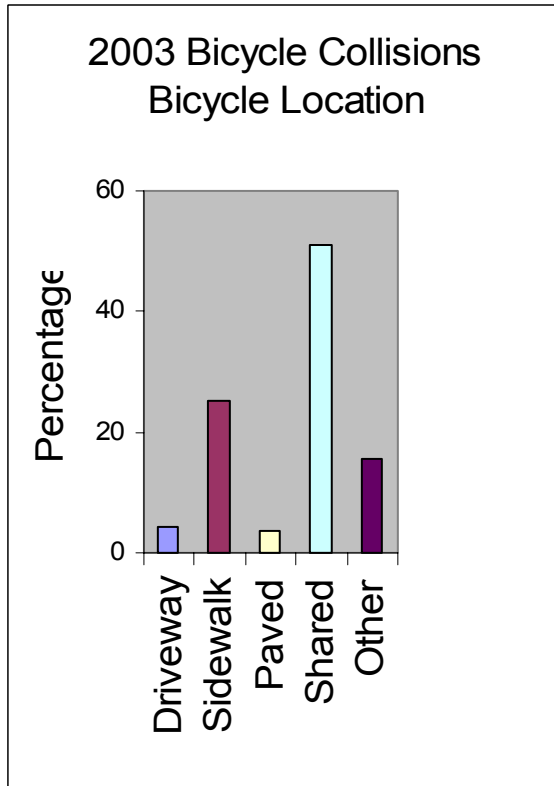
Safety-Metro Statistics

## 5. Police Training for Accuracy and Completeness of Accident Reporting (continued)



**Safety-Metro Statistics**

## 5. Police Training for Accuracy and Completeness of Accident Reporting (continued)



**Safety-Metro Statistics**

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## 6. Create a Walkable and Bikeable Community

### Walkable Communities

#### Importance of Pedestrians in the Transportation System

On any trip, regardless of mode chosen, every individual is a pedestrian. Even when we drive, some portion of our trip will involve walking. In the past walking was more common. For example, 30 years ago 66% of American children walked to school, today only about 13% walk. There are 3 major reasons for this trend:

- The build environment (school location) prohibits walking.
- Safe pedestrian facilities are not provided on the school route.
- Parents feel the walk route is unsafe

***The fact is 20-25% of morning traffic is due to parents driving their children to school. If we want more people walking we need conditions that encourage walking and make pedestrians feel safe. By creating walkable communities we will create communities that are perceived as more livable and communities that can encourage healthier lifestyles.***

### Principles of Walkability

- High traffic speeds make pedestrian crossings difficult, unsafe and unpleasant.
- Long pedestrian crossings are less safe than short crossings.
- Pedestrian Access that requires crossing a sea of parking is unpleasant and inherently unsafe.
- Pedestrian crossing signals that require extraordinarily long waits are seldom respected.
- Land use and the build environment largely influence how walkable a community is. Modern zoning requirements tend to result in build environments that discourage walking.
- Providing a separate facility for pedestrians (a sidewalk) leads to a safer and more pleasant condition for walking.
- Facilities for pedestrians need to be designed with all users (elderly, handicapped and children) in mind.
- Street plantings make a street environment more attractive and comfortable for pedestrians.
- A finely grained network of streets is important in both village centers and town centers to insure that no single road has to become so wide that it is no longer pedestrian friendly. That is, the denser the street grid system and the more options that traffic has,

## 6. Create a Walkable and Bikeable Community (continued)

### Focus Group Responses

**What would you like to get out of developing a bicycle and pedestrian plan?**

- Safety of bike and pedestrian paths
- Routes to work
- Safer routes to county roads
- Business location amenities
- Safety for kids
- Connections between parks and neighborhoods

**What is important to you regarding walking?**

- Lighting
- Amenities on nights and weekends
- Education about walking on sidewalks
- Well defined crossing at intersections
- Complete streets
- Grade separation/ADA accessible

**What is important to you regarding bicycling?**

- Health benefit
- Safety concerns
- Good smooth pavement
- Scenic benefit
- Accessibility

# **Chapter VI**

## **Community Outreach—Breakout Group Study**

- 1. Senior Citizens**
- 2. Businesses**
- 3. Schools**



# 1. Senior Citizens

- A. Press Release
- B. Survey and Results

## City of Jeffersontown, KY

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NEWS RELEASE

**FOR IMMEDIATE RELEASE**

Media Contact: Clay Foreman, 502-267-8333



### **MAYOR CLAY FOREMAN SEEKS TO INVOLVE SENIOR CITIZENS IN DEVELOPING A BICYCLE AND PEDESTRIAN TRAIL SYSTEM WITHIN JEFFERSONTOWN.**

#### Jeffersontown's *Gaslight Recreational & Workplace Trail System*

*Mission-- "enhance the quality of life within Jeffersontown by providing alternative means to the automobile and encourage physical fitness, family exercise and to create a link between where people live and work. Connecting the neighborhoods to the downtown, city parks, commercial corridors and the workplace will enhance accessibility throughout the city."*

JEFFERSONTOWN, KY (April 12, 2006) --The City of Jeffersontown has been awarded a grant through the Recreational Trails Program with the Governor's Office for Local Development for the construction of a bicycle and pedestrian corridor. Mayor Foreman has organized a Community Focus Group to discuss elements of this exciting project.

Jeffersontown residents take pride in the "quality of life" amenities available throughout their community. These amenities include services for seniors at the Jeffersontown Senior Citizens Center (serving over 2,300 seniors); a new library serving 26,000 patrons per month; 4 city parks, one of which is a swim and tennis

## City of Jeffersontown, KY

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### NEWS RELEASE

center, and another which is dedicated to veterans. Jeffersontown is committed to providing a safe and fun environment for the youth evident by being home to one of the premiere Little League programs in the Commonwealth. Nine years ago the City constructed and dedicated it's Skyview Park complex which consists of six lighted baseball/softball fields, batting cages, restrooms, press box and concession area. Also, the City constructed two full sized gymnasiums to serve the area's Youth Basketball League. Recently, in 2003 the City of Jeffersontown constructed a state of the art Jeffersontown Youth Football Complex. For a number of years our City has been home to the Jeffersontown Youth Football League (JYFL). Jeffersontown has become known for the strength and breadth of its programs offered to our youth

However, we feel there is one piece missing. All these city amenities are missing a recreational element linking these parks and facilities to the neighborhoods, downtown, workplace and civic areas of the city. We feel it is time to provide that linkage by committing time and money to *Discovering, Developing, Designing and Delivering to the Citizens of Jeffersontown* a bicycle and pedestrian trail system that can be used by the entire community. Construction of this trail system is an essential component in creating the connection of these parks and recreational facility to the community. Additionally, the Jeffersontown Police Bike Patrol is quite eager to gain access through this corridor in an effort to improve response time from the surrounding neighborhoods and the Bluegrass Industrial Park and increased patrols.

If you are interested in participating in an open discussion with Mayor Clay Foreman, members of the Gaslight Recreational & Workplace Bicycle and Pedestrian Focus Group and other Senior Citizens about bicycle and pedestrian trails please see Ruth Fredrick to sign up and pick up a small questionnaire. Please return your questionnaire by Thursday, April 27, 2006 and plan to attend Mayor Clay Foreman's discussion on May 2, 2006 at 10:15 am-11:15am.

Your comments and ideas are important as we create a trail system that can be used by all Jeffersontown citizens, so be part of this exciting city initiative.

## B. Survey and Results



### Jeffersontown's Gaslight Recreational and Workplace Bicycle and Pedestrian Trail Systems

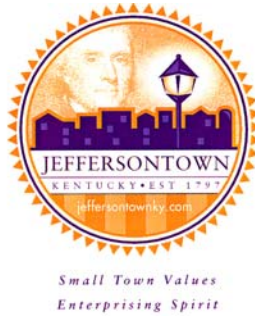


1. Would you use a bicycle and pedestrian path/route for physical fitness and recreational enjoyment?
  - **5 - Yes**
2. What features would be of benefit to you and increase your usage of a bicycle and pedestrian corridor?
  - **Shade trees**
  - **Better and more paths and trails**
  - **Safety, traffic is a problem**
  - **Bathrooms and benches**
  - **Fresh Air, quiet from man-made noises, but not deathly silent according to scientists a few benches to sit and rest on, a few beds of flowers (preferable maintained by local garden group)**
3. Where do you wish additional sidewalks and bicycle lane/paths would be located to increase usage by senior citizens in Jeffersontown?
  - **Paths to library**
  - **Path to Jeffersontown square and safe route to Charlie Vettner Park**
  - **I wish we had walks to/from shopping areas; i.e. Stony Brook, Walmart etc., and safe walking to Jeffersontown library**
  - **Latern Light in Bryan Estates. Smoke Road, Raintree, Kap Run, Triol Ct., etc.**
  - **For old people or anyone recovering from surgery the area should be relatively flat. For people pushing or monitoring wheel chaired people, areas of minimum slope must be established and parking must be nearby. This applies to people with strollers too.**
4. If there were a safe and attractive sidewalk and bike path/lane, would you start walking or biking?
  - **4 - Yes**
  - **That's better than nothing! It would not be safe for people who are affected by their medication in maintaining balance. It would be a hazard for people who are escorting children. It is not conducive to serenity.**
5. Additional Comments?
  - **None**
  - **I would appreciate any trails away from traffic**
  - **We need some bike racks near the stores.**
  - **None**

## **2. Businesses**

- A. Press Release**
- B. Survey and Results**

# A. Press Release



April 27, 2006

Dear Jeffersontown business owners and employees:

Spring has arrived, summer is just around the corner and soon everyone will be outside enjoying the milder temperatures. Last November I formed the “Gaslight Recreational & Workplace Trail System” Focus Group. The Mission of the focus group is:

*“to enhance the quality of life within Jeffersontown by providing alternative means to the automobile, to encourage physical fitness and family exercise and to create a link between where people live and work. Connecting the neighborhoods to the downtown, city parks, commercial corridors and the workplace will enhance accessibility throughout the city.”*

Jeffersontown residents take great pride in the “quality of life” amenities available throughout their community. In an effort to enhance that quality of life, the City is in the process of developing a bicycle and pedestrian master plan. I want to gain some information from you and your employees as a business that calls Jeffersontown home or businesses that provide important services to the citizens of Jeffersontown.

As your Mayor, I feel it is very important to provide a safe and enjoyable environment with opportunities for all citizens. Attached is a brief survey that I ask you to complete and return to me by email. Also, please forward this email onto your employees so that I can gain a better understanding of how a bicycle and pedestrian system of lanes/paths could benefit them. Would they bike or walk to work if adequate facilities were available? Would they utilize a trail system to increase physical fitness and recreation? These are the types of opportunities that can be extended to your company and employees.

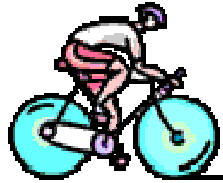
Thank you in advance for completing this survey and sharing your ideas with me. If you have any questions, please do not hesitate to contact me at 267-8333.

Best Regards,

A handwritten signature in cursive script that reads "Clay S. Foreman".

Clay S. Foreman  
Mayor

# Jeffersontown's Gaslight Recreational & Workplace Bicycle & Pedestrian Master Plan



1. Do you provide incentives or promote physical fitness with your employees?
  - **Some of our employees leave the office at lunch to visit an off-site (J-town) fitness facility**
  - **Yes, we often play golf together**
  - **No**
  - **Not at this time but would consider it in the future**
  - **Not at this time**
  - **Yes. We have an exercise room at our facility available to all employees**
  - **We are allowed to use our lunchtime for walking**
  - **Promote only**
  - **Not at this time**
  
2. Does your business have employees who walk, bike or ride public transit to work?
  - **6—No**
  - **1—Yes**
  - **We have one that bikes to work on occasion**
  - **Most of our employees live a considerable distance from J-town**
  
3. Would you promote a healthy lifestyle to your employees by walking & biking either as a means to get to work or as a physical fitness opportunity?
  - **5—No**
  - **3—Yes**
  - **Only if the employees would care to ride before or after work, or possible on their lunch hour, most live distances making improbable to ride to work**



## **B. Survey and Results (continued)**

4. What features would be of benefit to your employees & increase their usage of a bike and pedestrian corridor?
  - Family exercise
  - None, we have people from 30 miles out travel to Louisville for the job
  - None that comes to mind
  - Bicycle lane & walking paths
  - These would only be used at lunchtime walks. A couple of our employees already use the walkway at Papa John's corporate center
  - Having them connected so you do not have to use the busy streets
  - They should link to public transportation stops and provide storage for bicycles there and said transportation stops should be actually near where people work
  - Paths that would be safe from traffic
5. What roads would benefit from the addition of bike lanes/paths & sidewalks?
  - Ruckreigel Pkwy., Watterson Trail, Taylorsville Road
  - Watterson Trail (past Billtown Road)
  - Watterson Trail
  - Plantside Drive is very busy with truck traffic; Watterson Trail, Electron Drive, Ampere Drive
  - Watterson Trail, Bluegrass Pkwy., other two-lane roads
  - Bluegrass Pkwy. on the Sam's Club Side. Also Blankenbaker headed from Bluegrass to Taylorsville Rd.
  - Bluegrass Pkwy., Production Drive, Bunsen Way
  - Definitely the major ones, Bluegrass Pkwy. and Plantside Drive
6. Would you be willing to make a financial contribution for the development of future bicycle and pedestrian corridors that would benefit your employees or customers?
  - 3—No
  - I would consider it
  - No, we already have payroll tax & also pay corporate tax, this improvement should be covered by these monies
  - Yes, but the amount would probably not be substantial
  - I'm actually one of the employees and I live and work in Jeffersontown. I would be willing to pay a small fee to use the corridors.
  - No, we already pay your taxes. The city should provide appropriate accommodations for the needs of people who work here and pay taxes, but do not reap the benefits since they only work within your community.
  - I am afraid I can not answer that. It would be up to our corporate officers, which are of town at this time and have asked me to respond.
7. Additional Comments
  - 1—No
  - 6—None
  - Our company is small (5) & based on what I know about my employees I doubt that they would get any significant use.
  - I think this is a wonderful idea. In lieu of the price of a gallon of gasoline and the pollution our cars emit, this is a great way of benefiting the environment and our own physical and mental well being

## **3. Schools**

- A. Elementary Schools**
- B. Middle/High Schools**

## **A. Elementary Schools**

- 1. Student Essays**
- 2. Student Color Drawings**
- 3. Parent Survey and Results**

# 1. Student Essays—Elementary School

Elementary School students were asked: What do you like best about biking or walking in your community? Please color a picture of what you like about biking and walking in your neighborhood/community.

Their responses were as follows:

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Dear Mayor Foreman,

I know I am super thankful for you trying to improve the live of our citizens and students. I am glad you are trying to do this. I bet you have given a lot of your time and deteca-tion for the plans to build parks and football fields and etc. By doing this you make the stu-dents and citizens a lot happier.

Bicycle and pedestrian trails would benefit our city because we would be safer. Pedis-trians and people riding a bicycle wouldn't have too risk there lifes just to cross a busy street. I know that you and I both want the citizens to be safe.

I have been reading and it says that people in America are becoming to obese. By hav-ing these trails people could exercice. Everybody could ride a bike or walk on these trails and be fit and safe. This would also occupie there time.

These trails would give you acess to restaraunts, parks, swimming pools and etc. You wouldn't nessarely have to use a car or take a bus. Walking or rideing a bike would also save you tons of money on gas.

So thank you very much for all that you have done. Also thank you for trying to im-prove the quality of life in our community. In my opinion you are the best Mayor.

Sincerely,  
Rachel

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Dear Mayor Foreman,

It's thankful of you to think about what is good for the citizens in the city. I think it's a great idea for you to have a bicycle and pedestrian trail at any place in the city.

It would help some people's lives. This will promote citizens from get-ting hurt by fast moving cars. If you asked people if this was a good idea, they would say it's magnificent.

It would help build strong muscles on your legs and arms. When your on a bike your legs do all the work. When you walk your legs are still doing all the work, but when your walking you sometimes pump your arms, this helps keep citizens active and heatly.

This can also give you transportation to any places, such as resteraurts, parks and even the ymca. You can go anywhere, anytime using a bicycle and even your two legs. This is why it would be great to have a bicycle and pedes-trian trail.

Thank you for coming up with this splendid idea. This idea a great idea to make the city a better place, such as nobody getting an over by a fast mov-ing car or truck and people laying in bed at home doing nothing, this is not being healty or active.

Your friend,  
Aaliyah

# 1. Student Essays—Elementary School (continued)

I like enjoying the beautiful nature of J-town when I walk. I love smelling Kentucky, Louisville, J-town clean air when I bike especially at Charlie Vettner Park in J-town. But, we could use a little more park paths. So you know we won't have to worry about cars squishing us like bugs, but at least we have paths in the first place that are beautiful.

Janie

What I like best about walking in my community is that I feel relaxed by walking and smelling the wonderful, beautiful flowers. Seeing the people in there yards having fun with things. Seeing little kids play. It is fun walking, I feel that I'm getting healthier by walking. I feel happy. What I like best about biking in my community is that I feel good about myself riding my bike fast. And the wind going through my hair and my face.

Taylor

I'll be telling you what I like best about walking or biking in J-town. What I like best about biking or walking is because it helps you get energy and muscle. And it keeps you healthy and not bad. It also helps your body pump blood easier. And it gives your body nutrients. Also people do this to release all that badness inside. So if you look on the back you will see a picture of things I was telling you about.

Juan



What I like best about walking in my neighborhood/community is that you can do it together with your family, exercise, and have fun all at the same time. You don't have to just walk in groups you can walk by yourself.

You can do just about anything when you walk. You can listen to music, talk and goof off if you wanted to.

Some people may walk around places in J-town and not even know they walked so much. If you live in a neighborhood that is a good place for you to walk. You can walk around your neighborhood for a short time and get some exercise. You could even walk around a parking lot if you wanted to.

Some people may not like to exercise. All I have to say to them is to think of it differently. It's not just exercise but it's fun exercise.

That's what I like best about walking in my community/neighborhood.

Meagan

# 1. Student Essays—Elementary School (continued)

Dear Mayor Foreman,

I really enjoy going outside and playing but what I like to do most out of walking or biking is biking. Here are some reasons why I love to bike.

First of all, there is no limit to how fast you go. I love zooming freely through the streets without having to think about changing my speed. To me that is the best part about riding my bike.

Also, riding with friends is really cool. Taking a ride is lots of fun. Especially for me. I am the biggest chatter box you'll ever meet at home.

Last, there are many parks I can go to and ride. Such as Charles Vethener, Veterans Park and Skyview Park. There is plenty of room for people to ride these bikes there.

Now you can proudly tell why I love to ride my bike. It's all thanks to there are no limits to how fast I go, there are many parks I can go to and ride at, and I can ride and talk with friends at the same time. These things are why I love to ride my bike.

Sincerely,  
Jordan

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I like biking because you can work on your exercise and you can also work on your leg muscles and you get slimmer. You'll get to go outdoors. If you live close to Jefferson Elementary School you could ride around there track. It's good to get out and ride with your family. It also helps your heart pump blood good. Walking is also important because you'll get your heart pumping and strong and it works all your calories off. It works muscles in your body and gets you looking feeling healthier and slimmer. It makes you feel a lot better. And if you want to walk around a track then you can walk to Jefferson elementary school and walk around there as many times as you want until it's time for the kids to go home.

Steedra

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Dear Mayor Foreman,

Thank you for thinking about us. To improve the quality of life for us and our citizens. So in that case I have a couple of ideas.

The bicycle and pedestrian trail could benefit the city safety because we won't be walking on streets. This also keeps people active and healthy. I am sure you know that 16% of kids are overweight. I am sure that this would improve people not being overweight, don't you think. This gives you access to local businesses such as restaurants, parks and YMCA which in this case kids who go to YMCA faster.

Thank you again so so much. I think that this is super important so let me refresh your memory. First it keeps us safe, keeps us active and healthy. Also it gives us access to restaurants, parks and YMCA.

Your friend,  
Kate

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What I like best about walking in my neighborhood is when I walk I don't step on any trash. Plus the streets and sidewalks are clean too! And another reason I like to walk here is all the people are friendly and neighborly. When we walk they don't hurt their feet by stepping on things. And all the citizens are behaved and nicely mannered so they can hear the nice peaceful and quiet and can enjoy their walk of fresh air!

Ashley

# 1. Student Essays—Elementary School (continued)

Dear Mayor Foreman,

Thank you for trying to make our community a better place to live in. Thank you for trying to improve the quality of life to your students and citizens that live in J-town. Doing the Bicycle and Pedestrian Trail is good for our health.

The Bicycle and Pedestrian Trail could help keep us safe on buzy roads. It will give us exersize. Spending time together with friends and family.

The Bicycle and Pedestrian Trail Keeps us active because we can talk with friends and ride our cool bikes we could talk, play, run or do anything that keeps us active. Now, health; the Bicycle and Pedestrian Trail help our heal because going out and doing something is good for us.

The Bicycle and Pedestrian Trail could lead to parks, UMCA and other palces. The trail would create a safer way to get to outdoor activity centers.

Thank you once again for making our community better.

Sincerely,  
Kaitlyn

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Dear Mayor Foreman,

We are all thankful to you for trying to improve the quality of life to your citizens and students in Jeffersontown. You have created baseball fields, football fields, basketball courts, soccer fields and many other things that help people stay active, keep healthy, and have fun!

I think that you should create more bicycle and pedestrian trails around Skyview Park. I know for a fact that there are only 2 ways to get to the football field, by walking over the bridge, and by driving behind the field on the road there. By creating more bicycle and pedestrian trails, it would be easier to get to and from at the football field.

Bicycle and pedestrian Walkways help keep people active and healthy. I have heard that too many people are becoming obese and fat because they are not active. These pathways are safe because they prevent many bike recks because the are not in the road. This gives people a good source of fun, activness, transportation, health and safety. This will help the rate of fatness and obesity decrease in Louisville.

Another benefit bicycle and pedestrian trails in Louisville provide is that they can give us access to many different places, such as restaurants, parks, stores and other types of businesses too. Creating more bicycle and pedestrian pathways would create less traffic which would prevent more accidents and recks in Louisville. It would help people get to and fro to places easier.

Once again, if you create more bicycle and pedestrian walkways, it would be easier and quicker to get to and from different places. This keeps people healthy, active and it is fun for them. Together, the people and you will decrease the number of obesity and fatness in Louisville and hopefully and eventually will decrease the amount of obesity and fatness in the world.

Sincerely,  
Daylen



# 1. Student Essays—Elementary School (continued)

Dear Mayor Foreman,

You may have been asking what people like best about riding bikes or walking in J-town. Well stop asking because I have the answer you've been craving! What I like best about riding bikes and walking is J-town is— Whoops! Can't tell you now. You will just have to read on for more reason why!

To begin with, my first reason why I like about riding bikes or walking I J-town is there are ton and tons of kids in J-town who just happen to love to ride bikes and walk around. So. Everyone comes outside to ride bikes and walk when they see friends because it's jut really fun. Racing, playing games, laughing or just talking. There is nothing funner than that!

Second, you will have to agree that riding or walking on plain rodes and driveway is really bor-ing! So what I like about riding bikes and walking in J-town is unlike some places. J-town has a whole lot of parks with sidewalks, so you can walk and ride! It you get tired or want to take a quick break you could always go play on the playground or sit on the benches and rest. Some of the parks you can go to are Charlie Vettner Park, Veteran's Park and Skyview Park. There are more but those are the most common to me. Parks are the best place for people to walk and ride bikes.

Last, my favorite thing I like best about riding bikes and walking is you can lose a lot of weight while having fun. Yes, you can lose weight other ways and not just in J-town but its fun walking and riding bikes, and we have parks in J-town and a lot of kids in J-town. You could lose five pounds or even more in just four or five hours by riding bikes! And it will help all the kids in America become less overweight starting with J-town! By simply using all of my other reasons while riding bikes and walking and you could become very, very fit!

In conclusion, you like my answer don't you! I thought so! Now you know what I like best about biking and walking in my favorite town, J-town! We have friends, parks, and best of all combine them and you get losing a lot of weight while having fun! Even if you kept asking other people it would be impossible to find a better answer!

Sincerely,  
Megan

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Dear Mayor Foreman,

Thank you for trying to improve the quality of like to your students and citizens. For example, Bluebird Gym and Sky View Park. These gyms and ball parks help citizens grow as atheletes in Jeffersonstown. It also creates teamwork.

The bike and pedestrian trail can benefit the city in many ways. One way is nobody will get run over by cars. Also, people can go where ever they want whenever they want. Then less gas will be used.

This will keep people active and healthy because people can run off weight. It helps keep you active with more movement. This will help children get skinnier. It will turn our community be wealthy and healthy.

Also people can go to local businesses like Wal-Mart and Block Buster. You know places like that. People will love the walk way.

Thank you again for providing quality life. Especailly the walkway. These provide things to do without these things there wouldn't be quality in life.

Sincerely,  
Jordan

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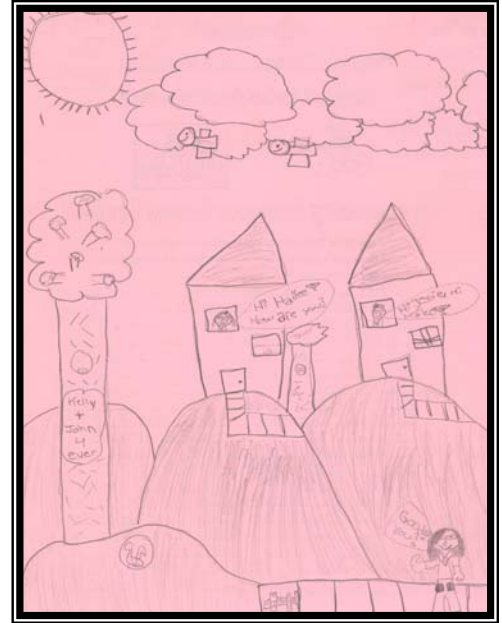
# 1. Student Essays—Elementary School (continued)

What I like best about walking in my community is that in my neighborhood there's not a lot of pollution unless the sewer is on. If its not on, the air is very refreshing. It feels like flowers going through my lung's. That seem's like it would feel very good. I also like that the people in J-town are nice and whenever I walk or ride by they always say "Hi" if there outside.

I like that when I go by J-town's lawns are clean because people take care of their lawn's. If you go through J-town you will usually see someone cleaning their lawn.

That's what I like best about biking or walking in my community.

Haplee



What I like about biking is that you can get exercise and that you can ride a bike with your family and can have fun doing. Also that the good about it is that that's the best type of exercise you can get and it's fun to do. It also sets me in a good mood. So you can get exercise by riding a bike in J-town. I like walking because you get exercise by walking but it does hep to walk. It helps your heart the most and you don't ever get tired that much by walking there are a whole lot of marathons in J-town you could walk in. I love to walk and ride my bikes with my Mom, Dad, Sister and I. And a lot more relitvies do.

Alex

Dear Mayor Foreman,

It's very thankful for you to try to improve qualitys in our community. It is also thankful for you to build baseball and softball fields at Skyview Park. And also football programs. The people that like biking are also thankful for the bike trails that you made for them.

Bicycle and pedestrian trails can benefit the city by safety. Bicycle trails are safe because most of the streets in Louisville are busy with all of the cars passing by. Pedestrian trails are safe because by schools there are always busses and cars coming threw.

Bicycling helps you stay active and healthy because it can make your legs stronger and if you keep pumping faster and faster. If your not biking you won't get healthy and your not active so your heart won't pump fast at all it will get slower. Walking gets you healthy because it also makes your legs stronger. If you keep walking the same thing will happen your heart will keep pumping and getting faster.

Bicycling gets you access to restaurants, parks and the UMCA because biking can sometimes get you to where you want to go faster. Walking can also get you places faster because if your in a care you can get stuck in traffic.

Thanks again for all of these nice things you've done for the City of Jeffersontown.

From,  
Drake

## 2. Student Color Drawings—Elementary School



Olivia  
5th Grade



Abbey  
Kindergarten

## 2. Student Color Drawings—Elementary School (continued)



Gracie  
5th Grade



Shelby  
5th Grade



Kieandrae  
5th Grade



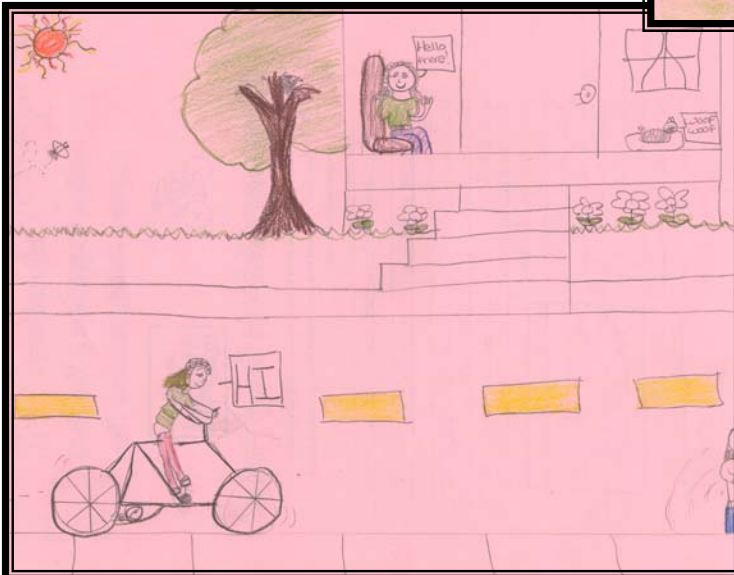
## 2. Student Color Drawings—Elementary School (continued)



Jordan  
5th Grade



Taylor  
5th Grade

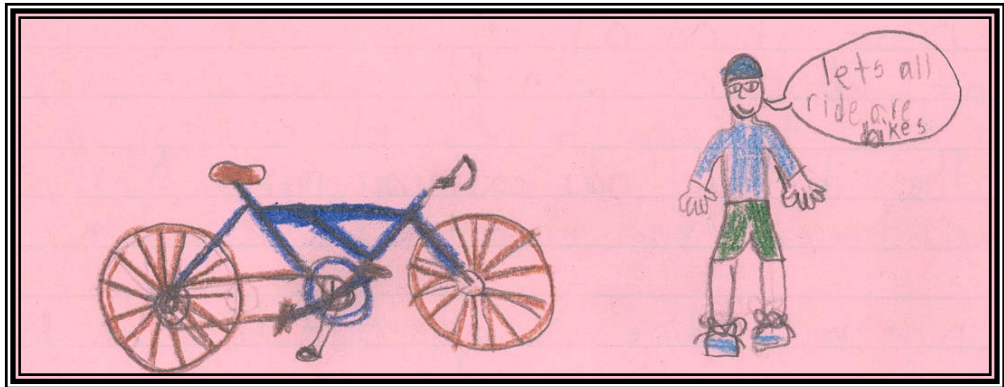


Emily  
5th Grade

2. Student Color Drawings—Elementary School (continued)



DeYonte



Shelby  
5th Grade



Ashley  
5th Grade

## Parent Questionnaire/Comments

1. Would you permit/promote your children to bike or walk in your neighborhood or to school if adequate bicycle and pedestrian facilities were available?

- No – 11
- Yes – 8

Comments:

- No, Because its not safe to leave a child alone, because someone can rob the child
- Yes, as long as safety and classes offering bicycle knowledge are available., i.e. helmets, crossing intersections, stop signs
- I would not permit right now. We live on a very busy street but if there was some way that they were safe and able to I may think about it. But it must be very safe.
- I would permit my son to ride his bike in the neighborhood only due to the high crime of predators stalking kids in the early morning.
- No. According to the national sex offender website a violator lives very close to J-town elementary
- Yes, it would be good exercise and it would be safe
- Yes. Kids need a safe place to ride bikes and walk with friends or family.
- Yes, if there were proper supervision and safety guards, as well as well paved sidewalks that were clearly lit.
- No, 20-30 years ago maybe, but now a days I don't think so.
- Childhood obesity is out of control. Children need adequate opportunities to remain active in order to fight obesity.
- I would still be nervous about my child being so close to moving vehicles. It's a great idea though, to promote better health in the community.
- Safety issues are a concern at this point.
- In out neighborhood, but not to school. Too many busy roads to cross.
- If the school was in the neighborhood, I would allow walking with an adult.
- I would only allow them to bike or walk to school if I went with them.
- Not unless I was with them because of the day and age we live in. To much could happen to them.
- Yes, the exercise would be great for them also.
- Yes, we would also use the facilities as a family.
- No, we live off Patti Lane, there is always high schoolers walking. I don't trust people in today's world.
- Yes, I would permit my children to walk. Accompanied with a group or an adult.
- Not as long as pedophile is on the loose.
- Not by themselves, but I do not allow that anyway. I would certainly go with them and we would use it together.
- Yes, I would promote anyone to use an adequate path and I would also promote car/bike/walker safety. Everyone would watch out for cars, ever the slow moving ones.
- To School, if there were crossing guards at Taylorsville Road.
- Yes, one she is older, I'd love it. I probably would not do it at this time even if she ere old enough because I feel that safety facilities are not there.
- Yes, I would feel More Comfortable allowing my children to bike in a designated area.



## **Parent Questionnaire/Comments**

1. Would you permit/promote your children to bike or walk in your neighborhood or to school if adequate bicycle and pedestrian facilities were available? (continued)
  - Yes, this would be great for families to exercise together.
  - No, I don't think it is safe for elementary kids to walk or ride by themselves in today's world.
  - Yes, I would support and appreciate this initiative.
  - We would love it.
  - This would not be an option for us because we live in a rural area outside of J-Town and it would be too far to bike ride to school.
  - No – too young, he's only 6 and we live over 6 miles away.
  - With supervision only.
  - Yes, biking and walking would permit appropriate physical activities and would steer her away from sedentary activities like watching television – also promote family time. No, I would still drive to school for safety.
  - Yes, we like to ride bicycles and take our bikes to areas where we feel it is safer, i.e. quiet neighborhood or park. A bike path would be fabulous.
  - Yes, definitely one of the integral parts of communities like St Matthews is the ability to “get out” and walk places. It really brings a community together and provides for ownership of the community.
  - This would not be an option for us because we live in a rural area outside of J-Town and it would be too far to bike ride to school.
  - We live approximately 2 ½ miles from Tully. This would be too far to feel it would be safe. Part of the safety concern would be traffic and part would be safety from others.
  - No, it is too far from our home to school.
  - No, not elementary, possible middle to high school grades
  - I have 5 kids. I have lives at 3502 Dell for 20 years. The girls walk, one boy skateboards and others ride bikes.
  - Yes, I would even consider riding with my kids to school to drop them off.
  - Yes, as long as the school was located within a reasonable distance from home. This is a great way to promote exercise and independence for older children.
  - Yes, I would as long as they were chaperoned or out of the way of traffic.
  - Possible.
  - Yes, school is too far.
  - Yes, as long as the surrounding atmosphere is safe and utilized appropriately.

## Parent Questionnaire/Comments

2. What would be important to you as a parent in creating a bicycle and pedestrian trail system in your neighborhood and community?
- Crossing Stony Brook safely
  - No
  - N/A
  - I would like it if they put lights on bike so cars could see them.
  - Keep them away from auto traffic
  - Safety, making sure all kids know the rules of the road
  - Most important would be safety and also needs to be patrolled to make sure that there was no wrong doing going on. Clean, neat, nice scenery.
  - Safety for everyone.
  - It wouldn't be an interesting issue to me as a parent.
  - Planning group walks or rides like the bus system. All children meet at a designated time and walk/ride together. (Safety in numbers!)
  - Safety. It would be something fun you could do with your child.
  - That the trail system not be right by the main streets. Trails for children need to be more than a foot from the street. They could still be hit by a car if something was to happen.
  - Safety is the main concern. Something that promotes a healthy lifestyle and encourages our children to be outside having fun while they exercise.
  - Well lit, open to plain site, not secluded, no steep grades.
  - I think there should be a barrier between the trail and the street in order to keep cyclists and pedestrians safe.
  - We had bicycle trails in San Jose, California. They were very well marked with broad white stripes and arrows.
  - Safe crossing areas, light trails.
  - Safety, traffic, how closely speeding and running stop signs are handled.
  - A path wide enough for both bicycles and pedestrians to use. A continuous path with no separations for safety reasons.
  - That the students would be safe from traffic and strangers not included in the system.
  - An open area without trees or anything else that someone might be able to hide behind.
  - Safety first always to ensure no one tried to take my kids.
  - I would need to know they would be safe the whole way of the trails. And we have pervs who live by school who want to hurt kids.
  - That there be more involvement by the police to run radar and enforce the speed limit. Also, that they put up more children at play signs in the neighborhood as a reminder to use caution when driving neighborhood. That it be well lit at night and that there be trash cans along the path to prevent litter.
  - Safety, Safety, Safety. Good, well marked street crossings with right of way given to the bike/pedestrian paths wherever possible. Well monitored and controlled. Not opposed to video surveillance on the paths.
  - If there was someone to watch them on the trail, which I know it is impossible for it to happen.
  - The trail would allow the children and adults to use other than the Streets and sidewalks.
  - We already have sidewalks, but a bike path would be nice as well. This way

## Parent Questionnaire/Comments

2. What would be important to you as a parent in creating a bicycle and pedestrian trail system in your neighborhood and community? (continued)
- Existing traffic lights at intersections that are friendly to pedestrians and bicycle. For example, when you want to cross the street and press the button it actually stops traffic all ways for someone to cross. I think Watterson Trail and Taylorsville Road is the intersection that is difficult to cross.
  - Safety and monitored.
  - Access to area parks, the trails being well lit and some sort of security for safety reasons. Perhaps a security phone or two along the trail like they have on college campuses.
  - Safety; close.
  - It is important that the trail be visible in most areas as well as well lit.
  - That the path be finished very fast so there would be no gaps in the sidewalk like the ones there were half finished on Hurstbourne Lane. That project took years.
  - Crossing Taylorsville Road.
  - Speed bumps on the roads, crosswalks and crossing guards when school is in session.
  - Watch out for cars or at lease but a speed limit and bump across.
  - The trail should be wide enough to accommodate both walkers and bikers. It should be a smooth surface to help prevent injury.
  - The safety of my children.
  - Safety, easy access. Cars not allowed too close or on trails used for walking and biking.
  - I do not support a bicycle or pedestrian trail.
  - Yes, I would love to see this trail system built in Jeffersontown.
  - Just to make sure it was very safe.
  - Trails that stay on one side of the highway or road and not suddenly end.
  - It would be nice in the city limits of town but we live too far away.
  - The safety of my children.
  - Safety! High visibility and no places for strangers to hang around unseen.
  - That it is far enough away from traffic and industrial areas and that it leads to park systems.
  - Separate from road. Too many cars don't respect designated bike paths.
  - It should be wide enough to be safe – a shoulder on the road is not safe enough to allow children to walk or bicycle without significant adult supervision.
  - It would be nice in the city limits of town, but we live too far away.
  - To have this would be wonderful. It would be important to have and maintain clear markings for the trails to keep motorized vehicles off of them.
  - Connect to neighborhood – safe vehicle free trail – to community trail.
  - I would want the trails to be safe and well patrolled by police. I would also want them wide and smooth to encourage more bike riding and walking.
  - Making sure trails are wide and trails do not directly connect with neighborhood streets. It would be important to have a barrier between the trail and the road.
  - To somehow slow people down. They don't even stop at the stop sign half the time. They wouldn't be able to stop for a child.
  - Safe, police patrolled safe roadway crossings. Well maintained, easy access – convenient.
  - It would be important to me that the bike/pedestrian path is well lit, well monitored (by police and/or security) and well maintained.

## Parent Questionnaire/Comments

3. Additional Comments?

- What does this have to do with school
- N/A
- I would like to see more police patrol, maybe speed bumps installed, as care in our neighborhood “FLY” through. Most kids aren’t allowed on main streets and are restricted to dead end streets and cul-de-sac’s.
- No
- I feel the best safety for children to get to school is Jefferson County School bus transportation, a parent walking a student to school or a student being a car rider.
- I would very much like to see our community increase routes for children to walk and/or ride their bikes if the areas are a safe place for them to ride or walk. Unfortunately, our world and the laxness of laws have made it hard for parents to allow children to be almost anywhere unsupervised.
- Our children need activities outdoors that do not require electronics. They begin to explore new ideas and become interested in new things. The only concern is any fitness trail or biking area will attract negative behavior as well. Anytime children are isolated to a particular area we have to be very careful to make sure it is properly patrolled by parents or occasionally police officers to ensure safety of each and every individual.
- Don’t waste community money on a bike/walking trails, improve your existing parts—ball fields, school properties. We have many venues for recreation. We just need to make them better.
- The problem in many neighborhoods is that there are sporadic sidewalks or bike paths that do not connect. No sidewalks in cul-de-sacs are a safety concern. Unfortunately my girls current school is too far for anything like this.
- As long as I could have a guarantee that my kids would be safe from pedophiles, I wouldn’t have a problem with it.
- We live in Watterson Woods. There is an extensive sidewalk system in our neighborhood that actually extends all the way to Billtown Road. Most of the kids in our neighborhood are either on bikes, scooters or rollerblades. Laura and her friends spend a lot of time outdoors. The sidewalks are such that they have no reason to set foot into the street.
- Adding bicycle/pedestrian facilities is a wonderful idea. I would use them with my child. I think it’s a great step toward a healthier community. I would be nervous for my child to be alone because I feel you can’t trust other drivers to stay alert and be cautious of their surroundings.
- I would participate in helping formulate ideas on making this a reality.
- To dangerous., to far and a target to child kidnapers and offenders.
- In addition to bicycle and pedestrian facilities, it would be great to have a feeder system to a main trail. Good, safe access to facilities would promote its use. Water fountains and possibly sprinklers (to cool users when hot) would be welcomed. As long as I’m writing a wish list, restroom facilities available to users would be a big plus.
- How would we be able to monitor the trails in case of predators ? We have already received a newsletter from our school, advising parents to be aware of suspicious vehicles and persons on the streets and bus stops. How would we protect our children on a trail?
- I would like to bike and walk on lighted and paved trails.

## Parent Questionnaire/Comments

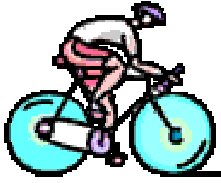
3. Additional Comments?

- Sidewalks are helpful. Its nice to have sidewalks on Billtown Road now. Bike lanes—I some parts of downtown Louisville there are bike lanes, parts of the existing road dedicated to bicycles. Places to lock bikes. These are devices placed in various locations where people could lock their bikes so they could use the bike as transportation to a store, etc. Roads with shoulders on some roads, like Watterson Trail, there are places with no shoulders. If a car forces you off the road you end up in a ditch, hopefully unharmed.
- Bike Paths– This would be a dream. In Bowling Green, Ohio they have a paved single lane road just for bicycle riders. Its beautiful, peaceful and good exercise.
- My family would certainly use the trail on a regular basis. We are always saying that there is no place to ride bikes. It would be especially nice if the trail connects to parks.
- There are so many things to consider when making a path. Materials used, steepness of the trail and its relationship with the road. The most important thing to member is that it's there to be fun. Fun for the walkers and bikers without crossing roads or intersections with cars.
- In our neighborhood there are so many people that speed – way beyond the speed limit on and around our house. I've noticed that there are a lot of younger drivers especially that do this. Also, stop signs are routinely ignored. It is very scary for all pedestrians/bikers. I've seen countless near misses of people on bikes and walkers being hit.
- It's a great idea. Hope it comes true, both parents and children will have fun with it.
- I think a bike/walk trail is a great idea and will support the idea.
- Our neighborhood the sidewalks suddenly end and or suddenly stop and resume on the opposite side of the street.
- Bike trails away from traffic areas would be best.
- Something to beautify the sewage plant or contain control - the odors- would also be a concern of mine if trails were adjacent to it.
- I appreciate the consideration and look forward to a nice place for walking or biking. Yeah!!
- We have wonderful country roads around Jeffersontown that are much too dangerous to walk or bike on due to inadequate shoulders. There is nowhere to go for safety when high speed traffic passes.
- A foreseeable problem is that many of the roads are country roads and would not be included in a plan – connecting neighborhoods on the outskirts, Saratoga Woods, etc. would be fantastic – could it really happen?
- Thanks for this survey and for attempts being made to improve our community.
- Great to have nature trail connect to parks and playgrounds. Walk ways crossing over streets well lighted in dark.
- Sidewalks are important, all the way to Chenoweth Hills and down Watterson Trail. I live in a nice subdivision with a lot of stop signs. I have one in front of my house which I watch. I can count 1 out of 10 cars who barely slow down. Let alone stop, the side street has a lot of kids playing on it. Too dangerous for anyone. The kids would be safer if people stopped at more signs.
- Even in the current subdivision our family lives in, it is difficult to ride a bike given that there are only major roads surrounding the neighborhood. It would be a great way to promote exercise and family activities that are “safe”.
- My husband went to the police station several years ago and complained about this. He asked for speed bumps. The answer was our street is a through fair to Watterson Trail. There was an extra stop sign added.
- Bike/walk paths are good for the community.

## **B. Middle/High Schools**

**Survey and Results**





## Jeffersontown's Gaslight Recreational & Workplace Bicycle & Pedestrian Master Plan



1. Do you own a bike?
  - Yes - 149
  - No - 73
  - No Comment - 3
2. Would you use a bicycle and pedestrian path/route for physical fitness or recreational enjoyment?
  - Yes - 170
  - No - 41
  - No Comment - 1

### Comments:

- If it was close to my house
- Sometimes, maybe, I usually just use my bike to get places. I never use my bike for fun
- I would use one if there were more paths available
- I would use the bike path for physical fitness
- Sometimes only if I was bored or had nothing to do
- I don't care
- I would not, cause that is what a gym and a bicycle
- You could ride in your house
- Not if there were 50 other people with the same idea
- Maybe but most likely not
- It really doesn't make a difference to me about the bike trail
- I rarely ride a bicycle
- It really doesn't make a difference to me about the bike trail but a ride/walk on Hurstbourne from the movies to Dick's Sporting Goods would be excellent
- Not just for enjoyment, but also to go from one place to another because sometimes we use a car to go to places you can simply walk or ride a bike
- I could get hurt or hurt a pedestrian
- I'm lazy
- I would love to go somewhere like that to enjoy and ride my bike
- If I had the time I would use my bike
- It can be a good route to get fit
- Anything to get fit
- I would love that
- I would really like that to be built
- Because I like to ride but no safe places to do so
- I would like to because it would be a very good thing for young teens
- Only for walking not for riding a bike
- I would use one
- To ride my skateboard on
- To make pedestrians more safe while they are on the road riding their bikes
- Riding a bike gets your heart rate up and you use all your muscles
- If I had a bike
- I would because it's safer for pedestrians to walk or ride on a sidewalk
- I would do exercise
- I like to use it for recreational uses
- I walk on paths
- Cause it's fun and also help your legs

3. Do you currently use your bike or walk for recreation or as a means to get to school, store or park?

- Yes – 85
- No - 85
- No Comment - 8
- Recreation - 13
- School, Store or Park - 26
- Walk - 1

Comments:

- I would bike and walk to the surrounding communities if there were more paths/walkways provided
- I sometimes walk home from school, but usually for recreation
- I walk to school if I miss the bus
- I don't have a bike but my little brother rides his bike all the time
- I walk or ride my bike to the store, but walk to school
- Sometime I will walk just for working out
- Because gas is getting high
- I'll use a bike or walk for any means to get me to my destination
- Not to school, but to enjoy the day
- I use my bike to go to the store a lot. My brother rides his bike everywhere though
- I go to a corner store sometimes. I can't ride it to school. I don't have a lock and it would be stolen
- I walk all the time, but my tire on my bike is popped so I can't ride it, but I used to ride it to the store and park
- My tires are flat and we don't know where my younger sister hid the pump
- I'm too afraid of getting hit by a car truthfully
- I use my bike for recreation, but it would be cool to go to school by bike
- I sometimes walk home from Stonybrook Cinemas to Brookhollow
- I walk mostly run to get in shape. I have a large area to run out in the open
- I'd like to use my bike, but there are not even sidewalks from my house to the school, so I have to take the school bus

4. Do you bike and walk just in your neighborhood or do you ride and walk to the surrounding neighborhood/community?

- Neighborhood - 65
- No - 35
- No Comment - 6
- Surrounding neighborhood/community - 51
- Yes - 48
- Both - 14

Comments

- I would bike and walk to the surrounding communities if there were more paths/walkways provided

5. What roads would benefit from the addition of bike lanes/paths and sidewalks?

- All Roads – 20
- Billtown Rd. - 18
- Galene Drive - 1
- Hurstbourne Pkwy. - 11
- Old Six Mile Lane - 6
- Ruckriegel Pkwy. - 9
- Six Mile Lane - 6
- Stony Brook Pkwy. - 4
- Taylorsville Rd. - 33
- Watterson Trail - 16
- No Comment - 98

Comments:

- Bike lanes ain't necessary
- Don't care
- Billtown Road – sidewalks connecting to each neighborhood it would really benefit everyone that walks home from Carrithers Middle School

6. Would you bike or walk to school if adequate bicycle and pedestrian lanes/routes were available? Would your parents allow you to bike/walk to school if adequate facilities were available?

- Maybe/No – 1
- No - 40
- No Comment – 9
- No/I don't know – 1
- No/No - 26
- No/Yes - 25
- Yes – 41
- Yes/No - 5
- Yes/Yes – 44

Comments:

- I would walk
- I love to walk and ride my bike. It's fun and an easy way to get your exercise. I'm not sure my parents would let me go alone, but I would be able to walk with my sister and friends in my neighborhood that go to my school.

7. Additional Comments?

- We need the bike path on Wilburlook for the kids who live on that street.
- Could be a good way for more business.
- There are plenty of sidewalks in my neighborhood, but when on Taylorsville Road it's hard to cross and get to a sidewalk and it's not long enough (ex. Kroger to Gaslight area – no sidewalk).
- I think this is a great idea to make it more safe and fun to ride bikes and walk.
- I think adding sidewalks are great so young people could ride their bikes safely and not worry about getting hit by cars in the street.
- I prefer driving than biking.
- I think sidewalks are a good idea.
- I think that's a good idea because I see a lot of people riding bicycles.
- Think they should have sidewalks everywhere.
- I don't think there are enough sidewalks.
- Bike lanes are not necessary.
- I think it's healthier and safer to walk or ride a bike in a pedestrian or/and bicycle sidewalk.
- Make a mountain bike track in at least one of the surrounding parks.
- Great idea. It is less pollutive to ride a bike than a car and people would enjoy it more.
- Yes, I think it is a good idea to make lanes for bikes and walkers to let them not ride in the same one as cars.
- Just let people use bikes.
- I think that biking/walking paths would be a great idea and it might help people think healthy.
- I think they should have more cross walks on the major roads in J-Town to avoid injuries.
- There's already no room so extra lanes would be a waste and clog the road even more.
- Please build more sidewalks for I am tired at walking on the edge of the street.
- I think it's about time that sidewalks are being built on both sides of Old Six Mile Lane.
- That would be a good idea.
- We need this to help our younger community.
- Try to fix the pot holes.
- Please! Please! Before anymore people get hurt or killed – give us some more lanes/routes/paths/sidewalks! Thanks so much!
- I think J-Town is in need of a bike route. My friends and I always ride our bikes from our Silver Oaks neighborhood up to Wal-Mart Grocery and gas stations. We also ride up to KFC in J-Town and are always having to cross streets. If we had a bike trail, we would feel very safe.
- Stop light at Billtown and Fairground.
- I think everybody should wear helmets.
- I think it is a great idea to help out the people using sidewalks.
- I think kids should exercise.
- I thing that these surveys are great. I like doing surveys and hope there is more.
- I think if people can, they should use a bike or walk to get somewhere because using cars puts exhaust in the air which can destroy the ozone layer.
- I thing we should add more sidewalks on busy roads for people who don't have cars so they can walk.
- This would be super.
- This is a good idea, but it will cost a lot of money.

# Chapter VII

## Phase I: A Model Project

### “Gaslight Recreational and Workplace Bicycle and Pedestrian Trail”

1. Separated, Multi-Use Path
2. Map of Area and Route

## 1. Separated, Multi-Use Path

A multiple-use path is a bicycle facility that is physically separated from motor vehicle traffic by an open space or barrier, and it may be within the roadway or independent right-of-way. Separated paths are normally two-way facilities. They may be appropriate in corridors not served by other bikeways, if there are few intersecting roadways.



***[T]he bicycle is the most efficient machine ever created:  
Converting calories into gas, a bicycle gets the equivalent of  
three thousand miles per gallon.  
~Bill Strickland, The Quotable Cyclist***



## **2. Maps of Area and Routes**

- A. Site Corridor**
- B. LOJIC Site Corridor**

## **A. Site Corridor**

*Gaslight Recreational & Workplace Bicycle & Pedestrian Trail System*  
Phase I Site Corridor



## **B. LOJIC Site Corridor**





# **Chapter VIII**

## **Comprehensive Approach to Bicycle and Pedestrian Design Considerations**

- 1. Bicycle Design Standards**
- 2. Pedestrian Design Standards**
- 3. Bicycle & Pedestrian Trail Amenities**



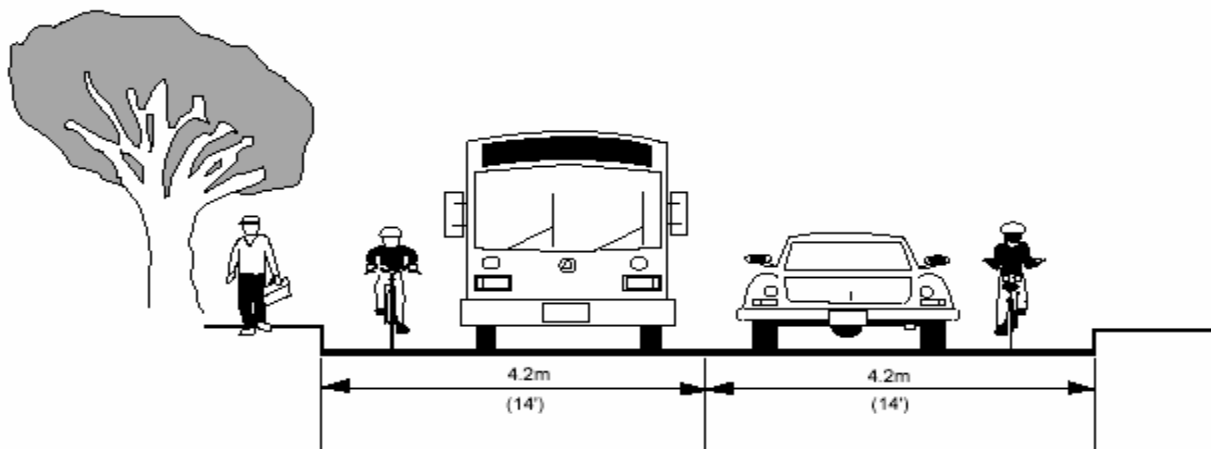
# 1. Bicycle Design Standards



- A. Shared Lanes
- B. Shoulder Bikeway
- C. Bicycle Lanes
- D. Separated, Multiple-Use Path

# A. Shared Lanes

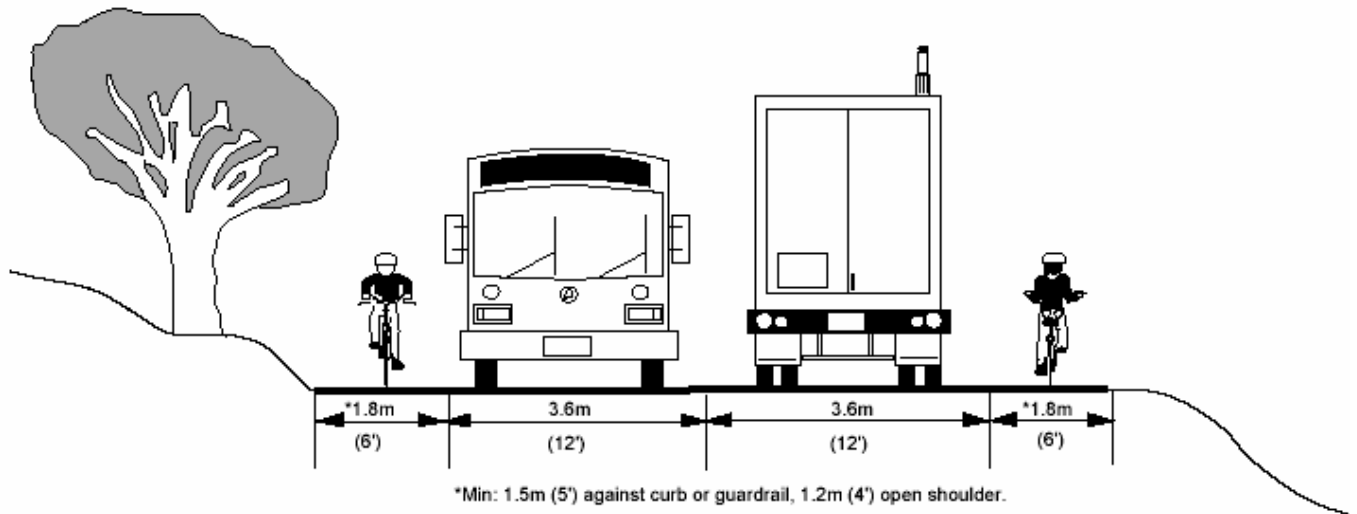
On a shared facility, bicyclists and motorists share the same travel lanes. Shared facilities are common on city street systems and roads with limited right-of-way. It can be considered an acceptable solution when there is inadequate width to provide bike lanes or shoulder bikeways. A lane with 14 feet of usable width is desired in an urban setting which allows a motor vehicle and a bicycle to operate side by side. Usable width would normally be from curb face to lane stripe, but adjustments need to be made for drainage grates, parking, and longitudinal ridges between pavement and gutter sections. Widths greater than 14 feet may encourage the undesirable operation of two motor vehicles in one lane. In this situation, consideration should be given to striping a bicycle lane or shoulder bikeway. Where bicycle travel is significant these roadways may be signed as bicycle routes.



## B. Shoulder Bikeway

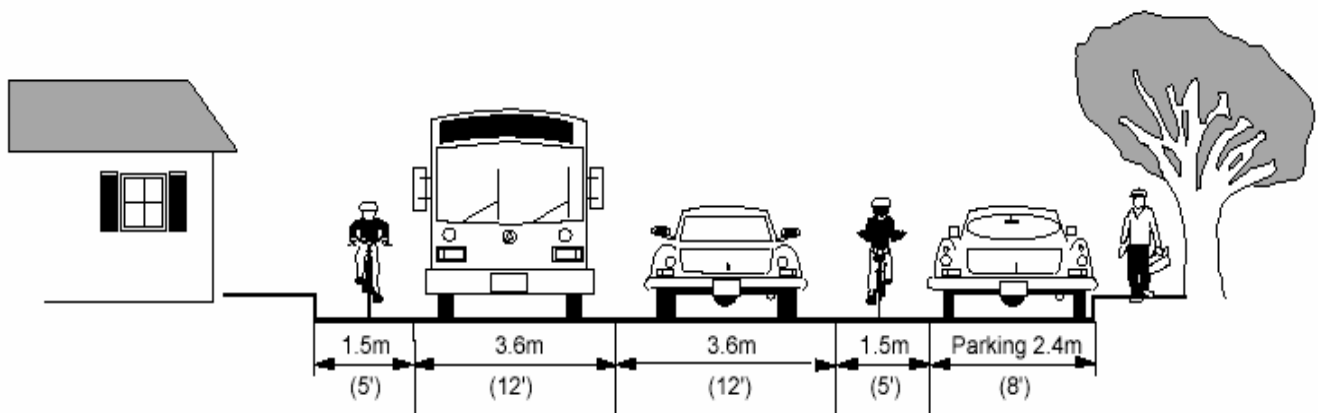
Smooth, paved roadway shoulders provide a suitable area for bicycling conflicting little with faster moving motor-vehicle traffic. The majority of rural bicycle travel on the state highway system is accommodated on shoulder bikeways. Roadway shoulders for bikeways should be 6 feet wide or greater. This provides ample width for bicycle traffic. If there are severe physical width limitations a minimum 4 feet shoulder may be adequate. Shoulder areas against an ordinary curb face should have a 5 feet minimum width or 4 feet from the longitudinal joint between a curb and gutter and the pavement edge. Shoulder widths of 5 feet are recommended from the face of a guardrail or other roadside barriers. Adding or improving shoulders can often be the best way to accommodate bicyclists in rural areas, and they are also a benefit to motor vehicle traffic. Even minimal width shoulders, 2-3 feet, is an improvement over no shoulder at all.

Rumble strips are not recommended for roadway shoulders because they create a rough and inappropriate surface for bicycles. However, when it is determined that rumble strips are a necessary design treatment for safety reasons, then a minimum 1 foot wide smooth surface should be provided between the shoulder stripe and the rumble strip should be a clear riding zone of 4 feet if there is a longitudinal joint between the pavement and the curb-and-gutter section. Bike lanes in excess of 6 feet wide are undesirable as they may be mistaken for a motor vehicle lane or parking area. Refer to the Idaho Traffic Manual or the MUTCD for detailed specifications.



## C. Bicycle Lanes

Where bicycle travel and demand are substantial, a portion of the roadway is designated for preferential use by bicyclists. Bike lanes are common in urban areas. Bike lanes must always be well marked and signed to call attention to their preferential use by bicyclists (refer to MUTCD). Bike lanes are established on urban arterial and major collector streets. The minimum width for a bike lane is 4 feet, or 5 feet from the face of a curb or guardrail. There should be a clear riding zone of 4 feet if there is a longitudinal joint between the pavement and the curb-and-gutter section. Bike lanes in excess of 6 feet wide are undesirable as they may be mistaken for a motor vehicle lane or parking area. Refer to the Idaho Traffic Manual or the MUTCD for detailed specifications for pavement striping, stencils, and signing of bicycle lanes. If parking is permitted, the bike lane must be placed between the parking area and the travel lane and have a minimum width of 5 feet. Bike lanes must always be one-way facilities and carry bicycle traffic in the same direction as adjacent motor vehicle traffic. Bike lanes on one-way streets should be on the right side of the roadway, except in areas where a bike lane on the left will decrease the number of conflicts (i.e., those caused by heavy bus traffic or dual right-turn lanes, for example).



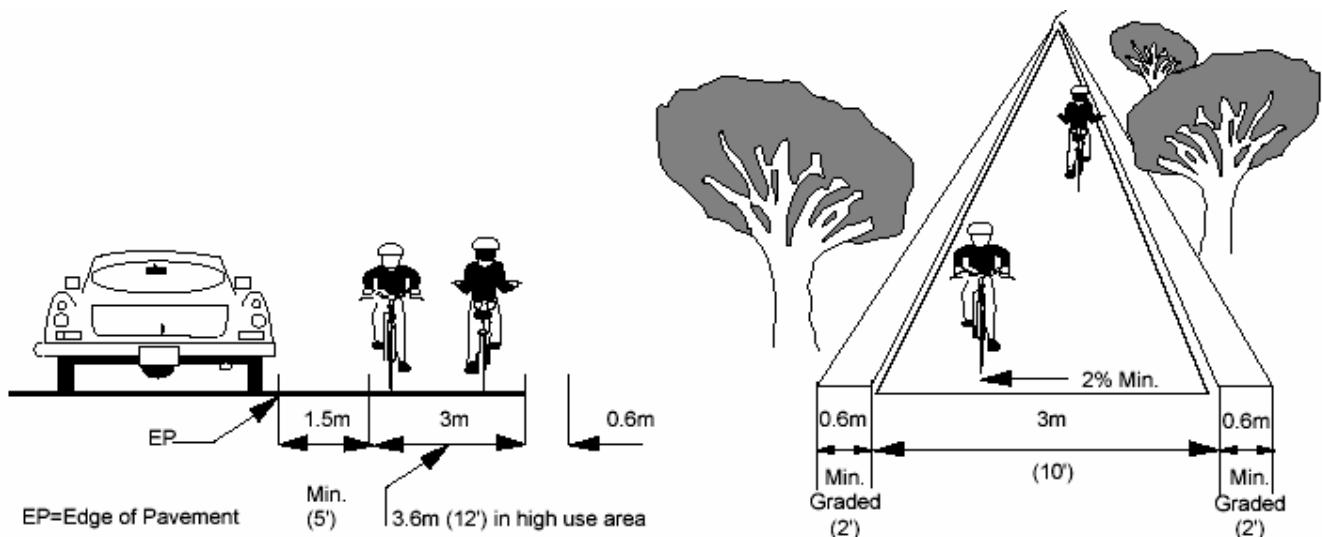


# D. Separated, Multiple-Use Path

A multiple-use path is a bicycle facility that is physically separated from motor vehicle traffic by an open space or barrier, and it may be within the roadway or independent right-of-way. Separated paths are normally two-way facilities. They may be appropriate in corridors not served by other bikeways, if there are few intersecting roadways.

Where a separated path must be parallel and near a roadway, there must be a 5 foot minimum width separating them, or a physical barrier of sufficient height (usually 4.5 feet minimum is adequate) must be installed. Ten feet is the standard width for a separated multiple-use path. Paths should be 12 feet wide in areas with high bicycle volume or where they are used by a combination of bicyclists, pedestrians, skaters, and joggers. A minimum 2 foot graded area should be maintained adjacent to both sides of the pavement to provide clearance (shy distance) from poles, trees, fences, and other obstructions.

Multiple-use paths provide excellent bicycle transportation, especially where the path is truly isolated from motor vehicles, such as along green ways or railroad corridors. Special care must be taken to limit the number of at-grade crossings with streets or driveways. Poorly designed paths can put cyclists in a position where the driver of a motor vehicle does not expect them. Motorists are generally looking for traffic on the roadway and may not see a cyclist on a nearby path. Paths with two-way bicycle traffic should not be placed on or adjacent to roadways; otherwise, a portion of the cyclists ride against the normal flow of motor vehicle traffic, which is contrary to the rules of the road, with the following consequences:



## D. Separated, Multiple-Use Path (continued)



- Bicyclists and motorists may collide, as right turning drivers at intersections and driveways rarely look to their right. The drivers fail to see approaching bicyclists who are riding against traffic.
- Some bicyclists ride improperly against the normal flow of traffic to reach the path or continue on against traffic where the path ends. Wrong-way riding is a major cause of bicycle/motor vehicle accidents. Pathways of 8 feet are not recommended in most situations because they become overcrowded. If necessary, they should only be constructed where long-term usage is expected to be low; where there is minimum pedestrian use; and with proper horizontal and vertical alignment to ensure good sight distances. Multiple use paths built along streams and in wooded areas present special challenges. The roots of shrubs and trees, especially cottonwoods, can pierce the path surface and cause it to bubble up and break apart. Preventative methods include removal of vegetation, realignment of the path away from trees, and placement of root barriers along the edge of the path.

***When I see an adult on a bicycle,  
I do not despair for the future of  
the human race.***

***~H.G. Wells***



## 2. Pedestrian Design Standards



A total of 47 roadway and engineering improvements are discussed in this chapter. The categories of improvements include:

- A. Pedestrian Facility Design**
- B. Roadway Design**
- C. Intersection Design**
- D. Traffic Calming**
- E. Traffic Management**
- F. Signals and Signs**
- G. Other Measures**

## A. Pedestrian Facility Design



Walkways are the portion of the public right-of-way that provide a separated area for people traveling on foot. Walkways that are safe, accessible, and aesthetically pleasing attract pedestrians. People walk for many reasons: to go to a neighbor's house, to run errands, for school, or to get to a business meeting. People also walk for recreation and health benefits or for the enjoyment of being outside. Some pedestrians must walk to transit or other destinations if they wish to travel independently. It is a public responsibility to provide a safe, secure, and comfortable system for all people who walk.

## 1. Sidewalks or Walkways

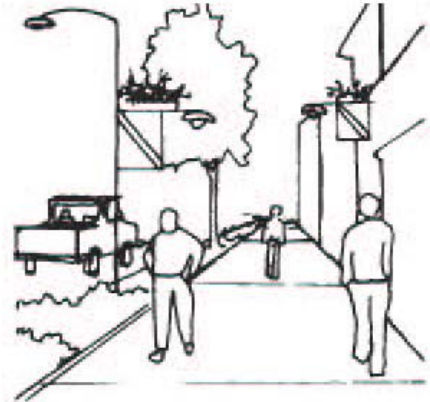
Sidewalks and walkways are “pedestrian lanes” that provide people with space to travel within the public right-of-way that is separated from roadway vehicles. They also provide places for children to walk, run, skate, ride bikes, and play. Sidewalks are associated with significant reductions in pedestrian collisions with motor vehicles. Such facilities also improve mobility for pedestrians and provide access for all types of pedestrian travel: to and from home, work, parks, schools, shopping areas, transit stops, etc. Walkways should be part of every new and renovated facility and every effort should be made to retrofit streets that currently do not have sidewalks.

While sidewalks are typically made of concrete, less expensive walkways may be constructed of asphalt, crushed stone, or other materials if they are properly maintained and accessible (firm, stable, and slip resistant). In more rural areas, in particular, a “side path” made of one of these materials may be suitable. The Institute of Transportation Engineers (ITE) guidelines recommend a minimum width of 5 feet for a sidewalk or walkway, which allows two people to pass comfortably or to walk side-by-side. Wider sidewalks should be installed near schools, at transit stops, in downtown areas, or anywhere high concentrations of pedestrians exist. Sidewalks should be continuous along both sides of a street and sidewalks should be fully accessible to all pedestrians, including those in wheelchairs.

A buffer zone of 4 to 6 feet is desirable and should be provided to separate pedestrians from the street. The buffer zone will vary according to the street type. In downtown or commercial districts, a street furniture zone is usually appropriate. Parked cars and/or bicycle lanes can provide an acceptable buffer zone. In more suburban or rural areas, a landscape strip is generally most suitable. Careful planning of sidewalks and walkways is important in a neighborhood or area in order to provide adequate safety and mobility. For example, there should be a flat sidewalk provided in areas where driveways slope to the roadway.



This sidewalk and buffer zone provides a safe place for pedestrians to walk outside of the paths of vehicles in the street.



### Purpose:

- Create the appropriate facility for the walking area of the public right-of-way.
- Improve pedestrian safety dramatically.

### Considerations:

- While continuous walkways are the goal, retrofitting areas without them will usually occur in phases. Lack of a seamless system is no excuse not to provide parts of the system.
- In retrofitting streets that do not have a continuous or accessible system, locations near transit stops, schools, parks, public buildings, and other areas with high concentrations of pedestrians should be the highest priority.
- Street furniture placement should not restrict pedestrian flow.

### Estimated Cost:

The cost for concrete curbs and sidewalks is approximately \$15/linearfoot for curbing and \$11/square foot for walkways. Asphalt curbs and walkways are less costly, but require more maintenance, and are somewhat more difficult to walk and roll on for pedestrians with mobility impairments.

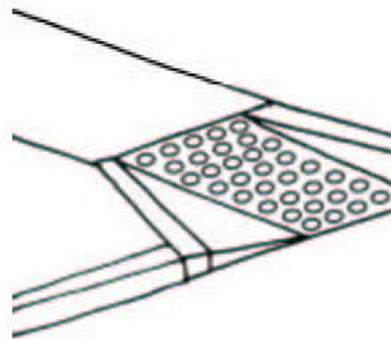
## 2. Curb Ramps

Curb ramps (wheelchair ramps) provide access between the sidewalk and roadway for people using wheelchairs, strollers, walkers, crutches, handcars, bicycles, and also for pedestrians with mobility impairments who have trouble stepping up and down high curbs. Curb ramps must be installed at all intersections and midblock locations where pedestrian crossings exist, as mandated by federal legislation (1973 Rehabilitation Act). Wheelchair ramps must have a slope of no more than 1:12 (must not exceed 25.4 mm/0.3 m (1 in/ft) or a maximum grade of 8.33 percent), with a maximum side slope of 1:10, and must be designed in accordance with the ADA guidelines.

Where feasible, separate curb ramps for each crosswalk at an intersection should be provided rather than having a single ramp at a corner for both crosswalks. This provides improved orientation for visually impaired pedestrians. Similarly, tactile warnings will alert pedestrians to the sidewalk/street edge. All newly constructed and altered roadway projects must include curb ramps. In addition, all agencies should upgrade existing facilities. They can begin by conducting audits of their pedestrian facilities to make sure transit services, schools, public buildings, and parks, etc. are accessible to pedestrians who use wheelchairs.

While curb ramps are needed for use on all types of streets, priority locations are in downtown areas and on streets near transit stops, schools, parks, medical facilities, shopping areas, and near residences with people who use wheelchairs.

For more information about curb ramp design, see *Designing Sidewalks and Trails for Access, Part I*, by the Federal Highway Administration, and *Accessible Rights-of-Way: Design Guide*, by the U.S. Access Board and the Federal Highway Administration. The Access Board's right-of-way report can be found at [www.access-board.gov](http://www.access-board.gov).



### Purpose:

- Provide access to street crossings.

### Considerations:

- Follow Americans with Disabilities Act (ADA) design guidelines.
- Texture patterns must be detectable to blind pedestrians.

### Estimated Cost:

The cost is approximately \$800 to \$1,500 per curb ramp (new or retrofitted).



A curb ramp should be designed to provide direct access and should have the proper width and slope.



### 3. Marked Crosswalks and Enhancements

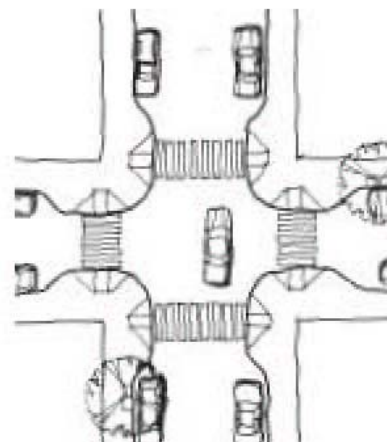
Marked crosswalks indicate optimal or preferred locations for pedestrians to cross and help designate right-of-way for motorists to yield to pedestrians. Crosswalks are often installed at signalized intersections and other selected locations. Various crosswalk marking patterns are given in the MUTCD. Marked crosswalks are desirable at some high pedestrian volume locations (often in conjunction with other measures) to guide pedestrians along a preferred walking path. In some cases, they can be raised and should often be installed in conjunction with other enhancements that physically reinforce crosswalks and reduce vehicle speeds. It is also sometimes useful to supplement crosswalk markings with warning signs for motorists. At some locations, signs can get "lost" in visual clutter, so care must be taken in placement.

Pedestrians are sensitive to out-of-the-way travel, and reasonable accommodation should be made to make crossings both convenient and safe at locations with adequate visibility.

Recommended guidelines and priorities for crosswalk installation at controlled locations are given in Appendix C. These guidelines are based on a major study of 1,000 marked crosswalks and 1,000 unmarked crossings in 30 U.S. cities. Recommendations are also given for providing other pedestrian crossing enhancements at uncontrolled locations with and without a marked crosswalk.

#### Crosswalk Materials

It is important to ensure that crosswalk markings are visible to motorists, particularly at night. Crosswalks should not be slippery or create tripping hazards. Even though granite or cobblestones are aesthetically appealing materials, they are generally not appropriate for crosswalks. One of the best materials for marking crosswalks is inlay tape, which is installed on new or repaved streets. It is highly reflective, long-lasting, and slip-resistant, and does not require a high level of maintenance. Although initially more costly than paint, both inlay tape and thermoplastic are more cost-effective in the long run. Inlay tape is recommended for new and resurfaced pavement; while thermoplastic may be a better option on rougher pavement surfaces. Both inlay tape and thermoplastic are more visible and less slippery than paint when wet.



#### Purpose:

- Warn motorists to expect pedestrian crossings.
- Indicate preferred crossing locations.

#### Considerations:

- Crosswalk locations should be convenient for pedestrian access.
- Crosswalk markings alone are unlikely to benefit pedestrian safety. Ideally, crosswalks should be used in conjunction with other measures, such as curb extensions, to improve the safety of a pedestrian crossing, particularly on multi-lane roads with average daily traffic (ADT) above about 10,000.
- Marked crosswalks are important for pedestrians with vision loss.
- Crosswalk markings must be placed to include the ramp so that a wheelchair does not have to leave the crosswalk to access the ramp.

#### Estimated Cost:

\$100 for a regular striped crosswalk, \$300 for a ladder crosswalk and \$3,000 for a patterned concrete crosswalk.

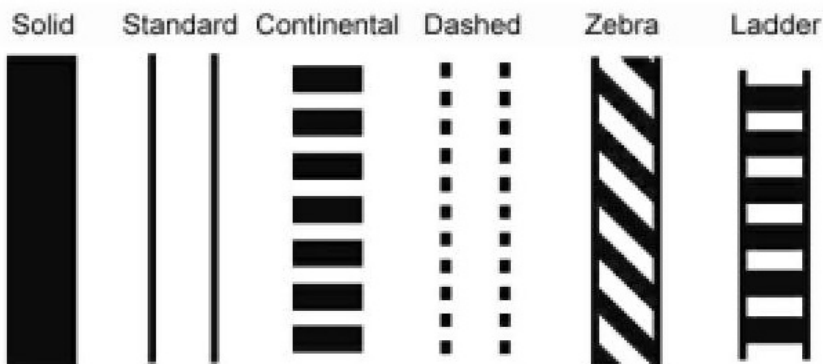




The “ladder” pattern shown above is more visible to motorists than parallel lines and requires less maintenance if painted to allow the tires of motor vehicles to track between the painted lines.



Some crosswalks are angled to the right in the median. This is intended to facilitate a pedestrian’s view of oncoming traffic before crossing the second half of the street.



Examples of different crosswalk marking patterns.

## 4. Transit Stop Treatments

Good public transportation is as important to the quality of a community as good roads. Well-designed transit routes and accessible stops are essential to a usable system.

Bus stops should be located at intervals that are convenient for passengers. The stops should be designed to provide safe and convenient access and should be comfortable places for people to wait. Adequate bus stop signing, lighting, a bus shelter with seating, trash receptacles, and bicycle parking are also desirable features. Bus stops should be highly visible locations where pedestrians can reach them easily by means of accessible travel routes. Therefore, a complete sidewalk system is essential to support a public transportation system. Convenient crossings are also important.

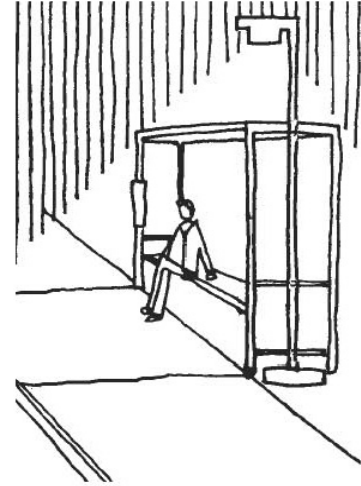
Proper placement of bus stops is key to user safety. For example, placing the bus stops on the near side of intersections or crosswalks may block the pedestrians' view of approaching traffic, and the approaching drivers' view of pedestrians. Approaching motorists may be unable to stop in time when a pedestrian steps from in front of a stopped bus into the traffic lanes at the intersection.

Far-side bus stops generally encourage pedestrians to cross behind the bus. Relocating the bus stop to the far side of the intersection can improve pedestrian safety since it eliminates the sight-distance restriction caused by the bus. Placing bus stops at the far side of intersections can also improve motor vehicle operation.

The bus stop location should be fully accessible to pedestrians in wheelchairs, should have paved connections to sidewalks where landscape buffers exist, and should not block pedestrian travel on the sidewalk. Adequate room should exist to operate wheelchair lifts. Yet, it is also useful to install curb ramps at bus stops so that a passenger can board from the street if bus-lift deployment is blocked.



The transit shelter above is in a lively commercial district. The shelter design reflects the surrounding architecture. Pedestrian-scale lighting and landscaping add visual interest and security.



### Purpose:

- Provide safe, convenient, and inviting access for transit users.

### Considerations:

- Ensure that access to and from stops is provided when transit stops are created.
- Ensure adequate room to load wheelchairs.
- Ensure a clear and comfortable path for passing pedestrians when placing transit shelters.
- Locate transit stops on the far side of marked crosswalks.

### Estimated Cost:

\$1,000 to \$10,000. Cost varies widely depending on type of improvements.

## 5. Roadway Lighting Improvements

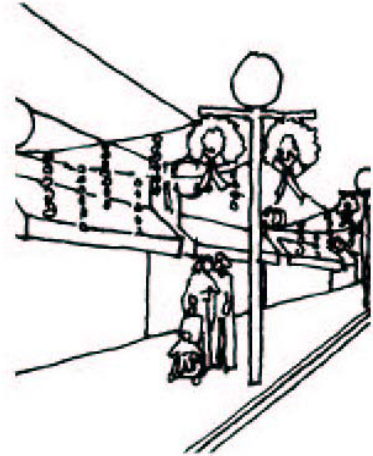
Good quality and placement of lighting can enhance an environment as well as increase comfort and safety. Pedestrians often assume that motorists can see them at night; they are deceived by their own ability to see the oncoming headlights. Without sufficient overhead lighting, motorists may not be able to see pedestrians in time to stop.

In commercial areas with nighttime pedestrian activity, streetlights and building lights can enhance the ambiance of the area and the visibility of pedestrians by motorists. It is best to place streetlights along both sides of arterial streets and to provide a consistent level of lighting along a roadway. Nighttime pedestrian crossing areas may be supplemented with brighter or additional lighting. This includes lighting pedestrian crosswalks and approaches to the crosswalks.

In commercial areas or in downtown areas, specialty pedestrian-level lighting may be placed over the sidewalks to improve pedestrian comfort, security, and safety. Mercury vapor, incandescent, or less expensive high-pressure sodium lighting is often preferred as pedestrian-level lighting. Low-pressure sodium lights are low energy, but have a high level of color distortion.



This well-lit commercial district is an attractive place to shop in the evening. The combination of pedestrian-scaled street lighting, holiday lights in the trees, and light from shop windows enhances visibility and creates a secure and festive atmosphere.



### Purpose:

- Enhance safety of all roadway users, particularly pedestrians.
- Enhance commercial districts.
- Improve nighttime security.

### Considerations:

- Ensure that pedestrian walkways and crosswalks are well lit.
- Install lighting on both sides of wide streets and streets in commercial districts.
- Use uniform lighting levels.

### Estimated Cost:

Varies depending on fixture type and service agreement with local utility.

## 6. Pedestrian Overpasses/Underpasses

Pedestrian overpasses and underpasses allow for the uninterrupted flow of pedestrian movement separate from the vehicle traffic. However, they should be a measure of last resort, and it is usually more appropriate to use traffic-calming measures or install a pedestrian-activated signal that is accessible to all pedestrians. This is also an extremely high-cost and visually intrusive measure.

Such a facility must accommodate all persons, as required by the ADA. These measures include ramps or elevators. Extensive ramping will accommodate wheelchairs and bicyclists, but results in long crossing distances and steep slopes that discourage use.

Studies have shown that many pedestrians will not use an overpass or underpass if they can cross at street level in about the same amount of time.(5-6) Overpasses work best when the topography allows for a structure without ramps (e.g., overpass over a sunken freeway).

Underpasses work best when designed to feel open and accessible. Grade separation is most feasible and appropriate in extreme cases where pedestrians must cross roadways such as freeways and high-speed, high-volume arterials.



This pedestrian overpass takes advantage of existing topography and allows pedestrians to avoid conflicts with traffic at street level.

### Purpose:

- Provide complete separation of pedestrians from motor vehicle traffic.
- Provide crossings where no other pedestrian facility is available.
- Connect off-road trails and paths across major barriers.

### Considerations:

- Use sparingly and as a measure of last resort. Most appropriate over busy, high-speed highways, railroad tracks, or natural barriers.
- Pedestrians will not use if a more direct route is available.
- Lighting, drainage, graffiti removal, and security are also major concerns with underpasses.
- Must be wheelchair accessible, which generally results in long ramps on either end of the overpass.

### Estimated Cost:

\$500,000 to \$4 million, depending on site characteristics.

## 7. Street Furniture/Walking Environment

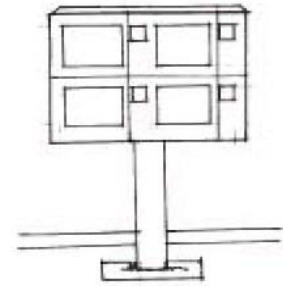
Sidewalks should be continuous and should be part of a system that provides access to goods, services, transit, and homes. Well-designed walking environments are enhanced by urban design elements and street furniture, such as benches, bus shelters, trash receptacles, and water fountains.

Sidewalks and walkways should be kept clear of poles, signposts, newspaper racks, and other obstacles that could block the path, obscure a driver's view or pedestrian visibility, or become a tripping hazard. Benches, water fountains, bicycle parking racks, and other street furniture should be carefully placed to create an unobstructed path for pedestrians. Such areas must also be properly maintained and kept clear of debris, overgrown landscaping, tripping hazards, or areas where water accumulates. Snow removal is also important for maintaining pedestrian safety and mobility. In most areas, local ordinances give property owners the responsibility of removing snow within 12 to 48 hours after a storm.

Walking areas should also be interesting for pedestrians and provide a secure environment. Storefronts should exist at street level and walking areas should be well lit and have good sightlines.



This is a good example of a street furniture zone along the sidewalk on Portland, Oregon's light-rail transit line.



### Purpose:

- Enhance the pedestrian environment.
- Enliven commercial districts by fostering community life.

### Considerations:

- Good-quality street furniture will show that the community values its public spaces and is more cost-effective in the long run.
- Include plans for landscape irrigation and maintenance at the outset.
- Ensure proper placement of furniture; do not block pedestrian walkway or curb ramps or create sightline problems.
- Ensure adequacy of overhead clearances and detect ability of protruding objects.

### Estimated Cost:

Varies depending on the type of furniture, the material out of which it is constructed, and the amount of planting material used.



## B. Roadway Design



## 8. Bicycle Lanes

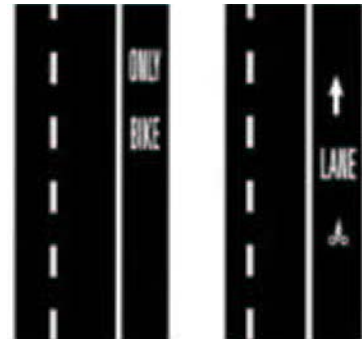
Bike lanes indicate a preferential or exclusive space for bicycle travel along an arterial street. Bike lanes have been found to provide more consistent separation between bicyclists and passing motorists. Marking bicycle lanes can also benefit pedestrians — as turning motorists slow and yield more to bicyclists, they will also be doing so for pedestrians.

Bike lanes are typically designated by striping and/or signing, although colored pavement (e.g., blue or red bike lanes, though they are not an accepted MUTCD standard) has also been used in certain situations. As striping bike lanes reduces the space dedicated to motor vehicles, safety may be enhanced for pedestrians who wish to cross the street. Bicycle lanes also provide a buffer between motor vehicle traffic and pedestrians when sidewalks are immediately adjacent to the curb. On high-speed, high-volume roads, it may be more appropriate to provide a multi-use path to physically separate both bicyclists and pedestrians from motor vehicle traffic.



A well-marked bicycle lane and bicycle parking in Cambridge, Massachusetts.

### Typical Optional Word and Symbol Pavement Markings for Bicycle Lanes



#### Purpose:

- Create on-street travel facilities for bicyclists.
- Narrow the roadway to encourage lower motor vehicle speeds.
- Provide additional separation between pedestrians and motor vehicles.
- Adding on-street bike lanes reduces the distance pedestrians must travel to cross automobile lanes.

#### Considerations:

- All roads should be evaluated for on-street bicycle facilities.
- Provide adequate space between the bike lane and parked cars so that open doors do not create a hazard for bicyclists.

#### Estimated Cost:

The cost of installing a bike lane is approximately \$3,100 to \$31,000 per kilometer (\$5,000 to \$50,000 per mile), depending on the condition of the pavement, the need to remove and repaint the lane lines, the need to adjust signalization, and other factors. It is most cost efficient to create bicycle lanes is during street reconstruction, street resurfacing, or at the time of original construction.

## 9. Roadway Narrowing

Roadway narrowing can be achieved in several different ways:

- Lane widths can be reduced 10 or 11 feet and excess asphalt striped with a bicycle lane or shoulder.
- Travel lanes can be removed.
- The street can be physically narrowed by extending sidewalks and landscaped areas, or by adding on-street parking within the former curb lines.

This can reduce vehicle speeds along a roadway section and enhance movement and safety for pedestrians. Bicycle travel will also be enhanced and bicyclist safety improved when bicycle lanes are added.



Before



After



Colored asphalt has been used to identify bike lanes on this street in Holland. The bike lanes visually narrow the street and help reduce speeds. Although the curb-to-curb width is more than 30 feet, the motorist only sees 11 feet of driving space.

### Purpose:

- Multiple benefits of lower vehicle speeds, increased safety, and redistributing space to other users.

### Considerations:

- Bicyclists must be safely accommodated. Bike lanes or wide curb lanes are needed if motor vehicle volume and/or speeds are high.
- Road narrowing must consider school bus and emergency service access and truck volumes.
- Evaluate whether narrowing may encourage traffic to divert to other local streets in the neighborhood.

### Estimated Cost:

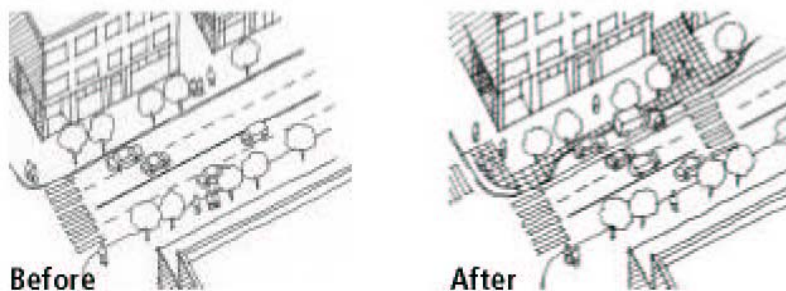
Adding striped shoulders or on street bike lanes can cost as little as \$620 per kilometer (\$1,000 per mile) if the old paint does not need to be changed. The cost for restriping a kilometer of street to bike lanes or reducing the number of lanes to add on street parking is \$3,100 to \$6,200 (\$5,000 to \$10,000 per mile), depending on the number of old lane lines to be removed. Constructing a raised median or widening a sidewalk can cost \$62,000 or more per kilometer (\$100,000 or more per mile).

## 10. Reducing Number of Lanes

Some roads have more travel lanes than necessary and are difficult to cross because of their width. Reducing the number of lanes on a multi-lane roadway can reduce crossing distances for pedestrians and may slow vehicle speeds. A traffic analysis should be done to determine whether the number of lanes on a roadway (many of which were built without such an analysis) is appropriate. Level-of-service analysis for intersections should not dictate the design for the entire length of roadway. For example, a four-lane undivided road can be converted to one through lane in each direction, with a center left turn lane or with a raised median, and turn pockets and bicycle lanes on both sides of the roadway. Turning pockets may be needed only at specific locations.

Depending on conditions, it may also be possible to add on-street parking while allowing for bicycle lanes on both sides of the street — instead of a center turn lane. If no sidewalks exist along the roadway, these should be added. If sidewalks exist, and there is adequate room, a landscaped buffer is desirable to separate pedestrians from the travel lane.

A typical three-lane configuration (two travel lanes and a center turn lane) also has advantages for motorists. Through traffic can maintain a fairly constant speed, while left-turning drivers can enter the center turn lane to wait.



This street in Cambridge, Massachusetts was reduced from four lanes to three. The conversion introduced wider sidewalks, additional space for landscaping, street furniture and cafes, and bicycle lanes.

### Purpose:

- Remedy a situation where there is excess capacity.
- Provide space for pedestrians, bicyclists, and parked cars.
- Reduce crossing width and help optimize signal timing.
- Improve social interaction and neighborhood feel along the street.

### Considerations:

- Roadway capacity operation and overall road safety need to be considered before reducing the number of lanes.
- Ensure street connections so major arterials can be crossed at controlled intersections.

### Estimated Cost:

The cost for restriping a kilometer of four-lane street to one lane in each direction plus a two-way, left-turn lane and bike lanes is about \$3,100 to \$12,400 (\$5,000 to \$20,000 per mile), depending on the amount of lane lines that need to be repainted. The estimated cost of extending sidewalks or building a raised median is much higher and can cost \$62,000 per kilometer (\$100,000 per mile) or more.

If a reconfiguration is done after repaving or with an overlay, and curbs do not need to be changed, there is little or no cost for the change.



## 11. Driveway Improvements

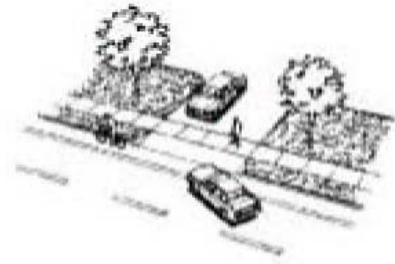
Several driveway designs may cause safety and access problems for pedestrians, including excessively wide and/or sloped driveways, driveways with large turning radii, multiple adjacent driveways, driveways that are not well defined, and driveways where motorist attention is focused on finding a gap in congested traffic. In addition, driveways without a level sidewalk landing may not comply with ADA standards.

Examples of driveway improvements include narrowing or closing driveways, tightening turning radii, converting driveways to right-in only or right-out only movements, and providing median dividers on wide driveways.

When driveways cross sidewalks, it is necessary to maintain a sidewalk level across the driveway of no more than 2 percent side slope (see sketch). This is more usable for all pedestrians, especially those in wheelchairs and makes it clear to motorists that they must watch for pedestrians. It is important to minimize large signs and bushes at driveways to improve the visibility between motorists and pedestrians. The sidewalk material (usually concrete) should be maintained across the driveway as well.



The top example shows a driveway with a wide apron to accommodate two adjacent driveways and a landscaped planting strip. The driveway in the lower picture demonstrates how to provide driveway access across a sidewalk while maintaining a continuous, level walkway for pedestrians.



### Purpose:

- Reduce pedestrian/motor vehicle conflicts.
- Improve access for people with disabilities.
- Improve visibility between cars and pedestrians at driveways.

### Considerations:

- It is best to properly design and consolidate driveways at the outset. Local regulations can require appropriate design when driveways are created.

### Estimated Cost:

No additional cost if part of original construction.



## 12. Raised Medians

Medians are raised barriers in the center portion of the street or roadway that can serve as a place of refuge for pedestrians who cross a street midblock or at an intersection location. They may provide space for trees and other landscaping that, in turn, can help change the character of a street and reduce speeds. They also have benefits for motorist safety when they replace center turn lanes. Desired turning movements need to be carefully provided so that motorists are not forced to travel on inappropriate routes, such as residential streets, or make unsafe U-turns.

Continuous medians may not be the most appropriate treatment in every situation. In some cases, separating opposing traffic flow and eliminating left-turn friction can increase traffic speeds by decreasing the perceived friction of the roadway. They may also take up space that can be better used for wider sidewalks, bicycle lanes, landscaping buffer strips, or on-street parking and may cause problems for emergency vehicles. In some environments, medians can be constructed in sections, creating an intermittent rather than continuous median. Another good alternative device for two-, three- or four-lane roads is the crossing island, which provides a crossing refuge for pedestrians and, in some designs, aids in decreasing vehicle speeds.

Raised medians are most useful on high-volume, high-speed roads, and they should be designed to provide tactile cues for pedestrians with visual impairments to indicate the border between the pedestrian refuge area and the motorized vehicle roadway.



This attractive median provides curb ramps and median openings for wheelchair users.



### Purpose:

- Manage motor vehicle traffic and provide comfortable left hand turning pockets with fewer or narrower lanes.
- Provide a refuge for pedestrians crossing the street.
- Provide space for street trees and other landscaping.

### Considerations:

- Ensure that there is enough room for wider sidewalks, bike lanes, and planting strips before proceeding with construction.
- Landscaping in medians should not obstruct the visibility between pedestrians and approaching motorists.
- Median crossings at midblock and intersection locations must be fully accessible by means of ramps or cutthroughs, with detectable warnings.

### Estimated Cost:

The cost for adding a raised median is approximately \$15,000 to \$30,000 per 30 m (\$15,000 to \$30,000 per 100 ft), depending on the design, site conditions, and whether the median can be added as part of a utility improvement or other street construction project.

### 13. One-Way / Two-Way Street Conversions

One-way streets can simplify crossings for pedestrians, who must look for traffic in only one direction. While studies have shown that conversion of two-way streets to one-way generally reduces pedestrian crashes, one-way streets tend to have higher speeds, which creates new problems. If a street is converted to one-way, it should be evaluated to see if additional changes should be made, especially if the street or lanes are overly wide. Also, traffic circulation in the surrounding area must be carefully considered before conversion to one-way streets.

As a system, one-way streets can increase travel distances of motorists and bicyclists and can create confusion, especially for non-local residents. One-way streets operate best in pairs, separated by no more than 0.4 km (0.25 mi). Conversion costs can be quite high to build cross-overs where the one-way streets convert back to two-way streets, and to rebuild traffic signals and revise striping, signing, and parking meters.

One-way streets work best in downtown or very heavily congested areas. One-way streets can offer improved signal timing and accommodate odd-spaced signals; however, signal timing for arterials that cross a one-way street pair is difficult.

Conversions can go the other way as well: some places are returning one-way streets back to two-way to allow better local access to businesses and homes and to slow traffic. Two-way streets tend to be slower due to “friction,” especially on residential streets without a marked center line and they may also eliminate the potential for multiple-threat crashes that exists on multi-lane, one-way streets.



Cars are forced to drive slowly on this two-way street with parking.

#### Purpose:

- Manage traffic patterns.
- Reduce conflicts.
- A one-way to two-way conversion will generally reduce speeds.

#### Considerations:

- Consider impacts on other streets.
- Be aware that one-way streets may decrease automobile accessibility to businesses.
- Be careful not to create speeding problems where a two-way street is changed to a one-way street. Redesign or traffic-calming measures may be required to address this.
- Will improve signal synchronization on the one way streets, but will hinder synchronization on cross-streets.
- Generally requires a one-way pair, with two nearby streets being converted to one-way.

#### Estimated Cost:

\$12,400 to \$124,000 per kilometer (\$20,000 to \$200,000 per mile), depending on length of treatment and whether the conversion requires modification to signals. If crossovers are needed at the end points of the one way streets, they may cost millions of dollars.

## 14. Curb Radius Reduction

One of the common pedestrian crash types involves a pedestrian who is struck by a right-turning vehicle at an intersection. A wide curb radius typically results in high-speed turning movements by motorists. Reconstructing the turning radius to a tighter turn will reduce turning speeds, shorten the crossing distance for pedestrians, and also improve sight distance between pedestrians and motorists.

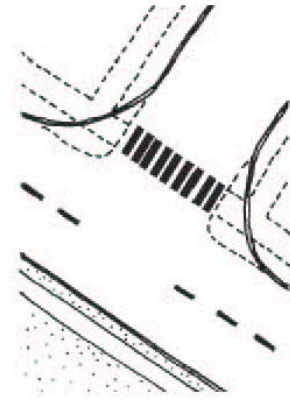
Nearby land uses and types of road users should be considered when designing an intersection so that curb radii are sized appropriately. If a curb radius is made too small, large trucks or buses may ride over the curb, placing pedestrians in danger.

Where there is a parking and/or bicycle lane, curb radii can be even tighter, because the vehicles will have more room to negotiate the turn. Curb radii can, in fact, be tighter than any modern guide would allow: older cities in the Northeast and in Europe frequently have radii of 2 to 5 feet without suffering any detrimental effects.

More typically, in new construction, the appropriate turning radius is about 5 feet and about 25 feet for arterial streets with a substantial volume of turning buses and/or trucks. Tighter turning radii are particularly important where streets intersect at a skew. While the corner characterized by an acute angle may require a slightly larger radius to accommodate the turn moves, the corner with an obtuse angle should be kept very tight, to prevent high-speed turns.



Tight corner radii keep turning vehicle speeds down and minimize crossing distances for pedestrians. This demonstration project uses inexpensive curbing to reduce the curb radius.



### Purpose:

- Safer intersection design.
- Slow right-turning vehicles.
- Reduce crossing distances, improve visibility between drivers and pedestrians, and provide space for accessible curb ramps.
- Shorter crossing distances can lead to improved signal timing.

### Considerations:

- Consider effective radii by taking into account parking and bicycle lanes.
- Make sure that public maintenance vehicles, school buses, and emergency vehicles are accommodated.
- Smaller radii reduce overall crossing distance and reduce time needed for the pedestrian phase.

### Estimated Cost:

Construction costs for reconstructing a tighter turning radii are approximately \$2,000 to \$20,000 per corner, depending on site conditions (e.g., drainage and utilities may need to be relocated).

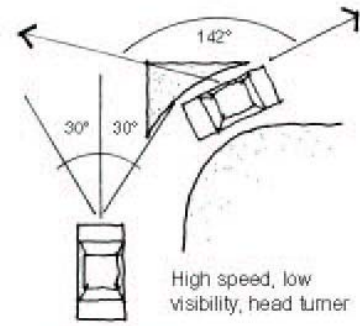
## 15. Improved Right-Turn Slip-Lane Design

Intersections should be designed to accommodate safe pedestrian crossings using tight curb radii, shorter crossing distances, and other tools as described in this document. While right-turn slip lanes are generally a negative facility from the pedestrian perspective due to the emphasis on easy and fast motor vehicle travel, they can be designed to be less problematic. At many arterial street intersections, pedestrians have difficulty crossing due to right-turn movements and wide crossing distances. Well-designed right-turn slip lanes provide pedestrian crossing islands within the intersection and a right-turn lane that is designed to optimize the right-turning motorist's view of the pedestrian and of vehicles to their left. Pedestrians are able to cross the right-turn lane and wait on the refuge island for their walk signal.

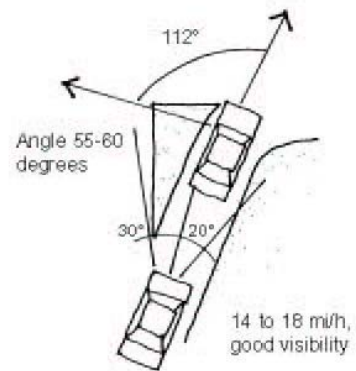
The problem for pedestrians is that many slip lanes are designed for unimpeded vehicular movement. The design of corner islands, lane width, and curb radii of right-turn slip lanes should discourage high speed turns, while accommodating large trucks and buses. The triangular "porkchop" corner island that results should have the "tail" pointing to approaching traffic. Since the traffic signal is timed based on a shorter crossing, the pedestrian crossing time has a much smaller influence on the timing of the signal. This design has an additional advantage for the pedestrian; the crosswalk is located in an area where the driver is still looking ahead. Older designs place the crosswalk too far down, where the driver is already looking left for a break in the traffic.



A slip lane designed at the proper angle, as shown on the right side of intersection, provides the driver with greater visibility of pedestrians. The lane on the left creates a higher speed, lower visibility right turn.



Current AASHTO Standard



Recommended Design  
1mi/h = 1.61 km/h

### Purpose:

- Separate right-turning traffic.
- Slow turning-vehicle speeds and improve safety.
- Allow drivers to see approaching cross-street traffic more clearly.
- Reduce the crossing distance for pedestrians.

### Considerations:

- Evaluate first whether a slip lane is really necessary.

### Estimated Cost:

Approximately \$50,000 to \$200,000 to reconfigure roadway, add striping and constructing an island, assuming additional right-of-way is not required.



## C. Intersection Design





## 16. Roundabouts

A modern roundabout is built with a large, often circular, raised island located at the intersection of an arterial street with one or more crossing roadways and may take the place of a traffic signal. Traffic maneuvers around the circle in a counterclockwise direction, and then turns right onto the desired street. All traffic yields to motorists in the roundabout and left-turn movements are eliminated. Unlike a signalized intersection, vehicles generally flow and merge through the roundabout from each approaching street without having to stop.

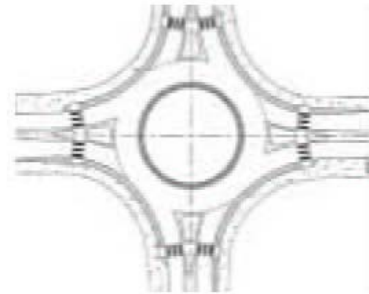
Roundabouts need to accommodate pedestrians and bicyclists. It is important that automobile traffic yields to pedestrians crossing the roundabout. Splitter islands at the approaches slow vehicles and allow pedestrians to cross one traffic lane at a time. Single-lane approaches can be designed to keep speeds down to safer levels and allow pedestrians to cross. Multi-lane approaches have higher speeds, create multiple threats for pedestrians, and are not recommended.

Pedestrians may need to travel out of their way to cross the intersection, but generally have a shorter wait than with a signal and have only one direction of approaching traffic to watch for. Wayfinding and gapselection cues need to be adequately addressed in the design of roundabouts so that roundabouts are not a barrier to pedestrians with vision impairments. Accessible pedestrian signals and truncated domes placed at splitter islands are two possible solutions.

Bicyclists are also disadvantaged by roundabout design. Unless the road is narrow (one lane in each direction), speeds are slow, and traffic very light, bicyclists may not be able to share the road comfortably. Marking bicycle lanes through the roundabout has not been shown to be safer. In larger roundabouts, an off-road bicycle path may be necessary to allow cyclists to use the pedestrian route. This is inconvenient and takes longer but it will improve safety.



This Fort Pierce, Florida, roundabout is being constructed to reduce speeding, improve safety, and enhance the aesthetics of the community.



### Purpose:

- Provide good traffic management where the intersection is large, complex, and/or has more than four approach legs.
- Replace a traffic signal that is experiencing heavy traffic backup and congestion.
- Reduce speeds at intersection.
- Create a gateway into an area.

### Considerations:

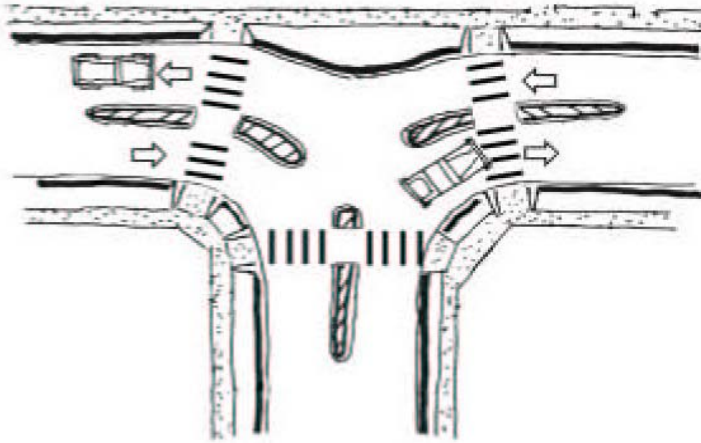
- Street widths and/or available right-of-way need to be sufficient to accommodate a properly designed roundabout.
- Roundabouts have a mixed record regarding pedestrian and bicyclist safety — a low design speed is required.
- Roundabouts are generally not appropriate for the intersections of multi-lane roads.
- Roundabouts often work best where there is a high percentage of left-turning traffic.
- Deflection on each leg of the intersection must be set to control speeds to 15-18 miles/hour.

### Estimated Cost:

The cost for a landscaped roundabout varies widely and can range from \$45,000 to \$150,000 for neighborhood intersections and up to \$250,000 for arterial street intersections, not including additional right-of-way acquisition. Yet, roundabouts have lower ongoing maintenance costs than traffic signals.

## 17. Modified T-Intersections

This design treatment is intended for certain T-intersections on lower volume streets in residential areas where there is a need to reduce the speeds of through traffic. It involves a gradual curb extension or bulb at the top of the T, such that vehicles are deflected slightly as they pass straight through the intersection (see diagram). This type of design can help to discourage cut-through traffic in a neighborhood and can reduce speeds at the intersection. If not properly designed, it can create confusion regarding priority of movement. Consider a mini-circle before installing this treatment.



This modified T-intersection in Portland, Oregon, is intended to reduce speeds of through traffic as well as restrict left-turning vehicles.

### Purpose:

- Reduce vehicle speeds through a T-intersection on a low-volume street.

### Considerations:

- Used when vehicle volumes are low to moderate.
- A mini-traffic circle may accomplish the same objective and may be less costly and confusing.
- If designed to eliminate some turning movements, the affected neighborhood residents should be consulted for input and an analysis of traffic patterns done to ensure that through traffic would not be diverted inappropriately.
- Pedestrian access must be accommodated through the island.

### Estimated Cost:

\$20,000 to \$60,000, depending on the design and whether drainage and utilities need to be relocated.

## 18. Intersection Median Barriers

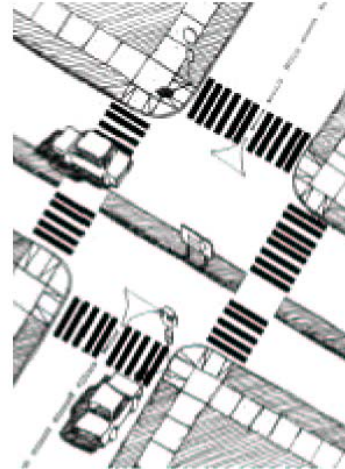
This shortened version of a raised curb median extends through the intersection to prevent cross-street through movements and left turning movements to cross-streets from the main street.

This treatment can benefit pedestrians who need to cross any leg of the intersection, but restricts vehicle entry into and out of neighborhoods and can therefore greatly reduce cut-through traffic. However, since this treatment can dramatically influence traffic patterns and have potentially negative consequences caused by shifting traffic, it should be used cautiously. Crossing islands can provide benefits to pedestrians if that is the desire. This is also a traffic management technique.

Cut-throughs must be incorporated into the design for pedestrian and bicyclist use.



Intersection median barriers need to keep walking and bicycling flowing freely through the neighborhood.



### Purpose:

- Reduce cut-through traffic on a neighborhood street.

### Considerations:

- Local residents need to be provided access so they do not have to drive excessive distances to their homes.
- An analysis of traffic patterns should be done to ensure that cut-through traffic would not be diverted to a nearby street.
- Design should ensure safe and convenient bicycle and pedestrian access.
- Ensure that emergency access is not negatively impacted. Some designs (e.g., high mountable curbs) may allow fire truck access, while inhibiting cars.

### Estimated Cost:

\$10,000 to \$20,000



## D. Traffic Calming



Traffic calming is a way to design streets, using physical measures, to encourage people to drive more slowly. It creates physical and visual cues that induce drivers to travel at slower speeds. Traffic calming is self enforcing. The design of the roadway results in the desired effect, without relying on compliance with traffic control devices such as signals, signs, and without enforcement. While elements such as landscaping and lighting do not force a change in driver behavior, they can provide the visual cues that encourage people to drive more slowly.

The reason traffic calming is such a powerful and compelling tool is that it has proven to be so effective. Some of the effects of traffic calming, such as fewer and less severe crashes, are clearly measurable. Others, such as supporting community livability, are less tangible, but equally important.

Experience throughout Europe, Australia, and North America has shown that traffic calming, if done correctly, reduces traffic speeds, the number and severity of crashes, and noise level. Research on traffic calming projects in the United States supports their effectiveness at decreasing automobile speeds, reducing the numbers of crashes, and reducing noise levels for specific contexts. Looking at a sample of various speed studies shows that typical speed reductions of 5 to 15 percent at the 85th percentile speed can be realized by the use of traffic calming measures — including speed tables, mini-circles, speed humps, and other standard traffic-calming devices. Use of several of the traffic-calming measures have also resulted in substantial reductions in motor vehicle crashes. For example, the implementation of traffic mini-circles in Seattle has resulted in a reduction of approximately 80 percent of intersection accidents.

The Institute of Transportation Engineers has arrived at the following definition of “traffic calming,” which is often used in the United States:

***“Traffic calming” is the combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behavior, and improve conditions for non-motorized street users.***

There are certain overall considerations that are applicable to both traffic management and traffic calming:

- Vehicle speed is more critical than volume in terms of safety and should be addressed first where there are monetary constraints.
- Neighborhood involvement is important to successful implementation. Rationale for traffic-calming and management measures should be explained clearly to community residents and installation of these treatments should incorporate public input.
- Traffic calming and management measures should fit into, and preferably enhance, the street environment.
- Traffic calming designs should be predictable and easy to understand by drivers and other users.



This midblock crossing is in Kalamazoo, Michigan. The landscaping and textured crosswalks are visually appealing and provide a clear message about where pedestrians can be expected to cross the street.



- Devices that meet multiple goals are usually more acceptable. For example, a raised crosswalk may be more understandable to motorists than a speed hump. The former has a clear goal, whereas the latter may be perceived as a nuisance.
- Treatments need to be well designed and based on current available information on their applications and effects. Information on U.S. experiences with various traffic-calming measures can be found in ITE's *Traffic Calming: State of the Practice*.
- Devices should accommodate emergency vehicles.
- Traffic-calming areas or facilities should be adequately signed, marked, and lit to be visible to motorists.
- Treatments need to be spaced appropriately to have the desired effect on speed — too far apart and they will have a limited effect, too close and they will be an unnecessary cost and annoyance. Devices usually need to be spaced about 300 to 500 feet apart. If they are spaced too far apart, motorists may speed up between them. This is particularly the case where the devices are added onto the street (e.g., speed humps). Whole street designs are usually able to create an environment that supports slower speeds for the entire length.
- Facilities should not be under designed or they will not work. Keeping the slopes too gradual for a speed table or curves too gentle for a chicane will not solve the problem and will appear as a waste of money and may ruin chances for future projects.
- Traffic calming measures should accommodate bicyclists and pedestrians with disabilities.
- If a measure is likely to divert traffic onto another local street, the area wide street system should be considered so as not to shift the problem from one place to another.
- Devices should be thought of as elements of a traffic-calming system and be placed to improve pedestrian conditions throughout an area.

Traffic-calming tools may be used in combination and are often most effective this way. The tools in this guide are organized into the following categories:

- Roadway narrowing.
- Lateral or horizontal shifts in the roadway.
- Raised devices (vertical devices).
- Complementary tools (landscaping and paving).
- Whole-street designs.

Some tools fall into multiple categories; however, for simplicity, they are listed only once.



Traffic calming improvements need to include input from and coordination with neighborhoods that are impacted.

## **Trials and Temporary Installations for Traffic Calming**

In communities trying traffic calming for the first time, it may be useful to lay out a new design with cones or temporary markings to test it. This provides emergency vehicle drivers, residents, and others with an opportunity to test the design to ensure that they are comfortable with it. Some communities have constructed elaborate temporary devices with concrete or plastic ("jersey") barriers. These can instill a negative reaction in the community due to their unaesthetic appearance and they do not generally have any significant benefits over the simpler test devices. Another option is to install more aesthetic test devices, such as painted flexible curbs that are bolted into the pavement and can easily be adjusted or removed.

## 19. Curb Extensions

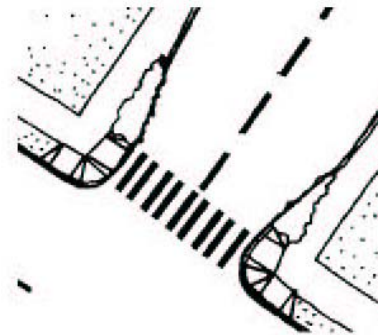
Curb extensions — also known as bulb-outs or neck downs — extend the sidewalk or curb line out into the parking lane, which reduces the effective street width. Curb extensions significantly improve pedestrian crossings by reducing the pedestrian crossing distance, visually and physically narrowing the roadway, improving the ability of pedestrians and motorists to see each other, and reducing the time that pedestrians are in the street.

Curb extensions placed at an intersection essentially prevent motorists from parking in or too close to a crosswalk or from blocking a curb ramp or crosswalk. Motor vehicles parked too close to corners present a threat to pedestrian safety, since they block sightlines, obscure visibility of pedestrians and other vehicles, and make turning particularly difficult for emergency vehicles and trucks. Motorists are encouraged to travel more slowly at intersections or midblock locations with curb extensions, as the restricted street width sends a visual cue to motorists. Turning speeds at intersections can be reduced with curb extensions (curb radii should be as tight as is practicable). Curb extensions also provide additional space for curb ramps and for level sidewalks where existing space is limited.

Curb extensions are only appropriate where there is an on-street parking lane. Curb extensions must not extend into travel lanes, bicycle lanes, or shoulders (curb extensions should not extend more than 6 feet from the curb). The turning needs of larger vehicles, such as school buses, need to be considered in curb extension design.



This curb extension in Venice, Florida, reduced motorist turning speeds by 6 to 8 miles/hour. Pedestrian crossing distance and time exposed to traffic was also reduced.



### Purpose:

- Improve safety for pedestrians and motorists at intersections.
- Increase visibility and reduce speed of turning vehicles.
- Encourage pedestrians to cross at designated locations.
- Prevent motor vehicles from parking at corners.
- Shorten crossing distance and reduce pedestrian exposure.

### Considerations:

- Curb extensions can provide adequate space on narrow sidewalks for curb ramps and landings.
- Curb extensions should only be used where there is a parking lane, and where transit and bicyclists would be traveling outside the curb edge for the length of the street.
- Midblock extensions provide an opportunity to enhance midblock crossings. Care should be taken to ensure that street furniture and landscaping do not block motorists' views of pedestrians.
- Where intersections are used by significant numbers of trucks or buses, the curb extensions need to be designed to accommodate them. However, it is important to take into consideration that those vehicles should not be going at high speeds, and most can make a tight turn at slow speeds.

## 19. Curb Extensions (continued)



A curb extension on an arterial street in Seattle, Washington. The crossing distance for pedestrians is substantially reduced by the installation of this device. The extension is limited to 1.8 m (6 ft) to allow bicyclists to pass safely.



A curb extension on a residential street in Seattle, Washington. In addition to improving pedestrian safety at this intersection, the extension provides additional sidewalk space for a bicycle rack and assessable curb ramp.

- It is not necessary for a roadway to be designed so that a vehicle can turn from a curb lane to a curb lane. Vehicles can often encroach into adjacent lanes safely where volumes are low and/or speeds are slow. Speeds should be slower in a pedestrian environment.
- Emergency access is often improved through the use of curb extensions if intersections are kept clear of parked cars. Fire engines and other emergency vehicles can climb a curb where they would not be able to move a parked car. At midblock locations, curb extensions can keep fire hydrants clear of parked cars and make them more accessible.
- Curb extensions can create additional space for curb ramps, landscaping, and street furniture that are sensitive to motorist and pedestrian sightlines; this is especially beneficial where sidewalks are otherwise too narrow.
- Ensure that curb extension design facilitates adequate drainage.

### Estimated Cost:

Curb extensions cost from \$2,000 to \$20,000 per corner, depending on design and site conditions. Drainage is usually the most significant determinant of cost. If the curb extension area is large and special pavement and street furnishings and planting are included, costs would also be higher. Costs can go up significantly if something major, such as a utility pole or controller box, is moved.

## 20. Chokers

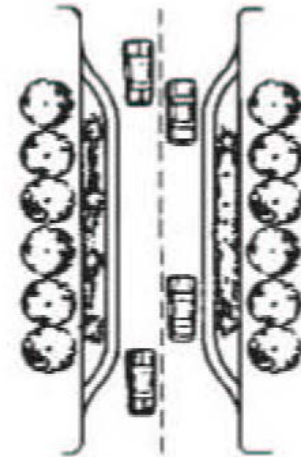
Chokers are curb extensions that narrow a street by widening the sidewalks or planting strips, effectively creating a pinch point along the street. Chokers can be created by bringing both curbs in, or they can be done by more dramatically widening one side at a mid-block location.

They can also be used at intersections, creating a gateway effect when entering a street.

Chokers can have a dramatic effect by reducing a two-lane street to one lane at the choker point (or two narrow lanes), requiring motorists to yield to each other or slow down. In order for this to function effectively, the width of the travel way cannot be wide enough for two cars to pass: 16 feet is generally effective (and will allow emergency vehicles to pass unimpeded). This kind of design is usually only appropriate for low-volume, low-speed streets.



This choker on a two-way roadway in Seattle, Washington, narrows the street from two lanes to one. Traffic is forced to slow down and, in some cases, wait for an approaching vehicle to pass before proceeding.



### Purpose:

- Slow vehicles at a mid-point along the street.
- Create a clear transition between a commercial and a residential area.
- Narrow overly wide intersections and midblock areas of streets.
- Add room along the sidewalk or planting strip for landscaping or street furniture.

### Considerations:

- If two travel lanes are maintained on a two-way street and/or the travel-lane widths are unchanged (at the location of the choker), it will have a minimal effect on speed.
- Consult with local fire and sanitation departments before setting minimum width.
- Ensure that bicyclist safety and mobility are not diminished.

### Estimated Cost:

\$5,000 to \$20,000, depending on site conditions and landscaping. Drainage may represent a significant cost.



## 21. Crossing Islands

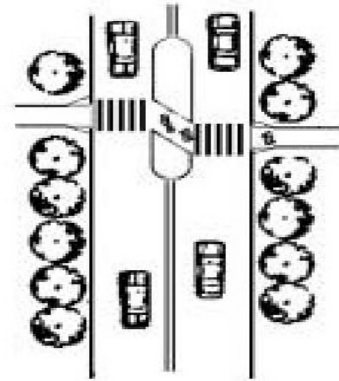
Crossing islands — also known as center islands, refuge islands, pedestrian islands, or median slow points — are raised islands placed in the center of the street at intersections or midblock to help protect crossing pedestrians from motor vehicles. Center crossing islands allow pedestrians to deal with only one direction of traffic at a time, and they enable them to stop partway across the street and wait for an adequate gap in traffic before crossing the second half of the street. Where midblock or intersection crosswalks are installed at uncontrolled locations (i.e., where no traffic signals or stop signs exist), crossing islands should be considered as a supplement to the crosswalk. They are also appropriate at signalized crossings. If there is enough width, center crossing islands and curb extensions can be used together to create a highly improved pedestrian crossing. Detectable warnings are needed at cut-throughs to identify the pedestrian refuge area.

This kind of facility has been demonstrated to significantly decrease the percentage of pedestrian crashes. The factors contributing to pedestrian safety include reduced conflicts, reduced vehicle speeds approaching the island (the approach can be designed to force a greater slowing of cars, depending on how dramatic the curvature is), greater attention called to the existence of a pedestrian crossing, opportunities for additional signage in the middle of the road, and reduced exposure time for pedestrians.

Curb extensions may be built in conjunction with center crossing islands where there is on-street parking. Care should be taken to maintain bicycle access. Bicycle lanes (or shoulders, or whatever space is being used for bicycle travel) must not be eliminated or squeezed in order to create the curb extensions or islands.



Crossing islands allow pedestrians to be connected with one direction of traffic at a time. The roadway markings in the design shown here also help make motorists aware that a pedestrian may be coming.



### Purpose:

- Enhance pedestrian crossings, particularly at unsignalized crossing points.
- Reduce vehicle speeds approaching pedestrian crossings.
- Highlight pedestrian crossings.

### Considerations:

- Do not squeeze bicycle access.
- Illuminate or highlight islands with street lights, signs, and/or reflectors to ensure that motorists see them.
- Design islands to accommodate pedestrians in wheelchairs. A cut-through design such as depicted in the diagram works best if the pedestrian refuge area is identified by detectable warnings.
- Crossing islands at intersections or near driveways may affect left-turn access.

### Estimated Cost:

Costs range from \$4,000 to \$30,000. The cost for an asphalt island or one without landscaping is less than the cost of installing a raised concrete pedestrian island with landscaping.

## 22. Chicanes

Chicanes create a horizontal diversion of traffic and can be gentler or more restrictive depending on the design.

**Diverting the Path of Travel.** Shifting a travel lane has an effect on speeds as long as the taper is not so gradual that motorists can maintain speeds. For traffic calming, the taper lengths may be as much as half of what is suggested in traditional highway engineering.

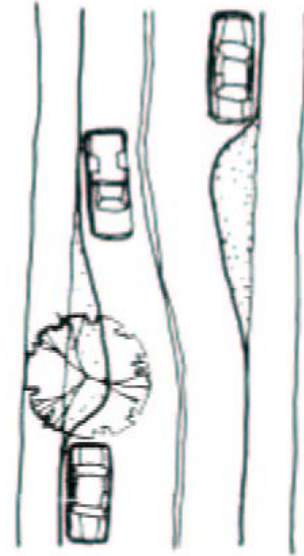
Shifts in travel ways can be created by shifting parking from one side to the other (if there is only space for one side of parking) or by building landscaped islands (islands can also effectively supplement the parking shift).

**Diversion Plus Restriction (Angled Slow Points).** Diverting the path of travel plus restricting the lanes (as described under "Chokers") usually consists of a series of curb extensions, narrowing the street to two narrow lanes or one lane at selected points and forcing motorists to slow down to maneuver between them. Such treatments are intended for use only on residential streets with low traffic volumes.

If there is no restriction (i.e., the number of lanes is maintained), chicanes can be created on streets with higher volumes, such as collectors or minor arterials.



The chicanes pictured above narrow this residential street to one lane and require traffic to move slowly.



### Purpose:

- Reduce vehicle speeds.
- Add more green landscaping) to a street.

### Considerations:

- Chicanes may reduce on street parking.
- Maintain good visibility by planting only low shrubs or trees with high canopies.
- Ensure that bicyclist safety and mobility are not diminished.

### Estimated Cost:

Costs for landscaped chicanes are approximately \$10,000 (for a set of three chicanes) on an asphalt street and \$15,000 to \$30,000 on a concrete street. Drainage and utility relocation often represents the most significant cost consideration.

## 23. Mini-Circles

Mini-circles are raised circular islands constructed in the center of residential street intersections (generally not intended for use where one or both streets are arterial streets). They reduce vehicle speeds by forcing motorists to maneuver around them. Mini-circles have been found to reduce motor vehicle crashes by an average of 90 percent in Seattle, WA. Drivers making left turns are directed to go on the far side of the circle (see diagram at right) prior to making the turn. Signs should be installed directing motorists to proceed around the right side of the circle before passing through or making a left turn. Mini-circles are commonly landscaped (bushes, flowers, or grass), most often at locations where the neighborhood has agreed to maintain the plants. In locations where landscaping is not feasible, traffic circles can be enhanced through specific pavement materials.

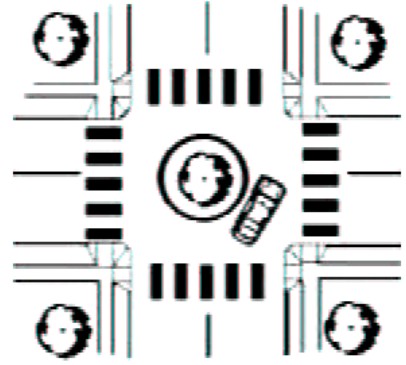
Mini-circles are an intersection improvement as well as a traffic-calming device and can take the place of a signal or four-way stop sign. Many unwarranted four-way stop signs are installed because of the demand for action by the community.

Mini-circles must be properly designed to slow vehicles and benefit pedestrians and bicyclists. Right-turning vehicles are not controlled at an intersection with a mini-circle, potentially putting pedestrians and bicyclists at risk. Therefore, short curb radii should complement this treatment to discourage fast right-turn maneuvers. Traffic circles with cuts in splitter islands make crossing easier for pedestrians, especially wheelchair users, and control vehicle movements entering the intersection, but require more space. Pedestrians with vision impairments will find fewer cues to identify a gap to cross when traffic does not stop.

The occasional larger vehicle going through an intersection with a traffic circle (e.g., a fire truck or moving van) can be accommodated by creating a mountable curb in the outer portion of the circle.



A traffic mini-circle helps reduce vehicle speeds, but still allows cars and emergency vehicles to pass through the intersection with little difficulty.



### Purpose:

- Manage traffic at intersections where volumes do not warrant a stop sign or a signal.
- Reduce crash problems at the intersection of two local streets.
- Reduce vehicle speeds at the intersection.

### Considerations:

- Do not make generous allowances for motor vehicles by increasing the turning radii — this compromises pedestrian and bicyclist safety.
- Larger vehicles that need access to streets (e.g., school buses and fire engines) may need to make left hand turns in front of the circle.
- Use yield, not stop, controls.
- Mini-circle landscaping should not impede the sight distance.
- Treat a series of intersections along a local street as part of a neighborhood traffic improvement program.

### Estimated Cost:

The cost is approximately \$6,000 for a landscaped traffic mini-circle on an asphalt street and about \$8,000 to \$12,000 for a landscaped mini-circle on a concrete street.

## 24. Speed Humps

## 25. Speed Tables

Speed humps are paved (usually asphalt) and approximately 3 to 4 inches high at their center, and extend the full width of the street with height tapering near the drain gutter to allow unimpeded bicycle travel. Speed humps should not be confused with the speed "bump" that is often found in mall parking lots. There are several designs for speed humps. The traditional 12 foot hump has a design speed of 15 to 20 miles/hour, a 14 foot hump a few miles per hour higher, and a 22 foot table has a design speed of 25 to 30 miles/hour. The longer humps are much gentler for larger vehicles.

A "speed table" is a term used to describe a very long and broad speed hump, or a flat-topped speed hump, where sometimes a pedestrian crossing is provided in the flat portion of the speed table. The speed table can either be parabolic, making it more like a speed hump, or trapezoidal, which is used more frequently in Europe. Speed tables can be used in combination with curb extensions where parking exists.



Speed humps are frequently used on some residential streets to reduce speeds. However, they can create unwanted noise if they are too severe, or cause motorists to slow down more than is necessary.

### Purpose:

- Reduce vehicle speeds. Raised measures tend to have the most predictable speed reduction impacts.
- Enhance the pedestrian environment at pedestrian crossings.

### Considerations:

- Do not use if on a sharp curve or if the street is on a steep grade.
- If the street is a bus route or primary emergency route, the design must be coordinated with operators. Usually, some devices are acceptable if used prudently — one device may be appropriate and may serve the primary need (e.g., if there is a particular location along a street that is most in need of slowing traffic and improving pedestrian conditions).
- The aesthetics of speed humps and speed tables can be improved through the use of color and specialized paving materials.
- Noise may increase, particularly if trucks use the route regularly.
- May create drainage problems on some streets.
- Speed humps and tables should be properly designed to reduce the chance of back problems or other physical discomfort experienced by vehicle occupants.

### Estimated Cost:

The cost for each speed hump is approximately \$1,000. Speed tables are \$2,000 to \$15,000, depending on drainage conditions and materials used.



## 26. Raised Intersections

### 27. Raised Pedestrian Crossings

A raised intersection is essentially a speed table (see photograph below) for the entire intersection. Construction involves providing ramps on each vehicle approach, which elevates the entire intersection to the level of the sidewalk. They can be built with a variety of materials, including asphalt, concrete, stamped concrete, or pavers. The crosswalks on each approach are also elevated as part of the treatment to enable pedestrians to cross the road at the same level as the sidewalk, eliminating the need for curb ramps. Use detectable warnings to mark the boundary between the sidewalk and the street.

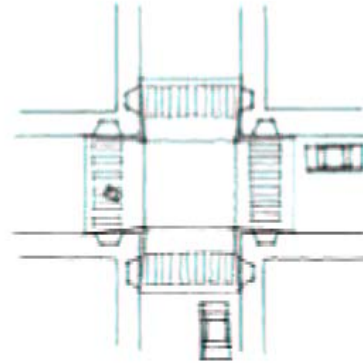
A raised pedestrian crossing is also essentially a speed table, with a flat portion the width of a crosswalk, usually 10 to 15 foot. Raised intersections and crosswalks encourage motorists to yield. On one street in Cambridge, MA, motorists yielding to pedestrians crossing at the raised devices went from approximately 10 percent before installation of the project to 55 percent after installation.



A raised intersection slows all vehicular movements through the intersection and improves pedestrian crossings in all directions.



.A raised pedestrian crossing provides a continuous route for the pedestrian at the same level as the sidewalk. Pavement markings on the slope (inlay type) make the crossing visible to motorists.



#### Purpose:

- Reduce vehicle speeds.
- Enhance the pedestrian environment at the crossings.

#### Considerations:

- Don't use if on a sharp curve or if the street is on a steep grade.
- May not be appropriate if the street is a bus route or emergency route. One device may be necessary and serve the primary need. Several raised devices may be disruptive, so other measures should be considered.
- Speed tables and raised crosswalks and intersections can be an urban design element through the use of special paving materials.
- Detectable warning strips at edges enable pedestrians with vision impairments to detect the crossing.
- Care must be taken to manage drainage.

#### Estimated Cost:

Raised crosswalks are approximately \$2,000 to \$15,000, depending on drainage conditions and material used. The cost of a raised intersection is highly dependent on the size of the roads. They can cost from \$25,000 to \$75,000.

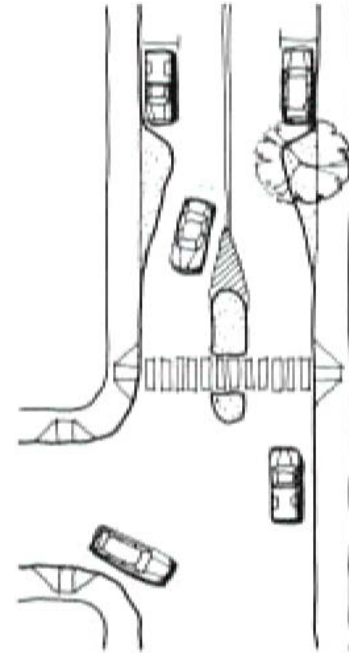


**28. Gateways**

A gateway is a physical or geometric landmark that indicates a change in environment from a higher speed arterial or collector road to a lower speed residential or commercial district. They often place a higher emphasis on aesthetics and are frequently used to identify neighborhood and commercial areas within a larger urban setting. Gateways may be a combination of street narrowing, medians, signing, archways, roundabouts, or other identifiable feature. Gateways should send a clear message to motorists that they have reached a specific place and must reduce speeds. This can help achieve the goal of meeting expectations and preparing motorists for a different driving environment. Gateways are only an introduction and slower speeds are not likely to be maintained unless the entire area has been redesigned or other traffic-calming features are used.



The combination of landscaping and a short median create a gateway to this neighborhood.



**Purpose:**

- Create an expectation for motorists to drive more slowly and watch for pedestrians when entering a commercial, business, or residential district from a higher speed roadway.
- Create a unique image for an area.

**Considerations:**

- Traffic-slowing effects will depend upon the device chosen and the overall traffic calming plan for the area.

**Estimated Cost:**

Varies widely depending on the measures chosen.

## 29. Landscaping

The careful use of landscaping along a street can provide separation between motorists and pedestrians, reduce the visual width of the roadway (which can help to reduce vehicle speeds), and provide a more pleasant street environment for all. This can include a variety of trees, bushes, and/or flowerpots, which can be planted in the buffer area between the sidewalk or walkway and the street.

The most significant issue with any landscaping scheme is ongoing maintenance. Some communities have managed effectively by creating homeowners associations to pay for landscape maintenance or through the volunteer efforts of neighbors. Others have found them to be unreliable and budget for public maintenance instead. Consider adding irrigation systems in areas with extensive planting.

Choosing appropriate plants, providing adequate space for maturation, and preparing the ground can help ensure that they survive with minimal maintenance, and don't buckle the sidewalks as they mature. The following guidelines should be considered: plants should be adapted to the local climate and fit the character of the surrounding area — they should survive without protection or intensive irrigation; and plant's growth patterns should not obscure signs or pedestrians' and motorists' views of each other.



Landscaping with low shrubs, ground cover, and mature trees that are properly pruned can add shade, color, and visual interest to a street.

### Purpose:

- Enhance the street environment.
- Calm traffic by creating a visual narrowing of the roadway.

### Considerations:

- Maintenance must be considered and agreed to up-front, whether it is the municipality or the neighborhood residents who will take responsibility for maintenance.
- Shrubs should be low-growing and trees should be trimmed up to at least 8 to 10 feet to ensure that sight distances and head room are maintained and personal security is not compromised.
- Plants and trees should be chosen with care to match the character of the area; be easily maintained; and not create other problems, such as buckling sidewalks.

### Estimated Cost:

Opportunities for funding landscaping are often more flexible than for major street changes. For example, the cost of the actual landscaping may be paid for by the corresponding neighborhood or business groups. Often, municipalities will pay for the initial installation and homeowners associations, neighborhood residents, or businesses agree to maintain anything more elaborate than basic tree landscaping.

### 30. Specific Paving Treatments

Paving materials are important to the function and look of a street, both in the road and on the sidewalk. Occasionally, paving materials in and of themselves act as a traffic-calming device (e.g., when the street is paved in brick or cobblestone). However, some of these materials may be noisy and unfriendly to bicyclists, pedestrians, wheelchairs, or snowplow blades. In particular, cobblestones should not be used in the expected pedestrian or bicycle path, although they may be used as aesthetic elements in a streetscape design. Smooth travel surfaces are best for all pedestrians.

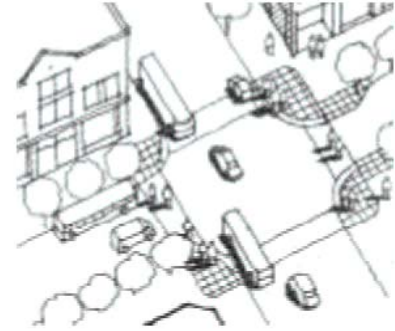
The pedestrian walkway material should be firm, planar, and slip resistant. Concrete is the preferred walking surface. A different look can be achieved by using stamped concrete or concrete pavers, which are available in a variety of colors and shapes; however, jointed surfaces may induce vibration, which can be painful to some pedestrians. They can also be used on the top of raised devices.

It is important to ensure crosswalk visibility. High visibility markings are often best. Textured crosswalks should be marked with reflective lines since these types of crosswalks are not as visible, especially at night or on rainy days.

Colored paving can often enhance the function of portions of the roadway, such as a colored bicycle lane. This can create the perception of street narrowing, in addition to enhancing the travel facility for bicyclists.



Brick or cobblestone streets help slow traffic and create a feeling that the street is not



#### Purpose:

- Send a visual cue about the function of a street.
- Create an aesthetic enhancement of a street.
- Delineate separate space for pedestrians or bicyclists.

#### Considerations:

- Slippery surfaces, such as smooth granite and paint, and uneven surfaces, such as cobblestones and brick, should not be used in the primary pedestrian or bicycle travel paths. Bumpy surfaces may be especially uncomfortable for wheelchair users and a tripping hazard for all pedestrians.
- Coordinate choice and placement of materials with maintenance agencies.
- Design and maintenance must ensure crosswalk visibility over time.
- Using materials such as bricks and cobblestones may increase the cost of construction and maintenance.

#### Estimated Cost:

Variable; materials requiring hand labor (cobblestones or pavers) have a higher cost.



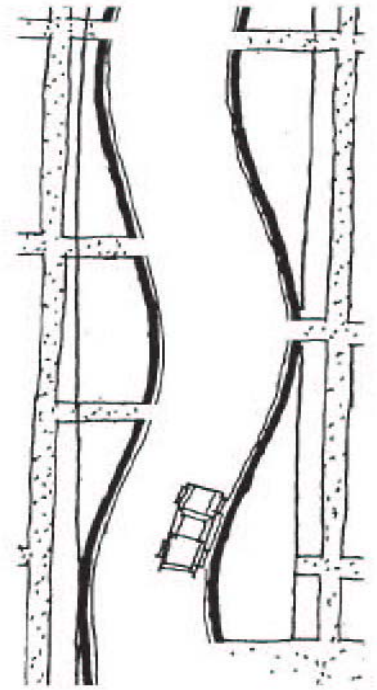
## 31. Serpentine Design

Serpentine design refers to the use of a winding street pattern with built-in visual enhancements through a neighborhood, which allow for through movement while forcing vehicles to slow. The opportunities for significant landscaping can be used to create a park-like atmosphere.

Such designs are usually implemented with construction of a new neighborhood street or during reconstruction of an existing street corridor. This type of design can be more expensive than other traffic calming options and needs to be coordinated with driveway access.



The serpentine street is a curving roadway that helps slow traffic through the use of curbs and landscaping.



### Purpose:

- Change to the entire look of a street to send a message to drivers that the road is not for fast driving.

### Considerations:

- Where costs are a concern, lower cost, equally effective traffic-calming strategies may be preferable.
- Most cost-effective to build as a new street or where a street will soon undergo major reconstruction for utility or other purposes.

### Estimated Cost:

The cost can be high (\$60,000 to \$90,000 per block) to retrofit a street, but may be no extra to build a new street with this design if adequate right-of-way is available.

## 32. Woonerf

"Woonerf" ("Street for living") is a Dutch term for a common space created to be shared by pedestrians, bicyclists, and low-speed motor vehicles. They are typically narrow streets without curbs and sidewalks, and vehicles are slowed by placing trees, planters, parking areas, and other obstacles in the street. Motorists become the intruders and must travel at very low speeds below 16 km/h (10 mi/h). This makes a street available for public use that is essentially only intended for local residents. A woonerf identification sign is placed at each street entrance.

Consideration must be given to provide access by fire trucks, sanitation vehicles and other service vehicles (school buses and street sweepers), if needed.



Motorists, bicyclists, and pedestrians share the space on this woonerf or "living street" in Asheville, North Carolina.

### Purpose:

- Create a very low automobile volume, primarily on local access streets.
- Create a public space for social and possibly commercial activities and play by area children.

### Considerations:

- A woonerf is generally not appropriate where there is a need to provide nonresident motorists with access to services or through travel.
- The design needs to keep vehicle speeds very low in order to make the streets safe for children.

### Estimated Cost:

The cost to retrofit a woonerf may be quite high, but there would be no extra cost if designed into the original construction



## E. Traffic Management



Although they are sometimes lumped together, traffic management and traffic calming are different tools and address different problems. Traffic management includes the use of traditional traffic control devices to manage volumes and routes of traffic. Traffic calming deals with what happens to traffic once it is on a street. For example, limiting access to a street (e.g., diverting traffic from entering a street on one end) may reduce the amount of traffic on that street, but will do nothing to affect the speed of the traffic that travels on that street or others. Traffic management and traffic calming are often complementary, and a plan to retrofit an area often includes a variety of tools.

Communities should think about the broader context of traffic. If there is too much traffic on any one street, it may be that there is too much traffic altogether. A more significant plan to reduce overall traffic volumes would be appropriate — encouraging and providing for alternate modes of travel by developing pedestrian and bicycling networks, implementing Transportation Demand Management, enhancing transit systems, improving land-use planning, etc. Comprehensive traffic reduction or mitigation strategies are important; however, these are beyond the scope of this guide. Resources that provide guidance on these issues are included in the reference section.

Traffic calming and traffic management should be assessed from an area wide perspective.



This street closure in Charlotte provides needed open space in an urban neighborhood.

The problem should not just be shifted from one street to another. Although implementation usually occurs in stages, an overall plan can be developed up-front, involving a larger neighborhood or area of the city.

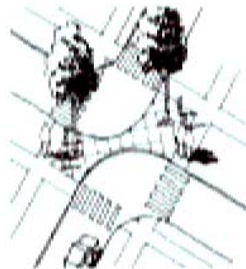
Traffic calming has also helped reduce motor vehicle traffic volumes and increase walking and bicycling. For example, on one traffic-calmed street in Berkeley, CA, the number of bicyclists and pedestrians more than doubled after the street was reconstructed with traffic-calming tools, and motor vehicle volumes decreased by about 20 percent. Traffic volume reduction raises the question: Where does the traffic go? In the Berkeley case, traffic volumes on parallel streets did not account for all of the traffic that disappeared from the traffic-calmed street. Ideally, the reduction in traffic means that some people chose a different mode of travel, such as transit, walking, or bicycling. This is only feasible if a system is in place to support those modes. What is often the case in selective street redesign is that traffic is routed onto other streets. It is desirable to keep traffic on collector and arterial streets and off residential streets. However, in many communities, arterials are already over capacity, and alternate routes may also involve other residential streets.

### 33. Diverters

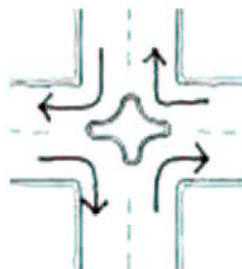
A diverter is an island built at a residential street intersection that prevents certain through and/or turning movements. Diverters affect people living in the neighborhood more than anyone else. Therefore, diverters should be considered only when less restrictive measures are not appropriate.

Four types of diverters are: diagonal, star, forced turn, and truncated. A diagonal diverter breaks up cut-through movements and forces right or left turns in certain directions. A star diverter consists of a star shaped island placed at the intersection, which forces right turns from each approach. A truncated diagonal diverter is a diverter with one end open to allow additional turning movements. Other types of island diverters can be placed on one or more approach legs to prevent through and left-turn movements and force vehicles to turn right.

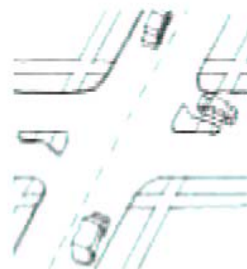
As with other traffic management tools, diverters must be used in conjunction with other traffic management tools within the neighborhood street network. Any of these diverters can be designed for bicycle and pedestrian access.



Diagonal Diverter



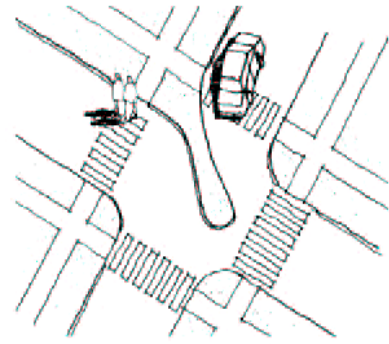
Star Diverter



Forced Turn Diverter



Traffic diverters restrict certain traffic movements and should only be considered when less restrictive measures are not appropriate.



#### Purpose:

- Discourage or prevent traffic from cutting through a neighborhood.

#### Considerations:

- Impacts residents more than through traffic.
- Consider less restrictive measures first.
- Evaluate traffic patterns to determine whether other streets would be adversely affected.
- Design diverters to allow bicycle, pedestrian and emergency vehicle access. If this cannot be done and the street is a major bicycle corridor, a diverter should not be used.
- Diverters generally do not effectively address midblock speeding problems.
- Diagonal diverters may be used in conjunction with other traffic management tools and are most effective when applied to the entire neighborhood street network.
- Diverters should have strong neighborhood support.
- The effect of diverters on service vehicles should be considered.

#### Estimated Cost:

\$15,000 to \$45,000 each, depending on the type of diverter and the need to accommodate drainage.

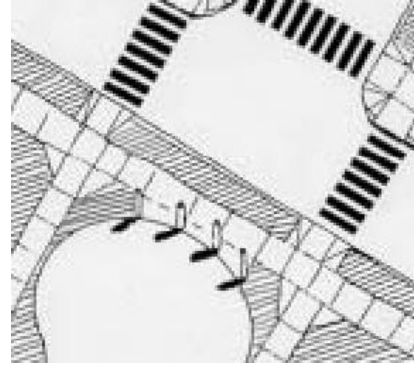
### 34. Full Street Closure

A full street closure is accomplished by installing a physical barrier that blocks a street to motor vehicle traffic and provides some means for vehicles to turn around. Full street closures should be used only in the rarest of circumstances. Neighborhoods with cul-de-sac streets require extensive out-of-the-way travel, which is not a mere convenience issue, but has serious implications for impacts on other streets. All traffic is forced to travel on feeder streets, which has negative consequences for the people who live on those streets and forces higher levels of control at critical intersections.

If a street closure is done, it should always allow for the free through movement of all pedestrians, including wheelchair users, and bicyclists. Emergency vehicles should also be able to access the street; this can be done with a type of barrier or gate that is electronically operated, permitting only large vehicles to traverse it. Examples are mountable curbs or an access way with a raised element in the center that a low vehicle would hit, though those treatments may not be able to stop pickups or sport utility vehicles. This is usually only appropriate for places with no snow (otherwise the device would be covered with snow and the access way could not be cleared).



Access is closed on this residential street.



#### Purpose:

- Ultimate limitation of motor vehicle traffic to certain streets.

#### Considerations:

- Part of an overall traffic management strategy.
- Analyze whether other streets would receive diverted traffic as a result of the street closure, and whether alternative streets exist for through traffic.
- Provide a turnaround area for motor vehicles, including service vehicles, and provide for surface drainage.
- Full street closures may be considered for local streets, but are not appropriate for collector streets.
- Do not use if the street is an emergency or school bus route.
- Do not adversely affect access to destinations in the community by pedestrians and bicyclists.
- Not an appropriate measure for addressing crime or other social problems.

#### Estimated Cost:

The cost for a full, landscaped street closure varies from approximately \$30,000 to \$100,000, depending on conditions.



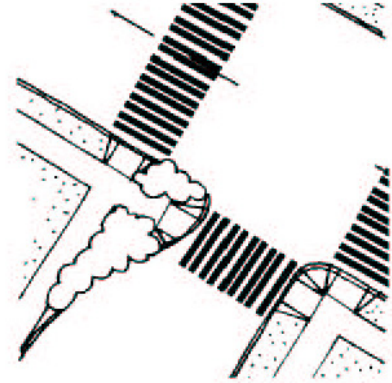
## 35. Partial Street Closure

A partial street closure uses a semi-diverter to physically close or block one direction of motor vehicle travel into or out of an intersection; it could also involve blocking one direction of a two-way street. Partial street closures at the entrance to a neighborhood or area should consider the traffic flow pattern of the surrounding streets as well. The design of this measure should allow for easy access by bicyclists and all pedestrians.

A partial closure provides better emergency access than a full closure. Since this design also allows motorists to easily violate the prohibitions, police enforcement may be required. If the partial closure only eliminates an entrance to a street, a turnaround is not needed; closing an exit will generally require a turnaround.



This partial street closure is found in Phoenix, AZ.



### Purpose:

- Prevent turns from an arterial street onto a residential street.
- Reduce cut-through traffic.
- Restrict access to a street without creating one-way streets.

### Considerations:

- Do not adversely affect access by service vehicles.
- Analyze whether less restrictive measures would work.
- Analyze whether other local streets will be adversely affected and/or access into or out of the neighborhood would not be adequate.
- Will create out-of-the-way travel for residents and put additional traffic on other streets.
- Consider impact on school bus routes, emergency access, and trash pickup.
- Will not solve speeding issues; speeds may increase on the new one-way street.

### Estimated Cost:

A well-designed, landscaped partial street closure at an intersection typically costs approximately \$10,000 to \$25,000. They can be installed for less if there are no major drainage issues and landscaping is minimal.



## 36. Pedestrian Streets/Malls

There are two types of pedestrian streets/malls: (1) those that eliminate motor vehicle traffic (deliveries permitted during off-peak hours) and (2) those that allow some motor vehicle traffic at very low speeds. The second type can be thought of as a pedestrian street that allows some motor vehicles, as opposed to a motor vehicle street that allows some pedestrians.

Pedestrian streets have been successful in places that are thriving and have high volumes of pedestrians. Examples of successful pedestrian streets include Church Street in Burlington, VT; Downtown Crossing in Boston, MA; Maiden Lane in San Francisco, CA; Occidental Street in Seattle, WA; Third Street Promenade in Santa Monica, CA; and, Fremont Street in Las Vegas, NV.

Another option is to create a part-time pedestrian street, as is done, for example, in the French Quarter in New Orleans, LA, which uses removable barriers to close the street to motorists at night.



Church Street in Burlington, Vermont, is a successful pedestrian street with market stalls, public art, landscaping, and cafes.

### Purpose:

- Create a significant public space in a downtown district, a tourist district, or a special events or marketplace area.
- Enhance the experience for people in a commercial district.

### Considerations:

- Pedestrian streets (those that eliminate motor vehicles) created with the notion of attracting people in areas that are on the decline have usually been unsuccessful.
- The pedestrian environment can often be enhanced through other measures, including street narrowing / sidewalk widening and the addition of landscaping.

### Estimated Cost:

A pedestrian street can be created simply by blocking either end of an existing street with nothing more than a few signs. Temporary pedestrian streets can be created for weekends or holidays. If the street is going to be a permanent public space, care should be taken in the design. Depending on the extent of the treatment (one block or several blocks) and the quality of the materials used, a true pedestrian street can cost from \$100,000 to several million dollars.

## F. Signals and Signs



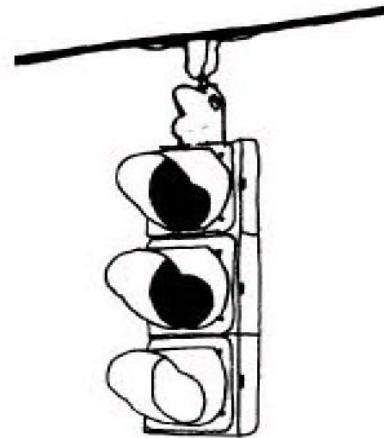
## 37. Traffic Signals

Traffic signals create gaps in the traffic flow, allowing pedestrians to cross the street. They should allow adequate crossing time for pedestrians and an adequate clearance interval based upon a maximum walking speed of 3.5 feet/second. In areas where there is a heavy concentration of the elderly or children, a lower speed of less than 3.5 feet/second should be used in determining pedestrian clearance time. Signals are particularly important at high-use, mid-block crossings on higher speed roads, multi-lane roads, or at highly congested intersections. National warrants from the *Manual on Uniform Traffic Control Devices* are based on the number of pedestrians and vehicles crossing the intersection, among other factors. However, judgment must also be used on a case-by-case basis. For example, a requirement for installing a traffic signal is that there are a certain number of pedestrians present. If a new facility is being built — a park or recreational path, for example — there will be a new demand, and the signal should be installed in conjunction with the new facility based on projected crossing demand. There may also be latent demand if a destination is not currently accessible, but could become so with new facilities or redesign.

In downtown areas, signals are often closely spaced, sometimes every block. Timed sequencing of signals may reduce the amount of time allotted per cycle for pedestrian crossing to unsafe lengths. Signals are usually spaced farther apart in suburban or outlying areas, but similar considerations for pedestrian phasing should be made. When high pedestrian traffic exists during a majority of the day, fixed-time signals should be used to consistently allow crossing opportunities. Pedestrian actuation should only be used when pedestrian crossings are intermittent, and should be made accessible to all pedestrians, including those with disabilities.



A traffic signal at a busy intersection with high volumes of pedestrians, bicyclists, and cars.



### Purpose:

- Provide intervals in a traffic system where pedestrians can cross streets safely.

### Considerations:

- Where pedestrian traffic is regular and frequent, pedestrian phases should come up automatically. Pedestrian actuation should only be used when pedestrian crossings are intermittent.
- Signal cycles should be kept short (ideally 90 seconds maximum) to reduce pedestrian delay. Pedestrians are very sensitive to delays.
- Marked crosswalks at signals encourage pedestrians to cross at the signal and discourage motorists from encroaching into the crossing area.

### Estimated Cost:

\$30,000 to \$140,000

### 38. Pedestrian Signals

Pedestrian signal indications should be used at all traffic signals whenever warranted, according to the MUTCD. The use of WALK/DON'T WALK pedestrian signal indications at signal locations are important in many cases, including when vehicle signals are not visible to pedestrians, when signal timing is complex (e.g., there is a dedicated left-turn signal for motorists), at established school zone crossings, when an exclusive pedestrian interval is provided, and for wide streets where pedestrian clearance information is considered helpful.

The international pedestrian symbol signal is preferable and is recommended in the MUTCD; the WALK and DON'T WALK messages are allowable alternatives. Pedestrian signals should be clearly visible to the pedestrian at all times when in the crosswalk or waiting on the far side of the street. Larger pedestrian signals can be beneficial in some circumstances (e.g., where the streets are wide). Signals may be supplemented with audible or other messages to make crossing information accessible for all pedestrians, including those with vision impairments. The decision to install audible pedestrian signals should consider the noise impact on the surrounding area. These should be used judiciously, because they can become a noise problem.



Pedestrian signals should always be clearly visible to the pedestrian while in the crosswalk and waiting on the far side of the street.



#### Purpose:

- Indicate appropriate time for pedestrians to cross.
- Provide pedestrian clearance interval.

#### Considerations:

- Ensure that signals are visible to pedestrians.
- When possible, provide a walk interval for every cycle.
- If pedestrian pushbuttons are used, they must be well signed and visible, and within reach and operable from a flat surface for all crossing pedestrians.

#### Estimated Cost:

\$20,000 to \$40,000



### 39. Upgrade/Modify Pedestrian Signal Timing

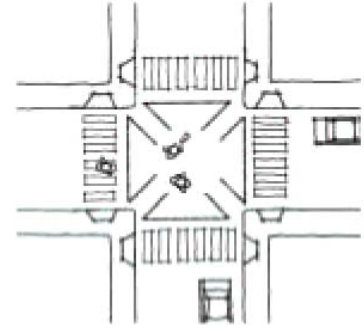
There are several types of signal timing for pedestrian signals, including concurrent, exclusive, “leading pedestrian interval” (LPI), and all red interval. In general, shorter cycle lengths and longer walk intervals generally provide better service to pedestrians and encourage better signal compliance. For optimal pedestrian service, fixed-time signal operation usually works best. Pedestrian pushbuttons may be installed at locations where pedestrians are expected intermittently. Quick response to the pushbutton or feedback to the pedestrian should be programmed into the system. When used, pushbuttons should be well signed and within reach and operable from a flat surface for pedestrians in wheelchairs and with visual disabilities. They should be conveniently placed in the area where pedestrians wait to cross.

In addition to concurrent pedestrian signal timing (where motorists may turn left or right across pedestrians' paths after yielding to pedestrians), exclusive pedestrian intervals stop traffic in all directions. Exclusive pedestrian timing has been shown to reduce pedestrian crashes by 50 percent in some downtown locations with heavy pedestrian volumes and low vehicle speeds and volumes. With concurrent signals, pedestrians usually have more crossing opportunities and have to wait less. Unless a system is willing to take more time from vehicular phases, pedestrians will often have to wait a long time for an exclusive signal. This is not very pedestrian friendly, and many pedestrians will simply choose to ignore the signal and cross if and when there is a gap in traffic, negating the potential safety benefits of the exclusive signal.

A simple, useful change is the LPI. An LPI gives pedestrians an advance walk signal before the motorists get a green light, giving the pedestrian several seconds to start in the crosswalk where there is a concurrent signal.



With a leading pedestrian interval, pedestrians get an advance walk signal before motorists get a green. This gives the pedestrians several seconds to establish their presence in the crosswalk before motorists start to turn.



#### Purpose:

- A “Pedestrian Scramble” provides an exclusive pedestrian crossing phase with no conflicting traffic.
- A short all-red clearance interval provides a better separation between cars and pedestrians.

#### Considerations:

- A “Pedestrian Scramble” usually creates a longer cycle length and a longer wait between crossings.
- The Scramble may eliminate the ability to synchronize timing at adjacent traffic signals.
- Scramble timing is most applicable to downtown areas with high pedestrian volumes (e.g., more than 1,200 pedestrian crossings per day).
- Scramble timing eliminates conflicts with turning vehicles if pedestrians and motorists obey their signals.
- The benefits of this treatment may not extend to vision impaired pedestrians.
- Wider intersections require longer cycle lengths.
- Longer walk or pedestrian clearance intervals may also lead to longer cycle lengths.



### 39. Upgrade/Modify Pedestrian Signal Timing (continued)

This makes pedestrians more visible to motorists and motorists more likely to yield to them. This advance crossing phase approach has been used successfully in several places, such as New York City, for two decades and studies have demonstrated reduced conflicts for pedestrians. The advance pedestrian phase is particularly effective where there is a two-lane turning movement. To be useful to pedestrians with vision impairments, an LPI needs to be accompanied by an audible signal to indicate the crossing interval.

There are some situations where an exclusive pedestrian phase may be preferable to an LPI. Exclusive phases are desirable where there are high-volume turning movements that conflict with the pedestrians crossing.

- Use fixed-time operation unless pedestrian arrivals are intermittent.

#### **Estimated Cost:**

Adjusting signal timing is very low cost and requires a few hours of staff time to accomplish. New signal equipment ranges from \$20,000 to \$140,000.



The pedestrian has a dedicated walk phase at this intersection of a busy street and a trail crossing.



The pedestrian has a dedicated walk phase and is allowed to cross diagonally at this intersection

## 40. Traffic Signal Enhancements

A variety of traffic signal enhancements that can benefit pedestrians and bicyclists are available. These include automatic pedestrian detectors, providing larger traffic signals to ensure visibility, placing signals so that motorists waiting at a red light can't see the other signals and anticipate the green, and installing countdown signals to provide pedestrians with information about the amount of time remaining in a crossing interval.

Countdown signals may be designed to begin counting down at the beginning of the walk phase or at the beginning of the clearance (flashing DON'T WALK) interval.

Since pedestrian pushbutton devices are not activated by about one half of pedestrians (even fewer activate them where there are sufficient motor vehicle gaps), new "intelligent" microwave or infrared pedestrian detectors are now being installed and tested in some U.S. cities. These automatically activate the red traffic and WALK signals when pedestrians are detected. Detectors can also be used to extend the crossing time for slower moving pedestrians in the crosswalk. Automatic pedestrian detectors have been found to improve pedestrian signal compliance and also reduce pedestrian conflicts with motor vehicles. However, they are still considered experimental and their reliability may vary under different environmental conditions.



This countdown signal in Cambridge, Massachusetts, indicates to pedestrians the amount of time they have available to cross.



An automated pedestrian detection system.

### Purpose:

- Improve pedestrian accommodation at signalized crossings.

### Considerations:

- Pedestrian signals need to indicate the crossing interval by visual, audible, and/or tactile means if pedestrians with vision impairments are to take advantage of them.
- The effects of pedestrian countdown signals on pedestrian safety are not well known. Further research is needed to better understand their effects.

### Estimated Cost:

About \$5,000 to add new pedestrian signals and mark crosswalks.

## 41. Right-Turn-on-Red Restrictions

A permissible Right Turn on Red (RTOR) was introduced in the 1970s as a fuel-saving measure and has sometimes had detrimental effects on pedestrians. While the law requires motorists to come to a full stop and yield to cross-street traffic and pedestrians prior to turning right on red, many motorists do not fully comply with the regulations, especially at intersections with wide turning radii. Motorists are so intent on looking for traffic approaching on their left that they may not be alert to pedestrians approaching on their right. In addition, motorists usually pull up into the crosswalk to wait for a gap in traffic, blocking pedestrian crossing movements. In some instances, motorists simply do not come to a full stop.

One concern that comes up when RTOR is prohibited is that this may lead to higher right-turn-on-green conflicts when there are concurrent signals. The use of the leading pedestrian interval (LPI) can usually best address this issue. Where pedestrian volumes are very high, exclusive pedestrian signals should be considered.

Prohibiting RTOR should be considered where and/or when there are high pedestrian volumes. This can be done with a simple sign posting, although there are some options that are more effective than a standard sign. For example, one option is a 30 inches by 36 inches NO TURN ON RED sign, which is more conspicuous. For areas where a right turn is acceptable during certain times, time-of-day restrictions may be appropriate. A variable-message NO TURN ON RED sign is also an option.



Prohibiting right turns can benefit pedestrian safety at some locations.

### Purpose:

- Increase pedestrian safety and decrease crashes with right turning vehicles.

### Considerations:

- Prohibiting RTOR is a simple, low-cost measure. Together with a leading pedestrian interval, the signal changes can benefit pedestrians with minimal impact on traffic.
- Part-time RTOR prohibitions during the busiest times of the day may be sufficient to address the problem.
- Signs should be clearly visible to right-turning motorists stopped in the curb lane at the crosswalk.

### Estimated Cost:

\$30 to \$150 per NO TURN ON RED sign plus installation at \$200 per sign. Electronic signs have higher costs.

## 42. Advanced Stop Lines

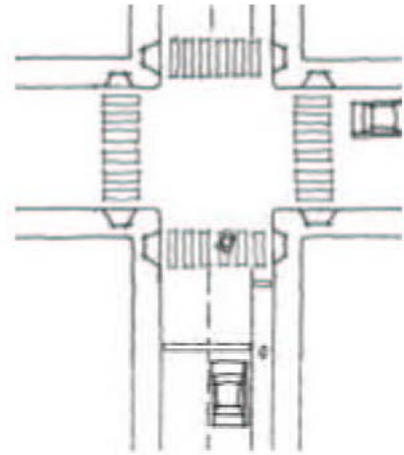
At signalized intersections and midblock crossings, the vehicle stop line can be moved farther back from the pedestrian crosswalk for an improved factor of safety and for improved visibility of pedestrians. In some places, the stop line has been moved back by 15 to 30 feet relative to the marked crosswalk with considerable safety benefits for pedestrians. One study found that use of a “Stop Here for Pedestrians” sign alone reduced conflicts between drivers and pedestrians by 67 percent. With the addition of an advanced stop line, this type of conflict was reduced by 90 percent compared to baseline levels.

The advanced stop lines allow pedestrians and drivers to have a clearer view of each other and more time in which to assess each other’s intentions. The effectiveness of this tool depends upon whether motorists are likely to obey the stop line, which varies from place to place.

Advanced stop lines are also applicable for non-signalized crosswalks on multi-lane roads to ensure that drivers in all lanes have a clear view of a crossing pedestrian.



Advanced stop lines are used at this signalized crossing to improve sight distances and to give the motorist who initially fails to see the crosswalk more time to stop. The bicyclist can advance ahead, which aids in bicyclist safety, particularly with right-turning motorists.



### Purpose:

- Improve visibility of pedestrians to motorists.
- Allow pedestrians to advance in a crosswalk before motor vehicles turn.

### Considerations:

- Effectiveness depends on motorist compliance with the marked stop line.
- If placed too far in advance of the crosswalk, motorists may ignore the line.
- In some locations, a wider crosswalk may be an effective alternative.

### Estimated Cost:

There is no extra cost when the recessed stop line is installed on new paving or as part of repaving projects. A STOP HERE sign can be used to supplement the recessed stop line.



### 43. Add/Modify Signing

Signs can provide important information that can improve road safety. By letting people know what to expect, there is a greater chance that they will react and behave appropriately. For example, giving motorists advance warning of an upcoming pedestrian crossing or that they are entering a traffic-calmed area will alert them to modify their speed. Sign use and movement should be done judiciously, as overuse breeds noncompliance and disrespect. Too many signs may also create visual clutter and signs can get lost.

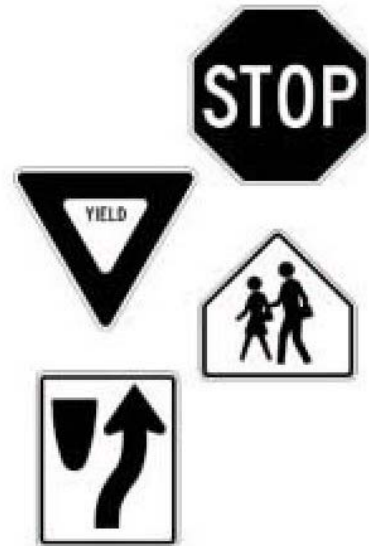
Regulatory signs, such as STOP, YIELD, or turn restrictions require certain driver actions and can be enforced. Warning signs can provide helpful information, especially to motorists and pedestrians unfamiliar with an area. Some examples of signs that affect pedestrians include pedestrian warning signs, motorist warning signs, NO TURN ON RED signs, and guide signs.

Advance pedestrian warning signs should be used where pedestrian crossings may not be expected by motorists, especially if there are many motorists who are unfamiliar with the area. A new fluorescent yellow/green color is approved for pedestrian, bicycle, and school warning signs. This bright color attracts the attention of drivers because it is unique.

All signs should be periodically checked to make sure that they are in good condition, free from graffiti, reflective at night, and continue to serve a purpose. In unusual cases, signs may be used to prohibit pedestrian crossings at an undesirable location and re-route them to a safer crossing location, or warn pedestrians of unexpected driver maneuvers. It is preferable to create safe crossings where there are clear pedestrian destinations. If unexpected driving maneuvers occur at what is an otherwise legal pedestrian crossing, an evaluation should be done to find ways to remedy or prevent the unsafe motorist maneuvers.



This experimental sign instructs drivers to yield to pedestrians when turning at this intersection.



#### Purpose:

- Provide regulation, warning, or information to road users as to what to expect and how to behave.

#### Considerations:

- Overuse of signs breeds non-compliance and disrespect. Too many signs can lead to visual clutter with the result that a driver is not likely to read or pay attention to any of the signs.
- Traffic signs used on public property must comply with the *Manual on Uniform Traffic Control Devices* (MUTCD).
- Signs should be checked to assure adequate nighttime reflectivity.

#### Estimated Cost:

\$50 to \$150 per sign plus installation costs.



**G. Other Measures**



## 44. School Zone Improvements

A variety of roadway improvements may be used to enhance the safety or mobility of children in school zones. The use of well-trained adult crossing guards has been found to be one of the most effective measures for assisting children in crossing streets safely. Sidewalks or separated walkways and paths are essential for a safe trip from home to school on foot or by bike. Adult crossing guards require training and monitoring and should be equipped with a bright and reflective safety vest and a STOP paddle. Police enforcement in school zones may be needed in situations where drivers are speeding or not yielding to children in crosswalks.

Other helpful measures include parking prohibitions near intersections and crosswalks near schools; increased child supervision; and the use of signs and markings, such as the school advance warning sign (which can be fluorescent yellow/green) and SPEED LIMIT 25 MPH WHEN FLASHING. Schools should develop "safe routes to school" plans and work with local agencies to identify and correct problem areas. Marked crosswalks can help guide children to the best routes to school. School administrators and parent-teacher organizations need to educate students and parents about school safety and access to and from school. Education, enforcement, and well-designed roads must all be in place to encourage motorists to drive appropriately



Children leaving school in this Honolulu suburb walk their bikes to the intersection where a crossing guard controls movements.



### Purpose:

- Provide enhanced safety around schools.

### Considerations:

- Safety must be a combined effort between local traffic officials, police, school officials, parents, and students.

### Estimated Cost:

Costs would depend on the school zone treatment selected. For example, if signs were chosen, costs might include \$50 to \$150 per sign plus installation costs.

#### 44. School Zone Improvements (continued)

One of the biggest safety hazards around schools is parents or caretakers dropping off and picking up their children. There are two immediate solutions: (1) there needs to be a clearly marked area where parents are permitted to drop off and pick up their children, and (2) drop-off/pick-up regulations must be provided to parents on the first day of school. Drop-off areas must be located away from where children on foot cross streets or access the school. Parent drop-off zones must also be separated from bus drop-off zones. If parents can be trained to do it right at the start of the school year, they are likely to continue good behavior throughout the year.

For a longer term solution, it is preferable to create an environment where children can walk or bicycle safely to school, provided they live within a suitable distance. One concept that has been successful in some communities is the concept of a "walking bus," where an adult accompanies children to school, starting at one location and picking children up along the way. Soon, a fairly sizeable group of children are walking in a regular formation, two by two, under the supervision of a responsible adult, who is mindful of street crossings. The presence of such groups affects drivers' behavior, as they tend to be more watchful of children walking. Parents take turns accompanying the "walking school bus" in ways that fit their schedules.



Vehicles must slow down to enter the tight curve of this modern roundabout in a school zone in Montpelier, Vermont. The roundabout creates a safer interaction between vehicles and pedestrians.

## 45. Identify Neighborhood

Many neighborhoods or business districts want to be recognized for their unique character. This can enhance the walking environment and sense of community.

Examples of treatments include gateways, traffic calming, welcome signs, flower planters, banners, decorative street lighting, unique street name signs, and other details. Neighborhood identity treatments rarely provide any direct traffic improvements, but they help develop interest in enhancing the community.



An identity sign in Seattle's Wallingford neighborhood marks an entry to the area.



### **Purpose:**

- Increase the visibility of a neighborhood or district and support community efforts to define their neighborhood.

### **Considerations:**

- Supports community efforts, but has no direct traffic benefits.

### **Estimated Cost:**

\$50 to \$150 per sign. Some signs may cost more because they are usually custom made.

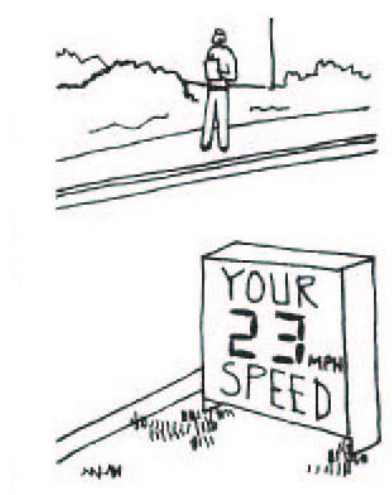
## 46. Speed-Monitoring Trailer

Speed-monitoring trailers — sign boards on trailers that display the speed of passing vehicles — are used by police departments and transportation agencies as educational tools that can enhance enforcement efforts directed at speed compliance. Speed radar trailers are best used in residential areas and may be used in conjunction with Neighborhood Speed Watch or other neighborhood safety education programs. They can help raise residents' awareness of how they themselves are often those speeding, not just "outsiders." Speed trailers are not substitutes for permanent actions, such as traffic-calming treatments, to address neighborhood speeding issues.

Speed-monitoring trailers can be used at several locations and should have occasional police monitoring and enforcement to maintain driver respect.



Speed-monitoring trailers let motorists know the speed limit and the speed they are traveling.



### Purpose:

- Enhance enforcement efforts through public education and awareness.

### Considerations:

- Occasional enforcement is needed to supplement the speed-monitoring trailers.
- Speed-monitoring trailers are not a substitute for engineering measures.
- Should not obstruct pedestrian travel way or sightlines.

### Estimated Cost:

\$10,000 to \$15,000 to purchase the speed-monitoring trailer, plus the cost to move the trailer to different locations and to monitor the trailer.



## 47. On-Street Parking Enhancements

On-street parking can be both a benefit and a detriment to pedestrians. On-street parking does increase positive “friction” along a street and can narrow the effective crossing width, both of which encourages slower speeds; parking can also provide a buffer between moving motor vehicle traffic and pedestrians along a sidewalk. In addition, businesses reliant on on-street parking as opposed to parking lots are more geared toward pedestrian access. This attention can foster a more vibrant pedestrian commercial environment.

On the other hand, parking creates a visual barrier between motor vehicle traffic and crossing pedestrians, especially children and people using wheelchairs. Therefore, where there is parking, curb extensions should be built where pedestrians cross. Parking needs to be removed on the approaches to crosswalks.

At least 20 feet of parking should be removed on the approach to a marked or unmarked crosswalk and about 20 feet of parking should be removed downstream from the crosswalk. Some agencies require that parking be removed 30 to 50 feet from intersections for pedestrian safety reasons. Well-designed curb extensions can reduce these distances and maximize the number of on-street parking spaces.



On-street parking in Concord, Massachusetts, shields pedestrians from moving traffic.



### Purpose:

- Provide motorist access to destinations along a street.
- Aid in speed reduction by increasing friction along the street.
- Provide a buffer between sidewalk edge and moving traffic.

### Considerations:

- Parking may take up space desired for other uses, such as wider sidewalks or bicycle lanes.
- Approaches to crosswalks and intersections should be cleared and curb extensions added at crossing locations for pedestrian safety.
- Parking meters should be used in downtown areas where there is a need for parking turnover. This can generate revenue for the community.

### Estimated Cost:

\$30 to \$150 per sign. About \$300 per parking meter and installation. Curb paint and stall marks or striping costs are additional (optional).

## Problem-Solving Methods

Deciding on the set of treatments that will provide the greatest benefits in terms of providing safety and mobility requires transportation and land-use planners and engineers and community leaders to engage in problem-solving.

Pedestrians face a variety of challenges when they walk along and across streets with motor vehicles. Communities are asking for help to "slow traffic down," "make it safer to cross the street," and "make the street more inviting to pedestrians."

The following is a list of requests (objectives) that transportation professionals are likely to face when working to provide pedestrian safety and mobility:

- Reduce speed of motor vehicles.
- Improve sight distance and visibility for motor vehicles and pedestrians.
- Reduce volume of motor vehicles.
- Reduce exposure time for pedestrians.
- Improve access and mobility for all pedestrians, especially those with disabilities.
- Encourage walking by improving aesthetics, safety, and security.
- Improve compliance with traffic laws (motorists and pedestrians).
- Eliminate behaviors that lead to crashes (motorists and pedestrians).

Each of these objectives can be accomplished through a variety of the individual treatments presented in this chapter. Yet, most treatments will work best when used at multiple locations and in combination with other treatments.

In addition, many of the treatments will accomplish two or more objectives. The key is to make sure that the right treatments are chosen to accomplish the desired effect.

The chart located on the following two pages is intended to summarize the uses of the tools presented in this chapter and to assist in the decision-making process. In using the chart, it is important to remember that it is simply a guide. In all cases, good engineering judgment should be applied when making decisions about what treatment will be best for a specific location.

### **3. Bicycle and Pedestrian Trail Amenities**

#### **Focus Group Recommended Amenities**

# Focus Group Recommended Amenities

1. Fitness Stations
2. Distance Markers
3. Benches/Rest Areas
4. Trash Cans
5. Water Fountains
6. Dog Friendly
7. Shady Areas w/Benches
8. Bike Racks
9. Good Lighting
10. Security Cameras
11. Call Boxes For Security
12. Maps
13. Alternative Route Options



***What really helps motivate me to walk are my dogs, who are my best pals. They keep you honest about walking because when it's time to go, you can't disappoint those little faces.***  
***~Wendie Malick***



# Chapter IX

## Police Accident Reports

- 1. Bike and Pedestrian Accident Statistics**
- 2. Definitions of Pedestrian Crash Types**



# **1. Bike and Pedestrian Accident Statistics**

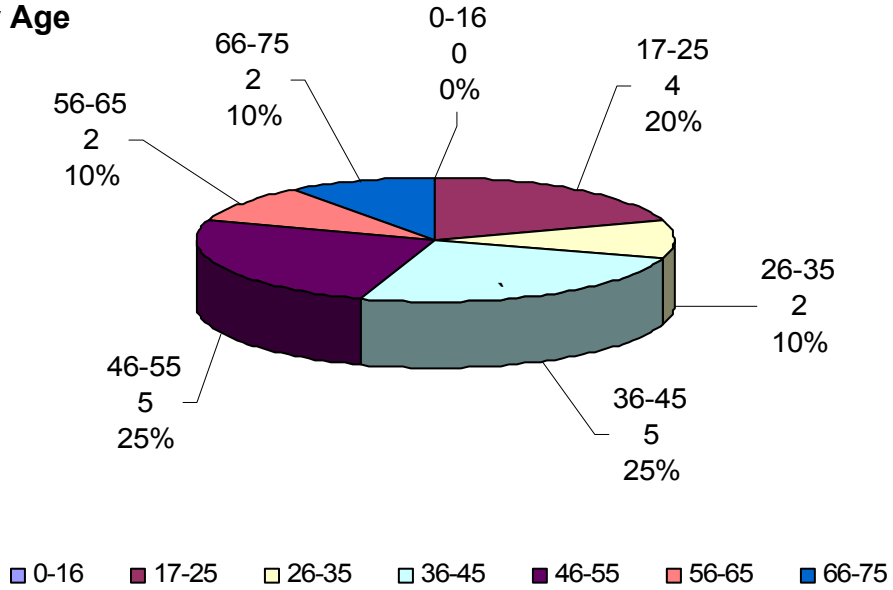
- A. Charts**
- B. Tables**

# A. Charts

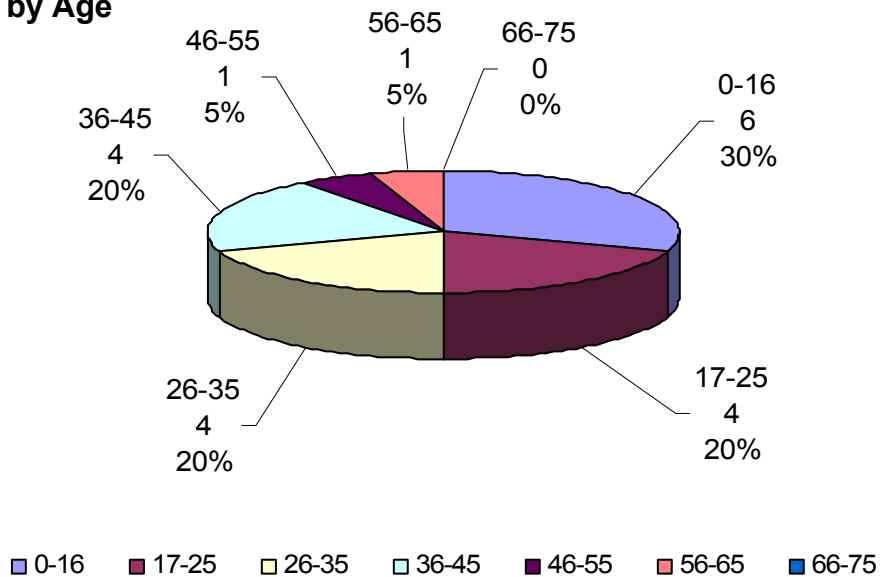
## City of Jeffersontown Police Department Driver/Bicyclist Accidents 2000-2005

\*Numbers based on 20 accidents

### Driver by Age



### Bicyclist by Age

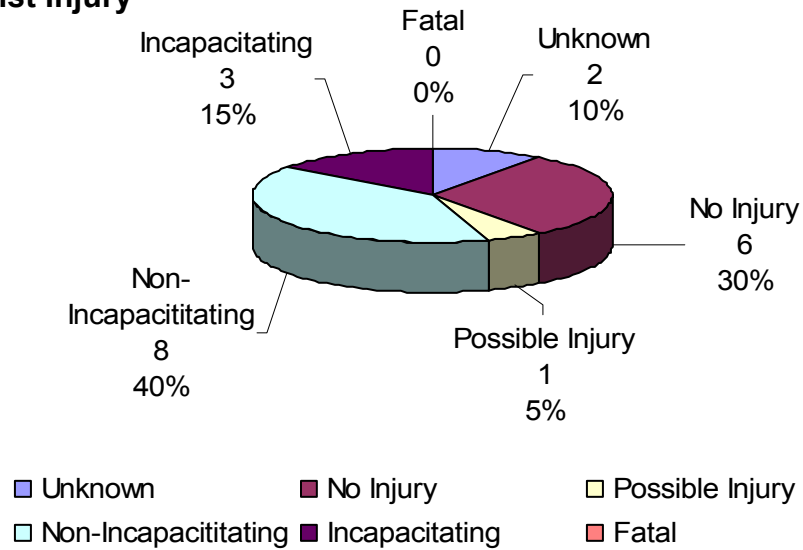


**A. Charts (continued)**

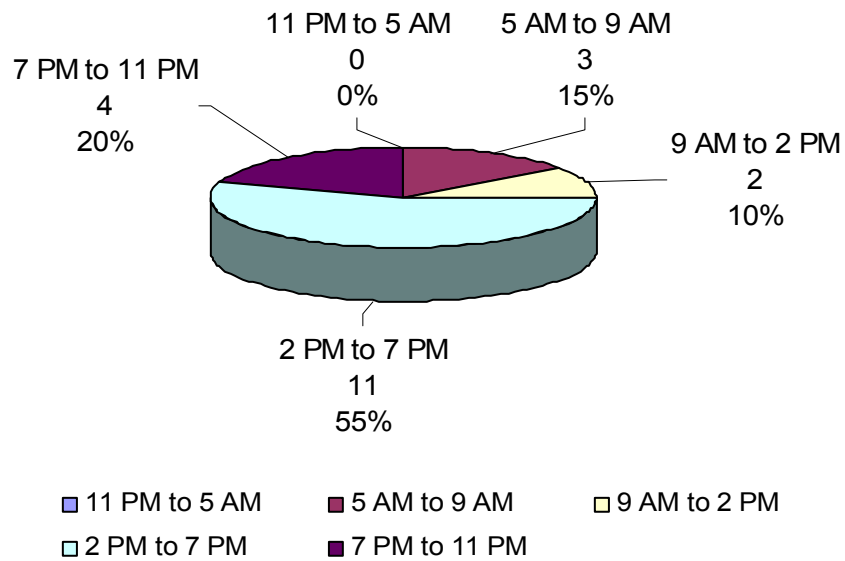
**City of Jeffersontown Police Department  
Driver/Bicyclist Accidents  
2000-2005**

\*Numbers based on 20 accidents

**By Bicyclist Injury**



**By Time**

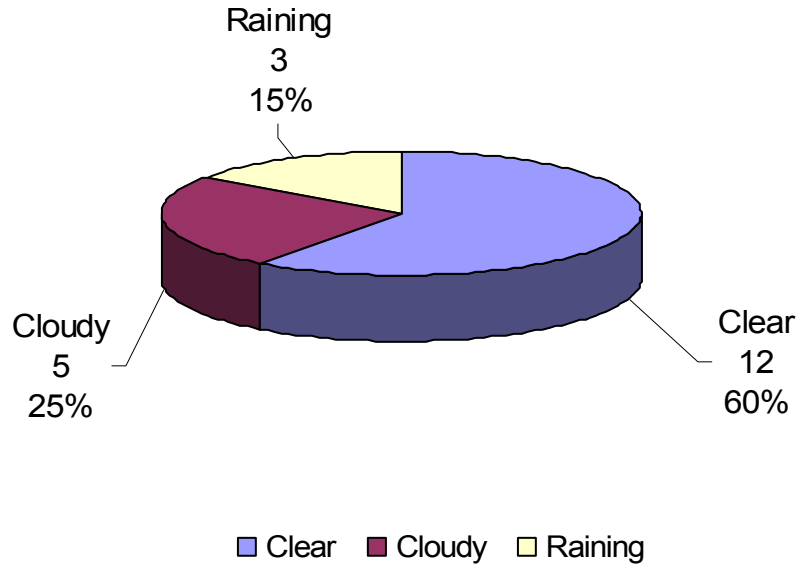


**A. Charts (continued)**

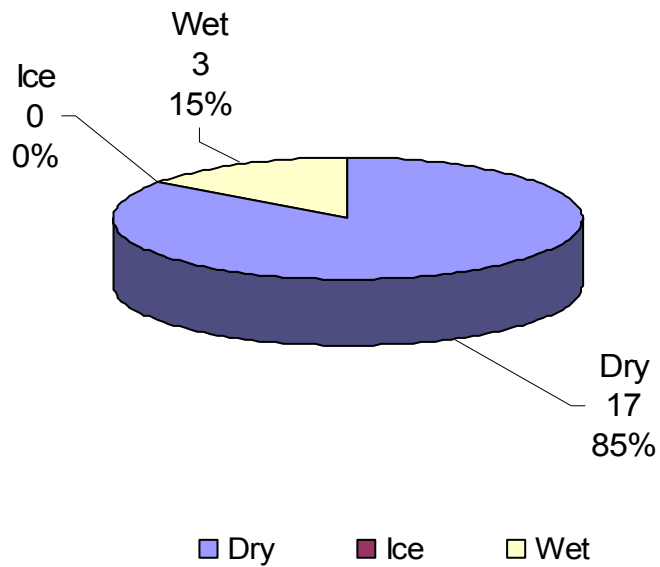
**City of Jeffersontown Police Department  
Driver/Bicyclist Accidents  
2000-2005**

\*Numbers based on 20 accidents

**By Weather  
Conditions**



**By Road  
Conditions**

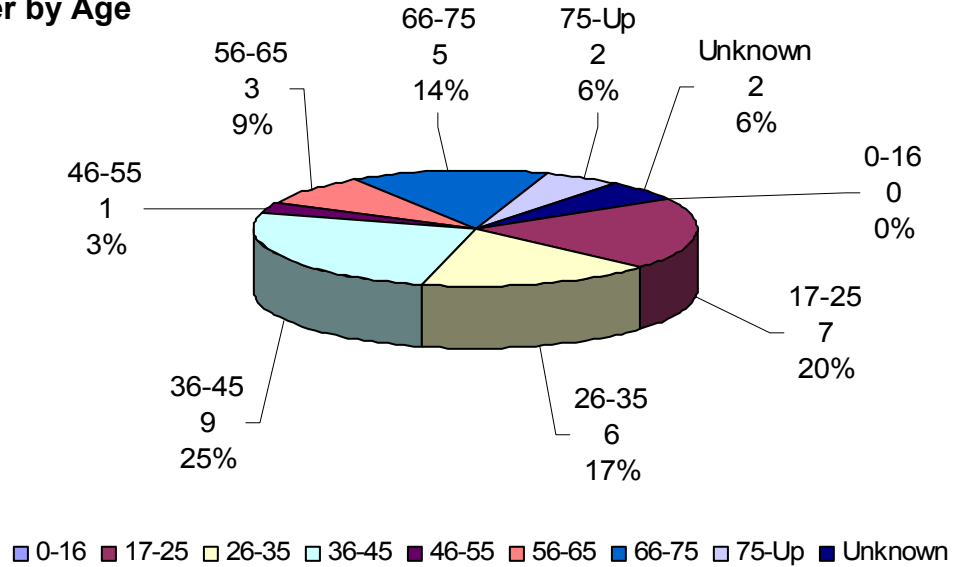


A. Charts (continued)

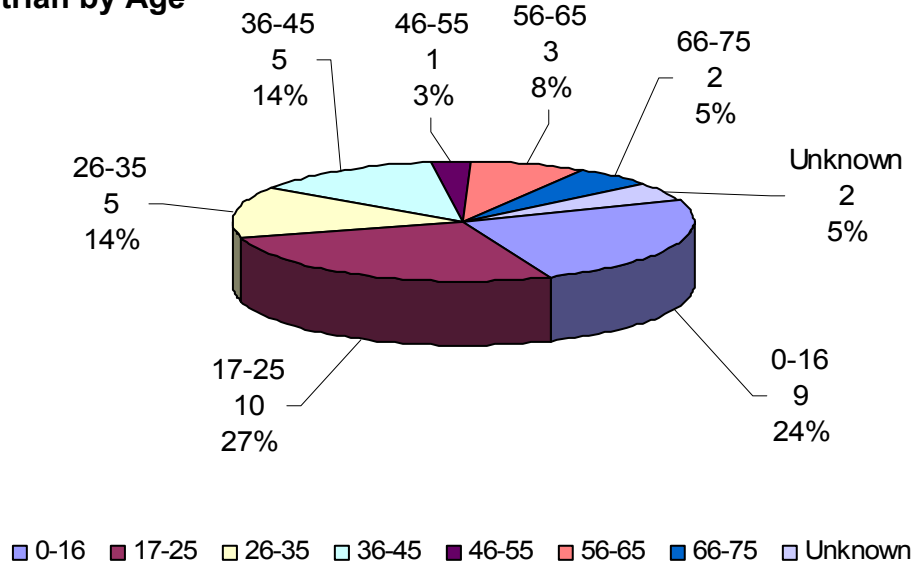
### City of Jeffersontown Police Department Driver/Pedestrian Accidents 2000-2005

\*Numbers based on 35 accidents

**Driver by Age**



**Pedestrian by Age**



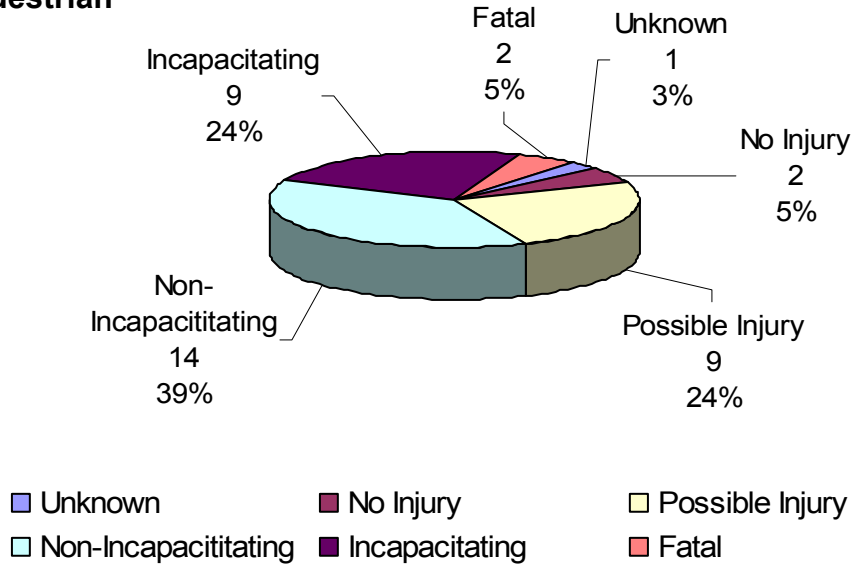


**A. Charts (continued)**

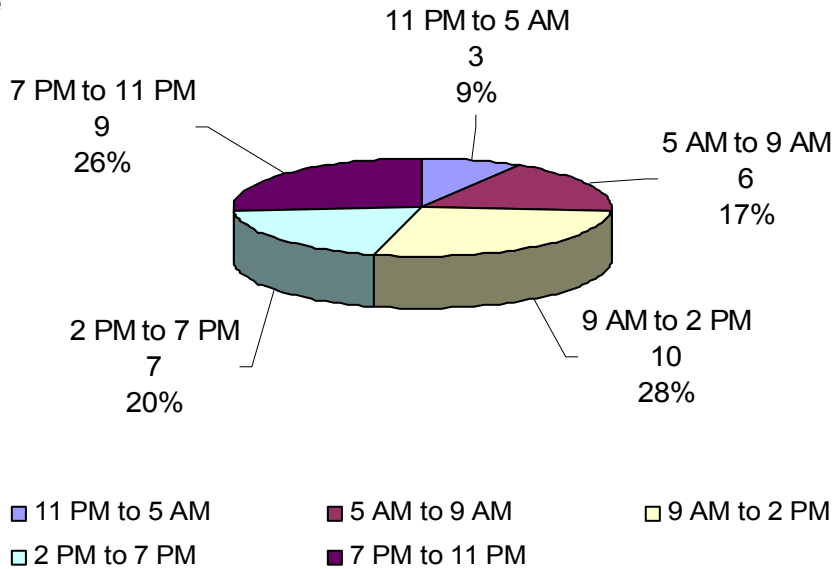
**City of Jeffersontown Police Department  
Driver/Pedestrian Accidents  
2000-2005**

\*Numbers based on 35 accidents

**By Pedestrian Injury**



**By Time**

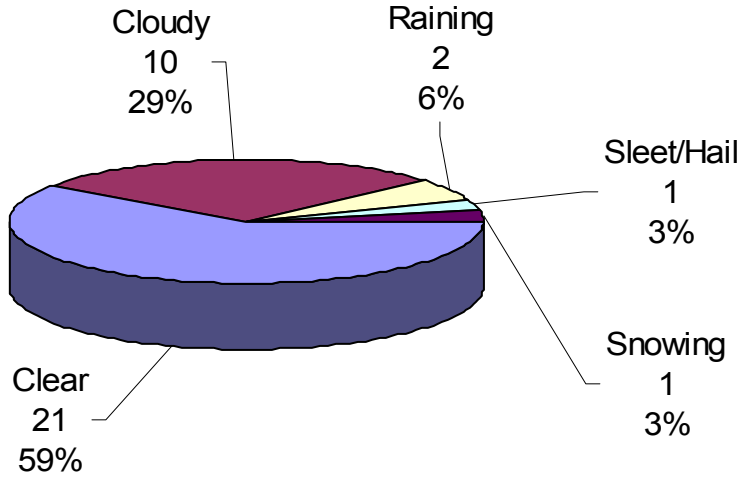


**A. Charts (continued)**

**City of Jeffersontown Police Department  
Driver/Pedestrian Accidents  
2000-2005**

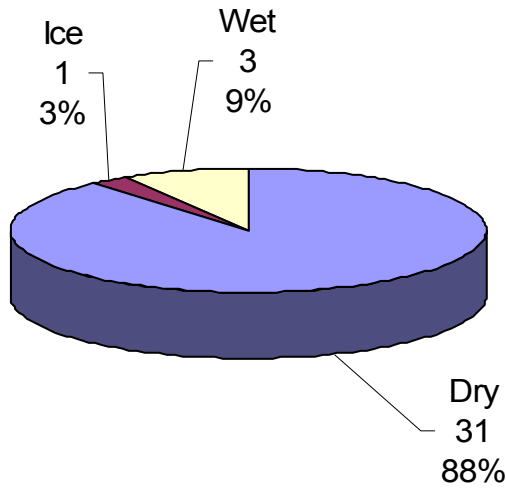
\*Numbers based on 35 accidents

**By Weather Conditions**



■ Clear ■ Cloudy ■ Raining ■ Sleet/Hail ■ Snowing

**By Road Conditions**



■ Dry ■ Ice ■ Wet

# B. Tables

**City of Jeffersontown Police Department  
Driver/Bicyclist Accidents  
2000-2005**

DATE	TIME	ROADWAY	BETWEEN/INTERSECTION	ROAD CONDITION	WEATHER CONDITION	UNIT 1	AGE	INJURIES	UNIT 2	AGE	INJURIES	UNIT 3	AGE	INJURIES
5/7/2000	21:22	Taylorsville Rd.	Merioneth Dr.	Dry	Clear	Driver	25	Possible Injury	Driver	18	None	Bicyclist	34	None
9/7/2000	18:23	Lantern Lite Pkwy.	Smoke Rd. & Reinhart Way	Dry	Clear	Driver	44	None	Bicyclist	11	Non-Incapacitating			
1/31/2001	18:45	Linn Station Rd.	Timberwood Cir. & Lakeshore Ct.	Wet	Raining	Driver	36	None	Bicyclist	18	Non-Incapacitating			
7/3/2001	12:55	10300B Watterson Trl. S.	Billtown Rd. & College Dr.	Dry	Clear	Driver	61	None	Bicyclist	13	None			
7/18/2001	17:21	4300B Billtown Rd.	Wildflower Woods Ct. & Michaele Ln.	Dry	Clear	Driver	44	None	Bicyclist	11	Non-Incapacitating			
8/28/2001	8:19	3101 Bluebird Ln.		Dry	Clear	Driver	35	None	Bicyclist	36	None			
9/20/2001	6:40	9812 Linn Station Rd.		Dry	Cloudy	Driver	28	None	Bicyclist	23	Non-Incapacitating			
12/12/2001	16:10	Watterson Trl. S.	Rivanna Dr.	Wet	Raining	Driver	19	None	Bicyclist	31	None			
7/8/2002	15:37	Grand Ave.	Bluebird Ln.	Dry	Clear	Driver	47	None	Bicyclist	29	Non-Incapacitating			
12/31/2002	20:00	10400B Watterson Trl. S.	Taylorsville Rd. & College Dr.	Wet	Raining	Driver	72	None	Bicyclist	60				
3/1/2003	15:56	Stony Brook Dr.	LanternLite Pkwy.	Dry	Cloudy	Driver	54	None	Bicyclist	39				
5/6/2003	17:39	Hurstbourne Pkwy. S.	Blairwood Rd. & Caritas Way	Dry	Cloudy	Driver	55	None	Bicyclist	13	Non-Incapacitating			
7/5/2003	15:40	3601 College Dr.	Neal Dr. & Watterson Trl. S.	Dry	Clear	Driver	47	None	Bicyclist	14	Incapacitating	Bicyclist	15	Incapacitating
7/31/2003	12:46	Billtown Rd.	Ruckriegel Pkwy.	Dry	Clear	Driver	57	None	Bicyclist	13	Non-Incapacitating			
9/27/2003	22:40	Taylorsville Rd.	Merioneth Dr.	Dry	Clear	Driver	45	None	Bicyclist	23	Non-Incapacitating			
4/6/2004	17:43	9100 Taylorsville Rd.	Hurstbourne Pkwy. S. & Six Mile Ln.	Dry	Clear	Driver	46	None	Bicyclist	37	Incapacitating			
5/6/2004	15:40	Grand Ave.	Taylorsville Rd.	Dry	Clear	Driver	24	None	Bicyclist	37	None			
7/22/2004	19:37	9616 Taylorsville Rd.	Patti Ln. & Merioneth Dr.	Dry	Cloudy	Driver	38	None	Bicyclist	27	Incapacitating			
5/21/2005	7:48	10618 Bluegrass Pkwy.		Dry	Clear	Driver	17	None	Bicyclist	47	None			
6/28/2005	18:33	10305 Taylorsville Rd.	Jefferson St. & Peach St.	Dry	Cloudy	Owner	70	None	Bicyclist	33	Possible Injury			

**City of Jeffersontown Police Department  
Driver/Pedestrian Accidents  
2000-2005**

DATE	TIME	ROADWAY	BETWEEN/INTERSECITON	ROAD CONDITION	WEATHER CONDITION	UNIT 1	AGE	INJURIES	UNIT 2	AGE	INJURIES	UNIT 3	AGE	INJURIES	UNIT 4	AGE	INJURIES
1/12/2000	19:14	Hurstbourne Pkwy. S.	Greene Way & Taylorsville Rd.	Dry	Clear	Driver	39	None	Ped	29	Possible Injury						
3/14/2000	11:49	10500B Watterson Trl. S.	Taylorsville Rd.	Dry	Clear	Driver	44	None	Ped	68	Incapacitating						
8/18/2000	7:13	Taylorsville Road	Stony Brook Dr.	Wet	Raining	Driver	34	None	Ped	66	Non-Incapacitating						
11/14/2000	15:53	Galene Drive	Maple Rd.	Dry	Clear	Driver	17	None	Ped	59	None						
3/23/2001	19:12	Garden Drive.	Willowood Way & Calais Drive	Dry	Clear	Owner	76	None	Ped	10	None						
7/9/2001	10:07	Plantside Drive	Bluegrass Pkwy. & Bunsen Way	Dry	Clear	Owner	42	None	Ped		Non-Incapacitating						
8/30/2001	15:35	10400B Bunsen Way	Carton Dr. & Watterson Trl. N.	Dry	Clear	Driver	74	None	Ped	31	Incapacitating						
10/16/2001	7:57	2000B Stony Brook Dr.	Park Laureate Dr. & Pointe Arbor Ln.	Dry	Cloudy	Driver	37	None	Ped	9	Incapacitating						
10/19/2001	7:40	Old Six Mile Lane	Patti Ln. & Bilsim Way	Dry	Clear	Driver	38	None	Ped	17	Non-Incapacitating						
10/19/2001	20:29	Taylorsville Road	Ruckriegel Pkwy.	Dry	Clear	Driver	76	None	Ped	39	Non-Incapacitating						
4/7/2002	16:00	Hurstbourne Pkwy. S.	Taylorsville Rd. & Greene Way	Dry	Clear				Ped	26	Possible Injury						
5/9/2002	15:51	4500B Taylorsville Rd.	Stony Brook Dr.	Dry	Clear	Driver	48	None	Ped	6	Possible Injury						
7/23/2002	22:30	2745 Hurstbourne Pkwy. S.	Stoney Brook Drive & Greene Way	Dry	Cloudy	Driver	17	None	Ped	16	Non-Incapacitating						
10/13/2002	13:15	2000B Stony Brook Dr.	Taylorsville Rd. & Salsman Dr.	Dry	Clear	Driver	58	None	Ped	7	Non-Incapacitating						
12/3/2002	12:20	9080 Taylorsville Road		Dry	Clear	Driver	44	None	Ped	41	Possible Injury						
12/19/2002	11:20	3300B Dell Road	Galene Drive & Marlin Drive	Wet	Raining	Owner	42	None	Ped	25	Possible Injury						
1/4/2003	14:55	9575 Taylorsville Rd.		Dry	Clear	Driver	25	None	Ped		Non-Incapacitating						
1/24/2003	6:55	Plantside Drive	Data Dr. & Bunsen Way	Dry	Clear	Driver	43	None	Ped	22	Incapacitating						
2/16/2003	23:53	9700B Sue Helen Drive	Barclay Dr. & Calais Dr.	Ice	Sleet/Hail	Owner			Ped	12	Non-Incapacitating	Ped	13	Non-Incapacitating	Ped	14	Non-Incapacitating
4/19/2003	23:42	10509 Timberwood Cir.		Dry	Clear	Driver	21	None	Ped	19	Non-Incapacitating						
5/29/2003	21:38	801 Hurstbourne Pkwy. S.	Timberwood Cir. & Seaton Springs Pkwy.	Dry	Cloudy	Driver	70	None	Ped	63	Fatal						
6/2/2003	19:34	2600 Hurstbourne Pkwy. S.		Dry	Cloudy	Driver	30	None	Ped	19	Non-Incapacitating						
8/4/2003	18:13	1200 Hurstbourne Pkwy.	Blairwood Rd. & Linn Station Rd.	Dry	Cloudy	Driver	43	None	Ped	16	Incapacitating						
10/2/2003	9:18	10103 Grand Ave.		Dry	Clear	Driver	23	None	Ped	24	Incapacitating						
6/8/2004	15:14	2820 Six Mile Ln.		Dry	Cloudy	Driver	75	None	Ped	44	Non-Incapacitating						
7/2/2004	11:30	Hurstbourne Pkwy. S.	I-64 & Blairwood Rd.	Dry	Cloudy	Driver	23	None	Ped	26	Possible Injury						
9/26/2004	21:35	I-64		Dry	Clear	Driver	26	None	Ped	25	Fatal						
10/17/2004	11:58	4640 Taylorsville Rd.		Dry	Clear	Driver	71	None	Ped	51	Possible Injury						
3/15/2005	7:37	9600 Old Six Mile Lane		Dry	Cloudy	Driver	28	None	Ped	26	Incapacitating						
5/25/2005	9:03	Galene Drive	Maple Rd.	Dry	Clear	Driver	71	None	Ped	65							
6/6/2005	4:00	9500 Camille Rd.		Dry	Cloudy	Driver	26	None	Ped	21	Incapacitating						
7/24/2005	19:23	Taylorsville Road	Merioneth Dr. & Patti Ln.	Dry	Clear	Owner	27	None	Ped	42	Possible Injury						
7/27/2005	13:42	3406 College Drive		Dry	Cloudy	Owner	60	None	Ped	40	Incapacitating						
9/16/2005	7:20	Old Six Mile Lane	Patti Ln. & Tree Ln.	Dry	Clear	Driver	17	None	Ped	17	Non-Incapacitating						
12/15/2005	22:00	11501 Kentucky Mills Dr.		Wet	Snowing	Owner	59	None	Ped	17	Possible Injury						



## **2. Definitions of Pedestrian Crash Types**

- A. Midblock: Dart/Dash**
- B. Multiple Threat**
- C. Mailbox Or Other Midblock**
- D. Failure To Yield At Unsignalized Location**
- E. Bus-Related**
- F. Turning Vehicle At Intersection**
- G. Through Vehicle At Intersection**
- H. Walking Along Roadway**
- I. Working/Playing In Road**
- J. Not In Road (Sidewalk, Driveway, Parking Lot, Or Other)**
- K. Backing Vehicle**
- L. Crossing On Expressway**
- M. Miscellaneous**

## A. Midblock: Dart/Dash

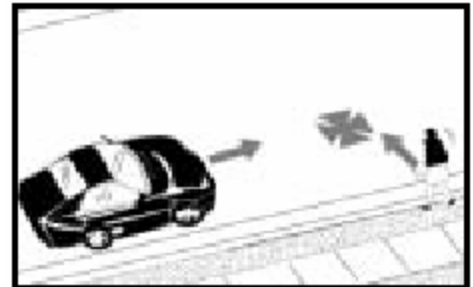
The pedestrian walked or ran into the roadway and was struck by a vehicle. The motorist's view of the pedestrian may have been blocked until an instant before the impact, and/or the motorist may have been speeding.

### Possible Cause/Problem #1

Child runs into neighborhood/collector street.

### General Countermeasures

- A. Implement traffic-calming measures such as speed humps, speed tables, or chicanes.
- B. Remove or restrict on-street parking.
- C. Provide adequate nighttime lighting.
- D. Provide curb extensions.
- E. Install spot street narrowing at high midblock-crossing locations.
- F. Narrow travel lanes.
- G. Install street closure/diagonal diverter at selected intersection(s).
- H. Provide adult crossing guard (in school zone).
- I. Educate children about safe crossing behavior and adults about speeding.
- J. Add on-street bike lanes.
- K. Convert street to woonerf, pedestrian street, or driveway link/serpentine.
- L. Design gateway to alert motorists that they are entering neighborhood with high level of pedestrian activity.
- M. Provide a raised pedestrian crossing.



### Possible Cause/Problem #2

Pedestrian tries to cross high-speed and/or high-volume arterial street.

### General Countermeasures

- A. Install medians or pedestrian crossing islands.
- B. Provide staggered crosswalk through the median (forcing pedestrians to walk and look to the right for oncoming traffic in the second half of street).
- C. Provide curb extensions at intersections or midblock to improve direct line of sight between vehicle and pedestrian.
- D. Improve/add nighttime lighting.
- E. Install midblock traffic signal with pedestrian signals, if warranted.
- F. Install standard warning sign (see *Manual on Uniform Traffic Control Devices* (MUTCD)) or yellow or fluorescent yellow/green signs to alert drivers to pedestrian crossing area.
- G. Install overpass or underpass.
- H. Enforce speed limits, pedestrian ordinances.
- I. Add traffic-calming measures.
- J. Bus young children across busy streets or adjust school district boundaries.
- K. Relocate bus stop.
- L. Use speed-monitoring trailer.

## B. Multiple Threat

The pedestrian entered the traffic lane in front of stopped traffic and was struck by a vehicle traveling in the same direction as the stopped vehicle. The stopped vehicle may have blocked the visibility between the pedestrian and the striking vehicle, and/or the motorist may have been speeding.

### Possible Cause/Problem #1

Motorist's view of pedestrian is blocked and motorist fails to yield.

### General Countermeasures

- A. Recess stop lines 9.1 m (30 ft) in advance of crosswalk.
- B. Install traffic signals with pedestrian Hand/Man or WALK/DON'T WALK signals, if warranted.
- C. Provide midblock or intersection curb extensions.
- D. Install traffic-calming devices such as speed tables or raised pedestrian crossings on local or other neighborhood streets.
- E. Install barriers or signs to prohibit crossings and direct pedestrians to safer crossing locations nearby.
- F. Provide raised crosswalks to improve pedestrian visibility.
- G. Install advance warning signs or flashers.
- H. Relocate bus stop to far side of crossing area.
- I. Improve roadway lighting.
- J. Enforce crosswalk laws.

### Possible Cause/Problem #2

Pedestrian tries to cross high-speed and/or high-volume arterial street.

### General Countermeasures

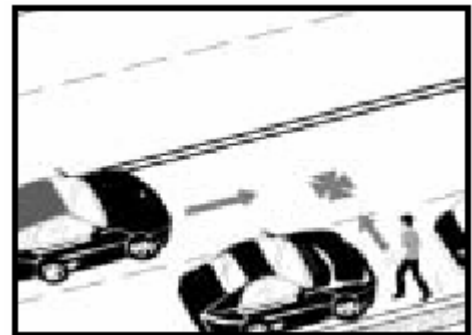
- A. Narrow travel lanes (e.g., add bike lanes) to slow vehicle speeds and reduce crossing distance.
- B. Reduce roadway width. For example, modify four-lane undivided roadways to two through lanes with sidewalks and bike lanes, plus a center two-way left-turn lane (or raised median).
- C. Increase police enforcement of speed limit.
- D. Construct overpass or underpass.
- E. Install raised median or pedestrian crossing island.

### Possible Cause/Problem #3

Pedestrian does not have adequate time to cross multi-lane roadway.

### General Countermeasures

- A. Install traffic signals with pedestrian WALK/DON'T WALK signals, if warranted.
- B. Adjust pedestrian signal timing.
- C. Provide raised crosswalk to improve pedestrian visibility.
- D. Provide midblock or intersection curb extensions.
- E. Install raised pedestrian crossing island.
- F. Enforce crosswalk laws.
- G. Reduce roadway width.



## C. Mailbox or Other Midblock

The pedestrian was struck while getting into or out of a stopped vehicle or while crossing the road to/from a mailbox, newspaper box, ice-cream truck, etc.

### Possible Cause/Problem #1

Pedestrian struck while going to/from a private residence mailbox/newspaper box.

#### General Countermeasures

- A. Relocate mailboxes to safer crossing area or provide safer crossings at existing location.
- B. Improve lighting.
- C. Provide traffic-calming measures (e.g., chicanes or raised devices on residential streets).
- D. Add bike lanes and reduce total roadway and lane width.
- E. Install pedestrian warning signs (see MUTCD).
- F. Implement driver education program.
- G. Implement pedestrian education program.
- H. Provide raised median on multi-lane arterial street.
- I. Construct gateway or provide signs that identify neighborhood as an area with high levels of pedestrian activity.

### Possible Cause/Problem #2

Pedestrian struck while going to/from an ice-cream vendor or similar destination.

#### General Countermeasures

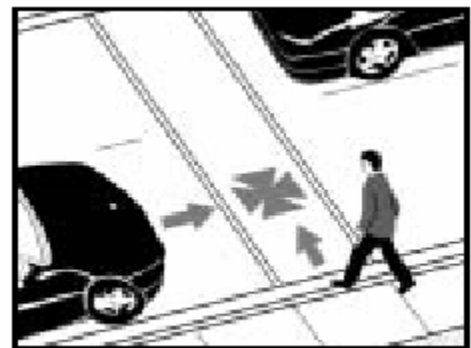
- A. Reduce lane or roadway width.
- B. Add pedestrian crossing islands to roadway.
- C. Provide traffic-calming measures on local streets.
- D. Create Public Service Announcements (PSAs) to educate parents, children, and drivers.
- E. Adopt an Ice-Cream Truck Ordinance. This ordinance would prohibit motorists from passing a stopped ice-cream truck. Trucks would be equipped with flashing lights and a "stop" arm that would extend when the truck stopped to serve children.

### Possible Cause/Problem #3

Pedestrian struck while getting into/out of parked vehicle or by an emergency or speeding vehicle.

#### General Countermeasures

- A. Implement speed-reduction measures such as chicanes or speed tables.
- B. Implement traffic-calming measures on local/collector streets.
- C. Restrict on-street parking.
- D. Increase police enforcement of speed limits.



## D. Failure To Yield At Unsignalized Location

At an unsignalized intersection or midblock location, a pedestrian stepped into the roadway and was struck by a vehicle. The motorist failed to yield to the pedestrian and/or the pedestrian stepped directly into the path of the oncoming vehicle.

### Possible Cause/Problem #1

Motorist fails to yield to pedestrian at two-lane, low-speed road crosswalk (or unmarked crossing).

#### General Countermeasures

- A. Install raised intersection, raised crosswalk, speed table, or speed humps with truncated domes at both ends.
- B. Install overhead CROSSWALK, school zone, or other warning signs.
- C. Install curb extensions or choker.
- D. Construct raised pedestrian crossing island.
- E. Install traffic signal with pedestrian signals, if warranted.
- F. Add chicane, use serpentine design or use special paving treatments along street to slow traffic.
- G. Use landscaping that slows vehicle speeds without impeding sightlines.
- H. Reduce curb radius to slow vehicle speeds.



### Possible Cause/Problem #2

Pedestrian has difficulty crossing multi-lane road.

#### General Countermeasures

- A. Install raised medians or pedestrian crossing islands.
- B. Install traffic signal with pedestrian signals, if warranted.
- C. Modify four-lane, undivided street to two lanes plus a two-way, left-turn lane (TWLTL) or median with turning pockets and bike lanes.
- D. Install nighttime lighting.
- E. Use police speed enforcement.
- F. Use far-side bus stops.
- G. Narrow lanes, reduce number of lanes, and/or install bike lanes.
- H. Construct overpass or underpass.
- I. Ensure that curb ramps are provided to make crossing easier for all pedestrians.

### Possible Cause/Problem #3

Motorist unwilling to yield due to high motorist speeds or high traffic volumes.

#### General Countermeasures

- A. Implement speed-reduction measures such as chicanes or speed tables.
- B. Implement traffic-calming measures on local/collector streets.
- C. Restrict on-street parking.
- D. Increase police enforcement of speed limit.
- E. Construct pedestrian crossing islands.
- F. Install traffic signal with pedestrian signals, if necessary.
- G. Install signs or sidewalk barriers to guide pedestrians to safer crossing locations.
- H. Use speed-monitoring trailer.



## E. Bus-Related

The pedestrian was struck by a vehicle either: (1) by crossing in front of a commercial bus stopped at a bus stop; (2) going to or from a school bus stop; or (3) going to or from, or waiting near, a commercial bus stop.

### Possible Cause/Problem #1

Motorist fails to yield to pedestrian or pedestrian crosses during inadequate gap in traffic due to limited sight distance at intersection.

#### General Countermeasures

- A. Move bus stop to far side of intersection or crosswalk.
- B. Install curb extension.
- C. Consider an alternative bus stop location.
- D. Install pedestrian crossing islands or raised crosswalk.
- E. Install or improve roadway lighting.
- F. Install crosswalk markings to encourage pedestrians to cross in the crosswalk behind the bus.
- G. Mark bus stop area with pedestrian warning signs.
- H. Remove parking in areas that obstruct the vision of motorists and pedestrians.

### Possible Cause/Problem #2

Pedestrian has difficulty walking along roadway and crossing at midblock location with high vehicle speeds and/or high volumes.

#### General Countermeasures

- A. Provide bus pull-off area.
- B. Consider an alternative bus stop location.
- C. Install midblock curb extensions.
- D. Provide curb ramps and an accessible sidewalk.
- E. Install sidewalk and/or sidewalk barriers to direct pedestrians to a nearby crossing location.
- F. Provide pedestrian education/training.
- G. Add bike lanes or painted shoulder.
- H. Add recessed stop lines.

#### General Countermeasures

- A. Implement traffic-calming measures.
- B. Narrow roadway by reducing number of lanes, reducing lane widths, and/or adding bicycle lanes.
- C. Provide gateway, identify neighborhood with signs, and/or create a pedestrian street.
- D. Increase police enforcement of speed limit.
- E. Construct pedestrian crossing islands.
- F. Install traffic signal with pedestrian signals, if necessary.
- G. Install signs or sidewalk barriers to guide pedestrians to safer crossing locations.
- H. Use speed-monitoring trailer.
- I. Increase police speed enforcement.
- J. Install or improve roadway lighting.
- K. Reduce number of roadway lanes.
- L. Install traffic and pedestrian signals, if warranted.

**E. Bus-Related (continued)**

**Possible Cause/Problem #3**

Pedestrian has difficult time crossing, waiting, or walking in the vicinity of school bus stop.

**General Countermeasures**

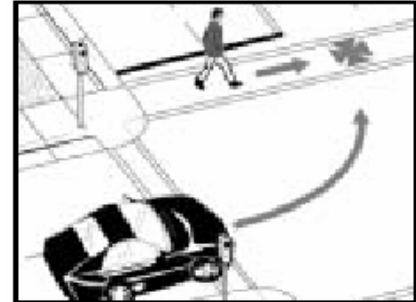
- A. Select safer location for school bus stop.
- B. Implement pedestrian/driver education programs.
- C. Involve school, neighborhood groups, and PTA in promoting enforcement and education.
- D. Provide sidewalks.
- E. Provide street furniture or other amenities at bus stop.
- F. Install or improve roadway lighting.
- G. Enforce regulations against passing stopped school bus.
- H. Educate pedestrians to cross behind the bus.

## F. Turning Vehicle at Intersection

The pedestrian was attempting to cross at an intersection and was struck by a vehicle that was turning right or left.

### Possible Cause/Problem #1

Conflict between pedestrian and left-turning vehicle.

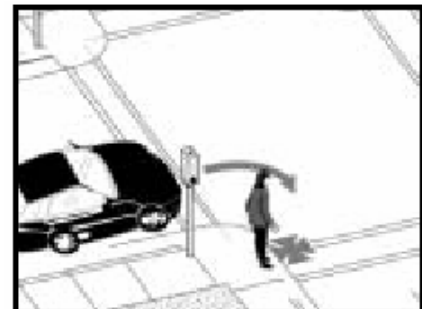


### General Countermeasures

- A. Prohibit left turn.
- B. Provide separate left-turn and WALK/DON'T WALK signals.
- C. Add special pedestrian signal phasing (e.g., exclusive protected pedestrian signal or leading pedestrian interval).
- D. Convert to one-way street network (if justified by surrounding area wide pedestrian and traffic volume study).
- E. Install warning signs for pedestrians and/or motorists (see MUTCD).
- F. Develop/provide Public Safety Announcement (PSA) safety messages.
- G. Add curb extensions or curb ramps.
- H. Convert intersection to modern roundabout or mini-circle where all motorists turn right.
- I. Consider closing street or using modified T-intersection, diverter, or intersection median barrier.
- J. Construct overpass or underpass.
- K. Install pedestrian crossing island and raised median.
- L. Use traffic-calming devices, such as a raised intersection or raised pedestrian crossing, to reduce vehicle speeds.

### Possible Cause/Problem #2

Conflict between pedestrian and right-turning vehicle.



### General Countermeasures

- A. Prohibit Right Turn on Red (RTOR).
- B. Reduce right-turn radii.
- C. Add curb extensions or curb ramps.
- D. Improve right-turn slip-lane design.
- E. Install warning signs for pedestrians and/or motorists.
- F. Provide leading pedestrian interval.
- G. Remove intersection snow/clutter at the corner to improve visibility and give pedestrian space to stand outside of roadway.
- H. Improve intersection lighting to improve visibility.
- I. Provide advanced stop lines and marked crosswalks.
- J. Consider street closure.
- K. Move bus stop to far side of intersection.
- L. Construct overpass or underpass.
- M. Install pedestrian crossing islands and raised median.
- N. Use a traffic-calming device, such as a raised intersection or raised pedestrian crossing, to reduce vehicle speeds.
- O. Remove on-street parking from the approaches to crosswalks.

## F. Turning Vehicle at Intersection (continued)

### Possible Cause/Problem #3

Substantial number of school children crossing and large turning vehicle movement.

### General Countermeasures

- A. Provide adult crossing guards during school crossing periods, or two guards for wide streets.
- B. Provide police enforcement at the intersection.
- C. Educate children about safe crossing behavior.
- D. Install pedestrian crossing islands for wide two-way streets.
- E. Prohibit left turns.
- F. Add exclusive pedestrian phase or leading pedestrian interval.
- G. Improve intersection lighting.
- H. Consider closing street or using modified T-intersection, diverter, or intersection median barrier.

### Possible Cause/Problem #4

Inadequate sight distance and/or intersection geometrics.

### General Countermeasures

- A. Remove sight obstructions and/or roadside obstacles (e.g., trees/shrubs, mailboxes, poles, newsstands, trash cans).
- B. Provide special pedestrian signal phasing (e.g., exclusive protected pedestrian signal interval).
- C. Install pedestrian warning signs and/or motorist regulatory signs (see MUTCD).
- D. Prohibit left turns.

## G. Through Vehicle at Intersection

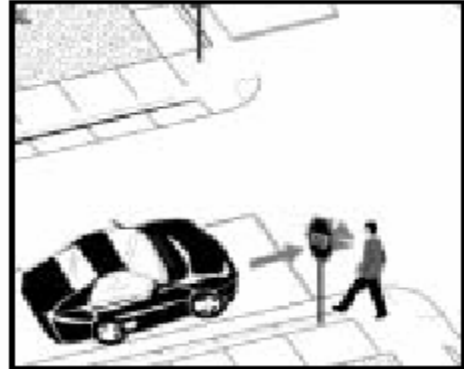
The pedestrian was struck at a signalized or unsignalized intersection by a vehicle that was traveling straight ahead.

### Possible Cause/Problem #1

Pedestrian could not see traffic signal.

### General Countermeasures

- A. Install new or larger pedestrian WALK/DON'T WALK or automated pedestrian signals.
- B. Move bus stop to far side of intersection.



### Possible Cause/Problem #2

Children crossing in school zones.

### General Countermeasures

- A. Provide adult crossing guards, or two guards for wide streets.
- B. Install pedestrian overpass or underpass.
- C. Install pedestrian signals.
- D. Install school regulatory flashers (e.g., SPEED LIMIT 25 MPH WHEN FLASHING).
- E. Provide school zone signs and pavement markings.
- F. Provide pedestrian education to students and motorists.
- G. Increase police enforcement.
- H. Use traffic-calming devices such as raised intersection or mini-circle to reduce vehicle speeds.
- I. Consider closing street or using diverter or intersection median barrier.
- J. Provide advanced stop lines.
- K. Provide curb extensions to reduce crossing distance.
- L. Provide curb ramps to make crossing easier for all pedestrians.
- M. Provide a raised pedestrian crossing.
- N. Convert to one-way street network (if justified by surrounding area wide pedestrian and traffic volume study).



### Possible Cause/Problem #3

Excessive delay to pedestrians prior to getting the WALK interval.

### General Countermeasures

- A. Re-time signal to be more responsive to pedestrian needs (e.g., shorter cycle lengths or convert to fixed-time operation).
- B. Provide quick-response pedestrian push-buttons or automatic (e.g., microwave or infrared) detectors.
- C. Install pedestrian overpass or underpass (if justified based on high pedestrian volumes with high traffic speeds or volumes).
- D. Provide Pedestrian crossing islands.



## G. Through Vehicle at Intersection (continued)

### Possible Cause/Problem #4

Lack of pedestrian compliance with WALK phase due to other causes.

#### General Countermeasures

- A. Re-time signal to be more responsive to pedestrian needs (e.g., shorter cycle length).
- B. Provide adequate WALK and clearance intervals
- C. Provide leading pedestrian interval.
- D. Provide pedestrian education to students and motorists.
- E. Provide adult crossing guard at school crossings.

### Possible Cause/Problem #5

Motorist did not see pedestrian in time to stop.

#### General Countermeasures

- A. Remove slight obstructions such as mailboxes or parked vehicles.
- B. Add pedestrian crossing islands or raised crosswalk.
- C. Remove on-street parking near intersection (e.g., up to 30.5 m {100 ft}).
- D. Use traffic-calming devices, such as speed tables or a speed0-monitoring trailer, on streets approaching the intersection if speed is an issue.
- E. Add curb extensions
- F. Construct raised intersection.
- G. Improve nighttime lighting.
- H. Move bus stop to far side of intersection.
- I. Add paving treatments that improve visibility of pedestrian crossing areas.

### Possible Cause/Problem #6

Motorist ran red light at signalized intersection.

#### General Countermeasures

- A. Increase police enforcement.
- B. Install camera enforcement.
- C. Add short all-red interval at signal.

## H. Walking Along Roadway

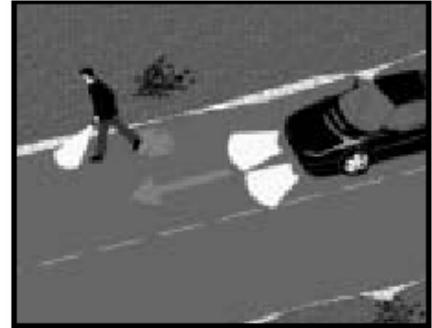
The pedestrian was walking or running along the roadway and was struck from the front or from behind by a vehicle.

### Possible Cause/Problem #1

Inadequate walking area.

#### General Countermeasures

- A. Provide a sidewalk on both sides of road.
- B. Provide asphalt path or paved shoulder.
- C. Reduce number of lanes (e.g., four lanes or three lanes) and add sidewalk.
- D. Construct and maintain sidewalks and curb ramps to be usable by people with disabilities.



### Possible Cause/Problems #2

High vehicle speeds and /or volume.

#### General Countermeasures

- A. Add sidewalk or walkway.
- B. Provide nighttime lighting.
- C. Install "Walk on Left Facing Traffic" sign.
- D. Increase lateral separation between pedestrians and motor vehicles (e.g., bike lanes or landscape buffers).
- E. Increase police enforcement of speed limit.
- F. Construct and maintain sidewalks and curb ramps to be usable by people with disabilities.
- G. Use speed-monitoring trailers.
- H. Construct gateway or install signs to identify neighborhood as area with high pedestrian activity.

### Possible Cause/Problem #3

Inadequate route to school.

#### General Countermeasures

- A. Provide Sidewalks.
- B. Involve school groups and PTA in evaluating safe routes to school and promoting education and enforcement.
- C. Provide adult crossing guards.
- D. Implement traffic-calming methods at selected sites.
- E. Construct and maintain sidewalks and curb ramps to be usable by people with disabilities.

### Possible Cause/Problem #4

Sidewalks are not accessible to all pedestrians.

#### General Countermeasures

- A. Construct curb ramps.
- B. Remove obstacles in sidewalk.
- C. Build missing sidewalk segments.
- D. Relocated poles and street furniture to provide continuous passage in sidewalk area.
- E. Enforce parking laws to prevent cars from blocking sidewalks.

## I. Working/Playing in Road

A vehicle struck a pedestrian who was: (1) standing or walking near a disabled vehicle, (2) riding a play vehicle that was not a bicycle (e.g., wagon, sled, tricycle, skates), (3) playing in the road, or (4) working in the road.



### Possible Cause/Problem #1

Worker, policeman, etc. struck in roadway (arterial street).

### General Countermeasures

- A. Provide better physical separation/protection from motor vehicles.
- B. Improve nighttime lighting and retroreflective materials on workers.
- C. Improve traffic control measures (e.g., signs, markings, cones, barricades, and flashers) warning motorists of workers' presence.
- D. Increase police enforcement of speed limits in work zones.
- E. Increase worker safety training.

### Possible Cause/Problem #2

Pedestrian was struck playing on foot or on play vehicle (e.g., skateboard, wagon, sled, in-line skates) on local/collector street.

### General Countermeasures

- A. Provide accessible sidewalks or walkways on both sides of street.
- B. Introduce traffic-calming measures (e.g., speed humps, street narrowing).
- C. Improve nighttime lighting.
- D. Implement pedestrian and motorist education programs.
- E. Provide community park/playground.
- F. Convert streets to a woonerf or use signs to identify neighborhood as area with high levels of pedestrian activity.
- G. Consider street closures (full or partial) or using diverters.

### Possible Cause/Problem #3

Vehicle speeds are excessive on local street.

### General Countermeasures

- A. Narrow streets and/or travel lanes.
- B. Install traffic-calming devices such as speed humps, speed tables, mini-circles, and/or chicanes.
- C. Convert to driveway link/serpentine street.
- D. Use speed-monitoring trailers in conjunction with police enforcement.

## I. Working/Playing in Road (continued)

### Possible Cause/Problem #4

Disabled vehicle-related (walking to/from disabled vehicle).

### General Countermeasures

- A. Provide sidewalks, walkways, or paved shoulders.
- B. Implement pedestrian/driver education program.
- C. Provide adequate nighttime lighting.
- D. Provide motorist assistance program.

### Possible Cause/Problem #5

Working on or standing by a disabled vehicle.

### General Countermeasures

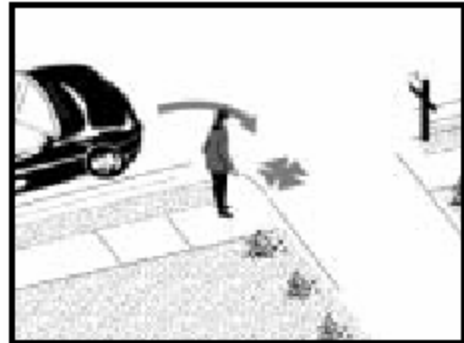
- A. Provide paved shoulders.
- B. Provide adequate nighttime lighting.
- C. Educate drivers about what to do if a vehicle becomes disabled.
- D. Provide a motorist assistance program.

## J. Not in Road (Sidewalk, Driveway, Parking Lot or Other)

The pedestrian was standing or walking near the roadway edge, on the sidewalk, in a driveway or alley, or in a parking lot, when struck by a vehicle.

### Possible Cause/Problem #1

Pedestrian was struck while waiting to cross roadway, standing at or near curb.



### General Countermeasures

- A. Provide accessible sidewalks/walkways and crosswalks.
- B. Install curb extensions for better line of sight between pedestrians and motor vehicles.
- C. Reduce curb radii to slow turning cars.
- D. Implement driver education program.
- E. Install sidewalk barriers.
- F. Improve nighttime lighting.
- G. Increase speed enforcement.
- H. Provide sidewalk buffer (landscape strip or bike lane).
- I. Use adult crossing guard.

### Possible Cause/Problem #2

Pedestrian was struck in parking lot, driveway, private road, gas station, alley, etc.

### General Countermeasures

- A. Redesign or re-stripe parking lot to provide pedestrian access.
- B. Maintain level sidewalk across driveway area.
- C. Implement pedestrian and motorist education programs.
- D. Move sidewalk farther back so that driver will have more time to stop for a pedestrian crossing a driveway.
- E. Improve nighttime lighting.
- F. Build/improve local parks for child activities.
- G. Provide clear pedestrian path across parking lot
- H. Remove landscaping or other visual obstructions near driveways.

### Possible Cause/Problem #3

Vehicle entered or exited a driveway or alley and struck pedestrian.

### General Countermeasures

- A. Provide sidewalk or walkway.
- B. Add adequate planting strip or sidewalk separation.
- C. Remove sight obstructions (e.g., trim hedges or lower fencing).
- D. Maintain level sidewalks across driveways or alleys.
- E. Narrow driveways and reduce turning radii.
- F. Provide clear walking path across driveway.
- G. Remove unneeded driveways and alleys.
- H. Provide advance warning signs for drivers.



## K. Backing Vehicles

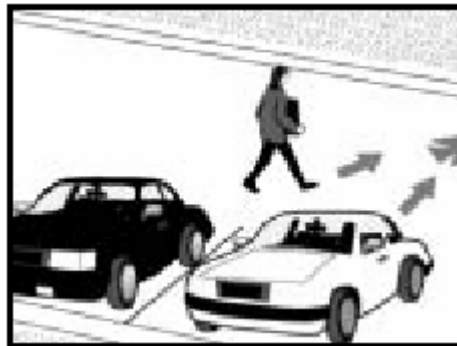
The pedestrian was struck by a backing vehicle on a street, in a driveway, on a sidewalk, in a parking lot, or at another location.

### Possible Cause/Problem #1

Pedestrian struck by backing vehicle.

### General Countermeasures

- A. Enhance pedestrian education.
- B. Enhance motorist education.
- C. Provide auditory backing alert on vehicle.
- D. Eliminate, modify, or relocate parking if feasible.
- E. Remove unneeded driveways and alleys.
- F. Remove landscaping or other sight obstruction near driveways.
- G. Provide clearly delineated walkways for pedestrians in parking lots.
- H. Relocate pedestrian walkways.
- I. Improve nighttime lighting.
- J. Provide raised pedestrian crossings or curb extensions to improve the visibility



## L. Crossing on Expressway

The pedestrian was struck while crossing a limited-access expressway or expressway ramp.

### Possible Cause/Problem #1

Disabled vehicle (pedestrian crosses expressway to seek help).

### General Countermeasures

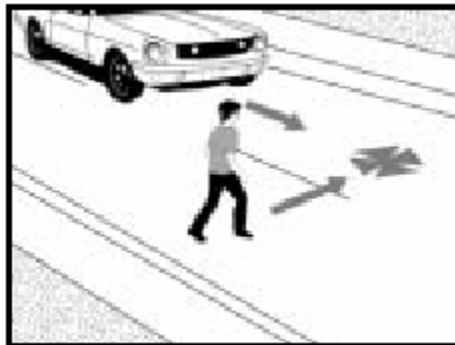
- A. Install/upgrade roadway lighting.
- B. Increase police surveillance.
- C. Provide motorist assistance program.
- D. Educate drivers on what to do if a vehicle is disabled.

### Possible Cause/Problem #2

Pedestrians routinely cross section of expressway.

### General Countermeasures

- A. Install large, visible pedestrian warning signs.
- B. Install/upgrade nighttime lighting.
- C. Provide pedestrian overpass/underpass.
- D. Install pedestrian fencing or barriers along roadway right-of-way
- E. Increase police surveillance.



## M. Miscellaneous

This category includes all other pedestrian crash types, such as: intentional crashes, driverless vehicle, a secondary crash after a vehicle/vehicle collision, a pedestrian struck by falling cargo, emergency vehicle striking a pedestrian, a pedestrian standing or lying in the road, or other/unknown circumstances. The information described above on pedestrian crash groups is referenced in the next chapter for selecting corresponding pedestrian safety improvements.

### Possible Cause/Problem #1

Pedestrian lying in road.

#### General Countermeasures

- A. Install or upgrade nighttime lighting.
- B. Increase police enforcement and surveillance.
- C. Provide taxi rides home from bars.



### Possible Cause/Problem #2

Emergency vehicle-related.

#### General Countermeasures

- A. Increase police surveillance.
- B. Install/upgrade lighting.
- C. Provide public education.

### Possible Cause/Problem #3

Pedestrian falls from vehicle.

#### General Countermeasures

- A. Increase police enforcement of teens "vehicle surfing."
- B. Pass/enforce laws and provide education programs against riding in back of pickup trucks.

### Possible Cause/Problem #4

Pedestrian standing in road prior to crash — action unknown.

#### General Countermeasures

- A. Provide accessible sidewalks/walkways and crosswalks.
- B. Install/upgrade roadway lighting.
- C. Provide raised median (multi-lane roads).
- D. Add pedestrian crossing islands.
- E. Enforce speed limit.
- F. Provide safe pedestrian crossings (e.g., traffic signal, if warranted).

### Possible Cause/Problem #5

Pedestrian struck by driverless vehicle.

#### General Countermeasures

- A. Require mandatory statewide vehicle inspection.
- B. Address through State driver education program.

# Appendices

- A. Glossary of Terms**
- B. Walkability and Bikeability Checklist**
- C. Benefits of Walking and Biking**
- D. Kentucky Revised Statutes and Local Ordinances Relative to  
Bicycle and Pedestrians**
- E. PowerPoint Presentation**

## **A. Glossary of Terms**



**AASHTO**

American Association of State Highway and Transportation Officials

**BICYCLE**

A vehicle having two tandem wheels propelled solely by human power upon which any person or persons may ride.

**BICYCLE FACILITIES**

A general term denoting improvements and provisions made by public agencies to accommodate or encourage bicycling including parking facilities all bikeways and shared roadways not specifically designated for bicycle use.

**BICYCLE ROUTE (BIKE ROUTE)**

A designated segment of a transportation system that is the preferred route for bicycle travel. This designation may be established by the jurisdiction having authority through signing or identification on a map. The term "bike route" should be used for operational purposes and not for bicycle system or facility planning.

**BICYCLE LANE**

A portion of a roadway which has been designated by striping signing and pavement markings for the preferential or exclusive use of bicyclists.

**BIKEWAY**

Any road, path, or way open to bicycle travel regardless of whether such facilities are designated for the preferential use of bicycles or are to be shared with other transportation modes.

**CLEARANCE, Lateral**

Width required for safe passage of a bicycle as measured in a horizontal plane.

**CLEARANCE, Vertical**

Height necessary for the safe passage of a bicycle as measured in a vertical plane.

**COMMUTER/ UTILITY CYCLIST**

An individual who uses a bicycle primarily to reach a particular destination for practical purposes, such as to purchase or deliver goods and services, or to travel to and from work or school. Messengers are classified as utility cyclists.

**GRADE SEPARATION**

Vertical separation of travel ways through use of a structure so that traffic crosses without interference such as a pedestrian overpass.

**HIGHWAY**

A general term denoting a public way for purposes of vehicular travel, including the entire area within the right-of-way.

**LEGEND**

Words, phrases, or numbers appearing on all or part of traffic- control device.

**MOTOR VEHICLE**

A vehicle that is self-propelled or designed for self-propulsion.

**MUTCD**

Manual on Uniform Traffic Control Devices is approved by the Federal Highway Administration as a national standard for placement and selection of all traffic control devices on or adjacent to all highways open to public travel.

**PAVEMENT MARKING(s)**

Painted or applied line(s) or legend placed on any pavement surface for regulating, guiding, or warning traffic.

**PEDESTRIAN**

A person whose mode of transportation is on foot. A person “walking a bicycle” becomes a pedestrian. A general term denoting land or property (or interest therein), usually in a strip, acquired for or devoted to transportation purposes.

**RIGHTOF WAY**

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

**ROADWAY**

The portion of the highway for vehicle use, including bicycles. That portion of a motor vehicle law which contains regulations governing the operation of vehicular and pedestrian traffic.

**SEPARATED MULTI-USE 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.

**SHARED, ROADWAY**

A type of bikeway where bicyclists share the roadway with motor vehicles.

**SHOULDER**

A portion of a highway contiguous to the roadway that is primarily for use by pedestrians, bicyclists, and emergency use of stopped vehicles.

**SHOULDER BIKEWAY**

A type of bikeway where bicyclists travel on the shoulder of the roadway.

**SHY DISTANCE**

The distance between the bikeway’s edge and any fixed object capable of injuring a cyclist using the facility.

**SIDEWALK**

The portion of a highway or street designed for preferential or exclusive use by pedestrians.

**SIDEWALK BIKEWAY**

Any sidewalk signed and/or striped to permit bicyclists to share the sidewalk right-of-way with pedestrians.

**SIGHT DISTANCE**

A measurement of the bicyclist’s visibility, unobstructed by traffic along the normal path to the farthest point of the roadway surface.

**TRAFFIC CONTROL DEVICES**

Signs, signals, or other fixtures, whether permanent or temporary, placed on or adjacent to a travel way by authority of a public body having jurisdiction to regulate, warn, or guide traffic.

**TRAFFIC VOLUME**

The given number of vehicles that pass a given point for a given amount of time (hour, day, year).

**TRAVELWAY**

Any way, path, road, or other travel facility used by any and all forms of transportation.

**VEHICLE**

Any device in, upon, or by which any person or property is or may be transported or drawn upon a public highway and includes vehicles that are self-propelled or powered by any means.

## **B. Walkability and Bikeability Checklist and Results**

- 1. Walkability Checklist and Results**
- 2. Bikeability Checklist and Results**

# 1. Walkability Checklist and Results

# Walkability Checklist

## How walkable is your community?

### Take a walk with a child and decide for yourselves.

Everyone benefits from walking. These benefits include: improved fitness, cleaner air, reduced risks of certain health problems, and a greater sense of community. But walking needs to be safe and easy. Take a walk with your child and use this checklist to decide if your neighborhood is a friendly place to walk. Take heart if you find problems, there are ways you can make things better.

### Getting started:

First, you'll need to pick a place to walk, like the route to school, a friend's house or just somewhere fun to go.

The second step involves the checklist. Read over the checklist before you go, and as you walk, note the locations of things you would like to change. At the end of your walk, give each question a rating. Then add up the numbers to see how you rated your walk overall.

After you've rated your walk and identified any problem areas, the next step is to figure out what you can do to improve your community's score. You'll find both immediate answers and long-term solutions under "Improving Your Community's Score..." on the third page.



Partnership for a Walkable America



Pedestrian and Bicycle Information Center



U.S. Department of Transportation



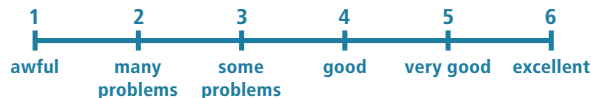


Take a walk and use this checklist to rate your neighborhood's walkability.

# How walkable is your community?

Location of walk \_\_\_\_\_

Rating Scale:



## 1. Did you have room to walk?

- Yes     Some problems:
- Sidewalks or paths started and stopped
  - Sidewalks were broken or cracked
  - Sidewalks were blocked with poles, signs, shrubbery, dumpsters, etc.
  - No sidewalks, paths, or shoulders
  - Too much traffic
  - Something else \_\_\_\_\_
- Locations of problems: \_\_\_\_\_

Rating: (circle one) \_\_\_\_\_  
1 2 3 4 5 6 \_\_\_\_\_

## 4. Was it easy to follow safety rules?

### Could you and your child...

- Yes     No    Cross at crosswalks or where you could see and be seen by drivers?
- Yes     No    Stop and look left, right and then left again before crossing streets?
- Yes     No    Walk on sidewalks or shoulders facing traffic where there were no sidewalks?
- Yes     No    Cross with the light?
- Locations of problems: \_\_\_\_\_

Rating: (circle one) \_\_\_\_\_  
1 2 3 4 5 6 \_\_\_\_\_

## 2. Was it easy to cross streets?

- Yes     Some problems:
- Road was too wide
  - Traffic signals made us wait too long or did not give us enough time to cross
  - Needed striped crosswalks or traffic signals
  - Parked cars blocked our view of traffic
  - Trees or plants blocked our view of traffic
  - Needed curb ramps or ramps needed repair
  - Something else \_\_\_\_\_
- Locations of problems: \_\_\_\_\_

Rating: (circle one) \_\_\_\_\_  
1 2 3 4 5 6 \_\_\_\_\_

## 5. Was your walk pleasant?

- Yes     Some unpleasant things:
- Needed more grass, flowers, or trees
  - Scary dogs
  - Scary people
  - Not well lighted
  - Dirty, lots of litter or trash
  - Dirty air due to automobile exhaust
  - Something else \_\_\_\_\_
- Locations of problems: \_\_\_\_\_

Rating: (circle one) \_\_\_\_\_  
1 2 3 4 5 6 \_\_\_\_\_

## 3. Did drivers behave well?

- Yes     Some problems: Drivers...
- Backed out of driveways without looking
  - Did not yield to people crossing the street
  - Turned into people crossing the street
  - Drove too fast
  - Sped up to make it through traffic lights or drove through traffic lights?
  - Something else \_\_\_\_\_
- Locations of problems: \_\_\_\_\_

Rating: (circle one) \_\_\_\_\_  
1 2 3 4 5 6 \_\_\_\_\_

## How does your neighborhood stack up?

### Add up your ratings and decide.

1. \_\_\_\_\_    26-30 Celebrate! You have a great neighborhood for walking.
2. \_\_\_\_\_    21-25 Celebrate a little. Your neighborhood is pretty good.
3. \_\_\_\_\_    16-20 Okay, but it needs work.
4. \_\_\_\_\_    11-15 It needs lots of work. You deserve better than that.
5. \_\_\_\_\_    5-10 It's a disaster for walking!

Total \_\_\_\_\_

Now that you've identified the problems,  
go to the next page to find out how to fix them.

Now that you know the problems,  
you can find the answers.

# Improving your community's score...



## 1. Did you have room to walk?

Sidewalks or paths started and stopped  
Sidewalks broken or cracked  
Sidewalks blocked  
No sidewalks, paths or shoulders  
Too much traffic

### What you and your child can do immediately

- pick another route for now
- tell local traffic engineering or public works department about specific problems and provide a copy of the checklist

### What you and your community can do with more time

- speak up at board meetings
- write or petition city for walkways and gather neighborhood signatures
- make media aware of problem
- work with a local transportation engineer to develop a plan for a safe walking route

## 2. Was it easy to cross streets?

Road too wide  
Traffic signals made us wait too long or did not give us enough time to cross  
Crosswalks/traffic signals needed  
View of traffic blocked by parked cars, trees, or plants  
Needed curb ramps or ramps needed repair

- pick another route for now
- share problems and checklist with local traffic engineering or public works department
- trim your trees or bushes that block the street and ask your neighbors to do the same
- leave nice notes on problem cars asking owners not to park there

- push for crosswalks/signals/ parking changes/curb ramps at city meetings
- report to traffic engineer where parked cars are safety hazards
- report illegally parked cars to the police
- request that the public works department trim trees or plants
- make media aware of problem

## 3. Did drivers behave well?

Backed without looking  
Did not yield  
Turned into walkers  
Drove too fast  
Sped up to make traffic lights or drove through red lights

- pick another route for now
- set an example: slow down and be considerate of others
- encourage your neighbors to do the same
- report unsafe driving to the police

- petition for more enforcement
- request protected turns
- ask city planners and traffic engineers for traffic calming ideas
- ask schools about getting crossing guards at key locations
- organize a neighborhood speed watch program

## 4. Could you follow safety rules?

Cross at crosswalks or where you could see and be seen  
Stop and look left, right, left before crossing  
Walk on sidewalks or shoulders facing traffic  
Cross with the light

- educate yourself and your child about safe walking
- organize parents in your neighborhood to walk children to school

- encourage schools to teach walking safely
- help schools start safe walking programs
- encourage corporate support for flex schedules so parents can walk children to school

## 5. Was your walk pleasant?

Needs grass, flowers, trees  
Scary dogs  
Scary people  
Not well lit  
Dirty, litter  
Lots of traffic



- point out areas to avoid to your child; agree on safe routes
- ask neighbors to keep dogs leashed or fenced
- report scary dogs to the animal control department
- report scary people to the police
- report lighting needs to the police or appropriate public works department
- take a walk with a trash bag
- plant trees, flowers in your yard
- select alternative route with less traffic

- request increased police enforcement
- start a crime watch program in your neighborhood
- organize a community clean-up day
- sponsor a neighborhood beautification or tree-planting day
- begin an adopt-a-street program
- initiate support to provide routes with less traffic to schools in your community (reduced traffic during am and pm school commute times)

## A Quick Health Check

Could not go as far or as fast as we wanted  
Were tired, short of breath or had sore feet or muscles  
Was the sun really hot?  
Was it hot and hazy?

- start with short walks and work up to 30 minutes of walking most days
- invite a friend or child along
- walk along shaded routes where possible
- use sunscreen of SPF 15 or higher, wear a hat and sunglasses
- try not to walk during the hottest time of day

- get media to do a story about the health benefits of walking
- call parks and recreation department about community walks
- encourage corporate support for employee walking programs
- plant shade trees along routes
- have a sun safety seminar for kids
- have kids learn about unhealthy ozone days and the Air Quality Index (AQI)

Need some guidance?  
These resources might help...

# Great Resources

## WALKING INFORMATION

Pedestrian and Bicycle Information Center (PBIC)  
UNC Highway Safety Research Center  
730 Airport Road, Suite 300  
Campus Box 3430  
Chapel Hill, NC  
27599-3430  
Phone: (919) 962-2202  
[www.pedbikeinfo.org](http://www.pedbikeinfo.org)  
[www.walkinginfo.org](http://www.walkinginfo.org)

National Center for  
Bicycling and Walking  
Campaign to Make  
America Walkable  
1506 21st Street, NW  
Suite 200  
Washington, DC 20036  
Phone: (800) 760-NBPC  
[www.bikefed.org](http://www.bikefed.org)



## WALK TO SCHOOL DAY WEB SITES

USA event: [www.walktoschool-usa.org](http://www.walktoschool-usa.org)  
International: [www.iwalktoschool.org](http://www.iwalktoschool.org)

## STREET DESIGN AND TRAFFIC CALMING

Federal Highway Administration  
Pedestrian and Bicycle Safety Research Program  
HSR - 20  
6300 Georgetown Pike  
McLean, VA 22101  
[www.fhwa.dot.gov/environment/bikeped/index.htm](http://www.fhwa.dot.gov/environment/bikeped/index.htm)

Institute of Transportation Engineers  
[www.ite.org](http://www.ite.org)

Surface Transportation Policy Project  
[www.transact.org](http://www.transact.org)

Transportation for Livable Communities  
[www.tlcnetwork.org](http://www.tlcnetwork.org)

## WALKING COALITIONS

America Walks  
P.O. Box 29103  
Portland, Oregon 97210  
Phone: (503) 222-1077  
[www.americawalks.org](http://www.americawalks.org)

Partnership for a Walkable America  
National Safety Council  
1121 Spring Lake Drive  
Itasca, IL 60143-3201  
Phone: (603) 285-1121  
[www.nsc.org/walkable.htm](http://www.nsc.org/walkable.htm)



## PEDESTRIAN SAFETY

National Highway Traffic Safety Administration  
Traffic Safety Programs  
400 Seventh Street, SW  
Washington, DC 20590  
Phone: (202) 662-0600  
[www.nhtsa.dot.gov/people/injury/pedbimot/ped](http://www.nhtsa.dot.gov/people/injury/pedbimot/ped)

National SAFE KIDS Campaign  
1301 Pennsylvania Ave. NW  
Suite 1000  
Washington, DC 20004  
Phone: (202) 662-0600  
Fax: (202) 393-2072  
[www.safekids.org](http://www.safekids.org)

## WALKING AND HEALTH

US Environmental Protection Agency  
Office of Children's Health Protection (MC 1107A)  
Washington, DC 20460  
Phone: 202-564-2188  
Fax: 202-564-2733  
[www.epa.gov/children/](http://www.epa.gov/children/)  
[www.epa.gov/airnow/](http://www.epa.gov/airnow/)  
[www.epa.gov/air/urbanair/ozone/what.html](http://www.epa.gov/air/urbanair/ozone/what.html)  
[www.epa.gov/sunwise/uvindex.html](http://www.epa.gov/sunwise/uvindex.html)  
[www.epa.gov/otaq/transp/comchoic/ccweb.htm](http://www.epa.gov/otaq/transp/comchoic/ccweb.htm)

President's Task Force on Environmental Health Risks and  
Safety Risks to Children  
[www.childrenshealth.gov](http://www.childrenshealth.gov)

Centers for Disease Control and Prevention  
Division of Nutrition and Physical Activity  
Phone: (888) 232-4674  
[www.cdc.gov/nccdphp/dnpa/readysset](http://www.cdc.gov/nccdphp/dnpa/readysset)  
[www.cdc.gov/nccdphp/dnpa/kidswalk/index.htm](http://www.cdc.gov/nccdphp/dnpa/kidswalk/index.htm)

Prevention Magazine  
33 East Minor Street  
Emmaus, PA 18098  
[www.itsallaboutprevention.com](http://www.itsallaboutprevention.com)

Shape Up America!  
6707 Democracy Boulevard  
Suite 306  
Bethesda, MD 20817  
[www.shapeup.org](http://www.shapeup.org)

## ACCESSIBLE SIDEWALKS

US Access Board  
1331 F Street, NW  
Suite 1000  
Washington, DC 20004-1111  
Phone: (800) 872-2253;  
(800) 993-2822 (TTY)  
[www.access-board.gov](http://www.access-board.gov)



# Walkability Checklist Results

## Location >

Location	Willowood Way to St. Edwards to Charlene Pkwy. To Galene and back same route	Bluegrass Estates, Mammoth Way to parks	Six Mile Ln. to J-town Library	3 mile radius of Maple Rd.	Commonwealth Dr./Decimal Dr./Bluegrass Pkwy.	2805 Antone Pkwy. To LAC In J-town Plaza	Walnutwood, Ethelwood, Galene area	Total
----------	--	---	--------------------------------	----------------------------	--	--	------------------------------------	-------

### 1. Did you have some to walk?

- Yes
- Some problems
  - Sidewalks or paths started and stopped
  - Sidewalks were broken or cracked
  - Sidewalks were blocked with poles, signs; shrubbery, dumpster, etc.
  - No sidewalks, paths, or shoulders
  - Too much traffic
  - Something else
  - Locations of problems

X	X			X				<b>3</b>
		X	X		X	X		<b>4</b>
			X	X		X	X	<b>2</b>
		X	X			X		<b>3</b>

X  
Cars parked over sidewalks

**Rating**      5                      4                      3                      2                      4                      3                      4                      4

### 2. Was it easy to cross streets?

- Yes
- Some problems
  - Road was too wide
  - Traffic signals made us wait too long or did not give us enough time to cross
  - Needed striped crosswalks or traffic signals
  - Parked cars blocked our view of traffic
  - Trees or plants blocked our view of traffic
  - Needed curb ramps or ramps needed repair
  - Something else
  - Location of problems

	X	X	X	X	X			<b>5</b>
						X	X	<b>2</b>
X							X	<b>1</b>

X  
Crossing not easy at Ruckriegel & Billtown      No sidewalks along Six Mile & Old Six Mile Lane

**Rating**      4                      4                      5                      5                      5                      4                      4                      3

### 3. Did drivers behave well?

- Yes
- Some problems: Drivers....
  - Backed out of driveways without looking
  - Did not yield to people crossing the street
  - Turned into people crossing the street
  - Drove too fast
  - Sped up to make it through traffic lights or drove through traffic lights?
  - Something else
  - Locations of problems

				X		X		<b>2</b>
							X	<b>1</b>
X	X	X			X			<b>4</b>
	X	X						<b>2</b>
			X		X			<b>2</b>
			X					<b>1</b>

**Rating**      3                      4                      3                      2                      5                      4                      4                      4

# Walkability Checklist Results

## Location >

### 4. Was it easy to follow safety rules? Could you and your child...

Cross at crosswalks or where you could be seen by drivers?

Yes

No

Stop and look left, right and then left again before crossing streets?

Yes

No

Walk of sidewalks or shoulders facing traffic where there were no sidewalks?

Yes

No

Cross with the lights?

Yes

No

Locations of problems

	Willowood Way to St. Edwards to Charlene Pkwy. To Galene and back same route	Bluegrass Estates, Mammoth Way to parks	Six Mile Ln. to J-town Library	3 mile radius of Maple Rd.		Commonwealth Dr./Decimal Dr./Bluegrass Pkwy.	2805 Antone Pkwy. To LAC In J-town Plaza	Walnutwood, Ethelwood, Galene area	Total
Yes	X	X	X	X	X	X	X		6
No							X		1
Yes	X	X	X	X	X	X	X	X	8
No									
Yes	X	X	X		X		X		5
No				X		X			2
Yes	X	X	X		X		X		5
No				X		X			2
Locations of problems	No lights on route						No traffic lights in subdivision		
Rating	5	4	5	3	6	4	4	4	

### 5. Was your walk pleasant?

Yes

Some unpleasant things

Needed more grass, flowers, or trees

Scary dogs

Scary people

Not well lighted

Dirty, lots of litter or trash

Dirty air due to automobile exhaust

Something else

Location of Problems:

Yes	X				X				2
Needed more grass, flowers, or trees						X	X		2
Scary dogs		X		X				X	3
Scary people									
Not well lighted		X	X	X		X			4
Dirty, lots of litter or trash									
Dirty air due to automobile exhaust									
Something else		Consider new types of street light	Consider a different type street lite	Cars parked all over yards			Mainly just needs improved sidewalks		
Rating	5	4	4	4	5	4	4	4	

How does your neighborhood stack up?

22	20	20	16	25	19	20	19	<b>20.125</b>
----	----	----	----	----	----	----	----	---------------

26-30 Celebrate! You have a great neighborhood for walking.

21-25 Celebrate a little. Your neighborhood is pretty good.

**16-20 Okay, but it needs work.**

11-15 It needs lots of work. You deserve better than that.

5-10 It's a diaster for walking!

## **2. Bikeability Checklist and Results**



# Bikeability Checklist

## How bikeable is your community?

### Riding a bike is fun!

Bicycling is a great way to get around and to get your daily dose of physical activity. It's good for the environment, and it can save you money. No wonder many communities are encouraging people to ride their bikes more often!



### Can you get to where you want to go by bike?

Some communities are more bikeable than others: how does yours rate? Read over the questions in this checklist and then take a ride in your community, perhaps to the local shops, to visit a friend, or even to work. See if you can get where you want to go by bicycle, even if you are just riding around the neighborhood to get some exercise.



At the end of your ride, answer each question and, based on your opinion, circle an overall rating for each question. You can also note any problems you encountered by checking the appropriate box(es). Be sure to make a careful note of any specific locations that need improvement.



Add up the numbers to see how you rated your ride. Then, turn to the pages that show you how to begin to improve those areas where you gave your community a low score.

Before you ride, make sure your bike is in good working order, put on a helmet, and be sure you can manage the ride or route you've chosen. Enjoy the ride!

Go for a ride and use this checklist to rate your neighborhood's bikeability.



# How bikeable is your community?

Location of bike ride (be specific): \_\_\_\_\_

Rating Scale:



## 1. Did you have a place to bicycle safely?

### a) On the road, sharing the road with motor vehicles?

- Yes     Some problems (please note locations):
- No space for bicyclists to ride
  - Bicycle lane or paved shoulder disappeared
  - Heavy and/or fast-moving traffic
  - Too many trucks or buses
  - No space for bicyclists on bridges or in tunnels
  - Poorly lighted roadways
- Other problems: \_\_\_\_\_

### b) On an off-road path or trail, where motor vehicles were not allowed?

- Yes     Some problems:
- Path ended abruptly
  - Path didn't go where I wanted to go
  - Path intersected with roads that were difficult to cross
  - Path was crowded
  - Path was unsafe because of sharp turns or dangerous downhill
  - Path was uncomfortable because of too many hills
  - Path was poorly lighted
- Other problems: \_\_\_\_\_

Overall "Safe Place To Ride" Rating: (circle one)

1 2 3 4 5 6

## 2. How was the surface that you rode on?

- Good     Some problems, the road or path had:
- Potholes
  - Cracked or broken pavement
  - Debris (e.g. broken glass, sand, gravel, etc.)
  - Dangerous drain grates, utility covers, or metal plates
  - Uneven surface or gaps
  - Slippery surfaces when wet (e.g. bridge decks, construction plates, road markings)
  - Bumpy or angled railroad tracks
  - Rumble strips
- Other problems: \_\_\_\_\_

Overall Surface Rating: (circle one)

1 2 3 4 5 6

## 3. How were the intersections you rode through?

- Good     Some problems:
- Had to wait too long to cross intersection
  - Couldn't see crossing traffic
  - Signal didn't give me enough time to cross the road
  - Signal didn't change for a bicycle
  - Unsure where or how to ride through intersection
- Other problems: \_\_\_\_\_

Overall Intersection Rating: (circle one)

1 2 3 4 5 6

Continue the checklist on the next page...

## 4. Did drivers behave well?

- Yes     Some problems, drivers:
- Drove too fast
  - Passed me too close
  - Did not signal
  - Harassed me
  - Cut me off
  - Ran red lights or stop sign
- Other problems: \_\_\_\_\_  
\_\_\_\_\_

**Overall Driver Rating:** (circle one)

1   2   3   4   5   6

## 5. Was it easy for you to use your bike?

- Yes     Some problems:
- No maps, signs, or road markings to help me find my way
  - No safe or secure place to leave my bicycle at my destination
  - No way to take my bicycle with me on the bus or train
  - Scary dogs
  - Hard to find a direct route I liked
  - Route was too hilly
- Other problems: \_\_\_\_\_  
\_\_\_\_\_

**Overall Ease of Use Rating:** (circle one)

1   2   3   4   5   6

## 6. What did you do to make your ride safer?

Your behavior contributes to the bikeability of your community. Check all that apply:

- Wore a bicycle helmet
- Obeyed traffic signal and signs
- Rode in a straight line (didn't weave)
- Signaled my turns
- Rode with (not against) traffic
- Used lights, if riding at night
- Wore reflective and/or retroreflective materials and bright clothing
- Was courteous to other travelers (motorist, skaters, pedestrians, etc.)

## 7. Tell us a little about yourself.

In good weather months, about how many days a month do you ride your bike?

- Never
- Occasionally (one or two)
- Frequently (5-10)
- Most (more than 15)
- Every day

Which of these phrases best describes you?

- An advanced, confident rider who is comfortable riding in most traffic situations
- An intermediate rider who is not really comfortable riding in most traffic situations
- A beginner rider who prefers to stick to the bike path or trail

## How does your community rate? Add up your ratings and decide.

(Questions 6 and 7 do not contribute to your community's score)

1. _____	<b>26-30</b>	Celebrate! You live in a bicycle-friendly community.
2. _____	<b>21-25</b>	Your community is pretty good, but there's always room for improvement.
3. _____	<b>16-20</b>	Conditions for riding are okay, but not ideal. Plenty of opportunity for improvements.
4. _____	<b>11-15</b>	Conditions are poor and you deserve better than this! Call the mayor and the newspaper right away.
5. _____	<b>5-10</b>	Oh dear. Consider wearing body armor and Christmas tree lights before venturing out again.
<b>Total</b> _____		

## Did you find something that needs to be changed?

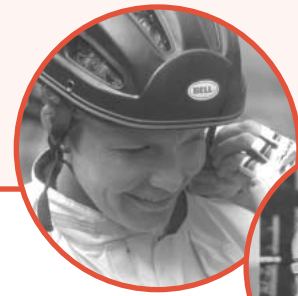
On the next page, you'll find suggestions for improving the bikeability of your community based on the problems you identified. Take a look at both the short- and long-term solutions and commit to seeing at least one of each through to the end. If you don't, then who will?

During your bike ride, how did you feel physically? Could you go as far or as fast as you wanted to? Were you short of breath, tired, or were your muscles sore? The next page also has some suggestions to improve the enjoyment of your ride.

Bicycling, whether for transportation or recreation, is a great way to get 30 minutes of physical activity into your day. Riding, just like any other activity, should be something you enjoy doing. The more you enjoy it, the more likely you'll stick with it. Choose routes that match your skill level and physical activities. If a route is too long or hilly, find a new one. Start slowly and work up to your potential.

Now that you know the problems,  
you can find the answers.

# Improving your community's score...



## 1. Did you have a place to bicycle safely?

### a) On the road?

No space for bicyclists to ride (e.g. no bike lane or shoulder; narrow lanes)  
Bicycle lane or paved shoulder disappeared  
Heavy and/or fast-moving traffic  
Too many trucks or buses  
No space for bicyclists on bridges or in tunnels  
Poorly lighted roadways

### What you can do immediately

- pick another route for now
- tell local transportation engineers or public works department about specific problems; provide a copy of your checklist
- find a class to boost your confidence about riding in traffic

### What you and your community can do with more time

- participate in local planning meetings
- encourage your community to adopt a plan to improve conditions, including a network of bike lanes on major roads
- ask your public works department to consider "Share the Road" signs at specific locations
- ask your state department of transportation to include paved shoulders on all their rural highways
- establish or join a local bicycle advocacy group

### b) On an off-road path or trail?

Path ended abruptly  
Path didn't go where I wanted to go  
Path intersected with roads that were difficult to cross  
Path was crowded  
Path was unsafe because of sharp turns or dangerous downhill  
Path was uncomfortable because of too many hills  
Path was poorly lighted

- slow down and take care when using the path
- find an on-street route
- use the path at less crowded times
- tell the trail manager or agency about specific problems

- ask the trail manager or agency to improve directional and warning signs
- petition your local transportation agency to improve path/roadway crossings
- ask for more trails in your community
- establish or join a "Friends of the Trail" advocacy group

## 2. How was the surface you rode on?

Potholes  
Cracked or broken pavement  
Debris (e.g. broken glass, sand, gravel, etc.)  
Dangerous drain grates, utility covers, or metal plates  
Uneven surface or gaps  
Slippery surfaces when wet (e.g. bridge decks, construction plates, road markings)  
Bumpy or angled railroad tracks  
Rumble strips

- report problems immediately to public works department or appropriate agency
- keep your eye on the road/path
- pick another route until the problem is fixed (and check to see that the problems are fixed)
- organize a community effort to clean up the path

- work with your public works and parks department to develop a pothole or hazard report card or online link to warn the agency of potential hazards
- ask your public works department to gradually replace all dangerous drainage grates with more bicycle-friendly designs, and improve railroad crossings so cyclists can cross them at 90 degrees
- petition your state DOT to adopt a bicycle-friendly rumble-strip policy

## 3. How were the intersections you rode through?

Had to wait too long to cross intersection  
Couldn't see crossing traffic  
Signal didn't give me enough time to cross the road  
The signal didn't change for a bicycle  
Unsure where or how to ride through intersection

- pick another route for now
- tell local transportation engineers or public works department about specific problems
- take a class to improve your riding confidence and skills

- ask the public works department to look at the timing of the specific traffic signals
- ask the public works department to install loop-detectors that detect bicyclists
- suggest improvements to sightlines that include cutting back vegetation; building out the path crossing; and moving parked cars that obstruct your view
- organize community-wide, on-bike training on how to safely ride through intersections

# Improving your community's score...

(continued)

## What you can do immediately

## What you and your community can do with more time

### 4. Did drivers behave well?

Drivers:  
Drove too fast  
Passed me too close  
Did not signal  
Harassed me  
Cut me off  
Ran red lights or stop signs

- report unsafe drivers to the police
- set an example by riding responsibly; obey traffic laws; don't antagonize drivers
- always expect the unexpected
- work with your community to raise awareness to share the road

- ask the police department to enforce speed limits and safe driving
- encourage your department of motor vehicles to include "Share the Road" messages in driver tests and correspondence with drivers
- ask city planners and traffic engineers for traffic calming ideas
- encourage your community to use cameras to catch speeders and red light runners

### 5. Was it easy for you to use your bike?

No maps, signs, or road markings to help me find my way  
No safe or secure place to leave my bicycle at my destination  
No way to take my bicycle with me on the bus or train  
Scary dogs  
Hard to find a direct route I liked  
Route was too hilly

- plan your route ahead of time
- find somewhere close by to lock your bike; never leave it unlocked
- report scary dogs to the animal control department
- learn to use all of your gears!

- ask your community to publish a local bike map
- ask your public works department to install bike parking racks at key destinations; work with them to identify locations
- petition your transit agency to install bike racks on all their buses
- plan your local route network to minimize the impact of steep hills
- establish or join a bicycle user group (BUG) at your workplace

### 6. What did you do to make your ride safer?

Wore a bicycle helmet  
Obeyed traffic signals and signs  
Rode in a straight line (didn't weave)  
Signaled my turns  
Rode with (not against) traffic  
Used lights, if riding at night  
Wore reflective materials and bright clothing  
Was courteous to other travelers (motorists, skaters, pedestrians, etc.)

- go to your local bike shop and buy a helmet; get lights and reflectors if you are expecting to ride at night
- always follow the rules of the road and set a good example
- take a class to improve your riding skills and knowledge

- ask the police to enforce bicycle laws
- encourage your school or youth agencies to teach bicycle safety (on-bike)
- start or join a local bicycle club
- become a bicycle safety instructor



Need some guidance?  
These resources might help...

# Great Resources

## STREET DESIGN AND BICYCLE FACILITIES

American Association of State Highway and Transportation Officials  
444 North Capitol Street, NW, Suite 249  
Washington, DC 20001  
Tel: (202) 624-5800  
[www.aashto.org](http://www.aashto.org)

Institute of Transportation Engineers  
1099 14th Street, NW, Suite 300 West  
Washington, DC 20005-3438  
Tel: (202) 289-0222  
[www.ite.org](http://www.ite.org)

Association of Pedestrian and Bicycle Professionals (APBP)  
P.O. Box 23576  
Washington, DC 20026  
Tel: (202) 366-4071  
[www.apbp.org](http://www.apbp.org)

Pedestrian and Bicycle Information Center (PBIC)  
UNC Highway Safety Research Center  
730 Airport Road, Suite 300  
Campus Box 3430  
Chapel Hill, NC 27599-3430  
Tel: (919) 962-2202  
[www.pedbikeinfo.org](http://www.pedbikeinfo.org)  
[www.bicyclinginfo.org](http://www.bicyclinginfo.org)

Federal Highway Administration  
400 Seventh Street, SW  
Washington, DC 20590  
[www.fhwa.dot.gov/environment/bikeped/index.htm](http://www.fhwa.dot.gov/environment/bikeped/index.htm)

## EDUCATION AND SAFETY

National Highway Traffic Safety Administration  
400 Seventh Street, SW  
Washington, D.C. 20590  
Tel: (202) 366-1739  
[www.nhtsa.dot.gov/people/injury/pedbimot/bike/](http://www.nhtsa.dot.gov/people/injury/pedbimot/bike/)

League of American Bicyclists  
1612 K Street NW, Suite 401  
Washington, DC 20006  
Tel: (202) 822-1333  
[www.bikeleague.org](http://www.bikeleague.org)

National Bicycle Safety Network  
[www.cdc.gov/ncipc/bike/default.htm](http://www.cdc.gov/ncipc/bike/default.htm)

National Safe Kids Campaign  
1301 Pennsylvania Ave NW, Suite 1000  
Washington, DC 20004  
Tel: (202) 662-0600  
[www.safekids.org](http://www.safekids.org)

## PATHS AND TRAILS

Rails to Trails Conservancy  
1100 17th Street SW, 10th Floor  
Washington, DC 20036  
Tel: (202) 331-9696  
[www.railtrails.org](http://www.railtrails.org)

National Park Service  
Rivers, Trails and Conservation Assistance Program  
1849 C Street, NW, MS-3622  
Washington, DC 20240  
[www.nrc.nps.gov/rtca/rtca-ofh.htm](http://www.nrc.nps.gov/rtca/rtca-ofh.htm)

## HEALTH

Centers for Disease Control and Prevention  
Division of Nutrition and Physical Activity  
4770 Buford Highway, NE  
Atlanta, GA 30341-3724  
[www.cdc.gov/nccdphp/dnpa](http://www.cdc.gov/nccdphp/dnpa)  
Tel: (770) 488-5692

National Center for Injury Prevention and Control  
Childhood Injury Prevention  
4770 Buford Highway, NE  
Atlanta, GA 30341  
[www.cdc.gov/ncipc](http://www.cdc.gov/ncipc)

## ADVOCACY AND USER GROUPS

Thunderhead Alliance  
1612 K Street, NW, Suite 401  
Washington, DC 20006  
Tel: (202) 822-1333  
[www.thunderheadalliance.org](http://www.thunderheadalliance.org)

League of American Bicyclists  
1612 K Street, NW, Suite 401  
Washington, DC 20006  
Tel: (202) 822-1333  
[www.bikeleague.org](http://www.bikeleague.org)

National Center for Bicycling and Walking  
1506 21st Street, NW, Suite 200  
Washington, DC 20036  
Tel: (202) 463-6622  
[www.bikewalk.org](http://www.bikewalk.org)

Surface Transportation Policy Project  
1100 17th Street, NW, 10th Floor  
Washington, DC 20036  
Tel: (202) 466-2636  
[www.transact.org](http://www.transact.org)

## OTHER USEFUL RESOURCES

Bikes and transit: [www.bikemap.com](http://www.bikemap.com)

Bicycle information: [www.bicyclinginfo.org](http://www.bicyclinginfo.org)

Bicycle-related research:  
[www.tfhr.gov/safety/pedbike/pedbike.htm](http://www.tfhr.gov/safety/pedbike/pedbike.htm)

Bicycling Magazine: [www.bicycling.com/](http://www.bicycling.com/)

Bicycle touring:  
Adventure Cycling Association  
P.O. Box 8308  
Missoula, MT 59807  
(800) 755-2453  
(406) 721-8754  
[www.adv-cycling.org](http://www.adv-cycling.org)



# Bikeability Checklist Results

## Location >

9603 Willowood Way  
by Ethelwood to corner  
of Galene and Stony  
Brook

Bluegrass Estates  
(bordered by  
Taylorsville Rd. &  
Hurstbourne Pkwy.

Garden Park &  
Gaslight & surrounding  
subdivisions

Maple, Watteson Trail,  
Stony Brook, back  
neighborhood road

Watterson  
Trail/Decimal Drive

2705 Antone Pkwy to  
Skyview Park

Wainetwood/Galene/Et  
helwood

### 1. Did You have a place to bicycle safely?

#### a) On the road, sharing the road with motor vehicles?

Yes

Some problems (please note locations):

No Space for bicyclists to ride

Bicycle lane or paved shoulder disappeared

Heavy and/or fast-moving traffic

Too many trucks or buses

No space for bicyclists on bridges or in tunnels

Poorly light roadways

Other problems:

X		X	X	X	X	X	X	7
			X		X			2
	X		X		X	X	X	5
	X				X			2

Road on sidewalks and Unsafe  
through shopping  
center lot

No space Stony Brook  
to Galene; RR tracts  
make getting to Galene  
difficult

#### b) On an off-road path or trail, where motor vehicles were not allowed?

Yes

Some problems

Path ended abruptly

Path didn't go where I wanted to go

Path intersected with roads that were difficult to cross

Path was crowded

Path was unsafe because of sharp turns or dangerous downhill

Path was poorly lighted

Other problems:

	N/A			N/A		N/A	N/A	

No off road path or trail  
in my neighborhood

What path in J-town?

### Overall "Safe Place to Ride" Rating

3

3

3

3

2

2

3

4

### 2. How was the surface that you rode on ?

Good

Some Problems, the road or path had:

Potholes

Cracked or broken pavement

Debris (e.g., broken glass, sand, gravel, etc.)

Dangerous drain grates, utility covers, or metal plates

Uneven surface or gaps

Slippery surfaces when wet (e.g., bridge decks, construction plates, road markings)

Bumpy or angles railroad tracks

Rumble strips

Other problems:

X		X						2
			X	X	X			3
X				X	X	X	X	5
X	X		X	X	X			5
						X		1
				X		X		2

### Overall Surface Rating:

3

4

4

3

2

2

4

3



# Bikeability Checklist Results

## Location >

### 6. What did you do to make your ride safer?

Your behavior contributes to the bikeability of your community. Check all that apply:

- Wore a bicycle helmet
- Obeyed traffic signal and signs
- Rode in a straight line (didn't weave)
- Signaled my turn
- Rode with (not against) traffic
- Used lights, if riding at night
- Wore reflective and/or retroreflective materials and bright clothing
- Was courteous to other travelers (motorist, skaters pedestrians, etc.)

	9603 Willowood Way by Ethelwood to corner of Galene and Stony Brook	Bluegrass Estates (bordered by Taylorsville Rd. & Hurstbourne Pkwy.	Garden Park & Gaslight & surrounding subdivisions	Maple, Watteson Trail, Stony Brook, back neighborhood road		Watterson Trail/Decimal Drive	2705 Antone Pkwy to Skyview Park	Wainetwood/Galene/Ethelwood	
	X	X	X	X	X	X	X	X	8
	X	X	X	X	X	X	X		7
		X	X	X	X	X	X	X	7
		X	X	X	X	X	X		6
		X	X	X	X	X	X	X	6
	X	X	X			X			4
	X	X	X	X		X	X		6

### 7. Tell us a little about yourself.

In good weather months, about how many days a month do you ride your bike?

- Never
- Occasionally (one or two)
- Frequently (5-10)
- Most (more than 15)
- Every day

			X						1
	X	X		X	X	X	X	X	6
								X	1

Which of these phrases best describes you?

- An advanced, confident rider who is comfortable riding in most traffic situations
- An intermediate rider who is not really comfortable riding in most traffic situations
- A beginner rider who prefers to stick to the bike path or trail

	X	X	X	X	X	X	X	X	8

How does your community rate?

17                      12                      18                      16                      9                      11                      18                      17                      **14.75**

- 26-30 Celebrate! You live in a bicycle-friendly community.
- 21-25 Your community is pretty good, but there's always room for improvement.
- 16-20 Conditions for riding are okay, but not ideal. Plenty of opportunity for improvements.
- 11-15 Conditions are poor and you deserve better than this! Call the Mayor and the newspaper right away.**
- 5-10 Oh dear. Consider wearing body armor and Christmas tree lights before venturing out again.

## **C. Benefits of Walking and Biking**

- 1. Walking**
- 2. Bicycling**

# 1. Walking

**Benefits of Walking: Health Benefits**

**Benefits of Walking: Transportation Benefits**

**Benefits of Walking: Environmental Benefits**

**Benefits of Walking: Economic Benefits**

**Benefits of Walking: Quality Of Life Benefits**

# 1. Walking

The positive consequences of bicycling and walking as healthy modes of transportation, or as purely recreational activities, span across many aspects of our lives. They can be expressed in terms of the health of environment (and resulting health of all living things), as well as the health of individuals who are more physically active. A transportation system that is conducive to bicycling and walking can reap many benefits in terms of reduced traffic congestion and improved quality of life. Economic rewards both to the individual and to society are also realized through reduced health care costs and reduced dependency on auto ownership (and the resulting insurance and maintenance costs). There are also other economic benefits of bicycling and walking that are more difficult to measure, such as the increased economic vitality of communities that have emphasized bicycle and pedestrian mobility

## Benefits of Walking: Health Benefits

The health benefits of regular physical activity are far-reaching: reduced risk of coronary heart disease, stroke, and other chronic diseases; lower health care costs; and improved quality of life for people of all ages. Regular exercise provides a myriad of health benefits for senior adults including a stronger heart, a positive mental outlook and an increased chance of remaining indefinitely independent – a benefit that will become increasingly important as our population ages in the coming years.



Physical activity need not be unduly strenuous for an individual to reap significant health benefits. Even small increases in light to moderate activity, equivalent to walking for about 30 minutes a day, will produce measurable benefits among those who are least active.

## Health Facts:

- 60% of Americans lead completely sedentary lifestyles, and 40% are clinically overweight (1998 report of the American Medical Association)

Research conducted in 1999 by the Centers for Disease Control found that "obesity and overweight are linked to the nation's number one killer--heart disease--as well as diabetes and other chronic conditions." The report also states that one reason for Americans' sedentary lifestyle is that "walking and cycling have been replaced by automobile travel for all but the shortest distances." (October 27, 1999 issue of the JAMA)

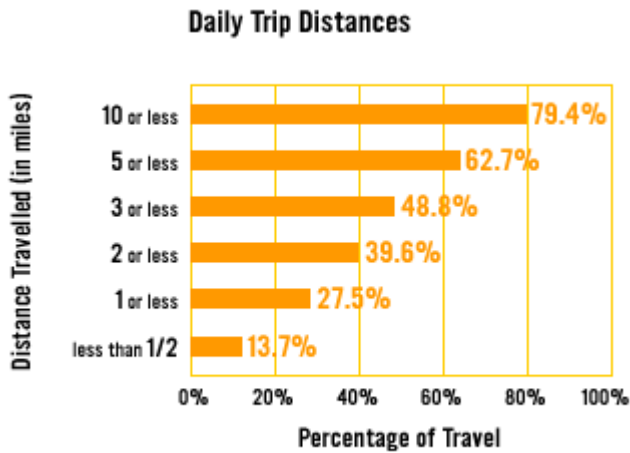
## Benefits of Walking: Transportation Benefits

Many of the trips that Americans make every day are short enough to be accomplished on a bicycle, on foot or via wheelchair. The 1995 National Personal Transportation Survey (NPTS) found that approximately 40% of all trips are less than 2 miles in length – which represents a 10-minute bike ride or a 30-minute walk. In fact, a 1995 Rodale Press survey found that Americans *want* the opportunity to walk or bike instead of drive: 40% of U.S. adults say they would commute by bike if safe facilities were available.

Bicycling and walking can help to reduce roadway congestion. Many streets and highways carry more traffic than they were designed to handle, resulting in gridlock, wasted time and energy, pollution, and driver frustration. Bicycling and walking require less space per traveler than automobiles. Roadway improvements to accommodate pedestrians and bicycles can also enhance safety for motorists. For example, adding paved shoulders on two-lane roads has been shown to reduce the frequency of run-off-road, head-on, and sideswipe motor vehicle crashes.



# 1. Walking (continued)



***Everywhere is walking distance if you have the time.***  
~Steven Wright

## Travel Facts

- One in ten U.S. households do not own an automobile (1995 NPTS)
- About one-third of all Americans cannot or do not drive -- they may be too young, too old, or unable to afford a car. (1990 U.S. Census)
- There are 9 million bike trips and 56 million walking trips in the U.S. everyday – an amount that exceeds daily transit trips (1995 NPTS)
- About 40% of all trips are shorter than 2 miles - a 10-minute bike ride or a 30-minute walk (1995 NPTS)
- 40% of U.S. adults say they would commute by bike if safe facilities were available (1995 Rodale Press Poll)

## Benefits of Walking: Environmental Benefits

Motor vehicles create a substantial amount of air pollution. In fact, transportation is responsible for nearly 80 percent of carbon monoxide and 50 percent of nitrogen oxide emissions in the U.S. Not surprisingly, many metropolitan areas do not meet the air quality standards specified in the 1990 Clean Air Act Amendments. Although individual cars are much cleaner today than they were in earlier years, if total traffic continues to grow, overall air quality will deteriorate. Moreover, cars and trucks burn millions of barrels of oil, a non-renewable energy source, every day.



## Pollution Facts:

- Motor vehicle emissions represent 31% of total carbon dioxide, 81% of carbon monoxide, and 49% of nitrogen oxides released in the U.S. (The Green Commuter, A Publication of the Clean Air Council)
- 60% of the pollutions created by automobile emissions happens in the first few minutes of operation, before pollution control devices can work effectively. Since “cold starts” create high levels of emissions, shorter car trips are more polluting on

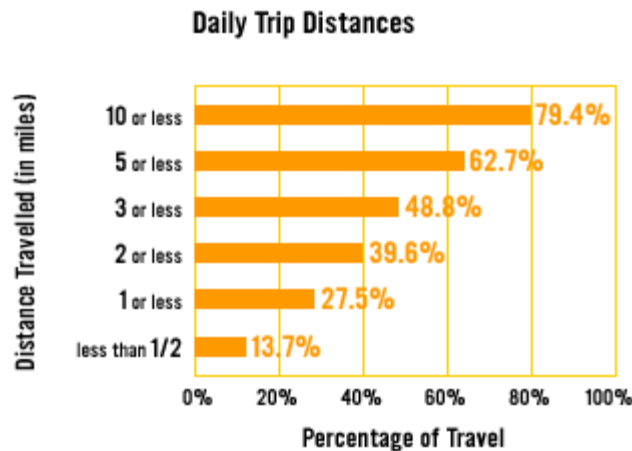
# 1. Walking (continued)

## Pollution Facts (continued):

- A short, four-mile round trip by bicycle keeps about 15 pounds of pollutants out of the air we breathe. (World Watch Institute)
- Air pollution contributes to the deaths of 60,000 people nation wide. In urban areas with poor air quality, asthma is becoming a more significant health concern. (Harvard University School of Public Health).

## Benefits of Walking: Economic Benefits

Bicycling and walking are affordable forms of transportation. When safe facilities are provided for pedestrians and bicyclists, more people are able to be productive, active members of society. Car ownership is expensive, and consumes a major portion of many Americans' income.



## Money Facts:

- The cost of operating a car for one year is approximately \$5,170 (AAA Mid-Atlantic)
- The cost of operating a bicycle for a year is only \$120 (League of American Bicyclists).
- The average family has to work for more than 6 weeks to pay a year's car expenses, compared to less than one day needed to pay for a year's bicycle expenses. (based on U.S. Census, 1998 median family income figures)
- Walking is **free!**

# 1. Walking (continued)

## Benefits of Walking: Quality of Life Benefits

Better conditions for bicycling and walking have intangible benefits to the quality of life in cities and towns. In a growing number of communities, bicycling and walking are considered as indicators of a community's livability – a factor that has a profound impact on attracting businesses and workers as well as tourism. In cities and towns where people can regularly be seen out bicycling and walking, there is a palpable sense that these are safe and friendly places to live and visit.

The recreation benefits of bicycling and walking are clear - according to the *Report of the President's Commission on Americans Outdoors* (1990), nearly 90 percent of Americans age 12 and older go outdoors for recreation. This research found that 60 million Americans are bicyclists and 100 million walk for pleasure. Improved sidewalks, trails and bikeways make an evening stroll or bike ride possible and provide public areas where neighbors can get to know each other.



***There is this to be said for walking: It's the one mode of human locomotion by which a man proceeds on his own two feet, upright, erect, as a man should be, not squatting on his rear haunches like a frog.***

***~Edward Abbey***

## **2. Bicycling**

**Benefits of Bicycling: Health Benefits**

**Benefits of Bicycling: Transportation Benefits**

**Benefits of Bicycling: Environmental Benefits**

**Benefits of Bicycling: Economic Benefits**

**Benefits of Bicycling: Quality of Life Benefits**

## 2. Bicycling

The positive consequences of bicycling and walking as healthy modes of transportation, or as purely recreational activities, span across many aspects of our lives. They can be expressed in terms of the health of environment (and resulting health of all living things), as well as the health of individuals who are more physically active. A transportation system that is conducive to bicycling and walking can reap many benefits in terms of reduced traffic congestion and improved quality of life. Economic rewards both to the individual and to society are also realized through reduced health care costs and reduced dependency on auto ownership (and the resulting insurance and maintenance costs). There are also other economic benefits of bicycling and walking that are more difficult to measure, such as the increased economic vitality of communities that have emphasized bicycle and pedestrian mobility.



### Benefits of Bicycling: Health Benefits

The health benefits of regular physical activity are far-reaching: reduced risk of coronary heart disease, stroke, and other chronic diseases; lower health care costs; and improved quality of life for people of all ages. Regular exercise provides a myriad of health benefits for senior adults including a stronger heart, a positive mental outlook and an increased chance of remaining indefinitely independent – a benefit that will become increasingly important as our population ages in the coming years.

Physical activity need not be unduly strenuous for an individual to reap significant health benefits. Even small increases in light to moderate activity, equivalent to walking for about 30 minutes a day, will produce measurable benefits among those who are least active.



***Melancholy is incompatible with bicycling.***  
***~James E. Starrs***

### Health Facts:

- 60% of Americans lead completely sedentary lifestyles, and 40% are clinically overweight (1998 report of the American Medical Association)
- Research conducted in 1999 by the Center for Disease Control found that “obesity and overweight are linked to the nation’s number one killer —heart disease— as well as diabetes and other chronic conditions.” The report also states that one reason for Americans’ sedentary lifestyle is that “walking and cycling have been replaced by automobile travel for all but the shortest distances.

## 2. Bicycling (continued)

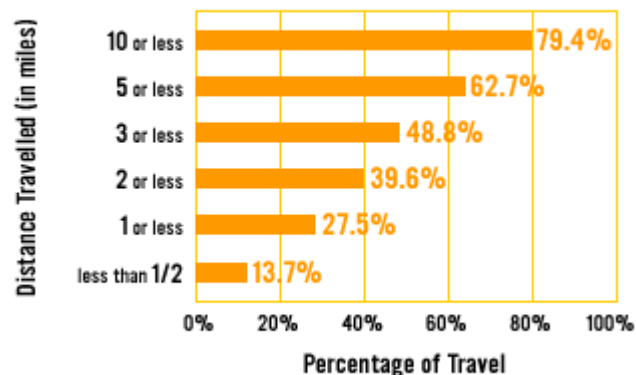
### Benefits of Bicycling: Transportation Benefits

Many of the trips that Americans make every day are short enough to be accomplished on a bicycle, on foot or via wheelchair. The 1995 National Personal Transportation Survey (NPTS) found that approximately 40% of all trips are less than 2 miles in length – which represents a 10-minute bike ride or a 30-minute walk. In fact, a 1995 Rodale Press survey found that Americans *want* the opportunity to walk or bike instead of drive: 40% of U.S. adults say they would commute by bike if safe facilities were available.



Bicycling and walking can help to reduce roadway congestion. Many streets and highways carry more traffic than they were designed to handle, resulting in gridlock, wasted time and energy, pollution, and driver frustration. Bicycling and walking require less space per traveler than automobiles. Roadway improvements to accommodate pedestrians and bicycles can also enhance safety for motorists. For example, adding paved shoulders on two-lane roads has been shown to reduce the frequency of run-off-road, head-on, and sideswipe motor vehicle crashes.

Daily Trip Distances



### Travel Facts

- One in ten U.S. households do not own an automobile (1995 NPTS)
- About one-third of all Americans cannot or do not drive -- they may be too young, too old, or unable to afford a car. (1990 U.S. Census)
- There are 9 million bike trips and 56 million walking trips in the U.S. everyday – an amount that exceeds daily transit trips (1995 NPTS)
- About 40% of all trips are shorter than 2 miles - a 10-minute bike ride or a 30-minute walk (1995 NPTS)
- 40% of U.S. adults say they would commute by bike if safe facilities were available (1995 Rodale Press Poll)



## 2. Bicycling (continued)

### Benefits of Bicycling: Environmental Benefits

Motor vehicles create a substantial amount of air pollution. In fact, transportation is responsible for nearly 80 percent of carbon monoxide and 50 percent of nitrogen oxide emissions in the U.S. Not surprisingly, many metropolitan areas do not meet the air quality standards specified in the 1990 Clean Air Act Amendments. Although individual cars are much cleaner today than they were in earlier years, if total traffic continues to grow, overall air quality will deteriorate. Moreover, cars and trucks burn millions of barrels of oil, a non-renewable energy source, every day.



### Pollution Facts:

- Motor vehicle emissions represent 31% of total carbon dioxide, 81% of carbon monoxide, and 49% of nitrogen oxides released in the U.S. (The Green Commuter, A Publication of the Clean Air Council)
- 60% of the pollution created by automobile emissions happens in the first few minutes of operation, before pollution control devices can work effectively. Since "cold starts" create high levels of emissions, shorter car trips are more polluting on a per-mile basis than longer trips.
- A short, four-mile round trip by bicycle keeps about 15 pounds of pollutants out of the air we breathe. (World Watch Institute)

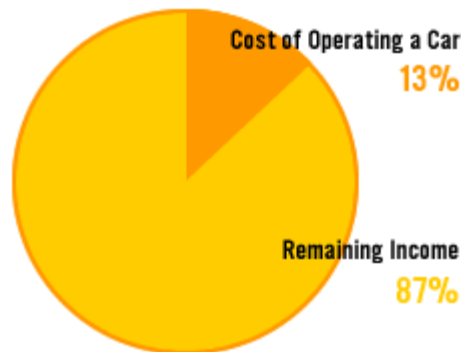
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## 2. Bicycling (continued)

Portion of a Typical U.S. Household's Income Spent on Owning and Operating an Automobile



### Money Facts:

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- The cost of operating a bicycle for a year is only \$120 (League of American Bicyclists).
- The average family has to work for more than 6 weeks to pay a year's car expenses, compared to less than one day needed to pay for a year's bicycle expenses. (based on U.S. Census, 1998 median family income figures)
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### Benefits of Bicycling: Quality of Life Benefits

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## **D. Kentucky Revised Statutes and Local Ordinances Relative to Bicycle and Pedestrians**

- 1. Kentucky Revised Statues**
- 2. Local Ordinances**

**Kentucky Revised Statute  
As Related To  
Bicycle and Pedestrian Activity**

**Chapter 174  
Transportation Cabinet**

**174.120 Statewide bicycle and bikeways program.**

- (1) The Transportation Cabinet shall develop and coordinate a statewide bicycle and bikeways program and shall coordinate plans for promotion of bicycling and promotion of bikeways with other state agencies, and units of local government in order to maximize the use of roads, streets, parks and other publicly owned lands, abandoned road beds, and other resources in the development of bike ways.
- (2) The cabinet shall:
  - (a) Assist and cooperate with local governments and other agencies in the development and construction of local and regional bikeway projects;
  - (b) Develop and publish policies, procedures, and standards for planning, designing, and constructing, maintaining, marking, and operating bikeways in the state, and for the safety of bicyclists, motorists, and the public;
  - (c) Develop bikeway demonstration projects and safety training programs; and
  - (d) Develop and construct a State Bikeway System.
- (3)
  - (a) The cabinet shall be authorized to appropriate needed funds for the program in the biennial budget, subject to approval of the General Assembly.
  - (b) The cabinet is authorized to obtain any federal, state, local, or private funds available to the cabinet, and designated for the purpose of this section and KRS 174.125.

**Effective:** July 14, 1992

**History:** Created 1992 Ky. Acts ch. 111, sec. 1, effective July 14, 1992.

**174.125 Kentucky Bicycle and Bikeway Commission; Membership; Duties; authority to adopt administrative regulations.**

- (1) There is hereby created a Kentucky Bicycle and Bikeway Commission within the Transportation Cabinet. The commission shall consist of seven (7) members appointed by the Governor. Members of the commission shall receive necessary travel expenses. The members of the commission shall elect a chairman who shall serve a two (2) year term. Initially, three (3) members shall be appointed for two (2) years, and four (4) members for four (4) years. Each appointment thereafter shall be for four (4) years. Upon the resignation of a member in midterm, the Governor shall appoint a replacement for the remainder of the unexpired term. The Governor shall make appointments to the commission with a view to represent each of the state's geographical regions and to various types of bicycle users and interests.
- (2) The commission shall meet in various sections of the state on a quarterly basis, and at other times as may be necessary to fulfill its duties. A majority of the members shall constitute a quorum for the transaction of business. The commission shall be provided with adequate staff as determined by the secretary, and this staff shall be responsible for maintaining the minutes the meetings, researching bicycle and bikeway related topics, and other activities for the commission as may be consistent with the commission's role within the cabinet.

**174.125 Kentucky Bicycle and Bikeway Commission; Membership; Duties; authority to adopt administrative regulations.** (continued)

- (3) The commission shall have the following duties:
  - (a) To represent the interests of bicyclists in advising the secretary on all matters pertaining to bicycles, bikeways, and their use, extent, and location;
  - (b) Assist the bicycle and bikeway program in the exercise of its duties within the cabinet;
  - (c) Promote the best interests of the bicycling public, within the context of the total transportation system, to governing officials and the public at large.
- (4) The secretary shall study bicycle and bikeway needs and potentials and shall report the findings to the legislature on an annual basis.
- (5) The secretary shall adopt administrative regulations to implement the purposes of KRS 174.120 and this section.
- (6) Initial appointments to the commission shall be made no later than August 1, 1994.

**Effective:** July 14, 1992

**History:** Created 1992 Ky. Acts ch. 111, sec. 2, effective July 14, 1992.

**Chapter 189**  
**Traffic Regulations; Vehicle Equipment and Storage**

**189.040 Front lights -- Flashing lights.**

- (9) Except as provided in any regulations adopted pursuant to KRS 189.287, bicycles need have only one (1) light in front which will reveal clearly substantial objects at least fifty (50) feet ahead.

**Effective:** June 17, 1978

**History:** Amended 1978 Ky. Acts ch. 349, sec. 7, effective June 17, 1978. -- Amended 1974 Ky. Acts ch. 101, sec. 2. -- Amended 1970 Ky. Acts ch. 93, sec. 8. -- Amended 1966 Ky. Acts ch. 18, sec. 3; ch. 50, sec. 2; ch. 73, sec. 1; and ch. 227, sec. 1. -- Amended 1964 Ky. Acts ch. 65, sec. 1. -- Amended 1960 Ky. Acts ch. 54, sec. 1. -- Amended 1954 Ky. Acts ch. 248, sec. 1. -- Amended 1950 Ky. Acts ch. 52, sec. 1. -- Recodified 1942 Ky. Acts ch. 208, sec. 1, effective October 1, 1942, from Ky. Stat. sec. 2739g-24.

**189.050 Rear, side and clearance lights.**

- (1) Except as provided in any regulations adopted pursuant to KRS 189.287, all vehicles shall display at the rear one (1) red light visible when lighted for at least five hundred (500) feet. A red reflector meeting the requirements may be used in lieu of a red light.
- (1) When in operation on any highway slow-moving or motorless vehicles, except bicycles, shall have at least one (1) lamp on the left side of the vehicle whether from the front or rear, showing white and of sufficient power to reveal clearly the outline of the left side of the vehicle and in such a manner that the outline may be observed clearly by approaching vehicles from a distance of at least one hundred (100) feet.

**History:** Amended 1974 Ky. Acts ch. 101, sec. 3. -- Amended 1966 Ky. Acts ch. 73, sec. 2. -- Recodified 1942 Ky. Acts ch. 208, sec. 1, effective October 1, 1942, from Ky. Stat. sec. 2739g-24, 2739g-50, 2739g-89, 2739g-90.

**189.080 Horns and other sound devices.**

Except as provided in any regulations adopted pursuant to KRS 189.287, every motor vehicle and bicycle, when in use on a highway shall be equipped with a horn or other device capable of making an abrupt sound sufficiently loud to be heard under all ordinary traffic conditions. Every person operating an automobile or bicycle shall sound the horn or sound device whenever necessary as a warning of the approach of such vehicle to pedestrians, or other vehicles, but shall not sound the horn or sound device unnecessarily. A bell may be used on a bicycle.

**History:** Amended 1974 Ky. Acts ch. 101, sec. 4. -- Amended 1970 Ky. Acts ch. 93, sec. 9. -- Amended 1952 Ky. Acts ch. 167, sec. 1, effective June 19, 1952. -- Recodified 1942 Ky. Acts ch. 208, sec. 1, effective October 1, 1942, from Ky. Stat. sec. 2739g-28.

**189.287 Bicycle safety regulations and standards.**

The Transportation Cabinet may promulgate bicycle safety regulations and standards. Bicycle riders and bicycles complying with such regulations and standards are exempt from the provisions of KRS 189.040 (9), 189.050(1), 189.050(5), and 189.080. Such bicycles and riders are also exempt from municipal and other local government regulations concerning safety equipment but not method of operation. In promulgating regulations and standards the Transportation Cabinet shall permit use of lightweight modern technological substitutes for lights, reflectors, and bells. The purpose of this section is to encourage bicycling and bicycle touring in this state by enabling bicycle riders to make use of modern technology to make their presence known to other users of the road. The Transportation Cabinet may consult with organizations of bicycle riders to aid it in the search for bicycle safety equipment and rules convenient for long distance bicycle riders.

**History:** Created 1974 Ky. Acts ch. 101, sec. 1.

**189.570 Pedestrians.**

- (1) Pedestrians shall obey the instruction of any official traffic control devices specifically applicable to them, unless otherwise directed by a police officer or other officially designated persons.
- (2) Pedestrians shall be subject to traffic and pedestrian control signals as provided in KRS 189.231 and 189.338.
- (3) At all other places, pedestrians shall be accorded the privileges and shall be subject to the restrictions stated in this chapter.
- (4) When traffic control signals are not in place or in operation the operator of a vehicle shall yield the right-of-way, slowing down or stopping if need be to so yield, to a pedestrian crossing the roadway upon which the vehicle is traveling, or when the pedestrian is approaching so closely from the opposite half of the roadway as to be in danger.
- (5) Whenever any vehicle is stopped at a marked crosswalk or at any unmarked crosswalk at an intersection, to permit a pedestrian to cross the roadway, the operator of any other vehicle approaching from the rear shall not overtake and pass the stopped vehicle.
- (6) (a) Every pedestrian crossing a roadway at a point other than within a marked crosswalk or within an unmarked crosswalk at an intersection shall yield the right-of-way to all vehicles upon the roadway.  
(b) Any pedestrian crossing a roadway at a point where a pedestrian tunnel or overhead pedestrian crossing has been provided shall yield the right-of-way to all vehicles upon the roadway.



**189.570 Pedestrians.** (continued)

- c) Between adjacent intersections within the city limits of every city at which traffic control signals are in operation, pedestrians shall not cross at any place except in a marked crosswalk.
- d) Notwithstanding other provisions of this subsection or the provisions of any local ordinance, every operator of a vehicle shall exercise due care to avoid colliding with any pedestrian and shall give warning by sounding the horn when necessary and shall exercise proper precaution upon observing a child or an obviously confused or incapacitated person upon a roadway.
- (7) No vehicle shall at any time be driven through or within a safety zone.
- (8) The operator of a vehicle shall yield the right-of-way to any pedestrian on a sidewalk.
- (9) 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 as to constitute an immediate hazard.
- (10) No pedestrian shall cross a roadway intersection diagonally unless authorized by official traffic control devices; and, when authorized to cross diagonally, pedestrians shall cross only in accordance with the official traffic control devices pertaining to such crossing movements.
- (11) Pedestrians shall move, whenever practicable, upon the right half of crosswalks.
- (12) Where a sidewalk is provided and its use is practicable, it shall be unlawful for any pedestrian to walk along and upon an adjacent roadway.
- (13) Where a sidewalk is not available, any pedestrian walking along and upon a highway shall walk only on a shoulder, as far as practicable from the edge of the roadway.
- (14) Where neither a sidewalk nor a shoulder is available, any pedestrian walking on or along a highway shall walk as near as practicable to an outside edge of the roadway, and, if on a two-way roadway shall walk only on the left side of the roadway.
- (15) Except as otherwise provided in this chapter, any pedestrian upon a roadway shall yield the right-of-way to all vehicles upon the roadway.
- (16) A pedestrian who is under the influence of alcohol or any kind of drug to a degree which renders himself a hazard shall not walk or be upon a highway except on a sidewalk.
- (17) No pedestrian shall enter or remain upon any bridge or approach thereto beyond the bridge signal, gate, or barrier, after a bridge operation signal indication has been given.
- (18) No pedestrian shall pass through, around, over, or under any crossing gate or barrier at a railroad grade crossing or bridge while such gate or barrier is closed or is being opened or closed.
- (20) No person shall stand in a roadway for the purpose of soliciting a ride.
- (21) No person shall stand on a roadway for the purpose of soliciting employment or business from the occupant of any vehicle.
- (22) No person shall stand on a highway for the purpose of soliciting contributions unless such soliciting is designated by the presence of a traffic control device or warning signal or an emergency vehicle or public safety vehicle as defined in KRS 189.910 making use of the flashing, rotating or oscillating red, blue, or yellow lights on such devices or vehicles.

**189.570 Pedestrians.** (continued)

- (23) Upon the immediate approach of an emergency vehicle equipped with, and operating, one (1) or more flashing, rotating, or oscillating red or blue lights, visible under normal conditions from a distance of 500 feet to the front of such vehicle, and the operator of which is giving audible signal by siren, exhaust whistle, or bell, every pedestrian shall yield the right-of-way to the emergency vehicle.
- (24) This section shall not relieve the operator of an emergency vehicle from the duty to drive with due regard for the safety of all persons using the highway nor from the duty to exercise due care to avoid colliding with any pedestrian.

**Effective:** June 17, 1978

**History:** Amended 1978 Ky. Acts ch. 46, sec. 8, effective June 17, 1978. -- Recodified 1942 Ky. Acts ch. 208, sec. 1, effective October 1, 1942, from Ky. Stat. secs. 2739g-69q to 2739g-69v.

## 2. Local Ordinances

Clay S. Foreman  
Mayor



Fred E. Fischer  
City Attorney

*Small Town Values • Enterprising Spirit*

April 14, 2006

Hon. Matt Meunier, Mayor's Assistant

**RE: Pedestrians and Bicyclists**

Dear Matt:

You have requested I provide you with a copy of statutes relative to the regulation of pedestrians and bicyclists. Accordingly, I am enclosing herewith copies of the relevant statutes; however, exhaustive as this is, I would caution you that under no circumstances should you, or the City, under any circumstances, utilize this compilation as advice to individuals regarding bicycles and pedestrian traffic. The purpose of this memorandum is merely to give you a focus of relevant statutes as you are developing your bicycle and pedestrian pathways. There is an entire body of Tort Law which is taught in Law School over two semesters, which I could not begin to address in this memorandum, which would also be applicable. For instance, in 1984, Justice Leibson, in a brilliant Opinion, adopted "comparative fault" in all negligence cases as opposed to "contributory negligence": Hilen v. Hayes, Ky., 673 SW 2d 713 (1984). This opinion was later codified as KRS 411.182 and continues to be the law in Kentucky.

All this notwithstanding, for purposes of your review and development of the bicycle and pedestrian pathways, I would recommend the following statutes to your consideration, to wit: KRS 189.570 to and through KRS 189.575, regarding pedestrians.

While some statutes relative to bicycles and bicyclists overlap with the pedestrian statutes, the most appropriate for your review would be as follows: KRS 189.040, 050, 080, 830; additionally, KRS 174.120 references 600 KAR 2:040 regarding "statewide bicycle and bikeways programs; KRS 174.125 creates a commission with respect to these statewide programs, and you may wish to contact that commission relative to any application to your endeavors.

KRS 189.287 provides that the Transportation Cabinet may promulgate bicycle regulations and standards for bicycles complying with standards, making them exempt from provisions of KRS 189.040 (9), 189.050 (1) and (5), and 189.080.

KRS 189.990 provides penalties for violations.

10416 Watterson Trail • Jeffersontown, KY 40299 • 502.267.8333

## 2. Local Ordinances (continued)

KRS 146.640 and KRS 148.60 relate to bike trails and bike trail development; however, a reading of these statutes indicates they are provisions for trails throughout the Kentucky State Park system; however, again, this may be an area of interest for you in your endeavors.

Again, let me emphasize the caveat that the City is not giving legal advice to either pedestrians or bicycle riders in the City. The purpose of this Memorandum is merely to advise you of some interesting reading you might digest as you develop you bike and pedestrian paths throughout the City.

I am enclosing copies of the relevant referenced statutes, and if you have any questions, after review, please do not hesitate to call me.

Very truly yours,



FRED E. FISCHER

FEF: tls  
Enclosure

cc: Hon. Clay S. Foreman, Mayor

## **E. PowerPoint Presentation**



# Jeffersontown's *Gaslight Recreational & Workplace Trail System*



## The Mission

The “*Gaslight Recreational & Workplace Trail System*” will enhance the quality of life within Jeffersontown by providing alternative means to the automobile and encourage physical fitness, family exercise and will create a link between where people live and work. Connecting the neighborhoods to the downtown, city parks, commercial corridors and the workplace will enhance accessibility throughout the city.





# Jeffersontown's *Gaslight Recreational & Workplace Trail System*



## Louisville Bicycle Summit 2005

Studied four areas relative to bicycle and pedestrian movement.

**Track 1A-**

**On-Road Facilities**

**Track 1B-**

**Off-Road Facilities**

**Track 2-**

**Programs & Events**

**Track 3-**

**Policy**





# Jeffersontown's

## *Gaslight Recreational & Workplace Trail System*



### **Short-term Goals**

#### **1-12 months**

- Create LBS follow-up Taskforce
- Community cycling events/festival
- Safe biking demo corridor
- Revamp bicycle routes/map
- Adopt a bike-pedestrian & greenways master plan
- Maintenance accountability
- Promotion - e.g. "Bike to Work" and Olmsted Parks tour

### **Mid-term Goals**

#### **1-5 years**

- Ohio River Greenway
- Olmsted Parks and Parkway
- Cross-town and North-South routes
- Striping and signage
- Information Clearinghouse

- Complete streets policy
- Funding equity campaign
- Education programs
- Eliminate major road impediment
- BFC designation

### **Long-term Goals**

#### **5 years plus**

- VeloPark
- Complete network of bicycle roads and paths
- Bike-ped access to new bridges





# Jeffersontown's *Gaslight Recreational & Workplace Trail System*



## On-road facilities

A roadway that accommodates both bicycles and motor vehicles.





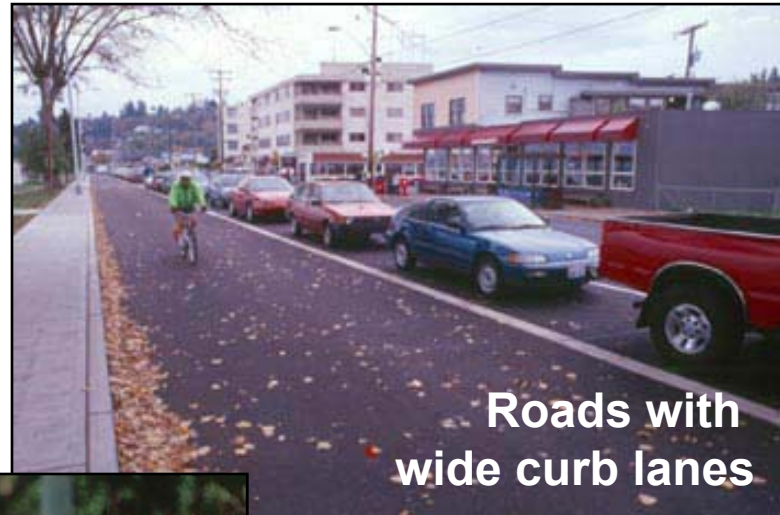


# Jeffersontown's *Gaslight Recreational & Workplace Trail System*



## On-road facilities

A roadway that accommodates both bicycles and motor vehicles.





# Jeffersontown's *Gaslight Recreational & Workplace Trail System*



## On-road facilities cont.

### *Why put a cyclist on the road?*

(National studies have shown that)

- Riding on the sidewalk is a danger to *everyone*: pedestrians, cyclists, and motorists.
- The road is often the most direct route to a destination.
- Implementing on-road facilities is cost effective.
- Bikes are legal vehicles with full rights!





# Jeffersontown's

## *Gaslight Recreational & Workplace Trail System*



## On-road facilities

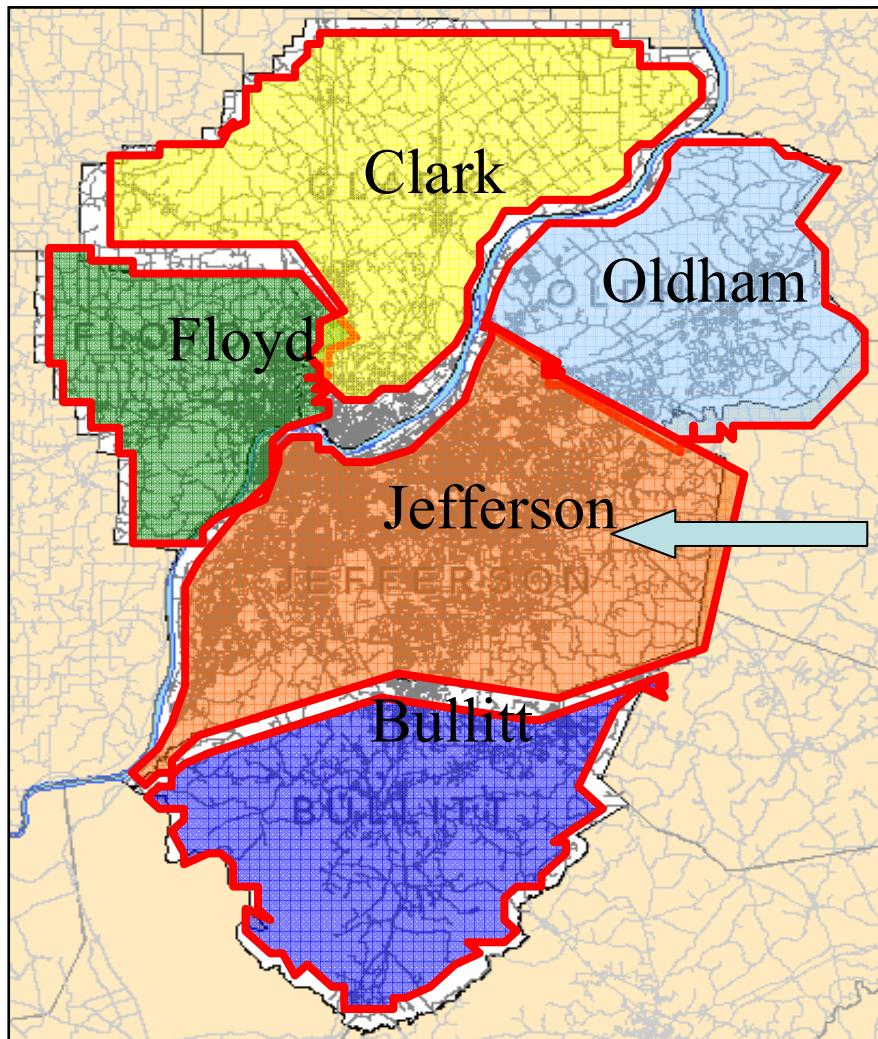
### Goals

1. Develop list of on-road facilities and recommendations.
2. Establish Priorities





# Jeffersontown's *Gaslight Recreational & Workplace Trail System*



## KIPDA HORIZON 2030

- Create a regional bicycle and pedestrian network in the KIPDA region
- Focus on major roadways to serve the region





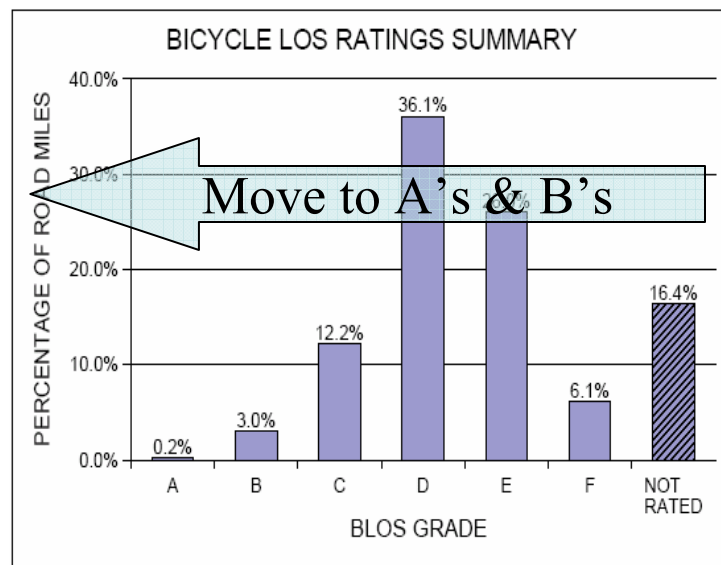
# Jeffersontown's *Gaslight Recreational & Workplace Trail System*



## 2004 Bicycles level of service report

Looked at

1. Our Major Streets and Roads transportation infrastructure and;
2. How we can best accommodate bicycling through minor alterations



Louisville metro major roads Bicycle Level of Service ratings





# Jeffersontown's *Gaslight Recreational & Workplace Trail System*



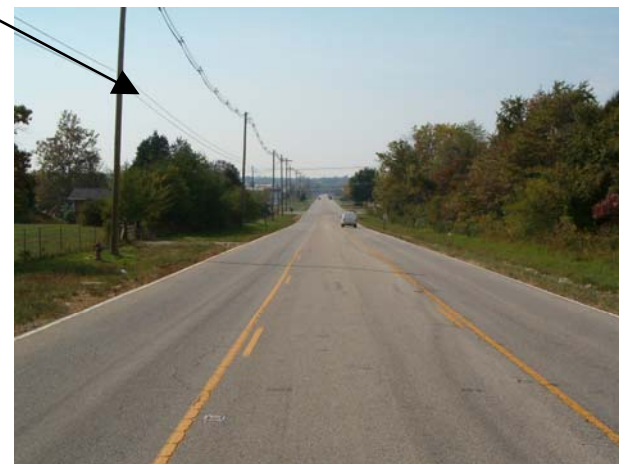
## Explore Bike Lanes on Our Roads

In most cases, minor improvements such as re-stripping or shoulder improvements can result in bike lanes/facilities

Plantside Drive →



Electron Drive →



Bluegrass Parkway →





# Jeffersontown's *Gaslight Recreational & Workplace Trail System*



## Explore Bike Lanes on Our Roads cont.

In most cases, minor improvements such as re-striping or shoulder improvements can result in bike lanes/facilities

### Hurstbourne Parkway



### Taylorville Road







# Jeffersontown's *Gaslight Recreational & Workplace Trail System*



**Bike & Pedestrian Routes** Currently, we have:

92 miles of roads

- Sidewalks that connect residential, some commercial, and walking trails in recreational parts of the city
- Are mostly located on calm, safe streets





# Jeffersontown's *Gaslight Recreational & Workplace Trail System*



## Bike & Pedestrian Routes

- Maintenance (glass, debris, etc.)
- Optimization
- Expansion possibilities
- Functionality
- Recreation







# Jeffersontown's *Gaslight Recreational & Workplace Trail System*



Develop amenities: Water fountains, rest benches, bike racks, lighting, stripping etc.





# Jeffersontown's *Gaslight Recreational & Workplace Trail System*

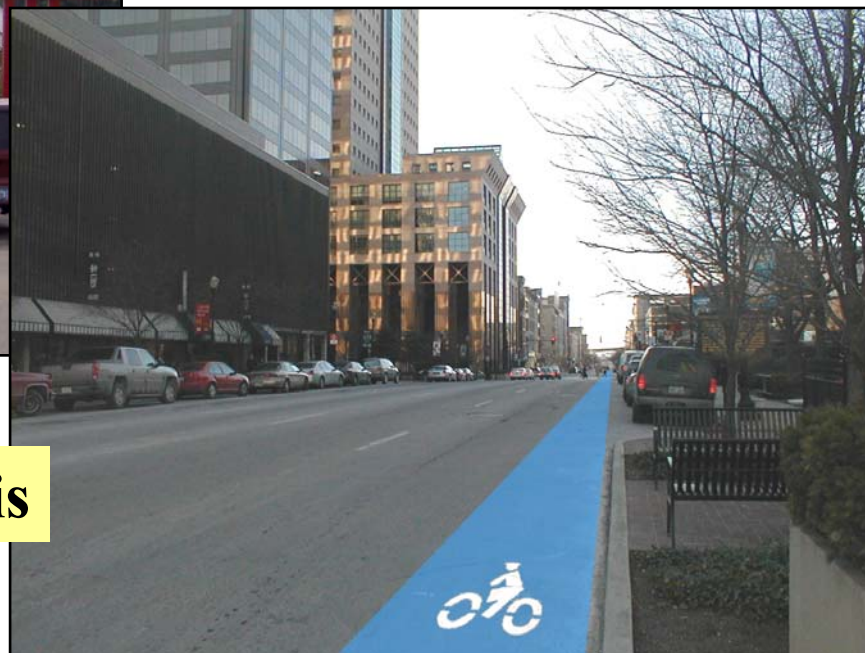


**Transform this...**





# Jeffersontown's *Gaslight Recreational & Workplace Trail System*



**...into this**



# Jeffersontown's *Gaslight Recreational & Workplace Trail System*



- Major Impediments



**Large Intersections**



**Busy Roads**



**Narrow or no  
Shoulders**





# Jeffersontown's *Gaslight Recreational & Workplace Trail System*



## *Off-Road Facilities*





# Jeffersontown's

## *Gaslight Recreational & Workplace Trail System*



### **Goal**

- 1. Develop list of off-road facilities and recommendations, considering:**
  - Past planning documents and recommendations
  - Comments/suggestions from Summit attendees and web site
- 2. Establish Priorities**

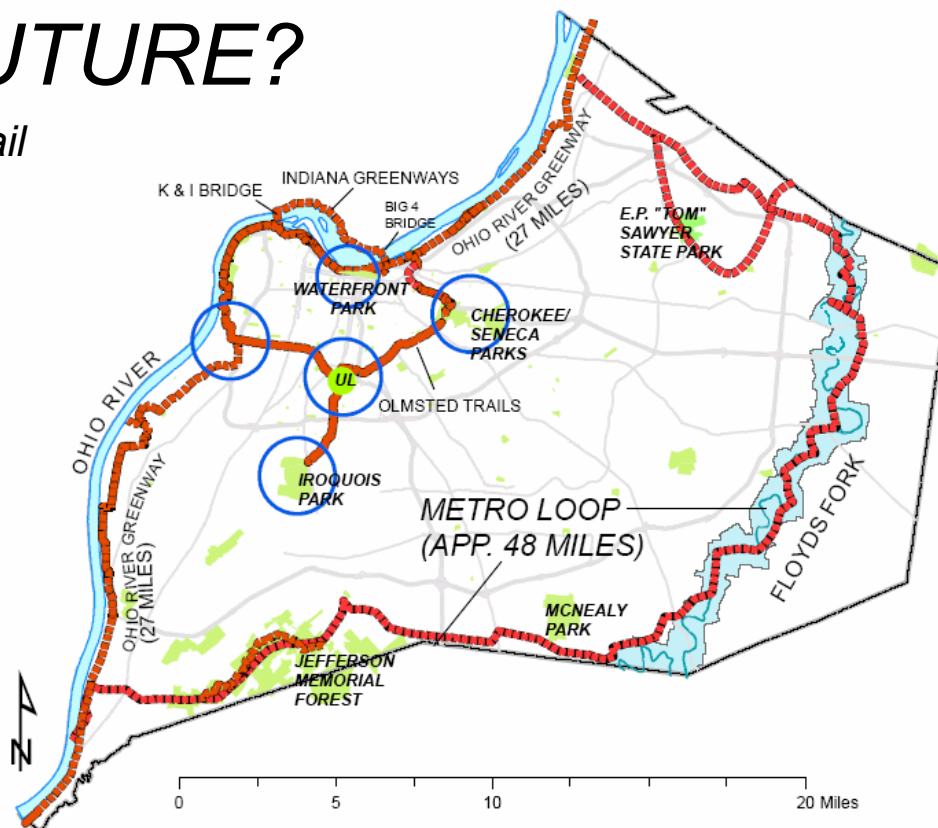




# Jeffersontown's Gaslight Recreational & Workplace Trail System



- **THE FUTURE?**
- *Metro Loop Trail*



Louisville Bicycle Summit 2005





# Jeffersontown's *Gaslight Recreational & Workplace Trail System*



- Mountain Biking



Louisville Bicycle Summit 2005





# Jeffersontown's

## *Gaslight Recreational & Workplace Trail System*



## *Programs & Events*

### Agenda

- **Review of the events/programs**
- **Discussion of additional programs**
- **Arriving at consensus**

### Goals

- **Build consensus on community-based programs and events that will consider:**
  - Promotion
  - Recreation
  - Active and healthy living
  - Participatory and spectator sport
- **Establish priorities**



# Jeffersontown's *Gaslight Recreational & Workplace Trail System*



## Bike To Work Week

- Promote bicycling and walking in our community
- Increase safety through education, traffic rules enforcement, and facilities
- Improved air quality and livability of our community.
- Increased productivity and fewer injuries at work.
- Significantly reduced traveling costs.



Louisville Bicycle Summit 2005







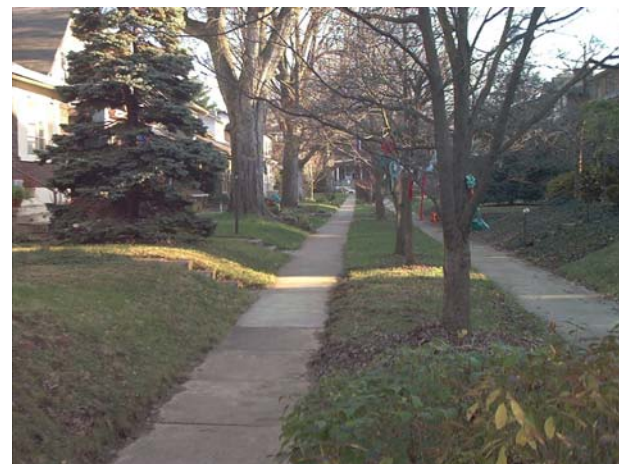
# Jeffersontown's *Gaslight Recreational & Workplace Trail System*



## Bicycle Tour of Jeffersontown

A day-long/half-day  
community event!

- An annual event
- Consider dedicating some streets to bike lanes and sidewalks
- Bringing the community together on bicycles or walking
- Celebrate the neighborhoods on bicycles or walking





# Jeffersontown's

## *Gaslight Recreational & Workplace Trail System*



### Midnight Tour of Louisville Metro Neighborhoods

- Tour Louisville Metro neighborhoods on bicycle
- Traffic would be minimal - could temporarily suspend motor vehicles from some streets if necessary
- Participants would become more familiar with the metro community
- There are successful midnight tours in large cities such as Chicago and Denver



Louisville Bicycle Summit 2005







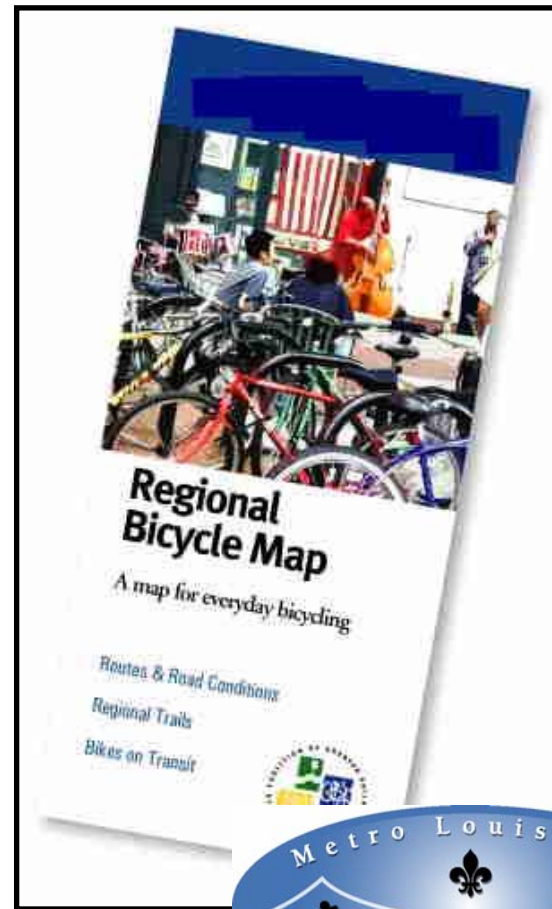
# Jeffersontown's

## *Gaslight Recreational & Workplace Trail System*



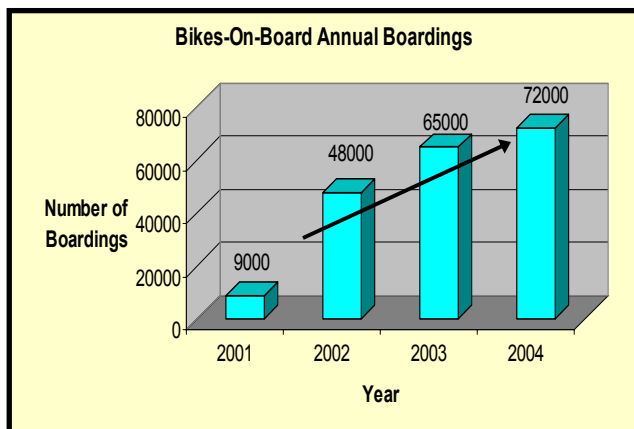
### User-Friendly Bicycle Map

- A user-friendly bicycle map and a website will:
  - Promote ridership
  - Provide interactive maps/route locations
  - Provide information of community events
  - Provide updates on condition of paths





# Jeffersontown's Gaslight Recreational & Workplace Trail System



## TARC Bikes On Board

### FACTS

- Increase in 3 years: 50%
- Record Month: August 2004 - 8270 boardings
- Average boardings: 6000 per month



The program significantly expands bicycling infrastructure and opportunities in the community.





# Jeffersontown's *Gaslight Recreational & Workplace Trail System*



## Bike Racks

- Bike Racks program helps to install bike racks Metro-wide
- If you promote bikes you need racks
- Racks can be attractive to a downtown





# Jeffersontown's *Gaslight Recreational & Workplace Trail System*



## Safe Routes to School

Provide safe and functioning facilities for walking and biking between homes and schools is an absolute necessity.

### SR2S

- Builds self confidence
  - Promotes active living
  - Creates a healthy
  - Social environment
- 
- Originated in Denmark due to high child pedestrian accidents – reduced child cyclist and pedestrian by 80%.
  - Program is gaining momentum throughout the United states – has been implemented in California, Virginia and New York
  - Success in Marion County, CA, Arlington County, VA, and The Bronx, NY





# Jeffersontown's

## *Gaslight Recreational & Workplace Trail System*



## *Policy*

### Goal

- 1. Develop list of policies and recommendations, considering:**
  - Past, existing policies & recommendations
  - Suggested policies from Summit attendees and focus group members
- 2. Establish priorities**





# Jeffersontown's

## *Gaslight Recreational & Workplace Trail System*



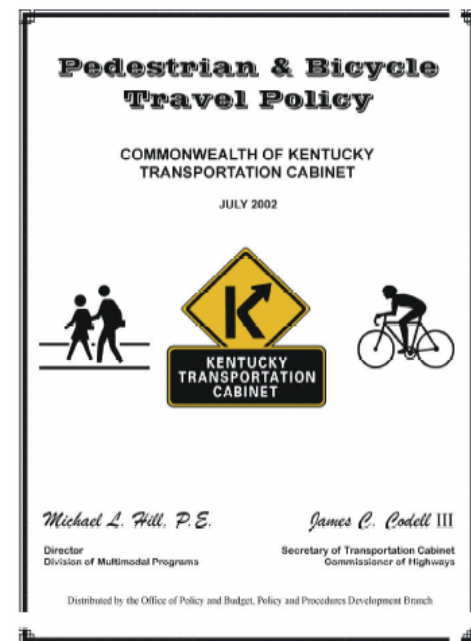
## A “Complete Streets” Policy

*Street design standard which bicycle and pedestrians are accommodated on all new and improved roads.*

### Existing

Pedestrian and Bicycle Travel Policy, adopted by Kentucky Transportation Cabinet, July 2002

- Requires only “consideration”
- Applies only to State roads
- Louisville Metro has adopted a policy (Cornerstone 2020)
  - Tools have not been developed yet





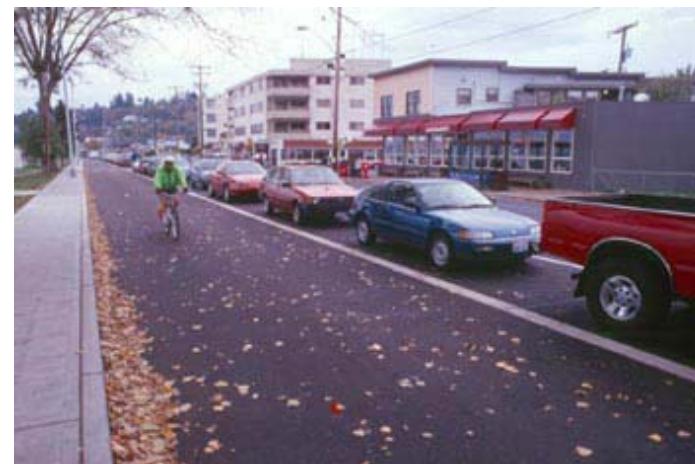


# Jeffersontown's *Gaslight Recreational & Workplace Trail System*



## Complete Streets

- All roadway projects in the future will include appropriate provisions to accommodate bicyclists and pedestrians



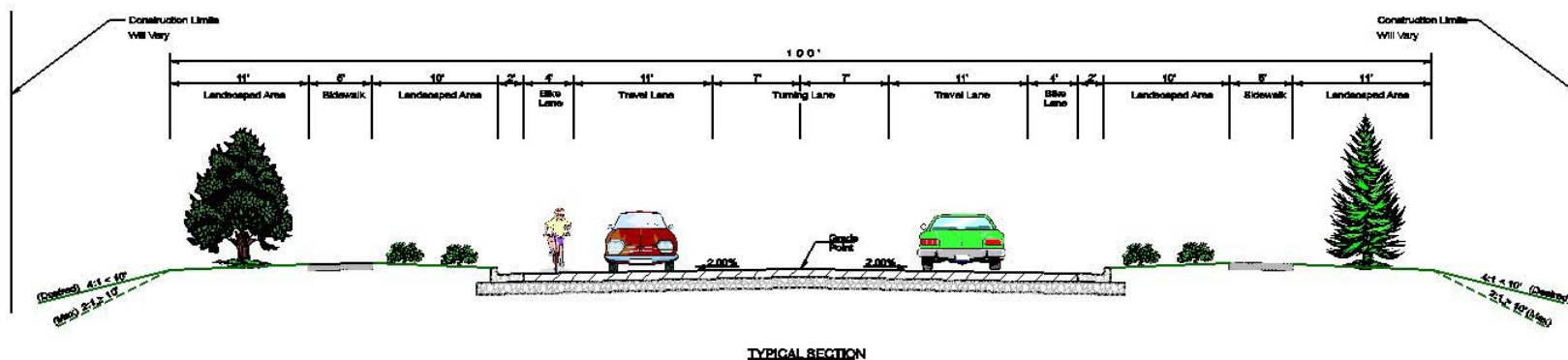


# Jeffersontown's *Gaslight Recreational & Workplace Trail System*



## Future Complete Streets In Metro Louisville

- Urton Lane, a new facility, inside I-275 from Shelbyville Rd. to Taylorsville Rd.
  - Pope Lick Rd and Shelbyville Rd area
- Cooper Chapel





# Jeffersontown's *Gaslight Recreational & Workplace Trail System*



## Use of Greenways as a Watershed Planning Tool

- Protect environmental qualities
- Right-of-way preservation (for potential bicycle use)
- Build awareness
- Educate school children and public



MSD



# Jeffersontown's

## *Gaslight Recreational & Workplace Trail System*



### Maintenance of Bicycle Facilities

- Multi-agency responsibility
  - Public Works
  - Permitting & Enforcement
  - MSD
  - Parks & Recreation
  - Chamber- Jeffersontown
  - JEDA
  - Jeffersontown Police
- Resource Commitments
  - Equipment
  - Personnel
  - Funding



*River Walk, Louisville*





# Jeffersontown's

## *Gaslight Recreational & Workplace Trail System*



### Reliable and adequate funding for bicycle facilities and programs.

- City of Jeffersontown
- Metro Louisville
- Chamber-Jeffersontown
- Recreational Trails Program
- Land & Water Conservation Fund Grant
- Transportation Enhancement
- CDAQ
- TIP





# Jeffersontown's *Gaslight Recreational & Workplace Trail System*



## Education

- Establish an effective educational program on bicycle safety and use for all ages







# Jeffersontown's *Gaslight Recreational & Workplace Trail System*



## Education, cont.

- Bilingual training and materials for immigrants
- Bicycle/driver education – one road for all





# Jeffersontown's

## *Gaslight Recreational & Workplace Trail System*



## **Education, cont.**

### Bicycle Safety/Educational Programs at School

Create partnership with schools to develop bicycle safety and educational programs

- Riding on the right
- Obeying traffic laws
- Riding predictably
- Wearing a properly fitting helmet





# Jeffersontown's *Gaslight Recreational & Workplace Trail System*



Develop programs to reduce sidewalk riding and other improper bicycle riding





# Jeffersontown's *Gaslight Recreational & Workplace Trail System*



## SAFETY

Develop a plan creating a safe environment for cars, cyclists, and people in the built environment. The plan to address

- Changing motorists attitudes
- Changing bicyclists attitudes
- Promotion/PR
- Safe streets for ALL

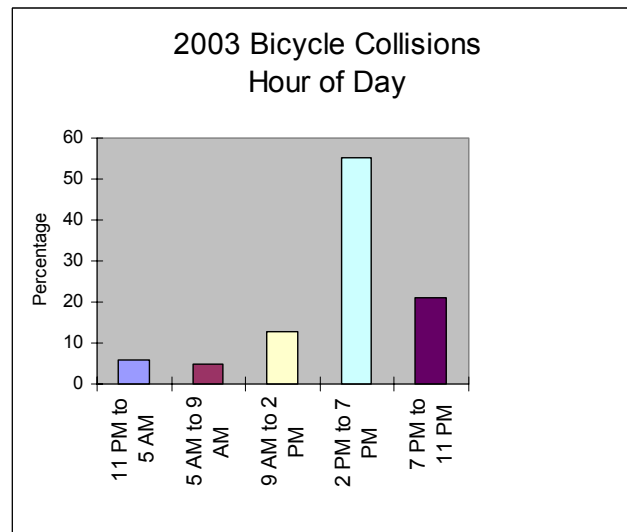
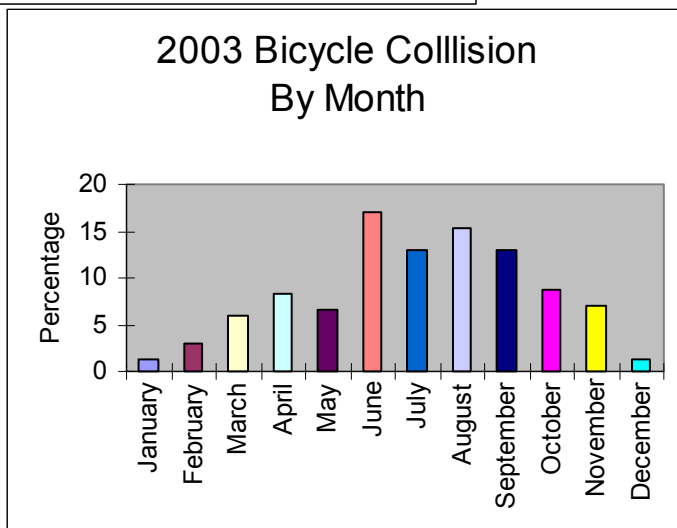
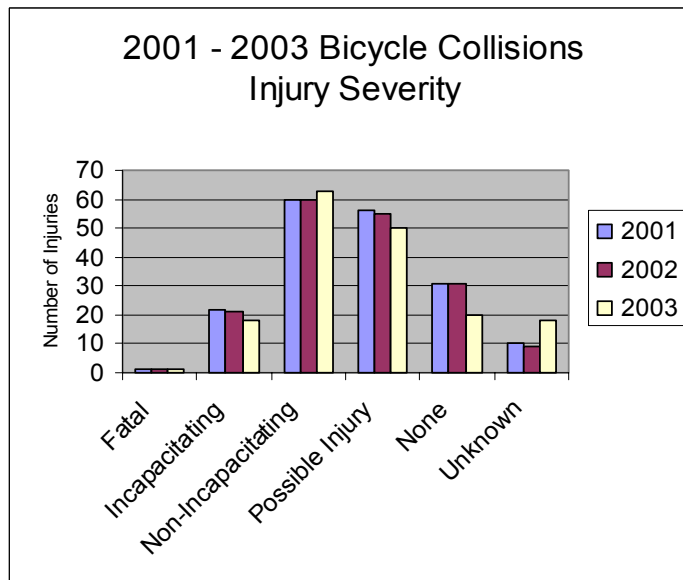
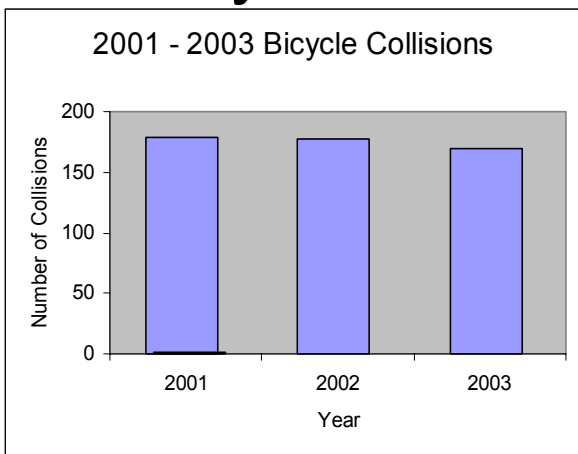




# Jeffersontown's Gaslight Recreational & Workplace Trail System



## Safety-Metro Statistics

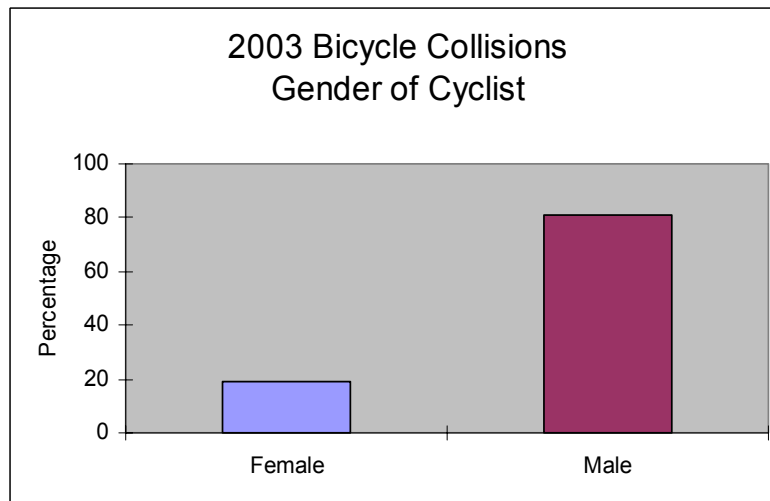
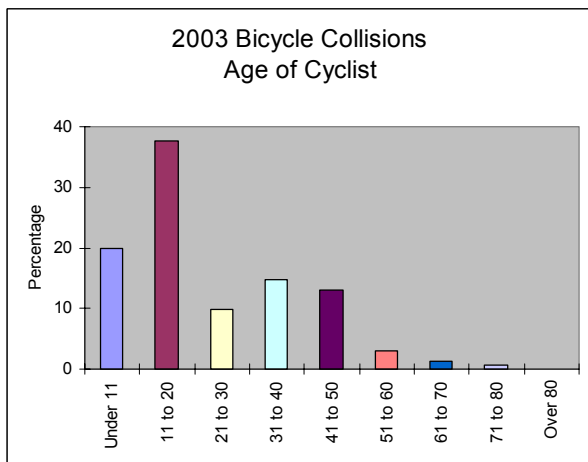
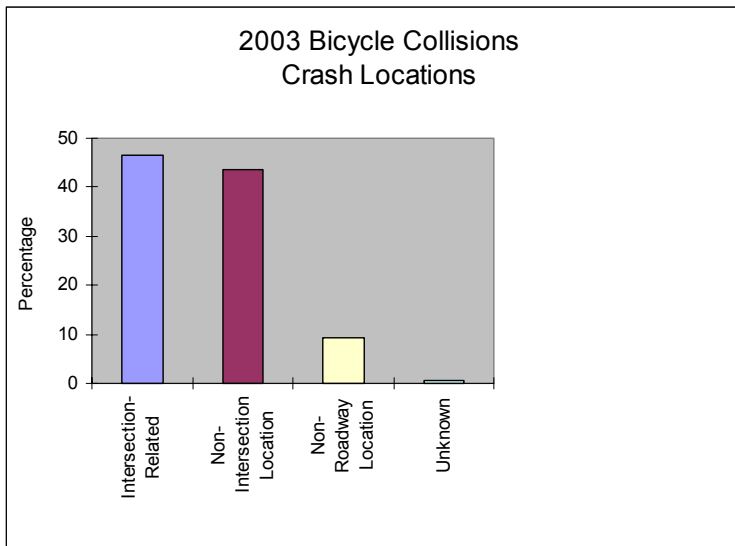
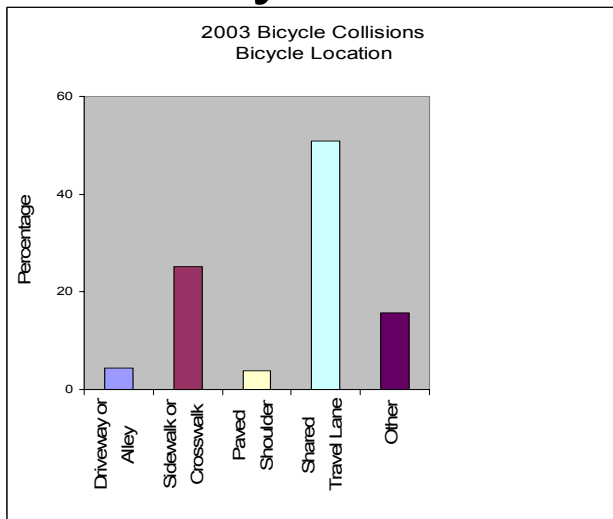




# Jeffersontown's Gaslight Recreational & Workplace Trail System



## Safety-Metro Statistics



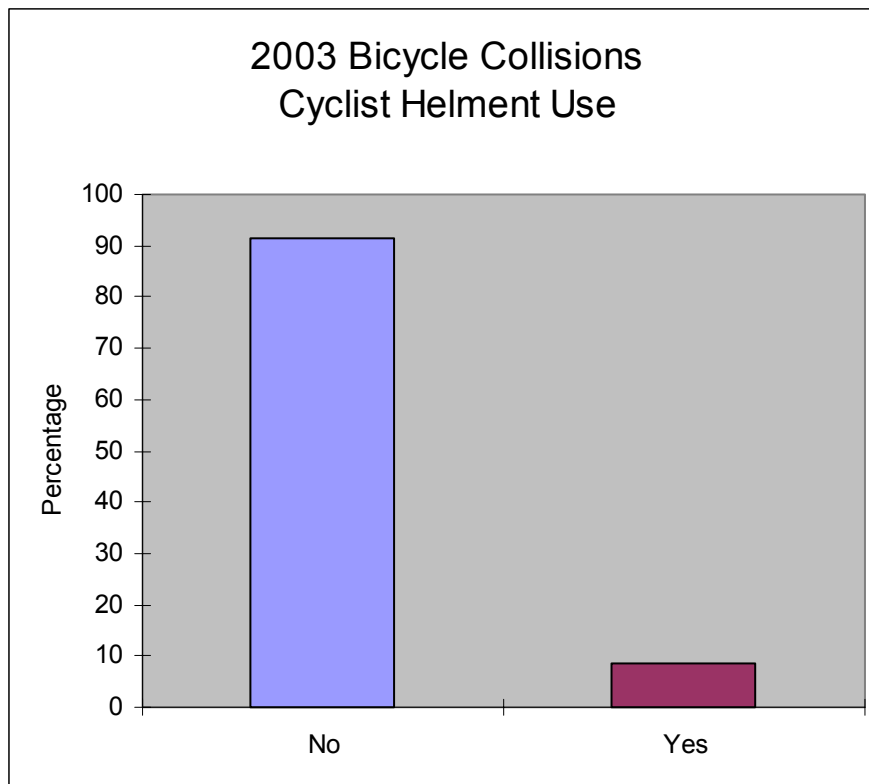




# Jeffersontown's *Gaslight Recreational & Workplace Trail System*



## Safety-Metro Statistics





# Jeffersontown's

## *Gaslight Recreational & Workplace Trail System*



### Police training for accuracy and completeness of accident reporting

- In 2003, there were **170** bicycle-vehicle collisions in Jefferson County
- This is unfortunate, but accidents need to be reported completely and accurately to efficiently resolve any problems that may arise





# Jeffersontown's *Gaslight Recreational & Workplace Trail System*



## Focus Group Process

### Mission Statement

“The Puzzle Pieces”

### Vision Statement

“What the puzzle looks like when it is complete”

### Goals

1. Give real, broadly defined direction.
2. First step in transitioning our process into a product.
3. Should have action directed wording

### Objectives

**S** pecific

**M** easurable

**A** ttainable

**R** esults

**T** ime oriented

### Strategies

How do we execute and reach each objective.

### Explanation

Why we think each strategy will work



# Jeffersontown's

## *Gaslight Recreational & Workplace Trail System*



Through this process the City of Jeffersontown hopes to answer the following type questions:

1. How easy is it for pedestrians & bikers to get around in town?
2. Is their journey a pleasant one?
3. What can we do to improve pedestrian safety, convenience, and bikeability and thereby improve community livability?



# Jeffersontown's *Gaslight Recreational & Workplace Trail System*



## Walkable Communities

### Importance of Pedestrians in the Transportation System

On any trip, regardless of mode chosen, every individual is a pedestrian. Even when we drive, some portion of our trip will involve walking. In the past walking was more common. For example, 30 years ago 66% of American children walked to school, today only about 13% walk. There are 3 major reasons for this trend:

- The built environment (school location) prohibits walking.
- Safe pedestrian facilities are not provided on the school route.
- Parents feel that the walk route is unsafe.

***The fact is 20-25% of morning traffic is due to parents driving their children to school. If we want more people walking we need conditions that encourage walking and that make pedestrians feel safe. By creating walkable communities we will create communities that are perceived as more livable and communities that can encourage healthier lifestyles.***



# Jeffersontown's

## *Gaslight Recreational & Workplace Trail System*



### Principles of Walkability

- High traffic speeds make pedestrian crossings difficult, unsafe, and unpleasant.
- Long pedestrian crossings are less safe than short crossings.
- Pedestrian access that requires crossing a sea of parking is unpleasant and inherently unsafe.
- Pedestrian crossing signals that require extraordinarily long waits are seldom respected.
- Land use and the built environment largely influence how walkable a community is. Modern zoning requirements tend to result in built environments that discourage walking.
- Providing a separate facility for pedestrians (a sidewalk) leads to a safer and more pleasant condition for walking.
- Facilities for pedestrians need to be designed with all users (elderly, handicapped, and children) in mind.
- Street plantings make a street environment more attractive and comfortable for pedestrians.
- A finely grained network of streets is important in both village centers and town centers to insure that no single road has to become so wide that it is no longer pedestrian friendly. That is, the denser the street grid system and the more options that traffic has, the more attractive individual streets will be for pedestrians.





# Jeffersontown's *Gaslight Recreational & Workplace Trail System*



## Walking and Bicycling Indicators

What makes a community bicycle-friendly and walkable? Good facilities are certainly important but its much more than that. The National Center for Bicycling & Walking, developed a list of factors, called indicators, grouped under five community characteristics:

- Transportation facilities and services.
- Land-use planning and development.
- Schools.
- Recreation, parks, and trails.
- Safety, security, and crime prevention.

(Handout of 30 top indicators)







# Jeffersontown's *Gaslight Recreational & Workplace Trail System*



## The Mission

The “*Gaslight Recreational & Workplace Trail System*” will enhance the quality of life within Jeffersontown by providing alternative means to the automobile and encourage physical fitness, family exercise and will create a link between where people live and work. Connecting the neighborhoods to the downtown, city parks, commercial corridors and the workplace will enhance accessibility throughout the city.