



Brownsburg Active Transportation Plan

**A Bicycle and Pedestrian Master Plan
Brownsburg, Indiana**

August, 2014



Brownsburg Active Transportation Plan

A Bicycle and Pedestrian Master Plan Brownsburg, Indiana



Brownsburg Parks and Recreation Department

326 North Green Street
Brownsburg, Indiana 46112
www.brownsburgparks.com



Town of Brownsburg

61 North Green Street
Brownsburg, Indiana 46112
www.brownsburg.com

Town Manager

Grant Kleinhenz

Assistant Town Manager

Brian Hartsell



Acknowledgements

Special thanks to the following people and organizations:

Town Council

Gary Hood, President
Don Spencer, Vice President
Rob Kendall, Member
Dave Richardson, Member
Ashley Hobbs, Member

Park Board

Michael Klitzing, President
Scott Lattimer, Vice President
Joseph Almon, Member
Tracie Morris, Member
Cari Palma, Member
Phil Utterback, Member

Park Staff

Philip Parnin, Director
Travis Tranbarger, Assistant Director
Cynthia Hyatt, Administrative Assistant
Rebecca Holloway, Office Assistant
Michael Hawk, Recreation Superintendent
Lora Lacey, Community Recreation Manager
Kevin Enders, Youth Services Manager
Judi Daniels, Recreation Program Assistant
Andy Wilson, Grounds Superintendent
Kris Myers, Grounds Laborer
Joe Maples, Grounds Laborer

Planning Department

Todd Barker, Director
Jonathon Blake, Senior Planner

Street Department

Jim Waggoner, Superintendent

prepared by:

Rundell Ernstberger Associates, LLC
Sprinkle Consulting, Inc.

THIS PAGE LEFT BLANK



Table of Contents

PROJECT INTRODUCTION	06
BROWNSBURG TODAY	10
FUTURE BROWNSBURG	24
IMPLEMENTATION	42
OPERATIONS AND MAINTENANCE	46
FACILITIES GUIDE	58
APPENDIX	70
Appendix A: Community Survey with Results	71
Appendix B: Existing Document Review Summary	88

LIST OF EXHIBITS

Overall Existing Conditions Map	13
Latent Demand Map	15
Northwest Quadrant Existing Conditions	17
Northeast Quadrant Existing Conditions	19
Southwest Quadrant Existing Conditions	21
Southeast Quadrant Existing Conditions	23
Hub and Spoke Concept Exhibit	25
Overall Proposed Route Map	27
Northwest Quadrant Proposed Route Map	29
Northeast Quadrant Proposed Route Map	31
Southwest Quadrant Proposed Route Map	33
Southeast Quadrant Proposed Route Map	35
Proposed Improvements Main Street & Green Street	37
Proposed Improvements Green Street near Main Street	39
Proposed Improvements College Avenue at Green Street	41
Short Term Capital Project Implementation Chart	44-45
Mid-Term Capital Project Implementation Chart	46
Long Term Capital Project Implementation Chart	47

Introduction

Introduction

Brownsburg Today

Future Brownsburg

Implementation

Operations and Maintenance

Facilities Guide

PROJECT HISTORY

The Town of Brownsburg has grown by over 46% in the past 20 years. The Town has attracted many new residents while maintaining its current resident base by providing amenities desired by the young and old alike. The location of Brownsburg within a few miles of Indianapolis, while still having a small town character, makes it a desirable location for many new families. In order to continue to serve the existing residents of Brownsburg while attracting new residents the Town must continue to develop new and improved amenities. A vital part of this is the bicycle and pedestrian system, or the Active Transportation System. As transportation systems continue to evolve the focus from the automobile as the primary source of travel will continue to change. Providing a complete system of facilities to offer a variety of options for the Town will add to the attractiveness of the community as a place to live and work.

Bicycling and walking are important aspects of a community's mobility, health, economic viability, and environmental sustainability. The bicycle and pedestrian facilities are especially important for people without vehicles and for children. These facilities are also important in attracting tourists and visitors to the Town of Brownsburg. Having a complete system of bike and pedestrian amenities provides people with an affordable way to incorporate physical exercise into their daily routine, helping to increase the overall health of the community. Walkable and bikeable communities also make it more convenient for neighbors to meet each other and provide additional safety measures by simply being out and about more. When people use modes of travel other than motor vehicles it decreases the pollution for that community providing yet another benefit.

Many areas of Brownsburg are walkable and bikeable however, there are many gaps in the system connecting neighborhood to neighborhood. While the existing facilities have increased biking and walking in the Town, a more comprehensive sys-

tem will provide more direct, convenient and safe travel for walkers and bikers.

PLAN AREA

The planning area for the Active Transportation Plan includes all of incorporated Brownsburg and Brown and Lincoln Townships (see Figure 1). Brownsburg is located in Hendricks County and had a population of 21,285 according to the 2010 census. Brownsburg is located approximately 12 miles northwest of Indianapolis along Interstate 74. Brownsburg is not currently served by IndyGo, the Indianapolis Transit Service, however, plans are currently underway to add Brownsburg to the system.

This study area includes a variety of community character types including the older, urbanized areas of downtown to suburban neighborhoods along 56th Street and the open rural areas of the County. In the downtown area residents have greater opportunities to walk and bike to schools, recreation, employment and commercial districts. There are more facilities provided within the downtown area. Most of the suburban neighborhoods provide the opportunity for recreational bicycling and walking in the form of paths and trails that wind through or around the neighborhoods. However, because of the distance between these neighborhoods and the parks, schools and shopping centers there are fewer opportunities to utilize biking and walking for these types of trips. The rural areas of the County support biking and walking but only on low-traffic county roads which come with their own challenges.

Although the study area includes only the areas shown in Figure 1, regional connections should still be made with the larger regional area. This includes the B&O Rail Trail as it extends east and west out of the study area, Eagle Creek Park, and the White Lick Trail to the south through Avon and Plainfield.



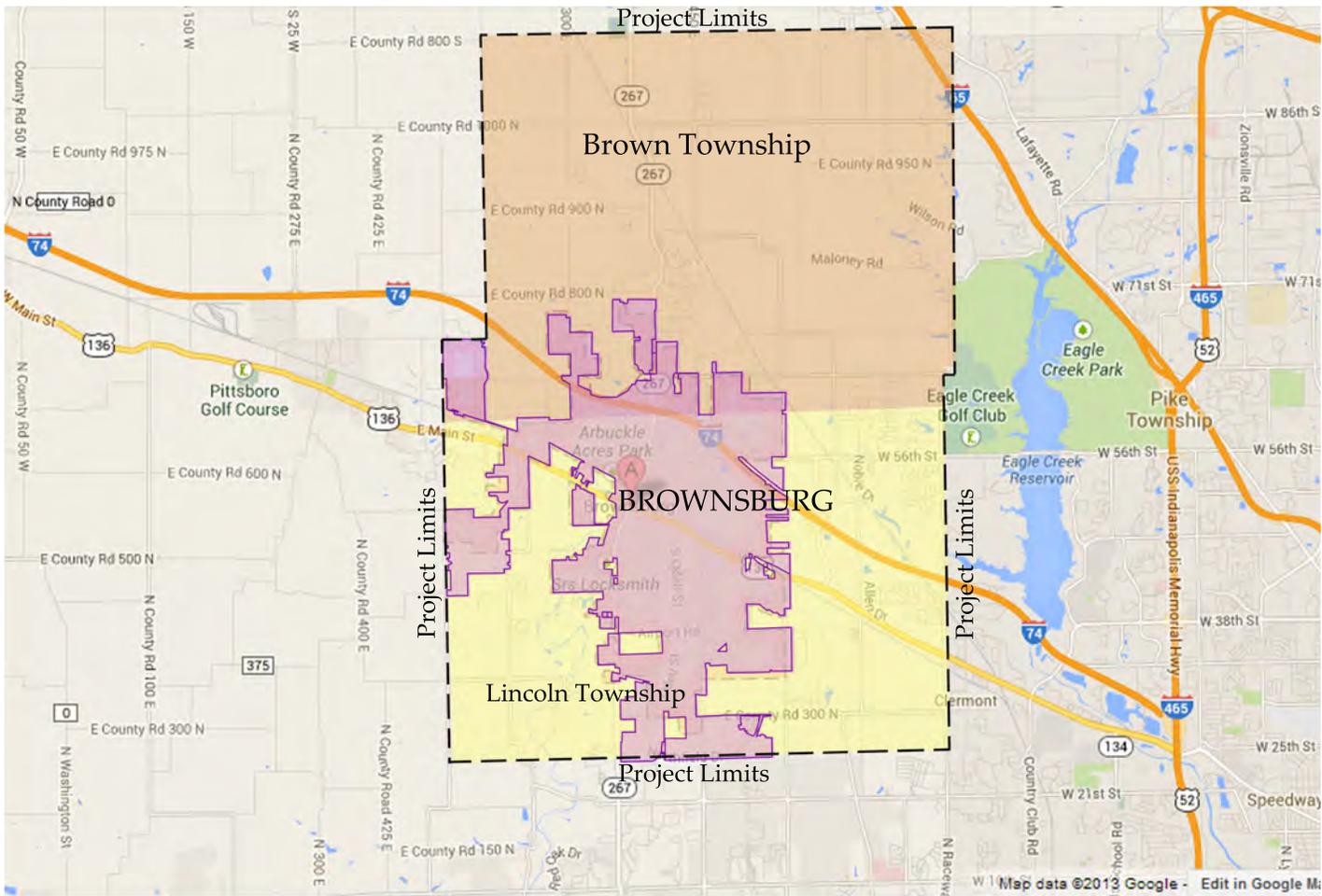


Figure 1 - Study Area



Community Pictures

Introduction

Introduction

Brownsburg Today

Future Brownsburg

Implementation

Operations and Maintenance

Facilities Guide

GOALS AND OBJECTIVES

The Brownsburg Active Transportation plan sets forth a roadmap for construction of a complete system of facilities to connect people to neighborhoods, schools, shopping centers and parks. This network will provide people with the opportunity to reach these destinations by foot or by bike without utilizing their motor vehicles. Such a complete system will provide many benefits to the Town including:

- Increased health through active travel
- Increased environmental sustainability through preservation of naturalized areas and reduction in carbon dioxide from fewer vehicular trips
- Increased amenities for recreation and exercise
- Increased economic growth through increased property values near amenities
- Increased assessed value of the Town
- Enhancing community pride and identity by becoming a bike and pedestrian focused community

The Active Transportation Plan contains goals and objectives for developing and implementing a pedestrian and bikeway system that will create safe, attractive and convenient options for bicycling and walking for all types of users. This will include trips for work, school, and recreation for all user types. The goals are the long-range visions that guide the plan and determine the desired direction of bicycle and pedestrian planning. The policies are more specific statements of how to accomplish the goals and identify means of measuring the fulfillment of the goals.

The goals and objectives reflect the current planning efforts of the Town of Brownsburg. The goals and objectives will help the Town to determine priorities for continuing to develop the bike and pedestrian system. The objectives illustrate the value of bicycling and walking and the positive impacts on the community, the environment and on the individual health and well-being.

GOAL 1: INCREASE RECREATIONAL AND TRANSPORTATION OPPORTUNITIES

Objective: Create a regional network of recreational and transportation routes to connect Brownsburg attractions with regional attractions in surrounding counties.

Objective: Provide access to bicycle and pedestrian facilities for a variety of users including walkers, runners, bicyclists, wheelchair users, strollers, and other non-motorized recreationalists and commuters.

Objective: Establish bicycle and pedestrian connections between parks to allow travel back and forth between the parks without the use of an automobile.

Objective: Provide off-road and on-road facilities to provide opportunities for different levels of recreation and commuting for various user levels.

Objective: Install bicycle parking at public buildings, retail areas, employment centers and recreational areas.

GOAL 2: IMPROVE CONNECTIVITY BETWEEN NEIGHBORHOODS AND DESTINATIONS.

Objective: Design and develop bicycle and pedestrian facilities to link major activity centers including schools, parks, shopping centers, and employment centers to encourage bicycling and walking as a viable mode of transportation.

Objective: Provide safe and convenient bicycle and pedestrian accommodations for every type of trip and user.

Objective: Provide bicycle and pedestrian amenities on routes linking schools with libraries, trails, parks, and recreational sites that encourage the mobility of school age children.



Objective: Eliminate gaps in the existing system and improve sub-standard conditions of facilities within the network.

Objective: Provide safe and convenient bicycle and pedestrian connections where natural or man-made barriers restrict access.

GOAL 3: PROVIDE A SAFER WALKING AND BIKING ENVIRONMENT.

Objective: Plan, design and construct bicycle and pedestrian improvements to meet or exceed guidelines for bicycle and pedestrian safety.

Objective: Monitor bicycle and pedestrian related accidents to determine areas in need of improvements.

Objective: Work with law enforcement departments to develop education and enforcement programs to increase the awareness of all road users for rules and regulations concerning bicyclists and pedestrians utilizing the roadways.

Objective: Develop and distribute information materials to all roadway users informing users of their rights and responsibilities targeting bicyclists, pedestrians, and motorists.

Objective: Develop bicycle and pedestrian facilities to provide safe and convenient routes between neighborhoods, schools, employment centers, and recreational opportunities.

Objective: Design roadway crossings to maximize bicyclists and pedestrian safety.

GOAL 4: INCREASE THE VALUE OF NEARBY RESIDENTIAL, COMMERCIAL AND INDUSTRIAL PROPERTIES THROUGH BICYCLE AND PEDESTRIAN AMENITY DEVELOPMENT.

Objective: Maintain the network of bicycle and pe-

destrian facilities to create a safe, convenient and effective bicycle and pedestrian network.

Objective: Design and implement a network of bicycle and pedestrian facilities to create an amenity to attract new businesses and residents to the area.

Objective: Foster opportunities for economic growth through the creation of bicycle and pedestrian related businesses.

Objective: Promote the efficient use of existing resources by developing bike and pedestrian facilities within publicly held lands.

Objective: Pursue public and private funding sources to facilitate faster growth of the system. Funding sources might include multi-jurisdictional, private entities, and other potential partners such as health agencies, and school districts.

GOAL 5: ENCOURAGE BICYCLING AND WALKING THROUGH EDUCATION AND OUTREACH.

Objective: Encourage bicycling and walking as an alternative to the automobile and as a means to reduce pollution and congestion while increasing mobility choices and the quality of life in the community.

Objective: Provide programs utilizing the network of bicycle and pedestrian facilities such as fun runs, festival events, and group rides.

Objective: Promote the benefits of recreational use of the bike and pedestrian improvements.

Objective: Encourage strategies to increase activity levels of residents through promotion of bicycling and walking activities.

Objective: Design and install signage and mapping to encourage bicycling and walking activities.

Existing Conditions

Introduction

Brownsburg Today

Future Brownsburg

Implementation

Operations and Maintenance

Facilities Guide

INTRODUCTION

This chapter provides an outline of the discovery phase of the master plan process where the existing conditions and policies of the Town were analyzed. Specific tasks within this phase include:

- Existing Studies Review
- Community Survey
- Public Input
- Existing Conditions Inventory

EXISTING STUDIES REVIEW

The purpose of reviewing other plans for the study area is to ensure that the Brownsburg Active Transportation Plan is consistent with the infrastructure improvements proposed within these documents. Policy recommendations were also reviewed for consistency between this plan and existing planning documents. In some cases updates are applicable to recommendations included in the previous studies. Previous studies which were reviewed include:

- Brownsburg Greenways Master Plan
- Town of Brownsburg Comprehensive Plan
- Brownsburg Trail Study
- Town of Brownsburg 2020 Thoroughfare Plan Update
- MPO Pedestrian Plan
- Sidewalk Assessment and Replacement Program
- State Road 237 Improvement Plans
- Brownsburg Strategic Master Plan
- Williams Park Trail Master Plan - Maple Ridge Trail Redesign
- White Lick Creek Trail Scoping Study
- ADA Transition Plan
- Ronald Reagan Corridor Master Plan
- Brownsburg Wayfinding and Signage Plan

A summary of each document and its relation to the Active Transportation Plan has been included in the appendix.

COMMUNITY SURVEY

A community survey was conducted online to ascertain the thoughts and opinions of the residents

of Brownsburg. Although the community survey is not a statistically significant survey it did fulfill two purposes: as a public participation tool that allowed members of the community to participate in the planning process and to use the results from the survey to reinforce findings from public involvement activities and planning analyses. The survey was developed in partnership with Town staff. The online survey was advertised through the project website, the Town website, the Parks Department website and through handouts at community events. Over one hundred surveys were completed. Although this represents just a fraction of the population of Brownsburg it does represent the wishes and desires of those who are most interested in the bicycle and pedestrian network. This sort of data, although unscientific, can help inform the master plan process with some general ideas of desired biking and walking travel paths.

The full survey with results is included in the appendix. A summary of the results includes:

- over 80% responded in favor of creating more bicycling and pedestrian facilities and gave this task a mark of high importance
- over 90% said they would bike and walk more if facilities were closer to their homes
- most respondents bicycle and walk for recreation and not for commuting
- the majority of respondents would like to connect neighborhoods with schools, the library, and to the center of downtown
- most respondents prefer multi-use trails but there was also a strong response rate for bike lanes
- Over 90% of respondents would utilize a complete system for recreation and exercise
- A lack of facilities close to neighborhoods was identified as the key factor discouraging bicycle and pedestrian use.
- Respondents would like to see a good mix of amenities included with the design of the bike and pedestrian system including lighting, restrooms, benches, signage and trail maps.



PUBLIC INPUT

The Project Process Diagram shown in Figure 1 illustrates the public input opportunities incorporated into the master plan process. In addition to the Community Survey, a project website was activated to inform the public on the progress of the master plan while also gathering additional input from the public.

A public meeting was held in February of 2014 to present existing conditions and proposed routes to the public. This open house style meeting incorporated multiple opportunities for input from the public concerning both existing conditions and the proposed routes.

Technical Advisory meetings were conducted to better understand the current system and maintenance policies. Recommendations were reviewed with Town staff to identify current policies that need revisions and additions to properly maintain the existing and the new bike and pedestrian facilities.

LAND USE

Not unlike many communities which have experienced rapid growth in population in the past twenty years, Brownsburg has land use patterns which do not promote bicycling and walking from neighborhood to neighborhood and to destinations. Although the development of subdivisions within recent years has encouraged the implementation of trails and paths surrounding the neighborhoods and even within the neighborhoods on occasion, the nature of suburban development does not promote connections between neighborhoods. The rural land use patterns reaching out into the areas of the county further detract from the use of bikes and walking for reaching destinations. However, these land use patterns offer many opportunities

for walking and biking for recreation for health and fitness.

The more dense land uses along Green Street and Main Street are more conducive to biking and walking as a means of travel to reach destinations. These areas are primarily commercial with residential areas directly adjacent to the commercial areas. The proximity of schools to the Town Center and Arbuckle Acres make walking and biking a convenient option for travel if adequate and comfortable facilities are available.

EXISTING DESTINATIONS

The underlying purpose of the bicycle and pedestrian network is to connect people to destinations. There are many destinations that are desirable to travel to on a daily basis. Typically, the starting point for most trips is the home. Connections are made to work, school, run errands, visit parks and places of entertainment. The bicycle and pedestrian network is designed to connect neighborhoods with all of these key destinations.

There are numerous destinations within the study area. These include: major retail areas, employment centers, government center, schools, parks and libraries. In addition, there are regional destinations that must be considered for connections within the system such as Eagle Creek Park and White Lick Creek Trail.

MAJOR RETAIL AREAS: Major retail areas are found along State Road 267 near the I-74 interchange, State Road 267 at the intersection to Main Street and along State Road 136 from Main Street to the edge of town. Additional retail areas and industrial land use are located along the ring of Northfield Drive.

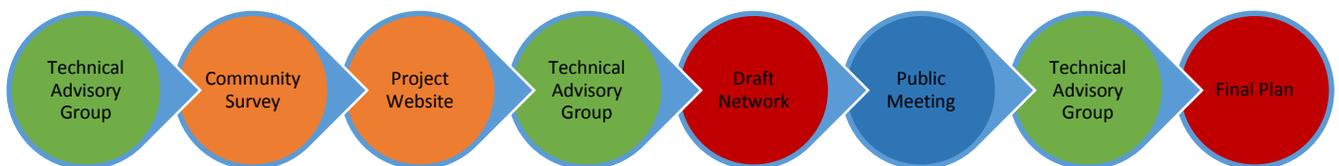


Figure 1 - Project Process Diagram

Existing Conditions

Introduction

Brownsburg Today

Future Brownsburg

Implementation

Operations and Maintenance

Facilities Guide

EMPLOYMENT CENTERS: The various retail centers and industrial areas of Brownsburg serve as employment centers for many residents. These areas identified on the Inventory Map as key destinations for the bicycle and pedestrian network.

GOVERNMENT CENTER: The Government Center is located along Green Street directly adjacent to the downtown area of Brownsburg and with close proximity to Arbuckle Acres. The Green located in front of the Town Hall is utilized by the Town for community events.

SCHOOLS: K-12 students within the study area are served by twelve schools including public and private schools. Schools are shown on the Inventory Map, Figure 2, with an orange shade and include:

- Brownsburg High School
- Harris Academy
- Brownsburg West Middle School
- Brownsburg East Middle School
- Brown Elementary School
- White Lick Elementary School
- Delaware Trail Elementary School
- Cardinal Elementary School
- Eagle Elementary School
- Reagan Elementary School
- Bethesda Christian School
- St. Malachy

PARKS: Parks and recreation facilities in Brownsburg are managed by the Brownsburg Parks Department. The parks within the Town are a great source of pride for the community and are heavily used throughout the year. The main parks in Brownsburg include Arbuckle Acres and Williams Park. New parks to be incorporated into the existing parks system include Stephens Park, Cardinal property, Magee property, West Wynne Farms, and the B&O Trail. Many festivals and activities are programmed throughout the year for both of the existing community parks including the annual Easter Egg Hunt, Adventure Camps, and Christmas

Under the Stars. In addition, the Green adjacent to Town Hall is maintained as a part of the parks system and includes community activities including the Summer Concert Series and the Brownsburg Farmers Market.

LIBRARY: The Brownsburg Public Library is located just off of Green Street in close proximity to both the downtown and several schools. The library is an active part of the community and includes several programs which attract residents of all ages to the facility.

BIKE AND PEDESTRIAN FACILITY INVENTORY

The existing network of pedestrian and bicycle facilities are shown on the Inventory Map, Figure 2. The transportation system serves as the baseline for bicycle and pedestrian travel in Brownsburg. Many of the downtown streets include sidewalks on both sides of the streets. Newer subdivisions have included sidewalks on both sides of the streets. In addition, the slower speeds of neighborhood streets lead to a general feeling of comfort for most pedestrians and bicyclists when traveling within the subdivisions.

In the older parts of Brownsburg, mostly located near the downtown area, some of the existing facilities need improvements to upgrade to current standards. Sidewalks are sometimes narrow and do not meet ADA guidelines for minimum standards.

Brownsburg has a fairly comprehensive system of multi-use paths and trails surrounding neighborhoods and in some cases winding through the neighborhoods. These are utilized heavily by residents of the neighborhoods for recreational uses. However, the lack of connections between these trails and the key destinations limit the use of the trails for uses other than recreational trips that are fairly short in nature.



LEGEND

- WATERWAY
- FLOODPLAIN
- FLOODWAY
- PARK/OPEN SPACE
- SCHOOLS/INSTITUTIONAL
- RETAIL/COMMERCIAL CENTERS
- EXISTING SIDEWALK
- EXISTING MULTI-USE TRAIL

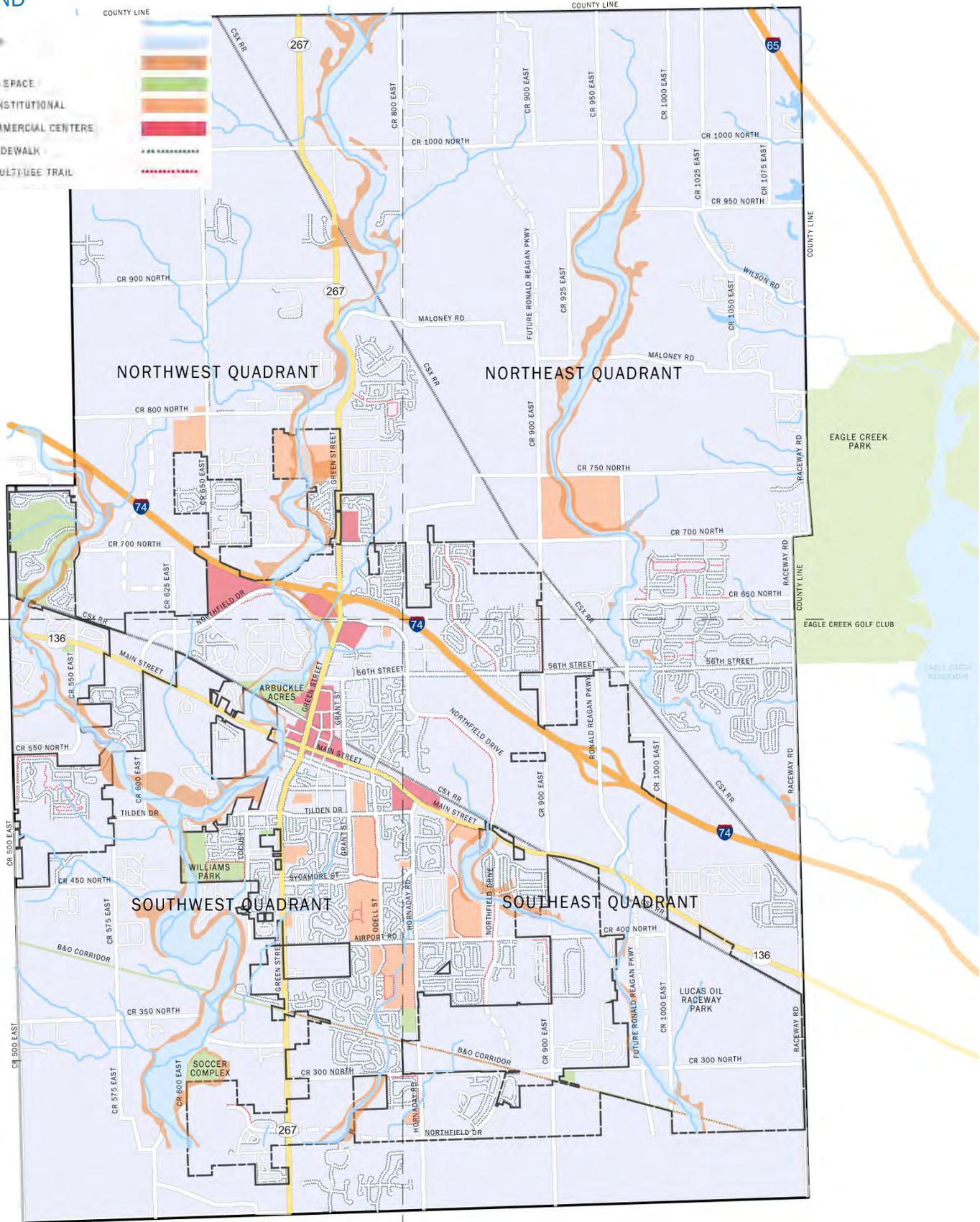


Figure 2: Inventory Map

Existing Conditions

Introduction

Brownsburg
Today

LATENT DEMAND MAP

The Latent Demand Map is shown in Figure 3. This is a simplified version of the FHWA-endorsed “latent demand score” method, which produces a relative measure of the potential propensity for bicycling and walking in an assumed environment in which these modes are well accommodated (as opposed to revealed demand (i.e., counts), which is not usually a good indicator of bike and pedestrian demand because many people find the existing environment intimidating).

Future
Brownsburg

This demand analysis takes into account MPO-projected population, employment, and school enrollment data at the Traffic Analysis Zone (TAZ) level and compares it to street segments. The tightest mix of where people live and where they want to go (work and school in this case) is generally indicative of high latent demand.

Implementation

A limited street network was analyzed. While we recognize that this is not an exhaustive network of major streets, results can be easily extracted to other nearby streets (or even trails that are being considered as part of the plan). The results are shown in a “heat map” approach to show high demand areas in warmer colors.

Operations and
Maintenance

The Latent Demand map is not only useful when designing corridor alignment but is also used when determining priorities for system implementation. The “warmer” areas of the map show where there is current demand for these facilities. The success of new facilities is increased by focusing on the areas with the most demand is currently. A higher number of residents will be affected by improvements within these areas.

Facilities Guide



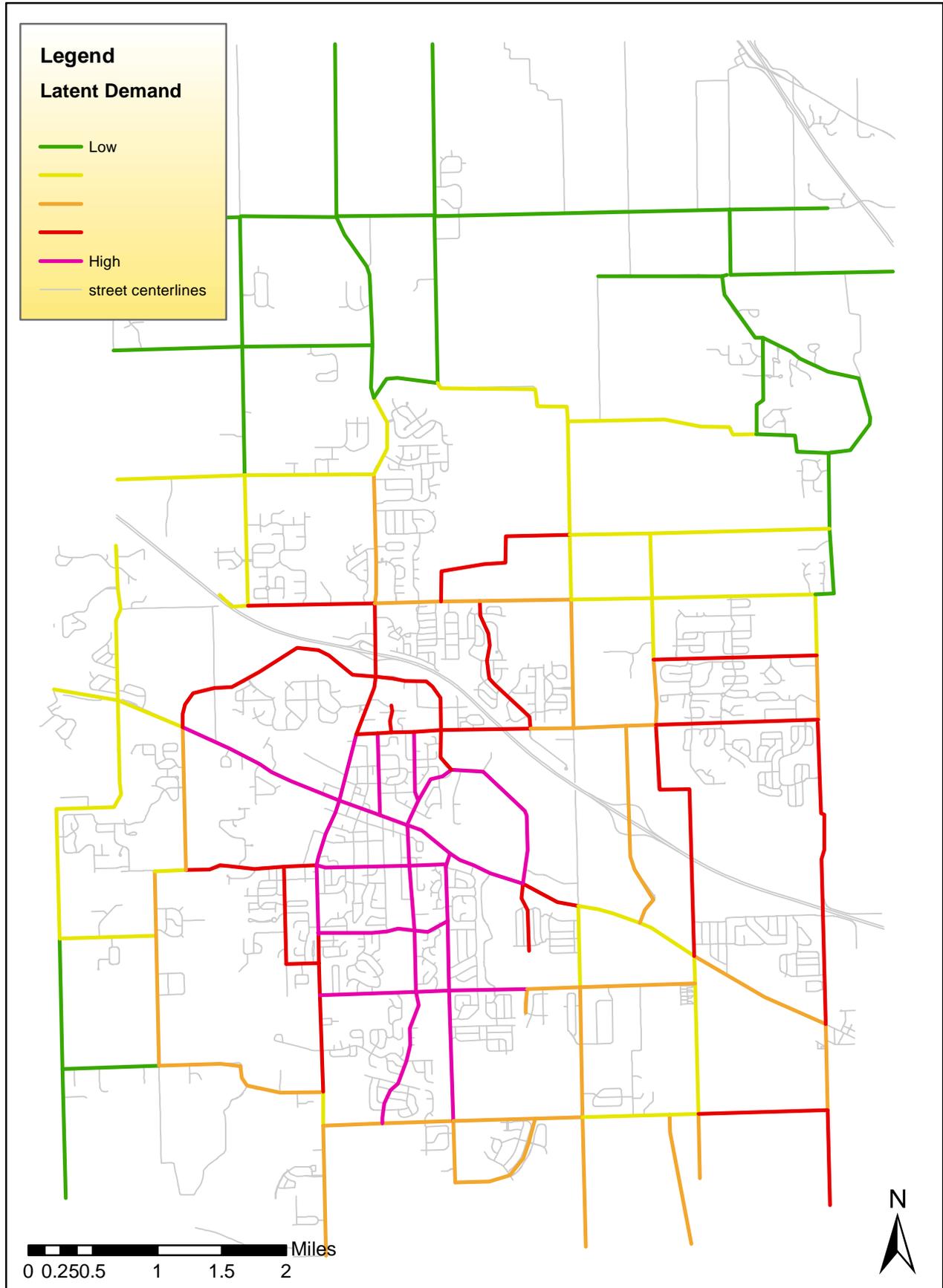


Figure 3: Latent Demand Map

Brownsburg Today

Introduction

Brownsburg Today

Future Brownsburg

Implementation

Operations and Maintenance

Facilities Guide

INVENTORY | NORTHWEST QUADRANT

The Northwest area of the study area is characterized primarily by rural land uses with a few areas of suburban subdivision development and retail shopping centers. There are multiple waterways that cross this portion of Brownsburg.

Travel: Interstate 74 travels east-west across this portion of the study area and is the main route to downtown Indianapolis. State Road 267 runs north-south across the study area and is a major travel route for both residents and commuters traveling through the Town. The county roads within this quadrant of the study area are characterized by narrow but fairly straight roadways. Some have adequate shoulders but most have little to no shoulder with utility easements directly adjacent to the roadways. Most of the roadways within subdivisions are wider with on-street parking allowed.

Bike and Pedestrian: Subdivision development within the northwest quadrant includes sidewalks in most subdivisions. There are a few gaps where specific lots have not been developed yet but do include requirements to fill these gaps as development occurs. In general the comfort level of even the novice bike rider is high within the subdivisions because of the lower speed and wider pavement widths. There are a few areas where multi-use paths were developed as a part of subdivision development but in general this quadrant has very few facilities dedicated to bike riding.

Destinations: Specific destinations identified within this area include shopping centers along Northfield Drive, north of I-74 on Green Street, south of I-74 along Green Street and along Northfield Drive (shown in red). School locations are shown in a light orange color and include Bethesda Christian School.

Challenges: Both Interstate 74 and State Road 267 present challenges for the bike and pedestrian network connections. Interstate 74 travels

at-grade through the majority of the study area. This creates a divide between the north portions of the study area and the southern areas. Green Street (S.R. 267) travels under the interstate and provides an opportunity to cross the interstate however, this interstate underpass is narrow and does not allow extra room for bike and pedestrian facilities with its current built environment.

The spread out nature of homes and neighborhoods in the northwest quadrant make travel by walking and biking to destinations more challenging. Trips in this portion of the study area are longer and should focus on travel by bike and foot more for recreational uses.

Opportunities: There are various waterways that traverse the northwest quadrant. These waterways provide the opportunity for naturalized corridors which also connect neighborhood to neighborhood and neighborhoods to the downtown area and parks. The rural areas of the county have many large tracts and large open fields which can be utilized for new multi-use paths adjacent to roadways with fewer user conflicts at roadway entrance locations. Planning now can guide the development of these large tracts to accommodate bicycle and pedestrian facilities in the future in the event these lands are developed.



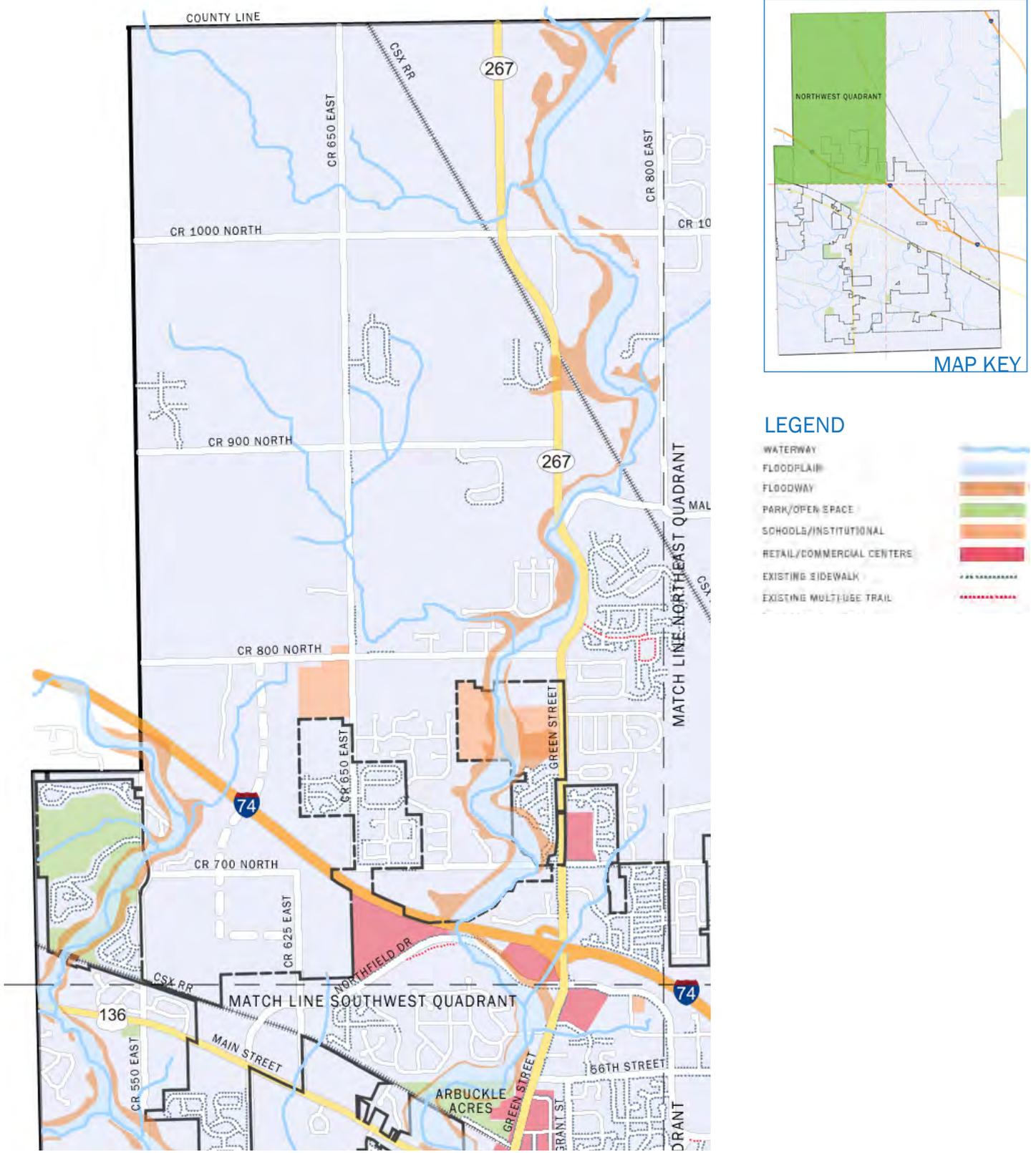


Figure 4: Northwest Quadrant Inventory Map

Brownsburg Today

Introduction

Brownsburg Today

Future Brownsburg

Implementation

Operations and Maintenance

Facilities Guide

INVENTORY | NORTHEAST QUADRANT

The Northeast area of the study area is also characterized primarily by rural land uses with a few areas of suburban subdivision development. There are no major shopping centers located in this quadrant of the study area. There is one main waterway that crosses this portion of Brownsburg. This waterway has a wide floodplain in many areas.

Travel: A small section of Interstate 74 travels across the southwestern corner of the northeast quadrant of the study area. Interstate 65 also travels across a corner of the quadrant to the northeast. There are no interchanges off of I-65 into the study area. The county roads within this quadrant of the study area are characterized by narrow but fairly straight roadways. Most have little to no shoulder with utility easements directly adjacent to the roadways. Most of the roadways within subdivisions are wider with on-street parking allowed.

Bike and Pedestrian: Subdivision development within the northeast quadrant includes sidewalks in most subdivisions as shown on the Inventory map. As in the northwest quadrant, there are a few gaps where specific lots have not been developed yet but do include requirements to fill these gaps as development occurs. In general there is a high comfort level of even the novice bike rider within the subdivisions. There are a few areas where multi-use paths were developed as a part of subdivision development but in general this quadrant also has very few facilities dedicated to bike riding.

Destinations: Specific destinations identified within this area include connections between neighborhoods and connections to the downtown area. St. Malachy Parish School is located within this district.

Challenges: This portion of the study area is fairly open with the CSX Railroad crossing the area. The only other major barriers to connections

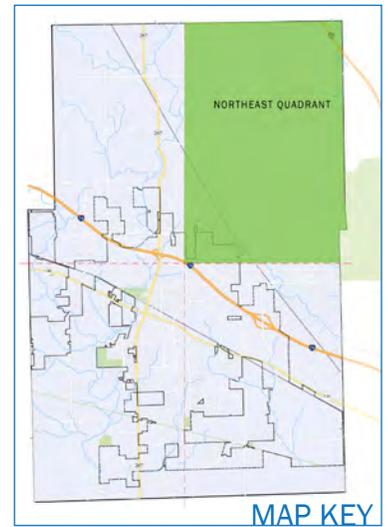
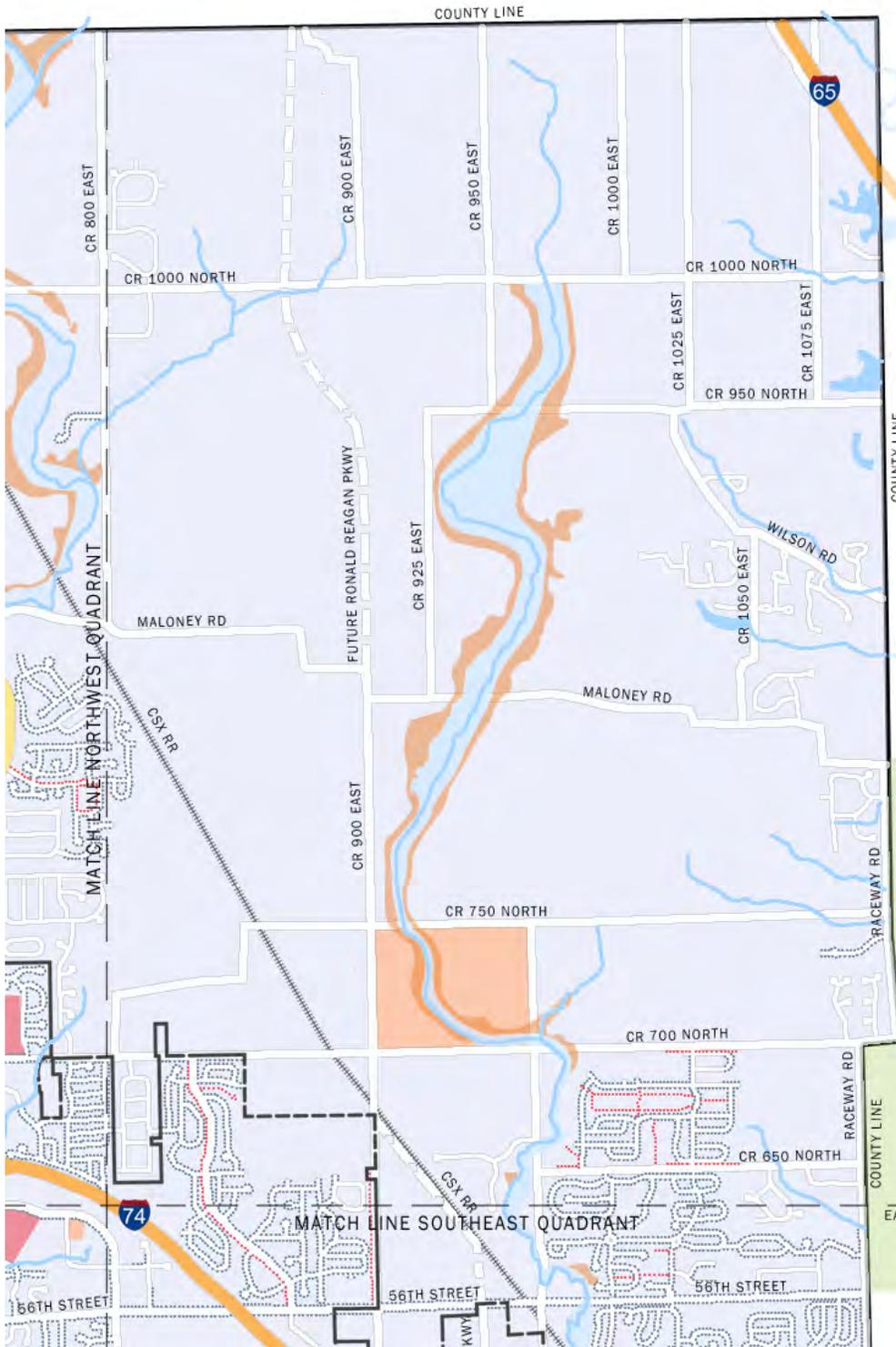
within the bike and pedestrian system include the distance from neighborhoods to downtown and crossing Interstate 74 to reach downtown and parks. Distances between homes, neighborhoods and the downtown area do present a barrier to commuting for residents of the area because of the distances needed to reach major destination points.

Opportunities: The major waterway that crosses the northeast quadrant from north to south provides an opportunity for greenway development which would connect rural residents with the shopping centers further south within Brownsburg. This waterway also provides opportunities for a long length of greenway with few conflicting intersection crossings. The waterway contains a large floodplain presenting the opportunity for a naturalized trail through parts of the county. Many times landowners are more responsive to inquiries for easements within flood-prone lands for uses such as greenways.

Although the county roads within the northeastern quadrant are narrow there are many with adjacent land that is conducive to the development of multi-use paths. Grades along these roads are fairly flat and do not vary greatly from the roadway grade. There are areas that will need drainage improvements and the potential for pedestrian bridges but developing trails along flat lands adjacent to the roadways is more cost effective than trails in areas with grading challenges. Another option where cost constraints prohibit the development of multi-use trails, paved shoulders can be added to the roadways to provide a fairly high level of bike comfort along roadways with low-volume traffic.

In addition, since this area is mostly undeveloped there is the potential for new development to take place. There is an opportunity to set up guidelines and regulations for trail development along with new built projects which could involve a private partnership in construction of the trails and sidewalks as outlined in this master plan.





LEGEND

- WATERWAY 
- FLOODPLAIN 
- FLOODWAY 
- PARK/OPEN SPACE 
- SCHOOLS/INSTITUTIONAL 
- RETAIL/COMMERCIAL CENTERS 
- EXISTING SIDEWALK 
- EXISTING MULTI-USE TRAIL 

Figure 5: Northeast Quadrant Inventory Map

Brownsburg Today

Introduction

Brownsburg Today

Future Brownsburg

Implementation

Operations and Maintenance

Facilities Guide

INVENTORY | SOUTHWEST QUADRANT

The Southwest quadrant has a different character than the Northwest and Northeast quadrants. Development is denser in this quadrant with the downtown area along Main and Green Streets. Subdivision development characterizes the majority of the land use. The areas of dense development are centered around Main and Green Streets.

Travel: One of the major interstate interchanges into Brownsburg from I-74 is located in this quadrant. State Road 267 (Green Street) is the main north-south roadway providing local and regional connections through Town. State Road 136 (Main Street) is the major east-west roadway providing those same regional and local connections for this direction. Both Interstate 74 and State Road 136 provide direct connections for residents of Brownsburg to Indianapolis. Both roadways see the highest traffic volumes during the morning and evening rush hours.

The downtown area of Brownsburg has a grid of roadways more typical of urbanized areas. Many of these roads have wide pavement widths with parallel parking available on both sides of the road and sidewalks adjacent to the roadway. Many of the sidewalks within this area were installed prior to the implementation of ADA requirements and do not meet current regulations.

Bike and Pedestrian: There are many pedestrian and bike facilities present within this quadrant. The majority of the subdivisions have sidewalks along both sides of the roadway. The downtown area has a comprehensive system of sidewalks (although some are very narrow in nature). There are a number of multi-use paths present in this quadrant within subdivisions and surrounding the schools. These pathways are utilized by local residents frequently. Multi-use paths surrounding the school properties are used by children at the schools and residents that live adjacent to the school properties.

Destinations: The Southwestern quadrant contains many destinations for the bike and pedestrian system. Destinations include shopping centers located at the intersection of Main and Green Street. Town Hall along Green Street is another key destination. Arbuckle Acres, Williams Park, and Stephens Park are located within this quadrant as well as the soccer complex. Each of these parks and recreation centers is a key destination for families and children.

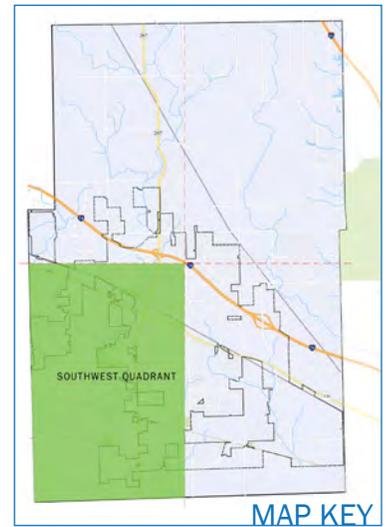
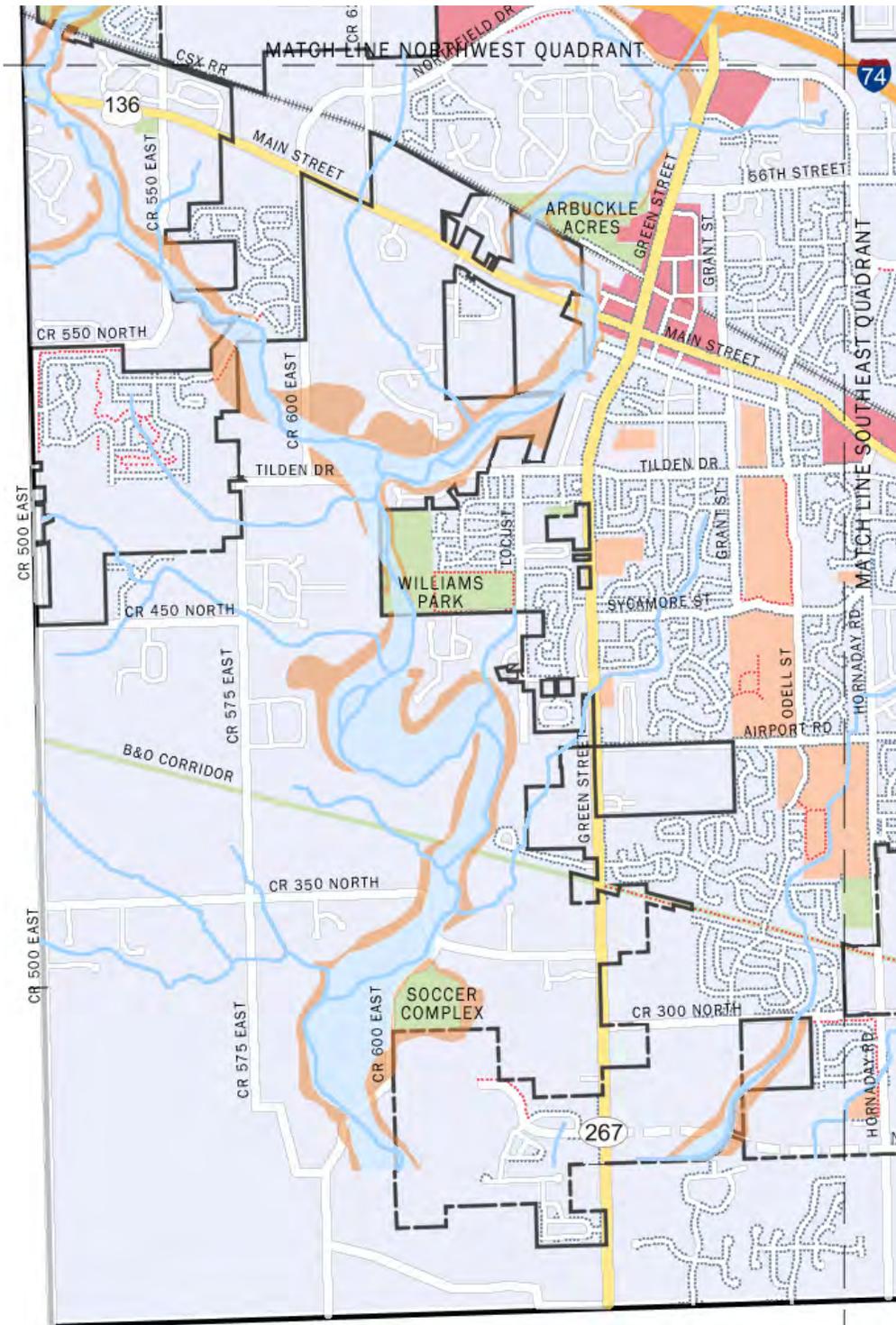
Many schools are located in this quadrant and are important destinations for nearby neighborhoods. Schools within this area include: Brownsburg High School, Harris Academy, Brownsburg West Middle School, Brown Elementary School, White Lick Elementary School, Delaware Trail Elementary School, Cardinal Elementary School, and Eagle Elementary School.

Challenges: As one of the major roadways moving traffic to and from Brownsburg State Road 267 (Green Street) presents a challenge for connections across the roadway. The speeds of a state road make this barrier challenging for the bike and pedestrian system. Likewise Main Street (S.R. 136) presents some of the same challenges although there are more stop conditions provided on Main Street with stoplights and intersection crossings.

Opportunities: The existing system of bike and pedestrian facilities within this quadrant creates the opportunity for the Town to provide connections between the neighborhoods creating longer trip opportunities while completing these portions of the overall system. Even where there are sub-standard facilities such as degrading multi-use paths and sidewalks which are too narrow, there is an opportunity to upgrade these facilities within existing right-of-way.

The close proximity of Arbuckle Acres and Williams Park to the downtown area present the opportunity for people to travel by bike and by foot to these destinations with improved facilities.





LEGEND

- WATERWAY 
- FLOODPLAIN 
- FLOODWAY 
- PARK/OPEN SPACE 
- SCHOOLS/INSTITUTIONAL 
- RETAIL/COMMERCIAL CENTERS 
- EXISTING SIDEWALK 
- EXISTING MULTI-USE TRAIL 

Figure 6: Southwest Quadrant Inventory Map

Brownsburg Today

Introduction

INVENTORY | SOUTHEAST QUADRANT

The Southeast area of the study area is characterized by suburban development bisected by Interstate 74. Most of the development is centered around 56th Street and Main Street.

Brownsburg Today

Travel: The eastern interchange off of Interstate 74 into Brownsburg is located within this area. The Ronald Reagan Parkway provides a link from the interstate directly into the industrial development along Northfield Drive. Northfield Drive serves as a ring-road around the downtown area with retail and industrial located along these portions of Northfield Drive. Main Street transitions from a downtown main street into a more typical State Road character.

Future Brownsburg

Bike and Pedestrian: The majority of neighborhood roads within this quadrant have sidewalks on both sides of the roadways. Some of these sidewalks are narrow and need to be upgraded to meet ADA requirements.

Implementation

There are many opportunities within this area for bike and pedestrian recreation with existing multi-use paths along Northfield Drive, along the school properties, and in front of several subdivision developments. The B&O Rail Trail provides another opportunity for recreation bike and pedestrian use and is seen as one of the key amenities within the community.

Operations and Maintenance

Destinations: Desired destinations within this area include shopping along Main Street and Northfield Drive. The B&O Rail Trail is another of the recreational destinations along with the Cardinal Property Park after it is completed including a trailhead for the rail-trail. Schools located within this district include: Brownsburg East Middle School and Reagan Elementary School. Another destination point for the bike and pedestrian system is Lucas Oil Raceway Park.

Facilities Guide

Challenges: Interstate 74 is a major barrier between the suburban neighborhoods north of

the interstate and the schools and neighborhoods located south of the interstate. Main Street (S.R. 136) is also a barrier to connections between the north and south however, there are more opportunities for safer crossings with stopped traffic at intersections along Main Street.

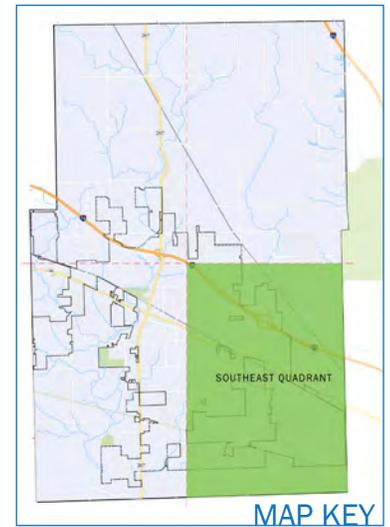
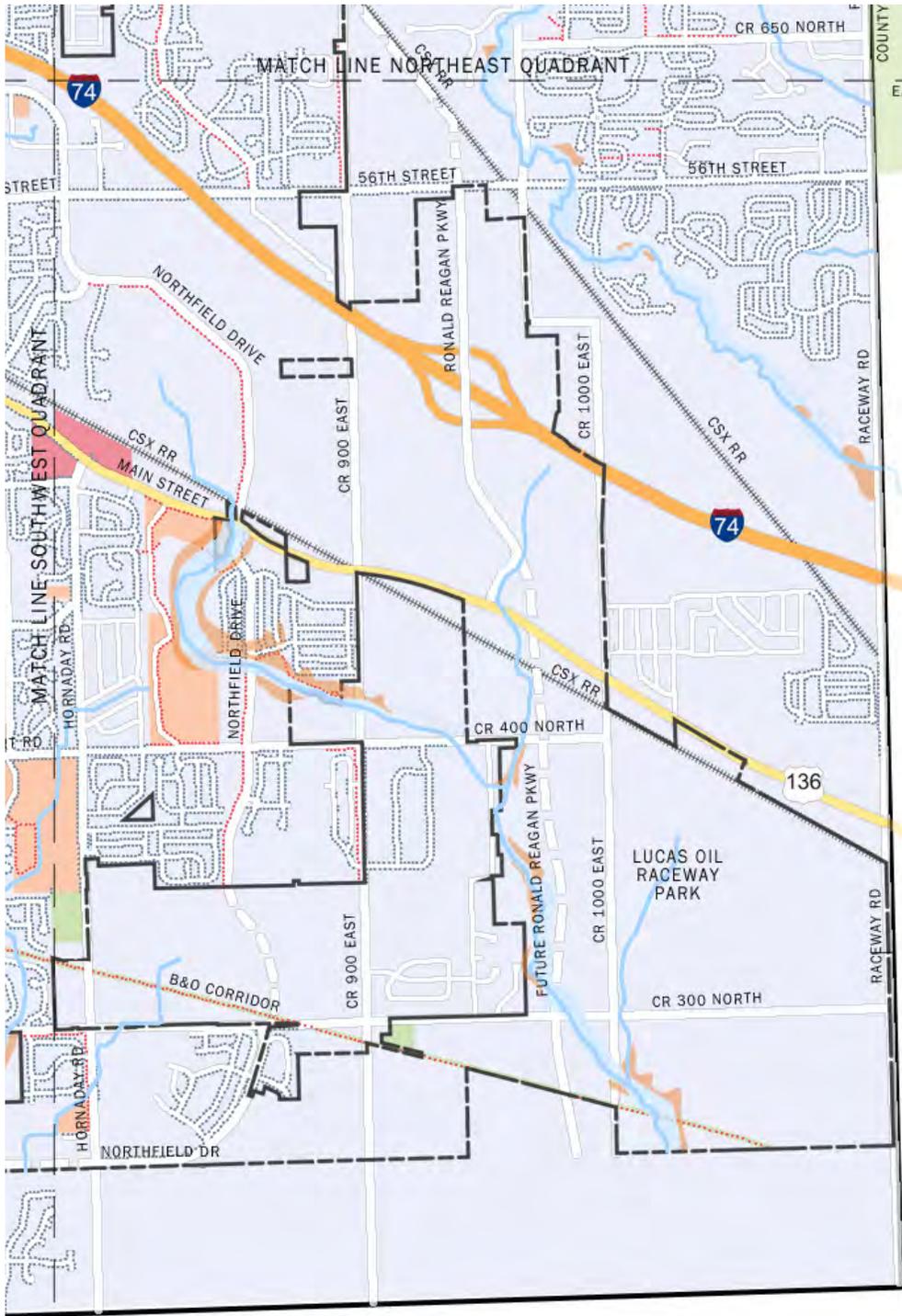
Opportunities: The Ronald Reagan overpass over Interstate 74 presents the opportunity for pedestrian and bicycle connections to be made on the wide paved shoulder of the bridge overpass. With existing pathways along Northfield Drive and along the school properties there is again the opportunity to make some quick impact to the bike and pedestrian system by connecting these existing facilities with each other and with neighborhoods.

The location of residential homes next to shopping centers, schools and to other neighborhoods in this area creates the opportunity for people to utilize bike and pedestrian facilities for commuting to work and running errands in addition to the more typical recreational uses.

The CSX Railroad paralleling Main Street through town provides a unique opportunity to create bike and pedestrian connections between the neighborhoods and downtown. This corridor is an established travel corridor with low rail travel. Intersections are established with existing roadways. Also, creating a bike and pedestrian corridor adjacent to the rail corridor presents an opportunity to connect visitors at Lucas Oil Raceway Park to the downtown and other shopping areas of Brownsburg.

Existing facilities within the right-of-way of 56th Street present an additional opportunity to provide a regional connection to amenities in nearby counties. Although existing sidewalks don't currently meet the needs of bike users, improvements to these facilities can be made to meet the needs of this additional user creating a more "Complete Street".





LEGEND

- WATERWAY 
- FLOODPLAIN 
- FLOODWAY 
- PARK/OPEN SPACE 
- SCHOOLS/INSTITUTIONAL 
- RETAIL/COMMERCIAL CENTERS 
- EXISTING SIDEWALK 
- EXISTING MULTI-USE TRAIL 

Figure 7: Southeast Quadrant Inventory Map

Future Brownsburg

Introduction

GUIDING DESIGN CONCEPT

The Hub and Spoke Concept Map is a conceptual exhibit illustrating key destinations and their connections with neighborhoods. The Hub Concept is used in many transportation systems and represents the wheel with a central hub and spokes radiating out. This system is utilized for efficiencies within transportation systems.

Brownsburg Today

This concept was utilized during the development of the preliminary route plan to determine where routes are needed to serve the neighborhoods and destinations. This ensures that every route has a purpose and that routes are not built without connections or destinations in mind. The concept also helps to guide prioritization of implementation decisions by identifying key connections to destinations that will serve more people. This widely used application has decreased the number of planned trails for the Town from previous planning studies. This decreases the capital costs of facilities making the future trail system more attainable for the Town.

Future Brownsburg

Implementation

THE HUB

Arbuckle Acres is the hub of the system. The hub is the center of the system and will be the focus for bike and pedestrian activities and amenities for the system. The hub might include amenities like bike parking, lockers, drinking fountains and restrooms.

Operations and Maintenance

The hub will also be the central location for programs surrounding the bike and pedestrian system. This includes activities such as bike rallies, fun runs, educate programs, and training specific for use of the bike and pedestrian improvements.

Facilities Guide

SPOKES

The spokes, shown as red arrows, illustrate the connections from neighborhoods to key destinations. The destinations were identified through the community survey and through the public input process. Key destinations include schools, parks and recreation centers, shopping centers and em-

ployment centers. The beginning source of many bike and pedestrian trips is most often the home. Therefore, neighborhoods are also identified as a major destination to connect with the central hub of the system.

NEIGHBORHOOD CONNECTIONS

Another important component of the Hub and Spoke concept are the connections from neighborhood to neighborhood. The green rings on the concept map illustrate these connections. It is important to remember that many of the users are children and families. Making connections between friends and families homes will add to the success of the overall system.



LEGEND

- WATERWAY
- FLOODPLAIN
- FLOODWAY
- PARK/OPEN SPACE
- SCHOOLS/INSTITUTIONAL
- RETAIL/COMMERCIAL CENTERS
- EXISTING SIDEWALK
- EXISTING MULTI-USE TRAIL
- SYSTEM HUB
- DESTINATION CONNECTION
- NEIGHBORHOOD CONNECTION

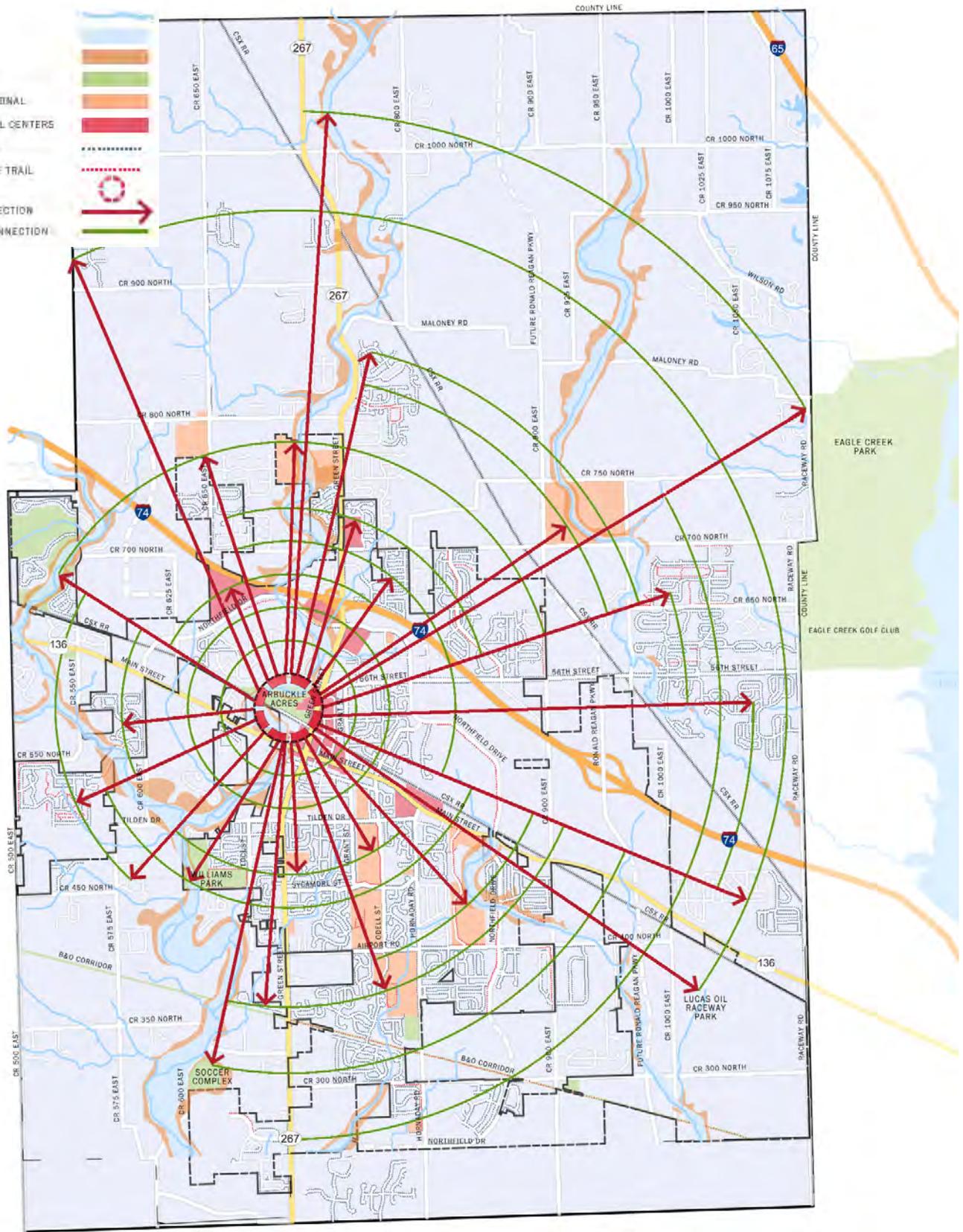


Figure 8: Hub and Spoke Concept Map

Future Brownsburg

Introduction

Brownsburg Today

Future Brownsburg

Implementation

Operations and Maintenance

Facilities Guide

INTRODUCTION

The current system of bike paths, greenways and sidewalks has encouraged many residents of Brownsburg to bike and walk for recreation and exercise. However, this system is disjointed and not connected in several areas. The system serves local residents that happen to live close to the built facilities. Providing a complete and comprehensive system will provide opportunities for more residents and visitors to Brownsburg to utilize the bike and pedestrian system. This will provide better quality of life in addition to better health for those that utilize the system. In addition, a greater variety of people will be able to use the system including for running errands and traveling to work.

The network of facilities creates regional connections (Eagle Creek Park), cross-town connections and local connections and loops. This hierarchy of network loops and connections creates opportunities for residents to create smaller loops close to home by bike or walking, create regional connections to parks and work center, and to create longer recreational trips between home and parks and also from park to park.

The hub for the system is shown at Arbuckle Acres. Facilities radiate out from this hub to connect with the destinations identified in the Hub and Spoke Concept. A variety of facilities have been provided to meet the needs of bicyclists and walkers of different skill levels. Facilities included in the system include:

- Multi-use paths
- Sidewalk
- Greenway
- Greenway to be implemented if development occurs
- Rail Adjacent to Trail
- Bike Lane
- Traffic Calming with Shared Lane Markings
- Signed Bike Route
- Trail Head

The system of bike and pedestrian facilities con-

nects the neighborhoods where people live to the places they work, shop, recreate, or go to school. An emphasis is placed on regional bikeway connections centered around the major activity center located at Arbuckle Acres. This is done through two main networks, the pedestrian network and the bicycle network.

PEDESTRIAN NETWORK

The major elements of the pedestrian network are sidewalks, multi-use paths and street crossings. The sidewalk is where people do most of their traveling by foot and is the space where they should be able to walk feeling safe and secure from vehicles. The goal for the pedestrian network is to provide an attractive walking environment while allowing for streetscape amenities (benches, light poles and trash cans) and utilities. Vehicular conflicts at driveways should be minimized where possible. Street crossings should improve pedestrian safety and comfort through better design of intersections and pedestrian signals. Providing adequate crossing opportunities and minimizing delay at traffic signals will reduce jaywalking and improve safety for all users of the roadway. Another focus of the pedestrian network is filling in the gaps where sidewalks are missing.

BICYCLE NETWORK

The proposed bicycle network will better accommodate bicyclists traveling in the Town of Brownsburg. The majority of bicyclists in Brownsburg are currently younger or families who are less comfortable with riding on the roadways. For this reason, the most common facility provided for bicyclists is the multi-use path. However, future riders are also accommodated through on-road bike facilities such as the bike lane on Main Street and the implementation of a roadway diet with sharrows (a symbol placed in the travel lane to show that bikes also share the roadway) on College Avenue. Regional connections are provided for bikes with signed routes creating cross-town connections. Intersection improvements are also an integral part of the proposed bicycle network.



LEGEND

- WATERWAY
- FLOODPLAIN
- FLOODWAY
- PARK/OPEN SPACE
- SCHOOLS/INSTITUTIONAL
- RETAIL/COMMERCIAL CENTERS
- EXISTING SIDEWALK
- EXISTING MULTI-USE TRAIL
- PROPOSED SIDEWALK
- PROPOSED MULTI-USE TRAIL
- PROPOSED GREENWAY
- PROP. GREENWAY W/DEVELOPMENT
- PROP. TRAIL ADJACENT TO RAIL
- PROPOSED BIKE LANE
- PROP. TRAFFIC CALMING W/SHARROW
- PROPOSED SIGNED ROUTE
- PROPOSED SYSTEM HUB
- PROPOSED TRAIL HEAD

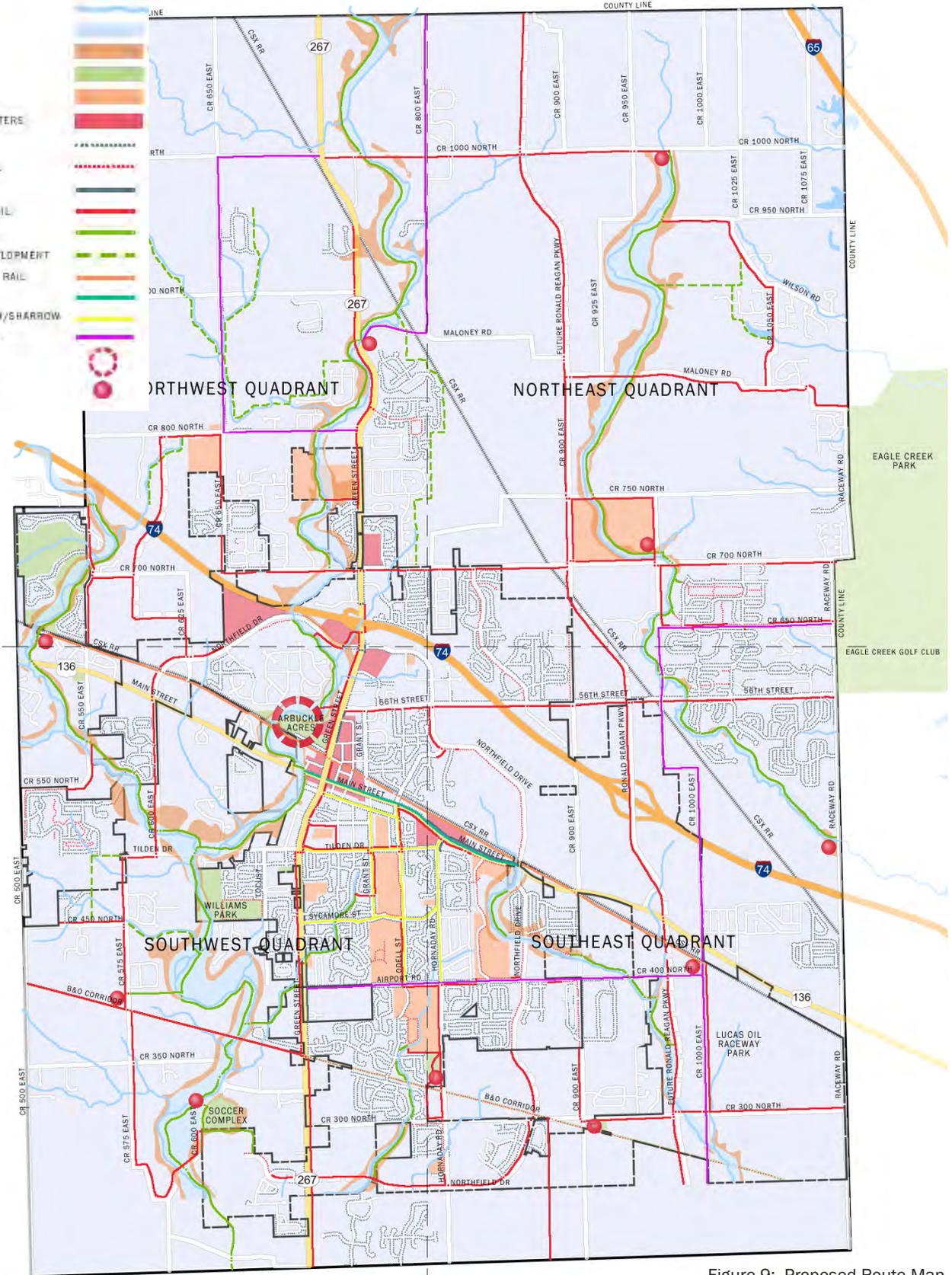


Figure 9: Proposed Route Map

Future Brownsburg

Introduction

Brownsburg Today

Future Brownsburg

Implementation

Operations and Maintenance

Facilities Guide

NORTHWEST QUADRANT PROPOSED ROUTES

The focus of the Northwest Quadrant for the proposed routes is to fill in gaps in the existing system by connecting neighborhoods that are close in proximity while also providing connections for longer trips whether they are recreational or utilized for commuting.

Multi-Use Path: Primary multi-use path routes in this quadrant of the study area include a pathway adjacent to State Road 267, County Road 700 North and extension of the existing path system along Northfield Drive. Other multi-use paths are proposed to connect neighborhoods with the system.

Greenway: Greenway development is a major component of the system within this portion of the study area. These trails will provide regional connections and will also connect the rural areas of the county to the downtown and the parks located closer to town. The greenways also provide smaller neighborhood circulation loops for neighborhoods.

The areas labeled as proposed greenway with development are intended to be constructed only in the event that development occurs within those areas. This designation would not only help to connect new development with the bike and pedestrian system but also help to identify these corridors for preservation of natural areas.

Signed Route: Signed route design is detailed within the Facility Guide section of this document (page 56). Signed routes are designed to provide an additional option for reaching destinations. The signed routes within the northwest quadrant are located along County Road 1000 North, County Road 650 East, County Road 800 North and County Road 800 East. These routes are designed to continue regional connections provided by the multi-use path along County Road 1000 North to Eagle Creek Park and to downtown Indianapolis for the more dedicated bicycle commuter.

This loop of signed routes also creates a loop for recreational riders visiting the scenic rural areas of Brownsburg.

Sidewalks: Gaps within the existing system within neighborhoods should be identified and completed. Where development has stalled or is not likely to happen in the near future, the Town should consider construction of the sidewalks to provide a consistent and continuous travel route for existing residents.

Intersection Improvements: A key intersection improvement within this quadrant includes providing bike and pedestrian access along State Road 267 underneath Interstate 74. The location shown would require modifications to the existing underpass structure to create room for these facilities. Key conflict areas which will need to be addressed in the design of this area also include crossings at the interstate off and on-ramps.

Other intersection improvements to be incorporated into the system include along State Road 267 at County Road 1000 North, Maloney Road, and County Road 700 North. Intersection improvements to be considered include mid-block crossings with signal, improved crosswalks, and pedestrian signals added to existing signaled intersections.



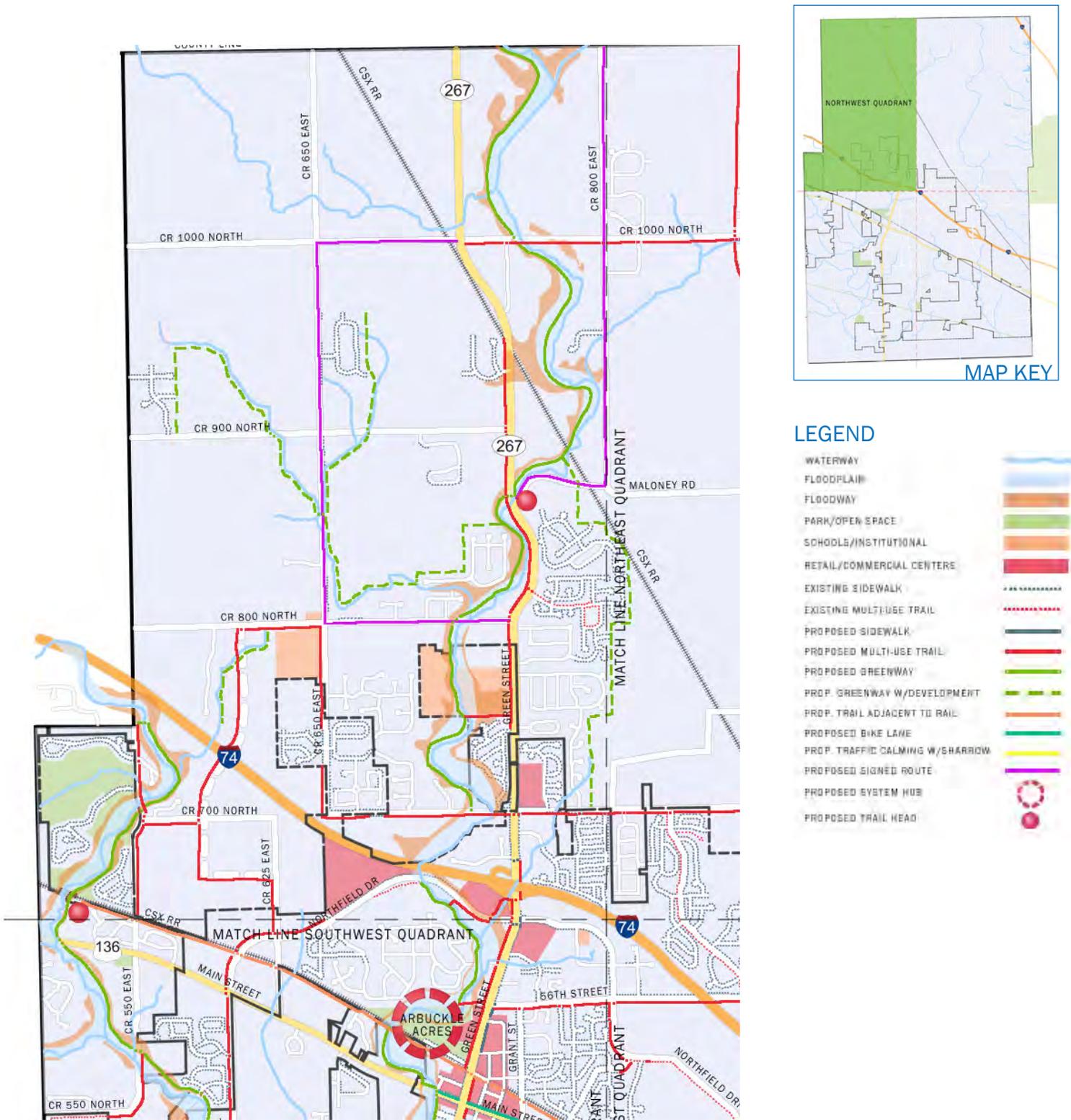


Figure 10: Northwest Quadrant Proposed Route Map

Future Brownsburg

Introduction

Brownsburg Today

Future Brownsburg

Implementation

Operations and Maintenance

Facilities Guide

NORTHEAST QUADRANT PROPOSED ROUTES

The focus of the Northeast Quadrant for the proposed routes occurs primarily through the implementation of multi-use pathways. This area of the study area is more rural in nature with homes spread out and farms dotting the landscape. Regional connections are important in this area with Eagle Creek Park located directly adjacent to the county in this quadrant. Recreation and exercise are the primary focus of trips in this area with considerations for the regional connections mentioned along with the bicycle commuter.

Multi-Use Path: Multi-use paths within this portion of the study area are proposed along County Road 1000 North, CR 1050 East connecting to County Road 950 North, Maloney Road, County Road 900 East, County Road 700 North and County Road 650 North. The future alignment of Ronald Reagan Parkway is shown on the map. These improvements will include a multi-use path adjacent to the new roadway providing an important north-south connection.

Greenway: There is one major greenway within this area providing north-south connections for the system. This greenway also aids in preservation of the stream corridor as development occurs within this area of the county. The proximity to Eagle Creek Park could also create a tourist destination for the greenway in combination with the park. The wide floodplain of this particular greenway may assist when obtaining easements from property owners because the land is not highly utilized at this time.

There are a few areas labeled as proposed greenway with development and are also intended to be constructed only in the event that development occurs within those areas.

Signed Route: The signed routes within the northeast quadrant are located along County Road 650 North and County Road 1000 East. These routes are designed to provide regional connections to

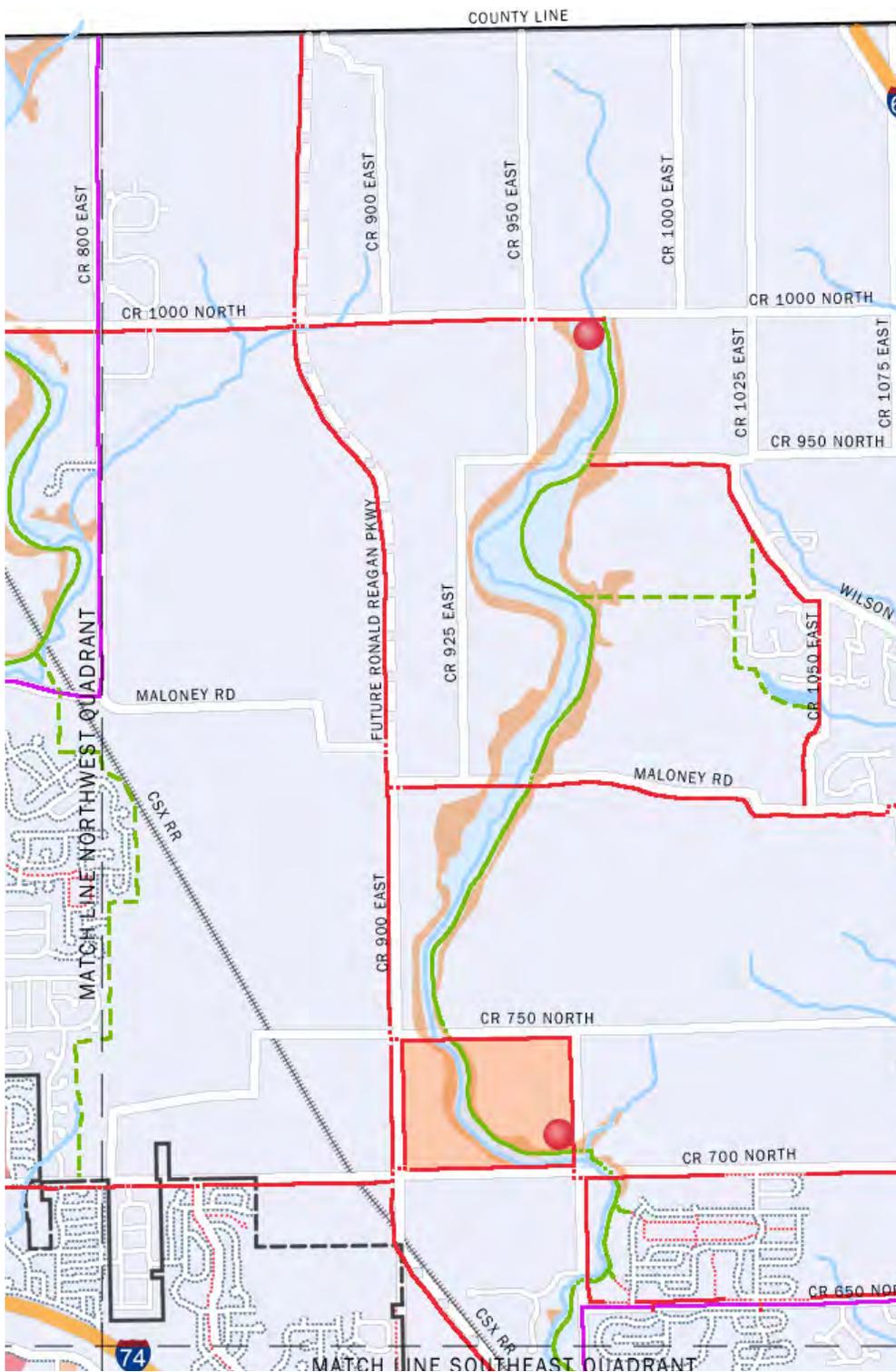
Eagle Creek Park.

Sidewalks: Gaps within the existing system within neighborhoods should again be identified and completed. There are fewer subdivisions within this area and the majority have existing sidewalks. These sidewalks should be evaluated and upgraded where they do not meet ADA standards.

Infrastructure Improvements: Infrastructure improvements such as bridges and drainage work will be needed to incorporate the multi-use paths shown in the northeast quadrant. Existing automobile bridges crossing over waterways do not always have adequate width to accommodate bike and pedestrian facilities. When these facilities cannot occur within the existing structures new bridges will need to be constructed. If roadway improvements are proposed including improvements to existing structures, bike and pedestrian facilities should be incorporated. Where these improvements are not proposed, separate bike and pedestrian dedicated bridges should be evaluated.

In addition, drainage improvements along the roadways will be required. Many times the right-of-way along these roadways includes a ditch to carry drainage from the roadway. This level land adjacent to the roadway is ideal for a multi-use path but will also require accommodations for drainage including storm pipes or relocating the ditch line. Utility easements are also good locations for multi-use pathways where there is room. These easements are maintained clear of vegetation and have an existing agreement with property owners for the use of their land. New easements would be required for the pathways but can be easier to negotiate when easements exists in the same location.





LEGEND

- WATERWAY
- FLOODPLAIN
- FLOODWAY
- PARK/OPEN SPACE
- SCHOOLS/INSTITUTIONAL
- RETAIL/COMMERCIAL CENTERS
- EXISTING SIDEWALK
- EXISTING MULTI-USE TRAIL
- PROPOSED SIDEWALK
- PROPOSED MULTI-USE TRAIL
- PROPOSED GREENWAY
- PROP. GREENWAY W/DEVELOPMENT
- PROP. TRAIL ADJACENT TO RAIL
- PROPOSED BIKE LANE
- PROP. TRAFFIC CALMING W/SHARROW
- PROPOSED SIGNED ROUTE
- PROPOSED SYSTEM HUB
- PROPOSED TRAIL HEAD

Figure 11: Northeast Quadrant Proposed Route Map

Future Brownsburg

Introduction

Brownsburg Today

Future Brownsburg

Implementation

Operations and Maintenance

Facilities Guide

SOUTHWEST QUADRANT PROPOSED ROUTES

The Southwest quadrant includes the location of the hub at Arbuckle Acres. There are many routes radiating out from the hub to connect the other areas of the project with this key destination. This quadrant includes many land use types and also has many types of facilities for the bike and pedestrian system.

Multi-Use Path: Multi-use paths within this quadrant are mostly located in the more rural areas with the exception of facilities which connect existing multi-use paths to the system especially around the school properties. A key regional connection will be completed with the final leg of the B&O Trail as identified on the map.

Greenway: Greenway development within this quadrant provides a key connection between Arbuckle Acres and Williams Park and even continuing to the Soccer Complex along County Road 600 East. This corridor will provide a trail through a natural environment connecting the two parks and will be heavily used as a destination for hikes and bike rides. Another key greenway would connect the existing pathway system along the school properties to the proposed loop system adjacent to Northfield Drive. Once completed, this loop will be a destination in itself for recreation and exercise.

Signed Route: The signed route within this quadrant occurs along Airport Road. The purpose of this signed route is primarily for bike commuters but also provides a connection to Lucas Oil Raceway Park.

Traffic Calming with Shared Lane Markings: A grid has been identified within the downtown area for roadways which would incorporate traffic calming measures and shared lane markings to create a more bike friendly environment. This treatment also helps to create a more attractive streetscape while accommodating storm water drainage within stormwater planters.

Bike Lane: A bike lane is proposed along Main

Street to accommodate bike traffic through the town. This bike lane will be used as a model for possible identification of other roadways which might incorporate bike lanes as this becomes a more popular mode of travel for residents in Brownsburg. There is adequate width within the existing pavement to construct the bike lane. However, physical constraints at the intersection will require careful design of the bike lane as it travels through this busy intersection.

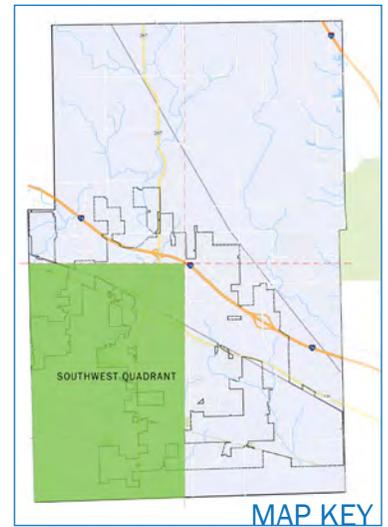
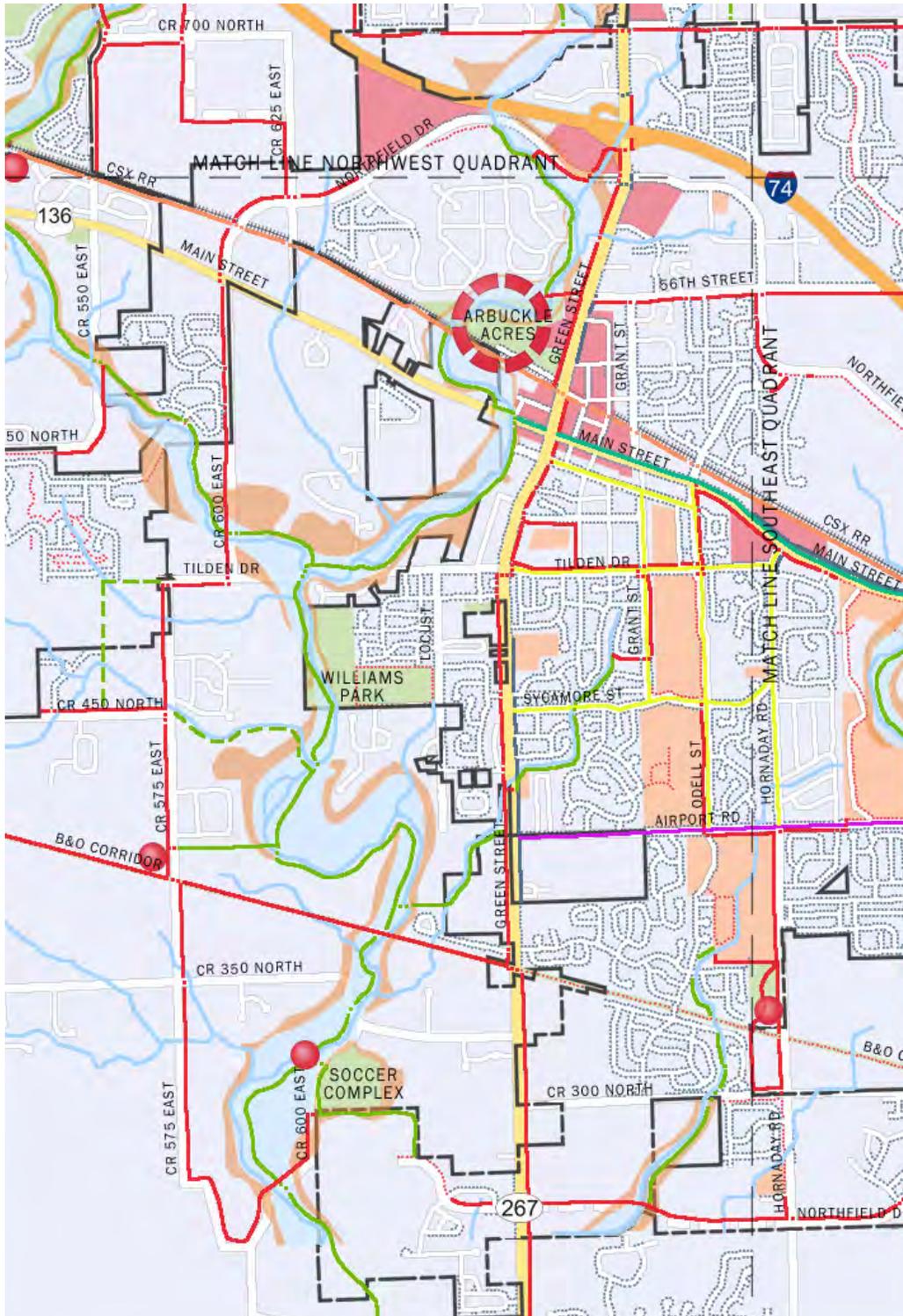
Trail next to Railway: Another facility key to providing both cross-town and regional connections is the trail next to the railroad. These types of facilities are becoming more common and utilize the wide and flat right-of-way of rail lines to incorporate the bike and pedestrian amenity. This corridor will provide a fairly low conflict connection between the schools and the downtown and Arbuckle Acres. It also provides a clear connection between Lucas Oil Raceway Park and the downtown.

Sidewalks: The majority of improvements to sidewalks within this area include upgrading existing sidewalks to meet ADA standards. This includes curb ramps and intersection crossings. In the older parts of Brownsburg some sidewalks are narrow and need to be upgraded to the minimum width of 5 feet.

Intersection Improvements: Constructing the bike lane on Main Street will require improvements to be made to the intersection with Green Street. A design solution is presented in the following pages as a case study and illustrates how bikes and automobiles can safely travel through this intersection.

Other key locations for intersection improvements include any roadway crossings in front of the school properties. A key user group for the system is children traveling to and from school. Providing safe and secure intersection treatments is key to having a successful system that children and families will feel safe using.





LEGEND

- WATERWAY
- FLOODPLAIN
- FLOODWAY
- PARK/OPEN SPACE
- SCHOOLS/INSTITUTIONAL
- RETAIL/COMMERCIAL CENTERS
- EXISTING SIDEWALK
- EXISTING MULTI-USE TRAIL
- PROPOSED SIDEWALK
- PROPOSED MULTI-USE TRAIL
- PROPOSED GREENWAY
- PROP. GREENWAY W/DEVELOPMENT
- PROP. TRAIL ADJACENT TO RAIL
- PROP. BIKE LANE
- PROP. TRAFFIC CALMING W/SHARROW
- PROPOSED SIGNED ROUTE
- PROPOSED SYSTEM HUB
- PROPOSED TRAIL HEAD

Figure 12: Southwest Quadrant Proposed Route Map

Future Brownsburg

Introduction

SOUTHEAST QUADRANT PROPOSED ROUTES

The Southeast quadrant includes several trail-heads for the system. These locations will provide amenities for the system including parking, maps, bike parking and other amenities focused on the bicycle and pedestrian.

Brownsburg Today

Multi-Use Path: Completing the multi-use path adjacent to Northfield Drive will create a recreational loop for users looking for exercise. This will be utilized by the commercial and industrial workers located around Northfield Drive as well as the residents to the south. A proposed multi-use trail adjacent Ronald Reagan Parkway will provide an important north-south regional connection.

Future Brownsburg

Existing concrete sidewalk along 56th Street is recommended to be renovated into a multi-use path. More user types are served with sidewalk on one side of the roadway and an asphalt multi-use path on the other side of the roadway.

Implementation

Greenway: The greenways proposed within this quadrant take on more of a local connection role providing smaller connections to neighborhoods.

Signed Route: Signed routes within this quadrant continue the regional and cross-town connections of the previous quadrants. Signed routes occur along Airport Road (County Road 400 North) and County Road 1000 East.

Operations and Maintenance

Traffic Calming with Shared Lane Markings: Hornaday Road is identified as one of the key roads in the downtown grid to include traffic calming improvements. With direct connections to neighborhoods on both sides of schools, this roadways could become a key connection between the schools and the neighborhoods.

Facilities Guide

Bike Lane: The bike lane along Main Street continues until the intersection with Northfield Drive. As this bike lane gets further from the downtown area and closer to Northfield Drive the need for a barrier protected bike lane should be analyzed. As

automobile speeds increase the comfort level of bike lane users decreases. An additional area of buffer helps to ease some of this discomfort.

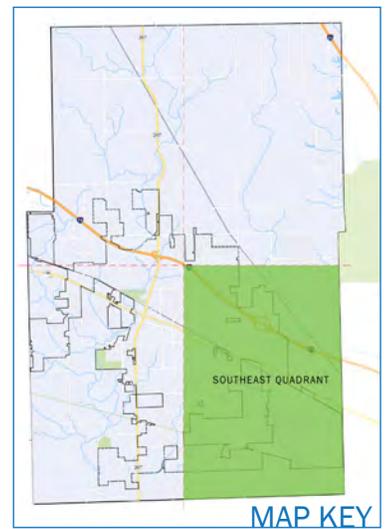
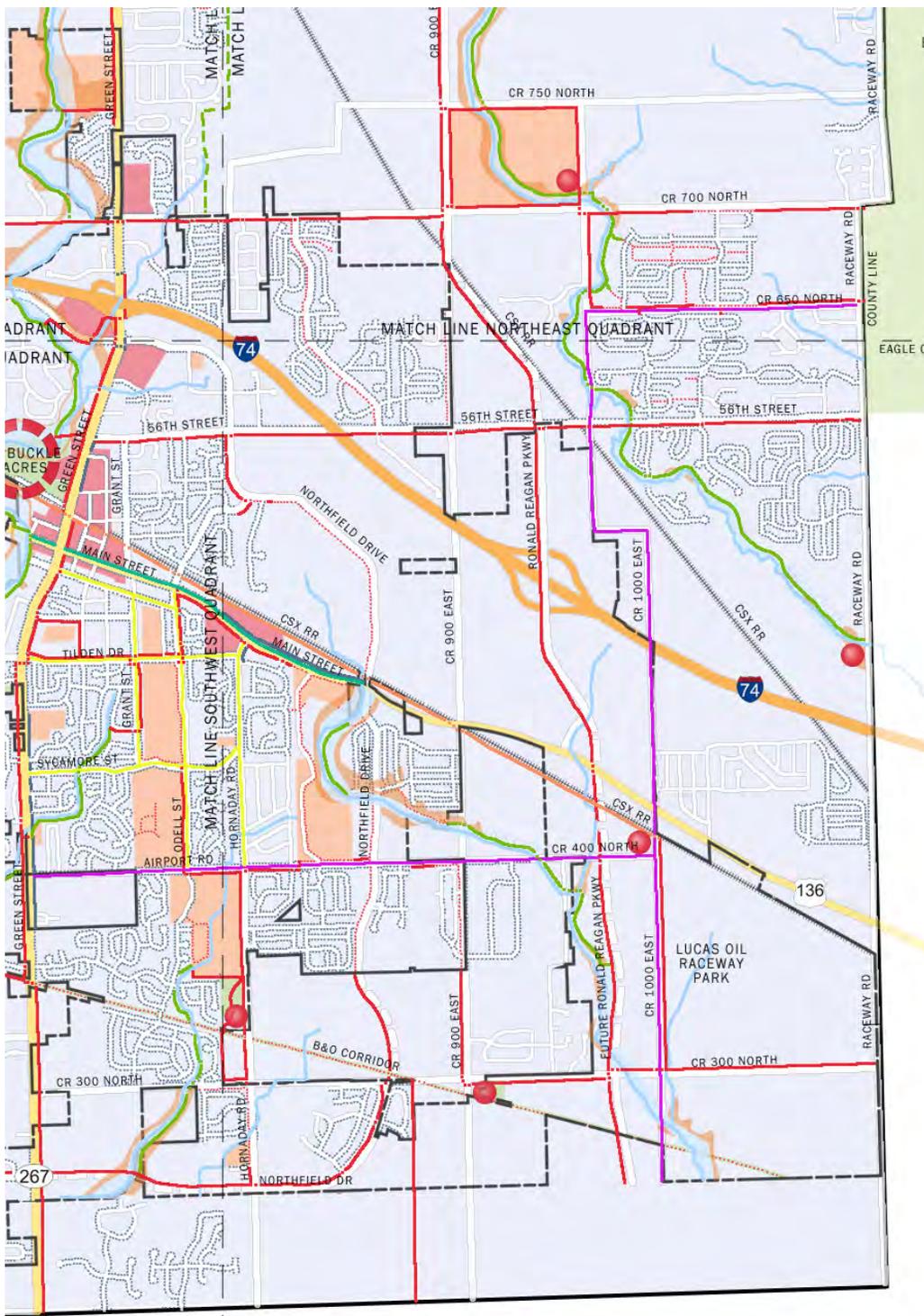
Trail next to Railway: The rail next to the CSX Railroad would provide a connection for visitors at Lucas Oil Raceway Park to the amenities of downtown Brownsburg including Arbuckle Acres. With a multi-use trail along County Road 1000 East, this corridor could provide a route with fewer intersection conflicts.

Sidewalks: As with the other quadrant areas of the study area the main location for sidewalk improvements is within the neighborhoods. Gaps in the system need to be completed and old and outdated sidewalks need to be upgraded to meet current standards. Another key area for sidewalk construction within this area is along Main Street adjacent to the retail areas near Hornaday Road. Completion of this sidewalk would allow users to park their car and access the different commercial establishments without moving their vehicle.

Intersection Improvements: Again, a key location for intersection improvements includes any roadway crossings in front of school properties. Providing safe and secure intersection treatments is key to having a successful system that children and families will feel safe using.

The existing overpass for Ronald Reagan Parkway over Interstate 74 provides an opportunity to connect the bike and pedestrian system over the interstate. The existing roadway widths could accommodate pathways on both sides. Special treatment to the on and off-ramps would be need to be addressed. Interstate 74 is a major barrier to the system and utilizing existing crossings such as the Ronald Reagan overpass will be critical to the success of the system.





LEGEND

- WATERWAY
- FLOODPLAIN
- FLOODWAY
- PARK/OPEN SPACE
- SCHOOLS/INSTITUTIONAL
- RETAIL/COMMERCIAL CENTERS
- EXISTING SIDEWALK
- EXISTING MULTI-USE TRAIL
- PROPOSED SIDEWALK
- PROPOSED MULTI-USE TRAIL
- PROPOSED GREENWAY
- PROP. GREENWAY W/DEVELOPMENT
- PROP. TRAIL ADJACENT TO RAIL
- PROPOSED BIKE LANE
- PROP. TRAFFIC CALMING W/SHARROW
- PROPOSED SIGNED ROUTE
- PROPOSED SYSTEM HUB
- PROPOSED TRAIL HEAD

Figure 13: Southeast Quadrant Proposed Route Map

Future Brownsburg

Introduction

Brownsburg Today

Future Brownsburg

Implementation

Operations and Maintenance

Facilities Guide

CASE STUDY - MAIN STREET AND GREEN STREET INTERSECTION

The intersection of Main Street at Green Street is a compact and challenging intersection to traverse by bike. There are established retail and commercial establishments along all sides of this intersection. In addition, traffic for two state roads, S.R. 237 (Green Street) and S.R. 136 (Main Street) must accommodate traffic traveling through the Town of Brownsburg. These conditions are shown in the before picture of this intersection.

The intersection improvement illustration shows a proposed solution to safely provide facilities for bicycles through this intersection along Main Street. There is adequate pavement width to provide bike lanes on Main Street which will transition to shared lane markings as the roadway transitions away from the intersection.

Crosswalk improvements are provided to create a safer environment for pedestrians to cross the intersection. Signal improvements are recommended along with the physical improvements shown in the illustration.





Main Street at Green Street Before



Proposed Intersection Improvements Main Street at Green Street

Future Brownsburg

Introduction

CASE STUDY - GREEN STREET AT MAIN STREET

Green Street at the intersection with Main Street is also a narrow section in terms of available right-of-way between existing establishments. With narrow sidewalks and entrances into buildings directly adjacent to the sidewalk there is not adequate room to accommodate bikes in the current configuration.

Brownsburg Today

The proposed improvement illustration shows how improvements to the roadway and existing facilities can not only provide room for both pedestrians and bicyclists but also increase the comfort level and the aesthetics of the intersection as people travel through Brownsburg on foot, bike or by car. Streetscape elements help to create a more inviting entrance for the downtown area of Brownsburg.

Future Brownsburg

The current roadway edge is undefined utilizing more of the right-of-way than what is required. Adding curbs to each side of the roadway would help to define the roadway edge while creating a defined space for bicyclists. Although there is not enough room to provide a grass verge on both sides of the road, slower traffic speeds will allow the development of a comfortable amenity for bicyclists. The multi-use path through this portion of town should be concrete in place of asphalt to be compatible with the more urban downtown character.

Implementation

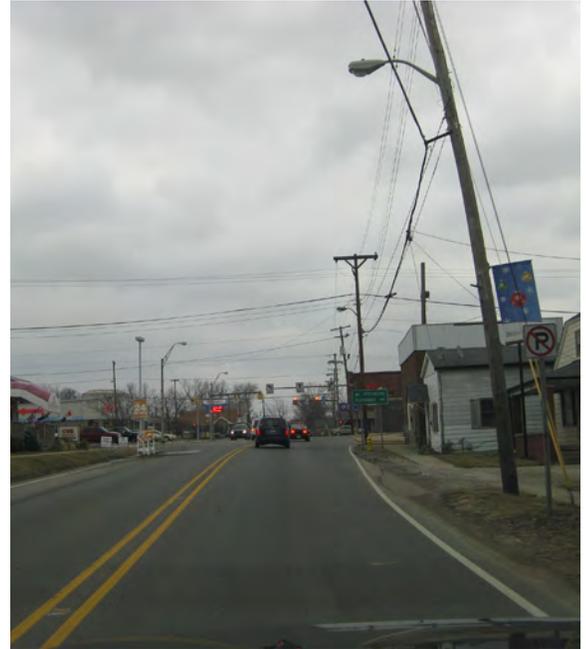
Street trees and a verge have been added to the west side of the roadway. This provides separation between the pedestrian and automobiles while increasing the beauty of this stretch of roadway. Access to existing businesses is maintained in their current locations.

Operations and Maintenance

Not only will this design accommodate both bicyclists and pedestrians it also increases the values of land adjacent to the improvements. This can result in economic benefits by becoming an attractive location for new businesses to locate. This

Facilities Guide

character of roadway treatment will be carried along Green Street north through Town until transitioning to the more suburban and rural parts of Brownsburg.



Green Street at Main Street





Green Street Before



Green Street with Improvements

Future Brownsburg

Introduction

Brownsburg Today

Future Brownsburg

Implementation

Operations and Maintenance

Facilities Guide

CASE STUDY - COLLEGE AVENUE

College Avenue runs parallel to Main Street and connects Green Street with neighborhoods and schools. The pavement width varies from 34-36' with parallel parking on both sides of the street. The proposed improvements shown in the illustration include a road diet with curb bump outs and stormwater planters. The proposed alignment would maintain parallel parking on both sides of the roadway. The curb extensions help to slow traffic down providing a more comfortable environment for bicyclists on the roadway.

Sidewalks are maintained on both sides of the roadway and would be upgraded to ADA standards including a minimum width of 5 feet for both sides.

Beautification improvements should be incorporated where possible and where budget allows including adding street trees where there are gaps. A review of lighting and how it relates to the character of the downtown should also be done at the time of improvement design.

Why a road diet?

Road diet is a term used by transportation professionals to describe the application of a number of infrastructure improvements to the roadway system. These designs are intended to slow traffic speeds down and move some of the focus of the roadway to pedestrians and bicyclists in place of the automobile focus.

The curb extensions proposed on College Avenue would occur at roadway intersections and occasionally at mid-block locations where there is a long length of roadway without intersections. The curb extensions serve a dual purpose by both placing the pedestrian out further in the intersection where seeing around parked cars is easier and also serves to slow traffic down by reducing the roadway width for cars.

The slower speeds created by these improvements will increase the comfort level of people riding in

the roadways. In addition, sharrows will increase the awareness of motor vehicle users that these roadways are designated for both bike and automobile travel. Most bicyclists are comfortable riding in their neighborhood streets. This design helps to create the same neighborhood character on key roadways identified on the preliminary route plan.

How do stormwater planters help?

Stormwater planters are designed to take on drainage from the adjacent roadway and at times the sidewalks. These planters allow water to infiltrate into the ground in place of flowing directly into storm water pipes. This is a more natural and environmentally sustainable solution to removing stormwater from roadways. It aids in the overall health of the soils while reducing the impacts on current wastewater systems. The plants that are incorporated into the stormwater planters are chosen for their hardiness. They must be resistant to both drought and water standing in the plant beds. Although these plants are very hardy they are also designed to be beautiful. This provides a dual benefit with beautifying the roadway while also helping the wastewater system.





College Avenue Before



College Avenue with Improvements

Implementation

Introduction

Brownsburg Today

Future Brownsburg

Implementation

Operations and Maintenance

Facilities Guide

INTRODUCTION

The improvements proposed for the Brownsburg Active Transportation System are comprehensive and complex and will require a multi-year incremental approach to implement. Implementation of this system will be a long-term investment for the community that will last for many generations with proper care and maintenance. Building on the assets of the existing system and following the goals and objectives of this plan will ensure the system will be built in as little time as possible and in an economically responsible manner. An important part of the plan also involves planning for funding, construction, marketing, and maintenance of the project. This chapter provides a general introduction to these tasks.

PRIORITIZATION

The exact route and alignment of each of the specific routes identified on the Preliminary Route Map have not been determined. Land acquisition has not been studied. Therefore, the recommendations for funding, implementing, and prioritizing of the proposed facilities contained herein are recommendations. The recommendations are based on national practices, information relevant to the project and recent experience with construction and funding of similar project types. The Town of Brownsburg should continue to evaluate the priorities as opportunities for funding become available. When considering these opportunities some general priorities should be considered.

General priorities are recommended for implementation of the master plan as follows:

- **Proposed facilities on publicly owned land:** Access to the land where the facilities are planned, either through fee simple ownership or through easement rights is obviously critical to implementation. Facilities that are proposed on publicly owned land such as parks or in conjunction with public Rights-of-Way should be given high priority.

- **Proposed facilities associated with other public or private improvements:** Planned improvements to land or along corridors where facilities are planned often times provide opportunities for implementation. As plans are developed by the Town of Brownsburg or the Indiana Department of Transportation for road improvements where a bike and pedestrian facility is proposed coordination should occur between the Town of Brownsburg and the entity making the improvements to incorporate these new facilities into those improvements. Opportunities might also exist when private development occurs through coordination with the developers and the Planning and Zoning process.
- **Expansion of existing system:** Proposed trail segments which complete existing links between neighborhoods and key destinations shall be given high priority. Brownsburg has a good start to completing a system of trails and bike and pedestrian facilities but is often lacking in a few key areas. Filling in these gaps will provide the maximum benefit to a number of existing users.
- **Source of Funding:** Funds have been committed to the project or other agencies or private sector groups, through partnerships, have committed funds in support of the project.
- **Increases safety for alternative modes of travel:** The project provides safe use for all users including people traveling along and across roadways, railways, waterways and other barriers.
- **Ease of Construction:** Construction of the project is considered simple and easy to build according to criteria such as costs and design constraints such as grading and drainage and structures required for the project.



These general priorities should be considered as guidelines, with opportunity playing a major role in determining actual implementation. Opportunity can come in many forms including the funding source (i.e. grant, dedication of land, endowment, etc.) and the timing of related projects (both public and private). These opportunities may open the door for implementation of a specific facility that might have been lower on the priority list.

FUNDING

Various funding sources have driven completion of the existing facilities present in the Town. Some of these include private development, Federal and State grants and local funding. As seen in other communities, these partnerships between private and public funds will have to be continued to implement the improvements proposed herein. The following text outlines potential funding sources for the proposed projects within this master plan.

Funding for the physical improvements will come mostly from traditional transportation sources, through the Federal surface transportation program and state and Town capital programs. Some of the Federal transportation programs include: Transportation Alternatives (TA) program in MAP-21, Congestion Mitigation and Air Quality Improvement (CMAQ), Community Development Block Grants (CDBG) programs. As current Federal funding programs expire and new programs are implemented opportunities for funding bicycle and pedestrian improvements may arise.

Another source of funding which has opened up in recent years includes the U.S. Department of Health and Human Services funding. The awareness of the public concerning health issues and concerns has made these funds available for bicycle and pedestrian facilities. This includes both planning for the projects and implementation.

The Indiana Department of Transportation (INDOT) is the major funding source at the state level. INDOT is also the conduit for all Federal transportation funds.

Other State departments which provide funding for bike and pedestrian improvements include the Office of Community and Rural Affairs and the Department of Natural Resources.

Local Government funding sources include taxes, bond referendums and capital improvement programs. It is important to the efficient and expedient implementation of the bicycle and pedestrian system for the Town to prioritize improvements and include these funds in the operating budget for the Town.

Property owners and business districts may also share in the costs of improvements, especially if the improvements benefit their property values and business. This could include capital funding in the way of grant matches.

Funding will also be needed for data collection, evaluation programs, design, and maintenance of the pedestrian and bicycle network. This funding should be planned for in the Town's operating budget. The costs associated with these programs and tasks should be identified in a detailed management plan to assist in the budget planning.

IMPLEMENTATION CHARTS

Implementation charts have been developed to prioritize projects for the proposed bike and pedestrian system. This includes short-term, mid-term and long-term projects to be implemented over the next 20 years.

Short-Term Projects

Projects listed in the short-term capital projects chart shall be considered high priorities in implementation of the system. Short-term projects help to create early success to build momentum for other improvements recommended within this plan. These routes provide connections to destination with high demand with a focus on reaching the majority of residents within Brownsburg. Short-term projects are expected to be implemented within the next 5 years.

Implementation

Introduction

Brownsburg
Today

Future
Brownsburg

Implementation

Operations and
Maintenance

Facilities Guide

Short Term Capital Projects Recommendations (1-5 years)

Project	Description	Miles
Main Street (West of Hornaday Rd. to Northfield Dr.)	Sidewalk	0.75
Hornaday Road (Main Street to E. Harris Street)	Sidewalk	0.08
Green Street (Airport Road to Manor Drive S.)	Sidewalk	0.25
Green Street (Sycamore Street to Airport Road)	Sidewalk	0.46
Green Street (Sycamore St. to Harris Academy)	Sidewalk	0.26
Green Street (56th Street to E. Franklin Street)	Sidewalk	0.25
Green Street (B&O Rail Trail to Tilden Drive)	Multi-use Trail	1.50
Green Street (Tilden Dr. to CSX Railroad)	Multi-use Trail	0.66
Airport Road (Odell St. to Hornaday Road)	Multi-use Trail	0.26
Airport Road (Hornaday Road to Woodstock Dr.)	Multi-use Trail	0.26
Airport Road (Brownsburg East M.S. to Northfield Dr.)	Multi-use Trail	0.07
Hornaday Road (Airport Road to B&O Rail-Trail)	Multi-use Trail	0.78
Hornaday Road (B&O Rail-Trail to C.R. 300 North)	Multi-use Trail	0.19
Cardinal Property (Hornaday Rd. to C.R. 300 North)	Multi-use Trail	0.49
Jefferson Street (Tilden Dr. to Lincoln Ave.)	Multi-use Trail	0.18
Northfield Drive (Pennwood Lane to 56th Street)	Multi-use Trail	0.35
Northfield Drive (Carnaby Drive to Main Street)	Multi-use Trail	0.75
Pennwood Lane (Longview Bend to Northfield Dr.)	Multi-use Trail	0.09
Green Street (Main Street to I-74)	Multi-use Trail	1.20
Northfield Drive (I-74 to White Lick Creek Greenway)	Multi-use Trail	0.42
Odell Street (Airport Road to Sycamore Street)	Multi-use Trail	0.47
Airport Road (Beacon Pointe Blvd. to Bellmore Dr.)	Multi-use Trail	0.11
C.R. 300 North (Hornaday Rd. to Heartland Lane)	Multi-use Trail	0.10
Grant Street (Sycamore St. to Tilden Drive)	Multi-use Trail	0.32
Tilden Drive (Green Street to Odell Street)	Multi-use Trail	0.71
Odell Street (Tilden Drive to Main Street)	Multi-use Trail	0.27
Main Street (Odell Street to Bulldog Drive)	Multi-use Trail	0.65
Lincoln Avenue (Jefferston Street to Green Street)	Multi-use Trail	0.20
Green Street (Connection Pointe Church to CR 800 N)	Multi-use Trail	0.56
C.R. 700 North (1000E. To Eagle Crossing Blvd.)	Multi-use Trail	0.49
C.R. 700 North (Eagle Crossing Blvd. to Raceway Rd.)	Multi-use Trail	0.49
C.R. 1000 E. (C.R. 700 N. to C.R. 650 N.)	Multi-use Trail	0.44
C.R. 650 E. (C.R. 1000 E. to Branches Drive)	Multi-use Trail	0.06
C.R. 650 E. (Branches Drive to Eagle Crossing Blvd.)	Multi-use Trail	0.32
C.R. 650 E. (Eagle Crossing to Raceway Rd.)	Multi-use Trail	0.48
C.R. 1000 E. (C.R. 700 N. to C.R. 750 N.)	Multi-use Trail	0.45
C.R. 750 N. (C.R. 1000 E. to C.R. 900 E.)	Multi-use Trail	0.59
C.R. 900 E. (C.R. 750 N. to C.R. 700 N.)	Multi-use Trail	0.45
C.R. 700 N. (C.R. 900 E. to C.R. 1000 E.)	Multi-use Trail	0.59
Northfield Drive (S.R. 267 to Legacy Park Drive)	Multi-use Trail	0.15

Implementation Chart



Short Term Capital Projects Recommendations (1-5 years) Cont.

Project	Description	Miles
Main Street (Northfield Drive to Green Street)	Bike Lane	1.70
Airport Road (Green Street to C.R. 1000 E.)	Signed Route	2.80
C.R. 1000 E. (C.R. 300 N. to C.R. 650 N.)	Signed Route	4.30
C.R. 650 N. (C.R. 1000 E. to Raceway Road)	Signed Route	1.30
C.R. 1000 N. (S.R. 267 to C.R. 650 E.)	Signed Route	0.74
C.R. 650 E. (C.R. 1000 N. to C.R. 800 N.)	Signed Route	2.00
C.R. 800 North (C.R. 650 E. to S.R. 267)	Signed Route	0.96
College Avenue (Odell Street to Green Street)	Traffic Calming with Shared Lane	0.57
Trail next to CSX Railroad (Green Street to Northfield Drive west)	Trail next to Rail	1.37
B&O Rail-Trail (S.R. 267 to County Line)	Greenway	2.07
White Lick Creek Greenway (Williams Park to I-74)	Greenway	3.46
School Branch Greenway (C.R. 750 N. to C.R. 700 N.)	Greenway	0.74
East Fork Greenway (Northfield Dr. to Reagan Elem.)	Greenway	0.43

Implementation Chart

Implementation

Introduction

Brownsburg Today

Future Brownsburg

Implementation

Operations and Maintenance

Facilities Guide

Mid-Term Projects

Mid-term capital projects are expected to be constructed within the next 10 years. These projects tend to include more complex facility improvements such as improvements to existing bridge facilities and new bike and pedestrian bridges beside existing automobile bridges. In addition, as development spreads throughout Brownsburg, new densities will be created outside of the existing neighborhoods. The mid-term projects provide connections to areas of expected growth as well as providing additional connections to destinations identified within this plan

Mid-Term Capital Projects Recommendations (6-10 years)		
Project	Description	Miles
56th Street (Green Street to Raceway Road)	Multi-use Trail	3.57
Ronald Reagan Pkwy. (56th Street to S.R. 136)	Multi-use Trail	1.65
Green Street (County Line to B&O Rail-Trail)	Multi-use Trail	1.52
Northfield Drive (S.R. 267 to Hornaday Road)	Multi-use Trail	0.99
Green Street (C.R. 800 N. to CSX Railroad)	Multi-use Trail	1.55
C.R. 1000 N. (S.R. 267 to School Branch Greenway)	Multi-use Trail	1.77
Maloney Road (C.R. 900 E. to Raceway Road)	Multi-use Trail	2.24
C.R. 1000 E. (C.R. 300 N. to CSX Railroad)	Multi-use Trail	1.08
C.R. 300 N. (Raceway Road to C.R. 900 E.)	Multi-use Trail	1.98
Connection Pointe Church (Green St. to White Lick Creek Greenway)	Multi-use Trail	0.25
C. R. 900 E. (C.R. 300 N. to Bellmore Drive E.)	Multi-use Trail	0.48
C.R. 650 E. (C.R. 800 N. to Windridge Landing)	Multi-use Trail	0.53
C.R. 650 E. (Windridge Landing to C.R. 700 N.)	Multi-use Trail	0.26
C.R. 550 E. (C.R. 550 N. to West Fork Greenway)	Multi-use Trail	0.47
C.R. 450 N. (C.R. 575 E to Crescent Ridge)	Multi-use Trail	0.48
C.R. 575 E. (C.R. 450 N. to B&O Rail-Trail)	Multi-use Trail	0.62
Northfield Drive (Hornaday Road to B&O Rail-Trail)	Multi-use Trail	0.87
Hornaday Road (Airport Road to Main Street)	Traffic Calming with Shared Lane	1.05
Tilden Drive (Hornaday Road to Green Street)	Traffic Calming with Shared Lane	0.97
Sycamore Street (Green Street to Hornaday Road)	Traffic Calming with Shared Lane	1.04
Odell Street (Airport Road to Main Street)	Traffic Calming with Shared Lane	1.29
Grant Street (Sycamore Street to Tilden Drive)	Traffic Calming with Shared Lane	0.78
Trail next to CSX Railroad (Green Street to Northfield Drive east)	Trail next to Rail	1.59
White Lick Creek Greenway (Williams Park to County Line south)	Greenway	3.85
White Lick Creek Greenway (I-74 to C.R. 800 N.)	Greenway	1.65
School Branch Greenway (C.R. 1000 E. to Raceway Road)	Greenway	3.13
East Fork Greenway (C.R. 900 E. to Ronald Reagan Pkwy.)	Greenway	1.20

Implementation Chart



Long-Term Projects

Long-term capital projects are expected to be constructed over the next 20 years. These projects require additional time for planning, design and budget planning. These projects also seek to incorporate improvements with long-term transportation projects such as road widening projects and bridge improvements.

Beyond the Master Plan

This plan establishes the vision and roadmap needed to provide a more complete system of bicycle and pedestrian improvements for Brownsburg. It will be important in the future to measure progress, reassess priorities, and strive to further increase the use and safety of the facilities within the system as the Town moves ahead with implementation of the plan.

As implementation progresses the Town of Brownsburg shall consider the following as ways to continue the success:

- Increase the number of neighborhood roadways designated as bicycle boulevards by installing traffic calming and share the road improvements
- Make intersection improvements through Brownsburg to allow bicyclists and pedestrians on non-arterial streets to safely cross arterial streets.
- Focus on bridges so that over time as bridges are improved or replaced they provide safe convenient access for bicyclists and pedestrians.
- Provide high capacity bicycle parking in more parks, schools, public buildings, retail areas, libraries and community centers.

Long Term Capital Projects Recommendations (11-20 years)		
Project	Description	Miles
Ronald Reagan Parkway (S.R. 136 to county line south)	Multi-use Trail	1.93
Ronald Reagan Parkway (56th Street to county line north)	Multi-use Trail	5.25
Northfield Drive (Gross Point Pass to C.R. 300 N.)	Multi-use Trail	0.53
C.R. 600 E. (Tilden Drive to Main Street)	Multi-use Trail	1.13
Tilden Drive (C.R. 600 E. to C.R. 575 East)	Multi-use Trail	0.25
C.R. 625 E. (Northfield Drive to Proposed Interstate Interchange)	Multi-use Trail	0.27
Proposed Interchange near C.R. 700 North)	Multi-use Trail	1.77
C.R. 700 N. (Prop. Interstate Interchange to C.R. 550 E.)	Multi-use Trail	0.30
C.R. 550 E. (CSX Railroad to West Fork Greenway)	Multi-use Trail	1.02
C.R. 800 N. (Prop. Interchange to Bethesda Christian School)	Multi-use Trail	0.20
Wilson Road (School Branch Greenway to C.R. 1050 E.)	Multi-use Trail	1.10
C.R. 1050 E. (Wilson Road to Maloney Road)	Multi-use Trail	0.74
C.R. 575 E. (Tilden Drive to B&O Corridor)	Multi-use Trail	1.10
C.R. 600 E. (C.R. 575 E. to Soccer Complex)	Multi-use Trail	0.98
C.R. 575 E. (B&O Corridor to C.R. 600 E.)	Multi-use Trail	1.11
Trail next to CSX Railroad (Northfield Drive to C.R. 1000 E.)	Trail next to Rail	1.50
Trail next to CSX Railroad (Northfield Drive to West Fork Greenway)	Trail next to Rail	0.94
White Lick Creek Greenway (C.R. 800 N. to county line north)	Greenway	4.14
School Branch Greenway (C.R. 750 N. to C.R. 1000 N.)	Greenway	2.98
Eagle Greenway (White Lick Creek Greenway to Grant St.)	Greenway	1.50
Cardinal Greenway (Northfield Drive to Cardinal Elem. School)	Greenway	1.14
West Fork Greenway (White Lick Creek Greenway to I-74)	Greenway	3.61

Implementation Chart

Operations and Maintenance Guide

Introduction

Brownsburg Today

Future Brownsburg

Implementation

Operations and Maintenance

Facilities Guide

INTRODUCTION

An important part of the Brownsburg Active Transportation Plan is ensuring that the existing and proposed improvements are cared for and maintained. One of the most important reasons to properly maintain the facilities within the system is to maximize safety while minimizing the local landowners concerns regarding liability. Planning for the maintenance and management of the bike and pedestrian system will ensure safety and will prolong the life of the facilities within the system. Budgeting and planning for the maintenance of the existing and proposed facilities is imperative for the long-term success of the system.

The guiding principal throughout the planning of the Active Transportation Plan has been to balance high-quality design with cost-effective maintenance. Operations and maintenance refers to specific tasks involved in caring for the facilities in this manner. A successful management plan should be supported by the departments who will be responsible for maintaining the facilities early on in the implementation process. In addition, it is important for community groups, business leaders, resident groups and developers to be engaged with the long-term success of the system.

The operations and maintenance plan for the Brownsburg Active Transportation Plan provides guidance for tasks that need to be undertaken by the managing agencies and project partners. This plan provides a series of work items that need to be completed in order to maintain the system as an attractive, safe and enjoyable amenity. The following defines key aspects of facility management beginning with principals of trail management, and operational policies, followed by facility assessment, maintenance, costs, management, safety and liability policies, and funding alternatives for the operations and maintenance tasks.

PRINCIPALS OF TRAIL MANAGEMENT

The longevity of the Brownsburg Transportation Plan is dependent on how the facilities are man-

aged after construction is complete. Management of the system will apply best practices of facility operations and management to ensure high-quality maintenance and therefore minimize safety risks to users, pothole liability and unexpected costs. The following guiding principals will help ensure that these standards are applied:

1. The management plan shall be reviewed and updated annually with tasks, operational policies, standards, and routine and annual maintenance goals promoting a cost-effective management program.
2. Sound planning and design shall be employed to protect user safety and the environment.
3. Impacts to adjacent properties shall be limited when conducting maintenance activities.
4. Regular inspections, consistent record-keeping and systematic maintenance shall be implemented to ensure a quality outdoor recreation and multi-modal transportation experience.
5. Develop and maintain a system for public feedback to promote public participation and to respond to public concerns.
6. Plan for sustainable funding to provide maintenance for the lifetime of the facilities within the system.
7. Develop and maintain a plan for uniform commitment among all respective agencies throughout the entire system to provide continued safety, quality, and cohesive attractiveness.

OPERATIONS

The operation of the bicycle and pedestrian systems includes day-to-day management of the system. This includes law enforcement, map and brochure updates, marketing, conducting special events, and other functional tasks.

Hours of Operation Policy

With many of the existing and proposed facilities within the system being incorporated into the living and working areas of the Town there will be no specific hours of operation for these facilities.



However, the greenway and rail-trail facilities will be operated as a non-lighted (except where lights already exist and are maintained) system of facilities and shall be open from dawn to dusk, 365 days a year. Where users are found using the non-lighted portions of the greenways or rail-trail, they can be deemed in violation of these hours and may be subject to fines. The Town will need to coordinate with the Police Department on the level of enforcement and methods to enforce this policy.

Care and Management Policy

Brownsburg Parks Department and the Brownsburg Street Department will be responsible for the care and upkeep of the facilities and the surrounding land, drainage features, signage, fencing, bridges, trail heads, landscape plantings and facility amenities such as benches and trash receptacles.

Fencing and Vegetative Screening Policy

The Town of Brownsburg will work with adjacent landowners on an individual basis to determine where fencing and screening is needed to buffer adjacent land from the bicycle and pedestrian facilities. In rare occasions, fencing and screening may be provided outside of the property owned by the Town. Private landowners will be responsible for maintaining these elements when they are located on private property. This should be part of the design consideration when installing these elements outside of the public right-of-way.

Trail Users

One of the goals when planning the bicycle and pedestrian system was to provide facilities and routes that would accommodate all users. However, there may be occasions where multiple users are not appropriate. In such instances, such as with bike trails and hiking trails, the town may want to limit the user type allowed on the trail with signage. Although enforcing these limits may not be possible on a regular schedule, providing signage will reduce the number of conflicting users on the facility.

Established guidelines provide for the following policy

recommendations concerning users on the system:

- Bicyclists should yield to pedestrians
- Access for motorized vehicles on trails is limited to authorized vehicles such as maintenance vehicles and emergency response vehicles
- Unauthorized motorized vehicles such as dirt bikes and ATV's are prohibited on multi-use trails
- Wheelchairs are allowed on multi-use trails when used solely for use by a mobility impaired person.
- Always keep to the right as you use a path or facility.
- Pass others on their left. Look ahead and behind you before you pull out and around the other user.
- Users should give a clear warning signal before passing. This may be by voice, bell or soft horn. Voice signals might include "passing on the left" or "cyclist on the left". Always be courteous when providing an audible signal
- Maintain safe and legal speed at all times when riding bicycles on the facilities.
- When entering or crossing a path or facility at uncontrolled intersections, yield to traffic already using the path.
- It is illegal to use the facilities while under the influence of alcohol in excess of the statutory limits.
- Users should clean up their litter. Always keep the facilities clean for other users.
- All pets must be kept on a secure leash. Failure to do so will result in fines.

Environmental Resources Policy

Habitat enhancement and control can improve aesthetics, help prevent erosion, and provide for wildlife habitat. Habitat control involves mitigation of damage caused by wildlife. Where possible, environmental preservation and restoration should be included in the pedestrian and bicycle facility design, especially along greenways and naturalized trails. Policy measures to enhance environmental resources include:

- Plant vegetation, such as trees and shrubs
- Take preventative measures to protect environmental features from wildlife, such as installing fencing around sensitive or newly planted materials

Operations and Maintenance Guide

Introduction

Brownsburg
Today

- Apply herbicide to eliminate any problem plant species, such as poison ivy or crown vetch
- Apply herbicide to maintain facility edges and prevent encroaching vegetation, such as along trails and sidewalks
- Deter interaction between users and wildlife such as feeding the wildlife and people gathering wildflowers
- Prohibit and sign litter and dumping along facilities. Users violating the littering laws may be issued a citation.
- Dogs should be kept on leashes at all times.

Emergency Response

Emergency services to the trails and facilities will be provided by various agencies depending on location. In many cases, the closest public safety agency will respond, which might include county sheriffs, town police or parks department personnel.

Closure Policy

There will be times when specific facilities will need to be closed for repair or during emergencies such as flooding. When the facilities are closed signs shall be posted and information regarding the closing shall be posted on the Town and Parks Department websites. Alternate routes shall be designated and signed. Barriers shall be installed to prevent access to the closed portion of the facility. Due to safety and liability issues, individuals who are found using the facilities while they are closed are subject to fines and prosecution.

ASSESSMENT

Create a Facility Assessment and Repair Sheet

A facility assessment process should be conducted to ensure all facilities are inventoried and the condition documented prior to performing maintenance tasks. A facility assessment and repair sheet should be developed to keep this process consistent across facility types and through the years as facilities age. The form should include information to document needed maintenance

and repair locations and types of repair. Items to be included on the form include: maintenance issue description, strategies to repair, notes on the trail or facility condition, space for sketches of the problem and/or solution, and action to be taken. The assessment and repair sheet should be completed on-site and should include the date conducted and name of person conducting the assessment. Preliminary training should be given to ensure consistency between staff members conducting the assessments.

Walk or Ride the Bicycle and Pedestrian Facility

Assessment of the facilities should include walking and riding the facility. Facilities should be inspected on a routine basis to identify current conditions, drainage issues, erosion, and other areas of needed repair. In addition, amenities such as fences, restrooms, kiosks, and wayfinding should be assessed. Walking or riding the facility will allow the person conducting the assessment to perform a more accurate assessment in terms of facility use and safety.

Confer with the Land Owner

When possible, discuss any proposed repairs or maintenance with adjacent land owners to the facilities prior to scheduling the repair work. The assessment sheet will help describe the problems to the adjacent land owners and describe the repairs that will take place.

Work Crews

Special training should be provided to maintenance crews responsible for maintaining the facilities including how to identify potential hazards, most efficient methods of repair, and types of repairs that can be performed by in-house staff. Issues identified by the maintenance crews should be included in the overall maintenance and repair budget and schedule.

Future
Brownsburg

Implementation

Operations and
Maintenance

Facilities Guide



MAINTENANCE

The maintenance of the bike and pedestrian system includes many activities involved in keeping the facilities in a safe and usable condition. This includes several tasks ranging from mowing and brush removal to repairs and reconstruction of facilities. Lifetime maintenance will place ongoing costs on the different agencies maintaining the system and should be considered when planning and funding new and existing projects.

A guideline for the most commonly performed maintenance tasks should be developed by the agency responsible for maintenance for both annual and seasonal maintenance. The recommendations should be reviewed on an annual basis and adjusted as experience determines more or less frequent applications are needed. Maintaining safe facilities will be the determining factor when scheduling tasks as outlined below.

Mowing and Spraying

Mowing along trails and other facilities should occur on a regularly scheduled basis. Mowing can be used to maintain certain types of vegetation such as turf and invasive species control. Schedule mowing and spraying regularly, based on knowledge of how fast such growth occurs to that facility so that it is not significantly inhibited. With some types of fast-growing species, it may be necessary to consider the use of herbicides. Special precaution and certified training must be included with any spraying operations. Environmentally safe weed removal methods should be used, especially along waterways. Trails with mowed areas should have four (4) feet mowed from the edge of the trail where possible. Some sections will have less due to topography and/or landscaped areas.

Tree and Brush Trimming

Trimming is performed to maintain clearance for users of the bike and pedestrian facilities. Workers performing the pruning must be trained in proper pruning to provide aesthetic treatments while protecting the health of the vegetation. Such work is usually done with clippers, string trimmers, and chainsaws. In some situations, it may be necessary to clear root systems or remove embedded plant material with more indus-

trial equipment. Operators must have proper training and education to operate machinery in a safe manner. Limbs should be trimmed four (4) feet back from the facility. In high use sections of trail or pathway use, dead or dying trees that have the possibility of falling on the facility should be removed.

Debris Removal

Removal of debris is one of the fundamental needs of the bike and pedestrian system and is necessary to provide safe facilities while extending their life expectancy. Keeping the facilities clear of mud and sediment, fallen leaves, branches and fallen trees will increase use while providing a safe environment for users.

Drainage Control

Proper drainage protects the bicycle and pedestrian system facilities from erosion damage. Facilities should be routinely inspected to ensure that all culverts, dips, bridges, low water crossings, drainage ditches, and open box culverts are free of debris and ready to function in the proper manner especially during the rainy season in the spring. Routine maintenance is not only necessary but valuable in terms of labor, material, and money saved on emergency repairs, and in the number of days the trail is useable. Erosion repairs should be made as quickly as possible to prevent further damage to the facility.

Signs and Other Amenities

Signs, benches, kiosks, bollards and fencing need to be kept clear to provide safe and aesthetically pleasing elements along the trail, path or sidewalk. Amenities that fall into disrepair are more susceptible to vandals. Prompt repairs are essential to keep vandalism from becoming a larger problem. These items also have life-cycle limits which should be considered in the annual maintenance budget.

Signs provide both safety and information for users. They provide users with their location, where they are going, and the rules to safely use the facilities. Up-keep of the signage along the system should be a high priority.

Operations and Maintenance Guide

Introduction

Graffiti Removal

Prompt removal of graffiti will deter additional graffiti and other destructive acts to the facilities within the system. Once graffiti has been reported, it should be removed as soon as possible within the first 24 hours when possible. Providing a system free of graffiti will increase usership by increasing the perception of safety.

Facility Repair or Replacement

All of the facilities will require repair or replacement at some time. Repair and replacement should be closely tied to the inspection schedule. Setting priorities for the repairs will be a part of the inspection process. The time between observation and the repair or replacement will depend on the nature of the issue. If the problem requiring the repair is deemed to be a hazard, and will affect the safety of the user a higher priority will be set. The time delay will also depend on whether the repair can be performed by in-house maintenance staff or if it so extensive that it will require an outside entity. Some repairs are minor enough in nature that they can be done with other capital projects such as resurfacing a bike lane at the same time as repaving an adjacent street. When repairs are required, they should meet or exceed the original construction specifications.

Seasonal Maintenance

Seasonal maintenance tasks should be performed as needed and include leaf removal, snow and ice removal. When conditions cannot be improved to provide for safe use of the facility, the facility should be closed to prevent the risk of injury to the user. Designated maintenance crews shall remove leaf debris, snow and ice from the facilities. Leaf debris can be hazardous when wet, especially on slopes. Special attention should be given to facilities with higher usage. Ice and snow removal is necessary for user safety but also to prevent damage caused to the facility from the freeze-thaw cycle.

- Leaf removal should be done through raking, blowing and mulching as needed to provide a

clear and safe facility for users and to prevent any storm water drainage or erosion issues.

- Remove snow and ice from the facilities by shoveling, picking, salt and sand as soon as possible after a storm.

COST OF OPERATIONS AND MAINTENANCE

Operations and maintenance budgets should take into account annual and long-range maintenance over the life cycle of the facility. Annual operations and maintenance costs vary depending on the facility to be maintained, level of use, location, and standard of maintenance. The following estimates should be used for reference only as these costs will fluctuate depending on actual conditions of the facilities within the town. The estimates include field labor, materials, equipment and administrative costs and are based on national industry standards.

Paved Shared-use Path

Annual: Depending on the intensity of use and development, the number of associated amenities and the standard of care the typical cost to maintain a paved shared-use path ranges from \$4,000 to \$15,000 per mile. Volunteers may absorb all or part of this cost.

Long-Range: Asphalt pathways usually have a 10-12 year life. An overlay is usually required at this time with a complete resurfacing after 20-25 years. Concrete paths have a life cycle of twice as long.

Natural Surface Path

Annual: Maintenance costs range from \$200 to \$2,000 per mile per year depending on usage and level of development. Volunteers are valuable in reducing this maintenance cost and can perform many of the required tasks.

Long-Range: The day-to-day maintenance performed on natural surface trails is usually adequate for even the long-range maintenance of the

Brownsburg Today

Future Brownsburg

Implementation

Operations and Maintenance

Facilities Guide



trail. Volunteers can also provide much of the maintenance needed over the life of the trail. There may be some administrative costs associated with the natural trails but long-range maintenance costs are negligible.

Greenway Trail

Annual: Crew sizes can range from 1 to 5 full time employees once the system is fully developed. This cost varies widely depending on the level of maintenance for not only the trail but also adjacent properties including stream banks and floodways. The maintenance costs can range from \$3,000 to \$20,000 per mile per year to maintain. Day-to-day maintenance and monitoring of greenway facilities should be divided between volunteers and maintenance crews when possible to lessen the impact of these fees.

Long-Range: The majority of greenway trails will be either asphalt or concrete. As such they will require the same long-range maintenance as the paved shared-use path. Greenway trails which experience regular flooding should be analyzed for a shorter life cycle.

On-road Bicycle Facility

Annual: It is assumed that the Brownsburg Street Department and INDOT will maintain the on-road bicycle facility system. Additional sweeping will be required where bike lanes are installed. Additional attention should be paid to any potholes or other pavement damage. Regular inspections should occur every year to assess the condition of roadways with bike lanes. Maintenance for these facilities can be included as a part of street maintenance with costs ranging from \$0 to \$250 per mile per year.

Long-range: Long-range maintenance tasks for on-road bicycle facilities include repaving and restriping when roadway improvements are implemented. Pavement markings include bicycle lane lines, bicycle stencil markings, and edge lines. This work should be included with current street maintenance and would have negligible costs.

Sidewalks

Annual: Typically sidewalks are maintained by adjacent property owners with major repairs done by the

maintaining agency. Cracks, surface defects, tree root damage, and other problems should be identified on a regular basis and fixed to ensure that sidewalks remain accessible to all types of pedestrians. Sidewalk maintenance costs range from \$0 to \$100 per mile per year.

Long-range: Sidewalks will be constructed with concrete which requires replacement ever 50-75 years.

FUNDING OPERATIONS AND MAINTENANCE

Identifying current and future funding sources specifically for the maintenance and management of the bike and pedestrian system must be done to ensure the longevity of the facilities. Development of new facilities should only occur when a plan has been completed for maintenance of the facility. Several types of funding sources should be identified and used in combination to fund the maintenance rather than relying on one source of funding. This will lessen the impact when one source has a short-fall. The following are potential sources for funding the operations and maintenance of facilities within the system.

Budget Allocations

The most common source is through budget allocations of existing departments. As facilities are added to the system these budgets should be increased to plan for the continued maintenance and repair of the facilities. This is usually the base revenue for the operations and maintenance of the facilities.

Public/Private Partnerships

The development of the new facilities will serve many public and private entities providing benefits for multiple departments including floodway and ditch maintenance, street maintenance, utility access, and enhancement of adjacent properties such as with new sidewalk development in the downtown area. These shared benefits may present the opportunity to share funding for tasks associated with the up-keep of the facilities. This may include between government agencies but also through business and residential association partnerships with the town.

Operations and Maintenance Guide

Introduction

In-Kind Services

In-kind services can be an important tool in funding the maintenance of the bike and pedestrian facilities. These services might include routine maintenance performed by volunteers, youth groups, student labor and seniors. Services might also include donations of materials and labor.

Brownsburg Today

Revenue from Programming

The Brownsburg Parks and Recreation Department should work to capture and direct fees and revenues that are obtained from facility events and activities into a fund that can be dedicated to operating and maintaining the system. Programming events such as fun-runs, bike races and other races can generate revenues for the bike and pedestrian system.

Future Brownsburg

MANAGEMENT

Brownsburg Parks and Recreation Department

The Brownsburg Parks and Recreation Department shall act as the lead agency for implementing the plan and coordinating maintenance tasks for the bicycle and pedestrian network. Duties for the Brownsburg Parks and Recreation Department include carrying out the recommendations of this plan, applying for funding, conducting routine maintenance of greenways, naturalized trails and other bicycle and pedestrian facilities located on Parks Department property, and overseeing the safety and operations of all facilities through Parks Department property. Parks Department staff will also be responsible for updating and publishing maps, proposing future alternative routes, and working with adjacent communities to coordinate linkages.

Implementation

Brownsburg Planning Department

The Brownsburg Planning Department will be responsible for creating and updating GIS layers of all network facilities. The Planning Department shall also assist the Parks and Recreation Department when applying for funding. Planning Department staff shall provide guidance to developers when implementing new projects in the town to

incorporate proposed facilities when appropriate.

Brownsburg Street Department

The Brownsburg Street Department shall continue to oversee the construction, day-to-day maintenance tasks, and seasonal maintenance tasks of the multi-use trails adjacent to roadways, sidewalks, bike lanes and any other bike and pedestrian facilities located within or next to the street right-of-ways.

Indiana Department of Transportation (INDOT)

INDOT should continue to design and build on-road facilities along with maintaining all pedestrian and bicycle facilities within the road right-of-ways that are owned by the state. This includes paved shoulders, bike lanes, crosswalks, pedestrian signals, and sidewalks along state roads. Brownsburg Parks and Recreation Department should coordinate with INDOT anytime new projects are proposed, or when repairs on existing facilities are scheduled, to implement facilities as proposed on the master plan.

Police Department

Law enforcement along new facilities should be dealt with in the same manner as on any other public or private land within Brownsburg. All local police officers should go through training courses so that they are up to date with the most current laws governing bicyclists and pedestrians in Indiana. Safe use of the facilities will depend largely on enforcement of policies identified for the facilities especially on facilities in the outlying areas with less exposure to surrounding traffic. The Parks and Recreation Department should work with the police department to assess current needs and availability for assisting in enforcement of network facility rules.

Volunteers

Volunteers can provide services to help offset or reduce the costs of construction and maintenance for the system of facilities. The use of volunteer

Operations and Maintenance

Facilities Guide



citizen groups are especially valuable for a variety of activities such as: trail construction and maintenance, trash and litter control, exotic vegetation removal, safety patrols, and educational outreach. Volunteer groups can work with the Town of Brownsburg and stakeholders to promote growth and maintenance of the system. By developing an organized volunteer program, it will allow people to get involved with implementation and upkeep of the system. The Brownsburg Parks and Recreation Department and the Street Department shall organize/coordinate volunteer groups for the facilities maintained by each respectively. Volunteer opportunities might include:

- Civic groups, youth organizations, or businesses might want to adopt a section of a trail or greenway and assume responsibility for litter patrol and light maintenance
- Youth corps can provide assistance for a variety of labor-intensive projects including trail construction, stream bank restoration, habitat improvement, and tree planting.
- Schools and historical societies could help create and manage web pages, interpretive materials, curriculum guides, etc.
- High school and college students seeking recreation or conservation internships could be recruited to provide a somewhat long-term commitment
- Law enforcement agencies could train volunteer 'trail stewards' to assist with enforcement of trail policies and rules
- High school and middle school students wishing to perform community service might assist in a trail clean-up day
- Trail days for scheduled maintenance

Develop a Non-Profit Group for Greenways

Although just one subset of the bike and pedestrian system, the greenways provide a naturalized setting for connections which will connect large areas of the town. Often times, developing a greenway system can take many years. Developing a non-profit group to oversee the implementation of the community wide greenway system can ensure the long-term success of the system. Establishing a "Friends of the Greenways" organization can help to advocate for and promote the

full development of the system. Many Friends organizations operate under a non-profit, 501c3 status so that they can receive contributions from individuals and private sector groups.

The Brownsburg Friends of the Greenways could assist the town by sponsoring events that raise funds for the system. They can host community forums or events to increase awareness and support for development of the system. They might also sponsor events, such as hikes and races, which encourage more use of the greenways.

SAFETY AND LIABILITY ISSUES

Safety

The owner of a bike and pedestrian facility must provide a safe facility for those that use it. The basic components of a risk management program include identification, evaluation, and treatment.

- Identification – regular inspections shall be conducted to identify potential risks and hazards
- Evaluation – evaluating the risk to determine the likelihood of an accident due to the age of the facility, amount of use, or poor design.
- Treatment – treating the risk or notifying the user. Treating the risk can include repair, redesign, increased maintenance or reducing the use of the facility. Treatment also might include prohibiting use of the area. Notifying the user can include posting signs notifying the user of the danger, or by obtaining waivers from users of the facilities. Implementation of such risk management programs will minimize safety problems.

Liability

The public operating agency of the bike and pedestrian facilities should fully understand the liability associated with the specific types of facilities and verify that insurance is adequate.

Some techniques which can help limit liability issues include:

- Implement a volunteer program to report problems and safety issues

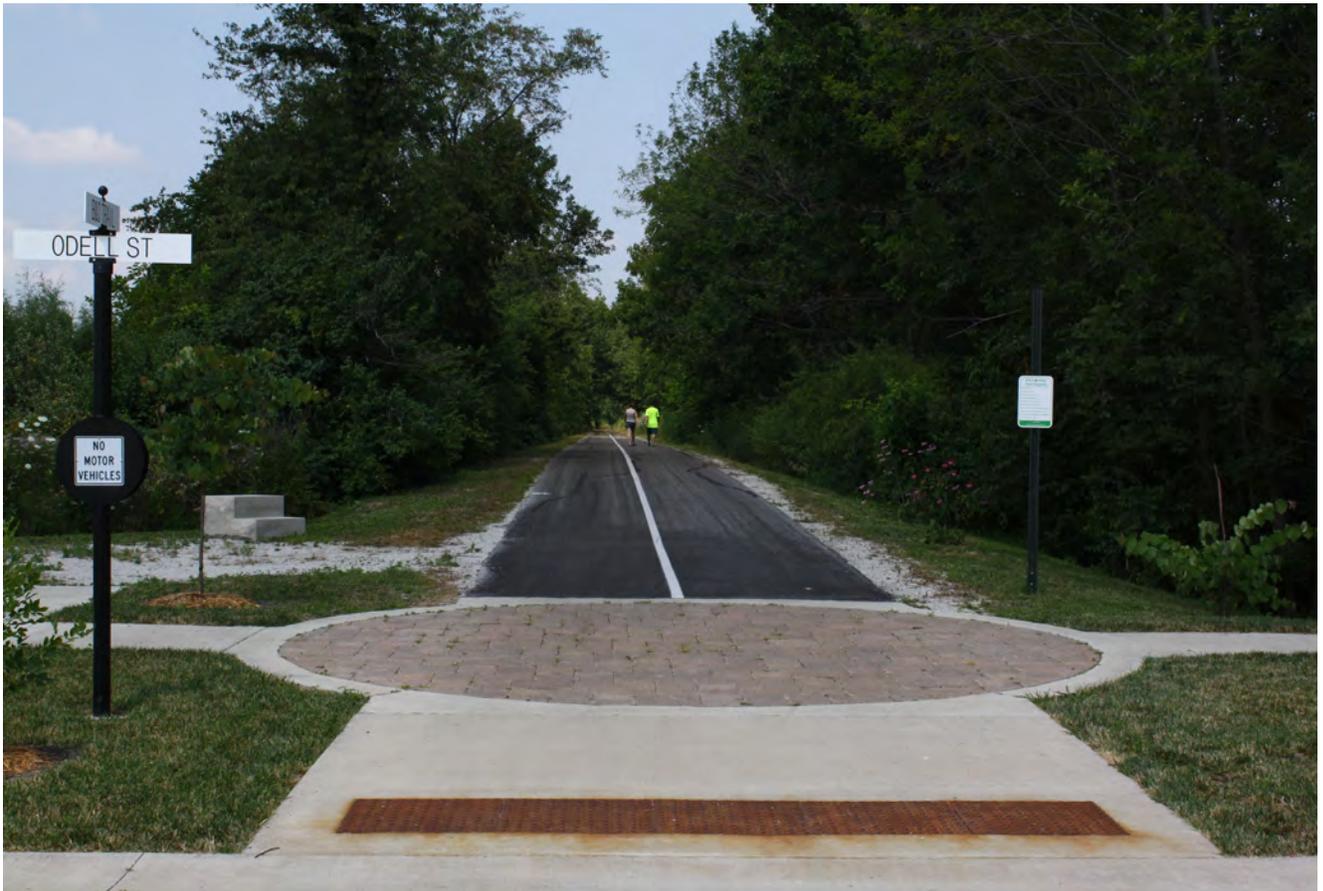
- Limit facilities to bicycles and pedestrians, prohibiting motorized use
- Educate users and adjacent land owners concerning private property rights including through signage, brochures and outreach
- Provide private property buffers such as vegetative screens and fencing where possible
- Notify adjacent property owners of any development plans or changes in policy
- Keep the lines of communication open between public agencies and adjacent property owners

Conflict Reduction

When a facility serves multiple user groups there will be inherent conflicts that will arise. The bike and pedestrian system shall work to reduce these conflicts where possible. Some conflict reduction methods include:

- Recognize the different goals of different users

- such as hikers and mountain bikers and separate facilities where feasible
- Plan and design to reduce conflicts between users and adjacent property owners. Post rules and regulations concerning reckless and unsafe behavior, trespassing, littering and disturbances.
- Provide user education through signage, brochures and media.
- Provide contact information for user input to report problems, complaints and concerns.
- Promote facility user etiquette
- Develop a plan to respond to any illegal or disturbing activity quickly.
- Avoid excessive regulatory signage while providing adequate signage to inform facility users.



THIS PAGE LEFT BLANK

Facility Guide

Introduction

Brownsburg Today

Future Brownsburg

Implementation

Operations and Maintenance

Facilities Guide

INTRODUCTION

The design guidelines contained in this section are intended to support the recommendations presented in this Plan, and to serve as an ongoing reference for the Town of Brownsburg. They are not intended as comprehensive design standards. Rather, they reference existing design standards and provide clarification or supplemental information as necessary. There are seven primary sources of bicycle and pedestrian facility design information that were used to develop the guidelines provided in this section:

1. Indiana Department of Transportation (INDOT) 2013 Design Manual Chapter 51 Special Design Elements – This document provides guidance for pedestrian and bicycle facilities that are included in Department of Transportation designs. This design manual is used for Hendricks County projects as well.
2. Federal Highway Administration Manual on Uniform Traffic Control Devices (MUTCD) – The MUTCD is the national standard for signing, markings, signals, and other traffic control devices. Indiana has adopted a slightly modified version of the MUTCD, the Indiana MUTCD. The IMUTCD modifications do not impact the recommendations in this design guidance document. It should be noted that the IMUTCD does provide alternative methods for analyzing the need for pedestrian signals. Additional school bus warning signs are also included in the IMUTCD.
3. American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities – This document is intended to present information on how to accommodate bicycle travel and operations in most riding environments. It is the design guidance upon which most state and local design guidelines are based. In many jurisdictions this document is considered to set the minimum values for bicycle design.

4. AASHTO Guide for the Planning, Design, and Operations of Pedestrian Facilities – This document is intended to present information on how to accommodate pedestrian travel and operations in (primarily) roadway environments. It is the design guidance upon which most state and local design guidelines are based. In many jurisdictions this document is considered to set the minimum values for pedestrian design.

5. Institute of Transportation Engineers Designing Walkable Urban Thoroughfares: A Context Sensitive Approach – This document's development was supported by FHWA. Designing Walkable Thoroughfares helps designers understand the flexibility for roadway design that is inherent in the AASHTO guide A Policy on the Geometric Design of Highways and Streets with a focus on balancing the needs of all users.

6. National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide – FHWA has issued a memo supporting the use of this document to further develop nonmotorized transportation networks, particularly in urban areas. Many of the designs in this document have been used successfully in urban areas. However, care should be exercised when applying the treatments described in this document to suburban or rural areas.

In this guidance section of the Town of Brownsburg Bicycle and Pedestrian Master Plan the following facility types are discussed:

- sidewalks,
- curb ramps,
- midblock crossings,
- bike lanes,
- shared lane markings,
- bike routes,
- bike boulevards, and
- shared use paths.



SIDEWALKS

Chapter 51 of the INDOT Design Manual requires pedestrian facilities comply with the Americans with Disabilities Act “Accessibility Guidelines for Buildings and Facilities” the most recent of which are the 2010 ADA Standards for Accessible Design. FHWA recommends agencies adopt the guidance found in the Notice of Proposed Rulemaking for Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (July 2011). The below guidance is consistent with the public right-of-way guidance.

Sidewalk Width

The preferred minimum sidewalk width is 5 feet. Under constrained conditions, 4-foot wide sidewalks are acceptable provided a 5-foot by 5-foot area with less than 2% cross slope is provided every 200 feet (maximum) to allow for the passing of one pedestrian using a wheelchair by another. Sidewalks placed at the back of curb should be at least 6 feet wide.

Location of Sidewalks

On roadways with curb and gutter sidewalks should be located six feet from the back of curb. This minimizes the encroachment of curb ramps and driveway cuts into the sidewalk width. On roadways without curb and gutter sidewalks should be separated from the roadway as shown by the following criteria, which are given in a sequence of desirability:

- at or near the right of way line (ideally, 3 feet of width should be provided behind the sidewalk for access, construction, and maintenance),
- outside of the minimum required roadway clear zone, or
- as far from the edge of the driving lane as practical.

Sidewalk alignments, which are set back from the roadway, should taper for alignment closer to the roadway at intersections. This will allow for coordinated placement of crosswalks and stop bars.

Sidewalk Slopes

The maximum cross slope on a sidewalk is 2%. This maximum cross slope must be maintained across driveways and crosswalks.

Sidewalks may follow the grade of the adjacent roadway. However, on new structures the grade of the sidewalk cannot exceed 5%. If a grade of more than 5% is required on a new structure, an ADA compliant ramp must be provided.

Curb Ramps and Blended Transitions

A curb ramp is a ramp that cuts through or is built up to the curb. A blended transition is a relatively flat area where a sidewalk meets a roadway. Curb ramps and blended transitions are primarily used where a sidewalk meets a roadway or driveway at a pedestrian crossing location. Blended transitions include raised pedestrian street crossings, depressed corners, or similar connections between pedestrian access routes at the level of the sidewalk and the level of the pedestrian street crossing that have a grade of 5% or less. Accessibility requirements for blended transitions serve two primary functions. First, they must alert pedestrians that have vision impairments to the fact that they are entering, or exiting, the vehicular area. Second, they must provide an accessible route for those using wheelchairs or other assistive devices. Ideally, a separate ramp should be provided for each crossing of the roadway.

Curb Ramp Slopes

The slope of a curb ramp shall not exceed 8.33%. The only exception to this standard is when a sidewalk is located along a roadway with a significant slope, in which case the maximum length of the curb ramp is 15 feet.

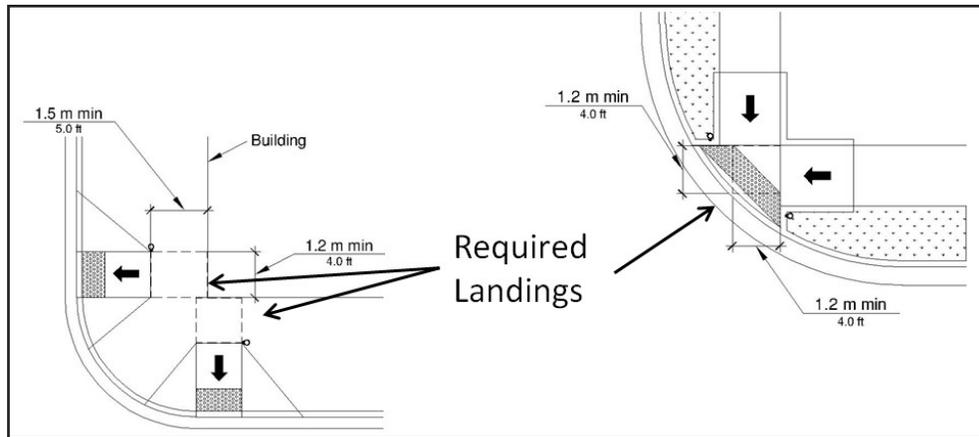
Landings

All curb ramps must have a landing at the location where a wheelchair user would have to turn to prepare to enter the roadway. For perpendicular ramps, this means a 4-foot by 4-foot landing at the top of the ramp (5-foot by 5-foot if there is a vertical obstruction adjacent to the landing). For parallel ramps where the sidewalk is depressed, the 4-foot by 4-foot landing is required at the bottom of the ramp.

Facility Guide

Introduction

Brownsburg Today



many more potential crossing locations at midblock than at intersections, motorists are less likely to expect pedestrians crossing at midblock, and pedestrians with visual impairments have fewer audible clues for determining the best time to cross.

Future Brownsburg

Detectable Warnings

Detectable warning surfaces shall extend a minimum of 2 feet in the direction of pedestrian travel and shall extend the full width of the curb ramp. Detectable warning surfaces are not required, nor desirable, at crossings of residential driveways since the pedestrian right-of-way continues across residential driveway aprons. However, where commercial driveways are provided with yield or stop control, detectable warnings should be provided at the junction between the pedestrian and vehicular routes

Each of these differences leads to important design considerations for midblock crossings:

- Make the crossing location convenient for pedestrians - Midblock crossings are provided in locations where crossings at intersections are not available or are inconvenient for pedestrians to use. Midblock crossings must be placed in convenient locations to encourage pedestrians to use them rather than other, more convenient, unmarked midblock locations.
- Make drivers aware of the crossing as they approach it - Drivers should be warned of the pedestrian crossing in advance of the crossing location, and the midblock crossing should be highly visible to approaching drivers. Drivers should have clear lines of sight to the crossing so that pedestrians at the crossing are visible. The approach to the crossing should encourage drivers to reduce their speeds prior to the crossing. Drivers should be given plenty of time to recognize the presence of a pedestrian and stop in advance of the crossing.
- Make pedestrians aware of the opportunity to cross - Provide aids for pedestrians with visual impairments to recognize the presence of a midblock crossing and the best opportunities for crossing. Auditory and tactile information should be provided for pedestrians with visual impairments since clues present at an intersection crossing are not always available at a midblock crossing (such as

Implementation

MIDBLOCK ROADWAY CROSSINGS

Intersections are often the best and most direct place for pedestrians to cross a roadway and are the most common pedestrian crossing locations. Still, more than 70 percent of pedestrian fatalities occur away from intersections, so it is critical to design midblock crossings that both increase drivers' awareness of the crossing and expectation of encountering pedestrians and encourage pedestrians to cross in the designated location. While drivers may not expect to encounter pedestrians at midblock locations as much as they do at intersections, midblock crossings have fewer conflict points between vehicles and pedestrians which is an important safety advantage over crossings at intersections.

Operations and Maintenance

Midblock crossings are different from intersection crossings in three important ways: there are

Facilities Guide



the sound of traffic stopping and starting).

- Make drivers and pedestrians aware of their responsibilities and obligations at the crossing and provide opportunities to meet these responsibilities/obligations - Use MUTCD guidance to establish a legal crossing. Vehicle approach, pedestrian approach, and traffic control design should provide pedestrians with clear messages about when to cross and drivers about where to yield. Where necessary, a refuge area should be provided for pedestrians to complete the crossing in stages. Traffic control devices can be used to create gaps in traffic for pedestrians to cross.

Pedestrian Approach (Sidewalk/Curb Line)

The pedestrian approach is the area near the crossing where pedestrians wait on the side of the roadway and away from traffic until they are able to cross. It is often part of the sidewalk, if the sidewalk is adjacent to the curb line, or an extension or spur of the sidewalk that provides a path from the sidewalk to the crossing, if the sidewalk is not immediately adjacent to the curb. The pedestrian approach design should accomplish the following:

- Make pedestrians, especially those with visual impairments, aware of the crossing location. In complex pedestrian environments, wayfinding signs may be appropriate to guide people to their desired destination. Auditory and tactile cues can be provided with traffic control devices adjacent to and in the sidewalk to direct pedestrians toward the crossing.
- Direct pedestrians to the proper location to activate a pedestrian signal (if present) and wait for an appropriate time to cross. Pedestrian-activated traffic control devices should be accessible to pedestrians with visual impairments and those using wheelchairs, scooters, and walkers. The approach design should make clear where pedestrians should stand while waiting to cross.
- Encourage pedestrians to cross at the marked crossing. The approach design should discourage pe-

destrians from crossing away from the marked crossing to the extent possible. The path to the crossing should be as direct and easy to navigate as possible.

- Keep pedestrians visible to approaching drivers and oncoming vehicles visible to pedestrians. Pedestrian furniture, traffic control devices, planters, and other objects should be located so they do not block pedestrians from the site of approaching drivers. Also, on-street parking should be restricted near the crossing so that parked vehicles do not limit sight lines.
- In areas with high volumes of pedestrians, there should be sufficient space for pedestrians to queue as they wait for an appropriate time to cross. Pedestrian storage should be designed to prevent crowds of pedestrians from spilling onto the roadway. Pedestrian storage area design can be especially important at bus stops, and care should be taken so that children can wait a safe distance from the roadway while waiting for a school bus.

Midblock curb extensions are a common and effective treatment at midblock locations and have many benefits.

Motorist Approach

As noted in the discussion about locating a midblock crossing, care should be taken to avoid locations where horizontal or vertical alignment of the roadway limit drivers' sight distance, view of the pedestrian approach to the crossing, or view of the crossing itself. Consideration should be given to how trees, shrubs, poles, signs, and other objects along the roadside might limit a driver's view of the crossing. On-street parking should be prohibited near the crossing using either signs and markings or physical barriers such as a curb extension, since a pedestrian who steps out into the road between parked cars can be blocked from the view of oncoming drivers.

Signing and markings on and along the motor vehicle approach to a midblock crossing should be designed in such a way as to make drivers aware of the cross-

ing in time to notice and react to the presence of a pedestrian, and to enhance the visibility of the crossing. Advanced warning signs should indicate any special traffic control used at the pedestrian crossing. Refer to the AASHTO Guide for the Development of Bicycle Facilities for examples of midblock control treatments for shared use paths.

Traffic calming devices and other measures to prevent high vehicle speeds should be considered along routes with midblock pedestrian crossings. More than 80% of pedestrians die when struck by vehicles traveling at greater than 40 mph versus less than 10% when cars are traveling at 20 mph or slower. In addition, vehicles traveling at lower speeds require less distance to come to a complete stop when braking.

BIKE LANES

A bike lane is a portion of the roadway that has been designated for preferential or exclusive use by bicyclists by striping, signing and pavement markings (the MUTCD does not require signs). Bike lanes are intended for one-way travel, usually in the same direction as the adjacent travel lane. Bike lanes should be designed for the operation of bicycles as vehicles. They should be designed to encourage bicyclists and motorists to interact in a safe, legal manner. Bike lanes should be designated with bike lane markings, arrows, and bike lane signs.

Width

The AASHTO Guide for the Development of Bicycle Facilities provides guidance on the width of bike lanes. The following points summarize this guidance:

- under most circumstances the recommended width for bike lanes is 5 feet;
- for roadways with no curb and gutter and no on-street parking, the minimum width of a bike lane is 4 feet;
- along sections of roadway with curb and gutter, a usable width of 4 feet measured

from the longitudinal joint to the center of the bike lane line is recommended (this means that 4 feet of pavement is sufficient when coupled with the gutter pan; it is also conceivable to interpret the guidance as meaning that even narrower pavement can be used as long as a total of 5' of rideable surface is maintained);

- additional width may be desirable on higher speed roadways.

Intersections

At intersections, bike lanes must be designed to encourage legal movements at the intersection; this includes proper positioning of bicyclists and motorists. Bike lane stripes should be dashed on the approaches to intersections without right turn lanes. Where there are right-turn lanes, through bike lanes must be placed to the left of the right turn lane. Section 4.8 of the AASHTO Guide for the Development of Bicycle Facilities (2012) provides numerous graphics illustrating bike lane markings at intersections.

Bike lanes should be continuous through intersections. That is, if a bike lane is provided to the intersection, a receiving bike lane should be provided on departure side of the intersection.

Two-Stage Left Turn Queuing Box

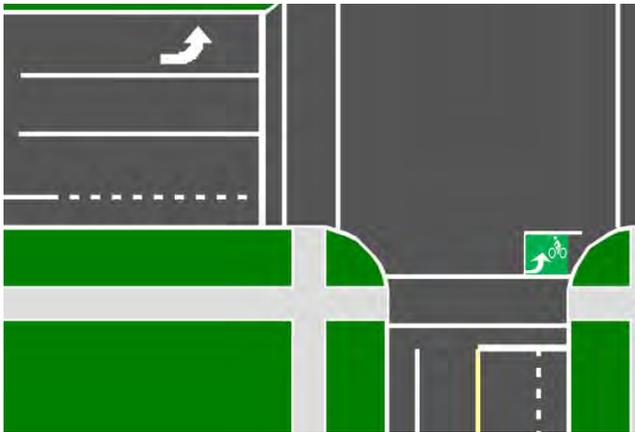
In locations where conventional left turns are prohibited or where bicyclists merging to a conventional left-turn would be inconvenient, a two-stage left turn can be utilized. To improve operational characteristics, and to avoid conflict with pedestrians and with right-turning traffic in the street into which the bicyclist is turning, a queuing area is needed. A two-stage turn queuing box is a waiting area for bicyclists to queue to turn left at an intersection by first proceeding to a position to queue at the right side of the intersection, then turning left and crossing as traffic permits, or when the traffic signal changes to green.

At locations where two-stage left turn queuing



boxes are considered, potential impacts to right turn on red motorists should be analyzed because of the prohibition of this movement by the MUTCD. In addition, bicycle demand of the facility should be considered.

The more common implementation of a bike box, in which the box is placed between the stop bar and the



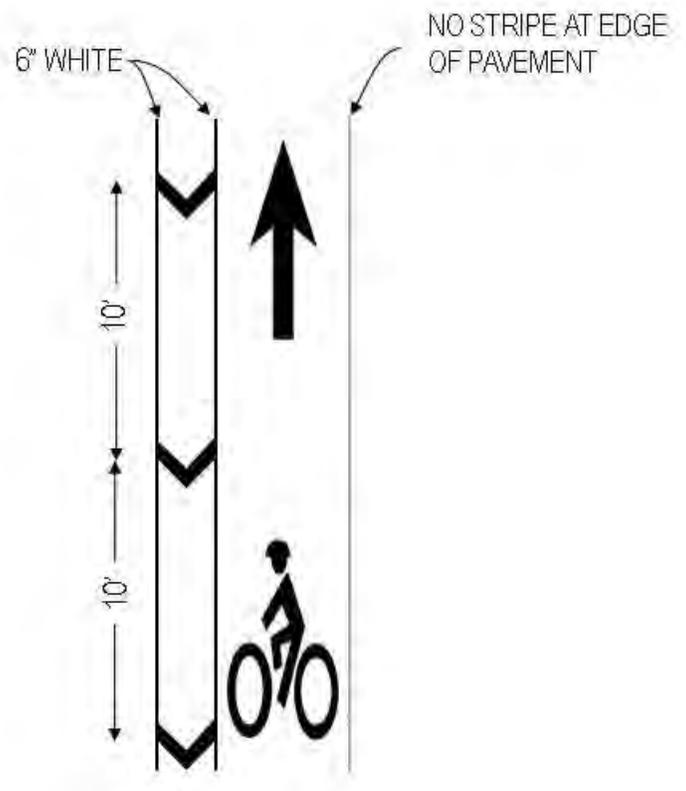
crosswalk to provide for queuing of through bicyclists, is illustrated below (source: NACTO Urban Bikeway Design Guide). It should be noted that in some states (including Indiana) some operational factors may prevent this application from operating as intended. This occurs because right turn motorists are discouraged from moving into the bike lane (separated by a solid line), while the rules of the road require that a person driving a vehicle intending to turn right at an intersection “make both the approach for a right turn and a right turn as close as practical to the right-hand curb or edge of the roadway.” (IC 9-21-8-21)



BUFFERED BIKE LANES

A buffered bike lane is a bike lane that is separated from adjacent through lanes by a striped out buffer area. In some locations it may be desirable to use less than the full space available for a bike lane. Such locations include sections of roadway where a wide bike lane might be perceived as on-street parking or another travel lane. In these locations a buffered bike lane may be considered. A buffered bike lane may also be considered where a bike lane of six or more feet is being provided to meet a minimum level of accommodation. At midblock locations the buffered bike lane is separated from the travel lanes by a chevroned buffer. The width of the buffer will vary depending upon such conditions as motor vehicle speed, percent heavy vehicles, roadway cross slopes, and desired level of accommodation of bicycles.

At intersections, buffered bike lanes must be striped to allow for right turning motorists. Typically this is done by eliminating the buffer on the approach to intersections and striping the area as one would a regular bike lane.



Facility Guide

Introduction

Brownsburg Today

Future Brownsburg

Implementation

Operations and Maintenance

Facilities Guide

SHARED LANE MARKINGS (SHARROWS)

Traffic lanes are often too narrow to be shared side by side by bicyclists and passing motorists. Where parking is present, bicyclists wishing to stay out of the way of motorists often ride too close to parked cars and risk being struck by a suddenly opened car door (being “doored”). Where no parking is present, as is the case throughout most of the Town of Brownsburg, bicyclists wishing to stay out of the way of motorists often ride too close to the roadway edge, where they run the risks of being run off the road; being clipped by motorists who do not see them off to the side or misjudge passing clearance; or encountering drainage structures, poor pavement, debris, and other hazards.

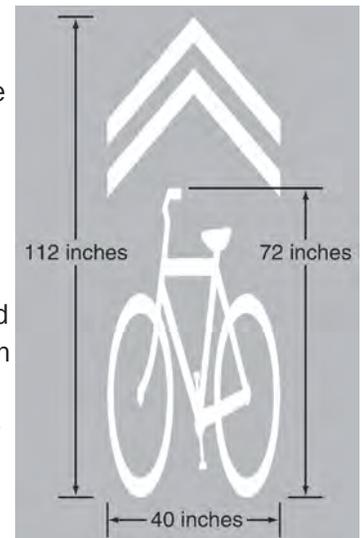
Riding further to the left avoids these problems, and is legally permitted where needed for safety. However, this practice can run counter to motorist expectations. A Shared Lane Marking (SLM) is a pavement symbol that indicates it is legal and appropriate for bicyclists to ride away from the right hand edge of the roadway, and cues motorists to pass with sufficient clearance.

Research suggests that SLMs:

1. alert motorists to the lateral location bicyclists are likely to occupy within the traveled way,
2. encourage safe passing of bicyclists by motorists,
3. assist bicyclists with lateral positioning in lanes that are too narrow for a motor vehicle and a bicycle to travel side by side within the same traffic lane,
4. reduce the incidence of wrong-way bicycling, and
5. where on-street parking exists, to align bicyclists with lateral positioning in a shared lane with on-street parallel parking to reduce the chances of a bicyclist impacting the open door of a parked vehicle.

SLMs are not to be used on shoulders or in des-

ignated bike lanes. MUTCD guidance suggests SLMs not be placed on roadways that have a speed limit above 35 mph. While this does not preclude the use of SLMs on higher speed roadways, no research is available as yet to suggest how effective they may be on such roadways.



SLMs encourage good lane positioning by bicyclists, and discourage them from riding too close to the pavement edge, curb, or parked cars. Riding away from the road edge allows bicyclists to avoid road edge hazards like drainage structures, poor pavement, and debris. It also places the bicyclist more directly in the motorist’s field of vision which, along with proper SLM treatments, encourages the safe passing of bicyclists by motorists.

Consequently, on roadways with on-street parking, the MUTCD requires that SLMs be placed with the centers of the markings at least 11 feet from the face of curb. On other roadways, the centers of the markings are required to be placed at least four feet from the edge of pavement.

SLMs are sometimes used at the ends of bike lanes or shoulders to inform motorists that bicyclists no longer have a separate space and will be sharing the main travel lane. SLMs should be installed strategically and judiciously to ensure that their value is not reduced by overuse. When used, SLMs should be placed after each intersection and then periodically on spacings not exceeding 250 feet between markings.



BIKE ROUTES

Bike routes are not an actual facility type. A bike route is a designation of a facility, or collection of facilities, that links origins and destinations that have been improved for, or are considered preferable for, bicycle travel. Bike routes include a system of route signs that provide at least the following basic information:

- Destination of the route,
- Distance to the route's destination, and
- Direction of the route.

Bike routes can be designated in two ways: General Routes and Number Routes. General Routes are links tying specific origins to specific destinations. Number Routes form a network of bike routes that do not necessarily connect specific destinations, but serve as general travel routes through an area.

General Routes connect users to destinations within a community. Typical destinations include the following:

- Attraction Areas (i.e. libraries, parks, etc.)
- Neighborhood Areas (i.e. downtown, historic neighborhoods, etc.)
- Trail Networks or trailheads (i.e. B&O Trail)

Bicycle Guide (the D11 series in the MUTCD) signs may be provided along designated bicycle routes to inform bicyclists of bicycle route direction changes and to confirm route direction, distance, and destination. The MUTCD provides a number of different types of signs that can be used to provide guidance along bike routes.

Some communities implement bike routes with unique designations (numbers or names). These routes should be designated using Bike Route signs.

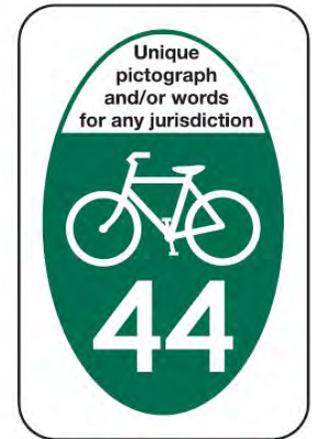
SIGNING ROADWAYS WITH PAVED SHOULDERS

The Town of Brownsburg may want to sign some roadways with paved shoulders to either guide bicyclists to destinations or to alert motorists to the presence of bicyclists.

If the subject roadway is along a designated bicycle



M1-8



M1-8a

route, then bike route guidance signs can be used to alert bicyclists to the presence of the interregional or state route.

If the Town determines it is appropriate to warn motorists of the potential presence of bicyclists along a section of roadway with paved shoulders, then special signing would be required. The "Share the Road" (W16-1P) plaque is not appropriate as bikes on the shoulder are not on the road (which is defined the same way as roadway in the MUTCD and excludes the shoulder). Thus a special supplemental plaque such as "On Shoulder" might be appropriate.

BIKE BOULEVARDS

A bike boulevard is a local street or series of contiguous street segments that have been modified to provide enhanced accommodation as a through street for bicyclists while discouraging through automobile travel.

Facility Guide

Introduction

Bike boulevards often make use of low volume, very low speed local streets. Frequently, streets are made more accommodating for bicyclists by significantly keeping motorists' speeds and volumes low. Often bike boulevards include bicycle friendly traffic calming treatments (speed pillows, mini traffic circles, chicanes with bike bypass lanes) to reduce speeds of motor vehicles along the roadway. While local motor vehicle traffic is maintained along the bike boulevard, motor vehicle traffic diverters may be installed at intersections to prevent through motor vehicle travel while having bypasses for bicyclists to continue on along the bike boulevard. Bike boulevards can be facilitated by connecting the ends of cul-de-sac roadways with shared use paths. At intersections the bicycle boulevard should be given priority over side streets.

Brownsburg Today

Future Brownsburg

Because of low motor vehicle speeds and volumes, bike lane markings are often not necessary along bike boulevards. SLMs may be used along bike boulevards. Alternatively, larger than normal bike symbols supplemented with the text BIKE BLVD have been used to designate bike boulevards.

Implementation

In some communities, bike boulevard networks begin as a "one-off" system of bikeways. When a primary arterial roadway cannot be improved to a point where most cyclists feel safe and comfortable using the facility, a parallel roadway - often one street off the main road (or "one-off") - may be improved with bicycle facilities and traffic calming features to provide an enhanced cycling street. By paralleling the main road, the "one-off" network provides access to the businesses along the arterial using a pleasant cycling roadway. A "one-off" roadway can be improved in stages: initially with signage and shared lane markings and then into a bike boulevard by instituting more substantial features such as traffic calming and diverters.

Operations and Maintenance

Since bike boulevards typically serve as bike routes, wayfinding signage should be provided.

This signage should include destination, direction, and distance (or travel time) information to attractors throughout Brownsburg. Wayfinding adds to the utility of bike boulevards because it educates cyclists and would be cyclists that there are safe, comfortable ways of accessing Brownsburg by bike.

SHARED USE PATHS

Shared use paths are facilities separated from motor vehicle traffic by an open space or barrier and either within the highway right-of-way or an independent right-of-way. They are open to many different user types and are often used by bicyclists, pedestrians, skaters, wheelchair users, joggers, and other non-motorized users. Motor vehicles are not allowed on shared use paths except for maintenance and emergency vehicles in specific circumstances. Most shared use paths are two-way facilities.

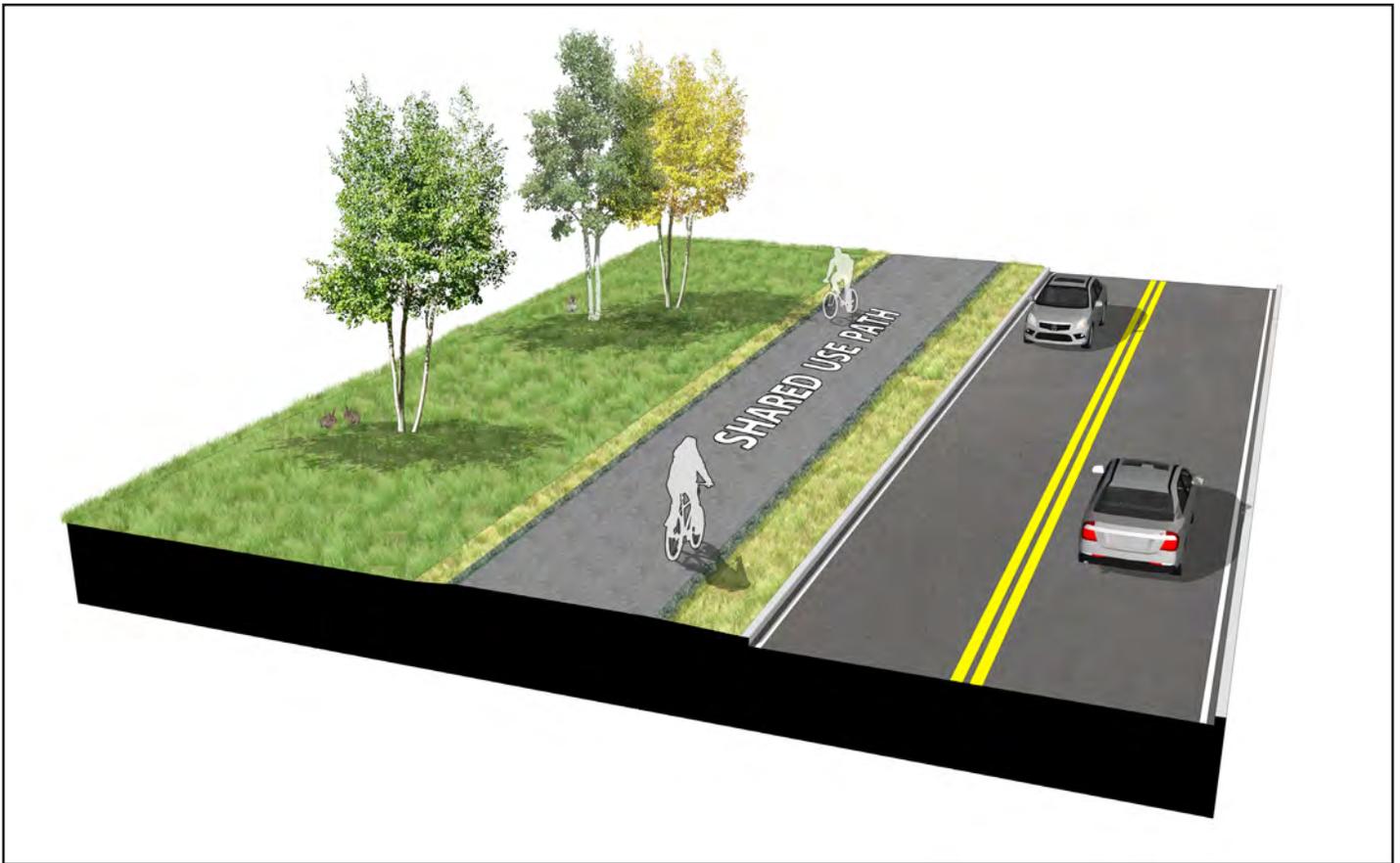
Shared use paths have design criteria for many of the same parameters as roadways. These include widths, horizontal clearances, design speed, horizontal alignment, stopping sight distance, cross slopes, grades, vertical clearance, drainage, and lighting. The AASHTO Guide for the Development of Bicycle Facilities should be consulted for design values.

The MUTCD provides the standards for signing, striping, and marking shared use paths. In most



Facilities Guide





cases, the signs and markings use on shared use paths are smaller versions of those used on roadways.

Many shared use paths are separated from the roadway network. Consequently, street name signs should be provided at intersecting roadways to help users orient themselves to the roadway network. Wayfinding signs should be used on paths and to potential destinations along the path such as locations where users can access water fountains and restrooms. At trailheads and rest areas, the distance and direction to the next trail head should be posted.

Most shared use path projects will be paved. Asphalt and Portland cement concrete are the two most common surfaces for shared use paths. In areas where path use is expected to be primarily recreational, unpaved surfaces may be acceptable for shared use paths. Materials should be chosen to ensure the ADA requirements for a firm, stable, slip resistant surface

are met. Even when meeting ADA criteria, some users such as in-line skaters, kick scooters, and skateboarders may be unable to use unpaved shared use paths.

The geometric and operational design of shared use paths is quite similar to that of roadways. However, additional considerations such as aesthetics, rest areas, amenities, and personal security are also important ensure the maximum number of potential users is encouraged to use the path for both utilitarian and recreational purposes.

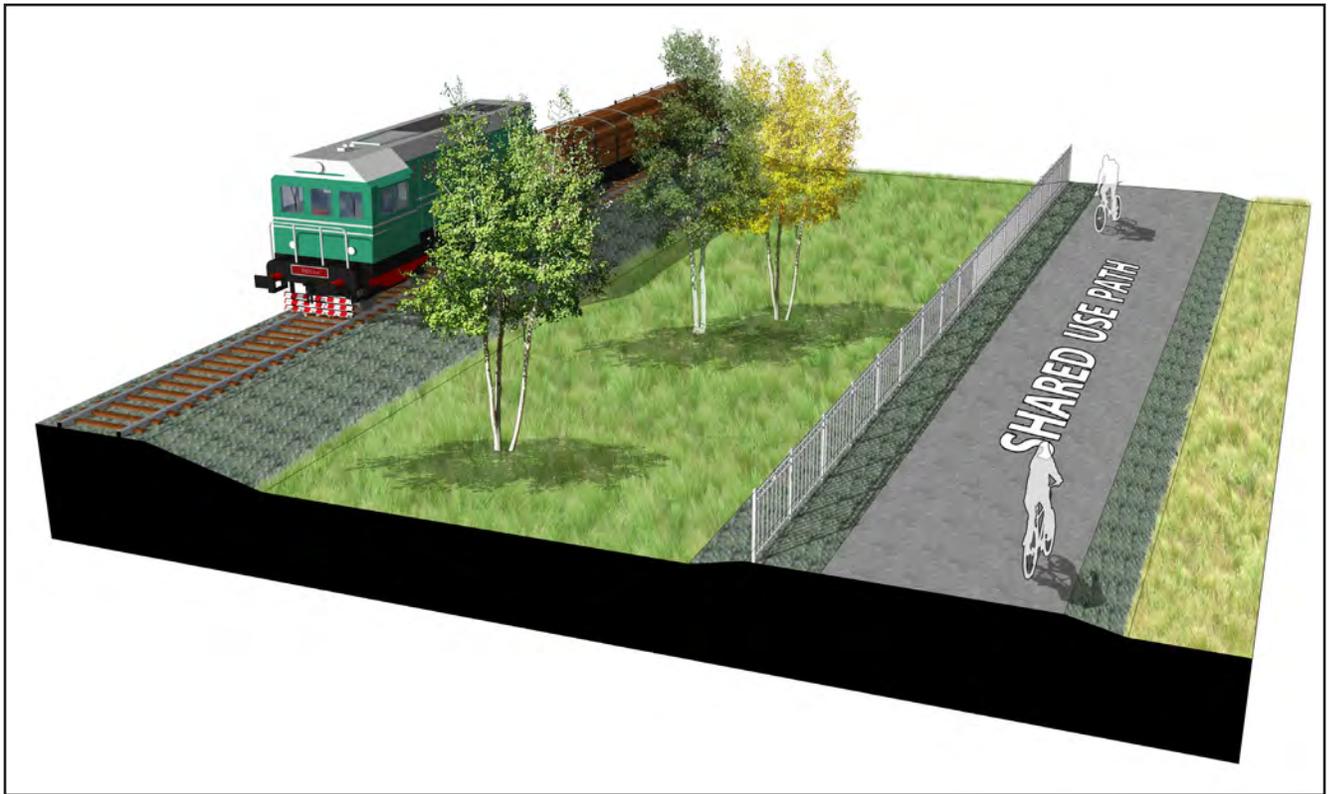
Sometimes local resistance to implementing shared use paths and other trail facilities exists because of perceived potential negative impacts to neighboring communities, usually in terms of property values and crime/vandalism. A valuable resource in discussions of these matters is a summary of national research conducted for a state department of transportation.

Facility Guide

Introduction

Brownsburg
Today

Future
Brownsburg



Implementation

Operations and
Maintenance

Facilities Guide

The studies cited collectively suggest that negative impacts are not an issue in either regard, and in fact suggests that property values frequently increase following the construction of shared use paths while crime rates are sometimes found to decrease.

Shared use paths through floodplains require special attention to design details. While the cross section and clearance requirements are the same as other trails the construction materials should be carefully chosen and installed to endure inundation by flood waters. This means special base materials should be used that are resistant to swelling and erosion. In addition, concrete is often selected a surface material in flood plains. In addition, adequate cross drains need to be installed to ensure water does not pond on the upstream side of the path.

Many shared use paths have been built adjacent to active rail lines. This requires close coordination

with the railroad. According to America's Rails with Trails (Rails-to-Trails Conservancy 2013), many shared use path managers require a 25 to 30-foot minimum setback from the trail to the railroad. However, this may not be an actual requirement; nearly 60 percent of shared use paths next to railroads were less than 30 feet from the tracks and more than 40 percent were less than 20 feet from the tracks. A physical barrier should be provided between the shared use paths and the railroad; chain link fences are the most commonly used type of barrier.

Amenities along Shared Use Path

Amenities should be provided along shared use paths to make their use more attractive for transportation use. Any long shared use paths or path network needs rest stops. These should be at intermediate points, scenic lookouts, or near amenities such as restaurants, convenience stores, picnic areas, or parking lots. Rest areas should be away from the path so path users can pull off the



path and not block traffic. At a minimum, they should include benches, shade, bike parking, and a trash receptacle. Bike parking racks should support a bike frame in two places and allow for locking of front and rear wheels. Some rest stops should include restrooms and potable water. Additional amenities which should be included include interpretive signs and informational kiosks. Bike repair stations including free air (presta and schrader valve compatible) and vending machines that dispense patch kits or tubes can be included at some trailhead facilities.



Bike Repair Station - Seattle



Trailhead With Amenities

Appendix

Brownsburg Active Transportation Plan A Bicycle and Pedestrian Master Plan

August, 2014



Community Survey

INTRODUCTION

An online survey was conducted in the Fall of 2013. The community survey was advertised on the Parks Department website, the project website and through postcards that were handed out at community events. The survey received over 100 responses. The complete results from the survey are shown in the following pages. A summary of the responses includes:

- over 80% responded in favor of creating more bicycling and pedestrian facilities and gave this task a mark of high importance
 - over 90% said they would bike and walk more if facilities were closer to their homes
 - most respondents bicycle and walk for recreation and not for commuting
 - the majority of respondents would like to connect neighborhoods with schools, the library, and to the center of downtown
 - most respondents prefer multi-use trails but there was also a strong response rate for bike lanes
 - Over 90% of respondents would utilize a complete system for recreation and exercise
- A lack of facilities close to neighborhoods was identified as the key factor discouraging bicycle and pedestrian use.
 - The respondents were fairly evenly divided between male and female.
 - Although Brown Township had the lowest number of respondents the location of respondents was fairly evenly distributed throughout the study area including Lincoln Township and incorporated areas of Brownsburg.

Respondents reported that they would like to see a good mix of amenities included with the design of the bike and pedestrian system including lighting, restrooms, benches, signage and trail maps.

BROWNSBURG ACTIVE TRANSPORTATION PLAN

An active transportation plan for a bicycle and pedestrian network to enhance the community's connections to local destinations, increase the level of bicycle friendliness, and realize the associated health, safety and quality-of-life benefits

WE WANT TO HEAR FROM YOU!

Please take our community survey to share your thoughts.

www.surveymonkey.com/s/BrownsburgActiveTransportationPlan

Additional project information can be found at:

www.reasite.com/live-sites/brownsburg-active-transportation-plan
www.brownsburg.org/parks/



TOWN OF
Brownsburg



Brownsburg
PARKS
Naturally Exciting

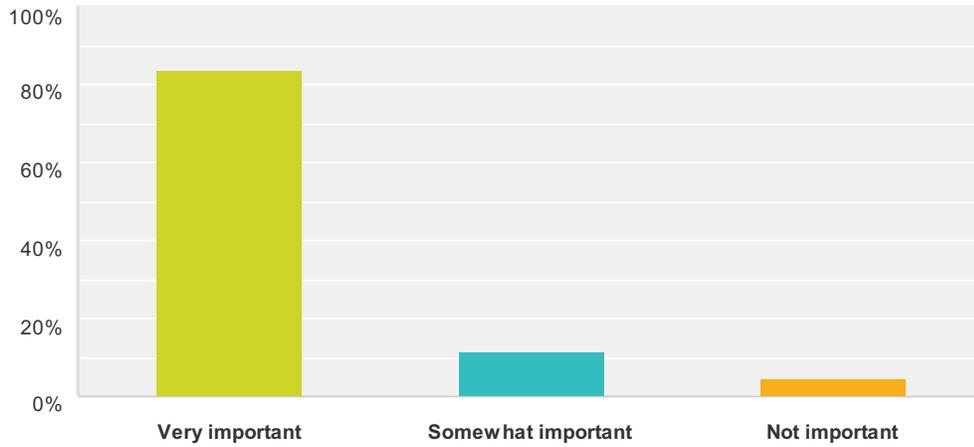


BUNDELL & ASSOCIATES, LLC
LAND PLANNING • ARCHITECTURE • INTERIOR ARCHITECTURE

1001 S. W. 11th St., Suite 1000
Brownsburg, IN 46101
Tel: 317.833.1111 Fax: 317.833.1111 www.bundell.com

Q1 How important to you is the goal of creating more bicycle and pedestrian facilities in Brownsburg?

Answered: 110 Skipped: 1

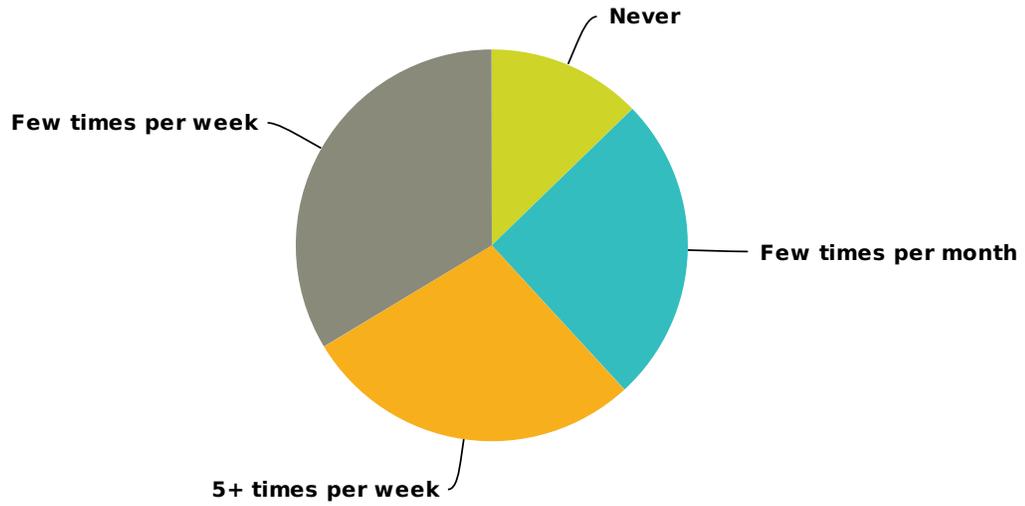


Answer Choices	Responses	
Very important	83.64%	92
Somewhat important	11.82%	13
Not important	4.55%	5
Total		110

Community Survey

Q2 How often do you walk now (select one)?

Answered: 110 Skipped: 1

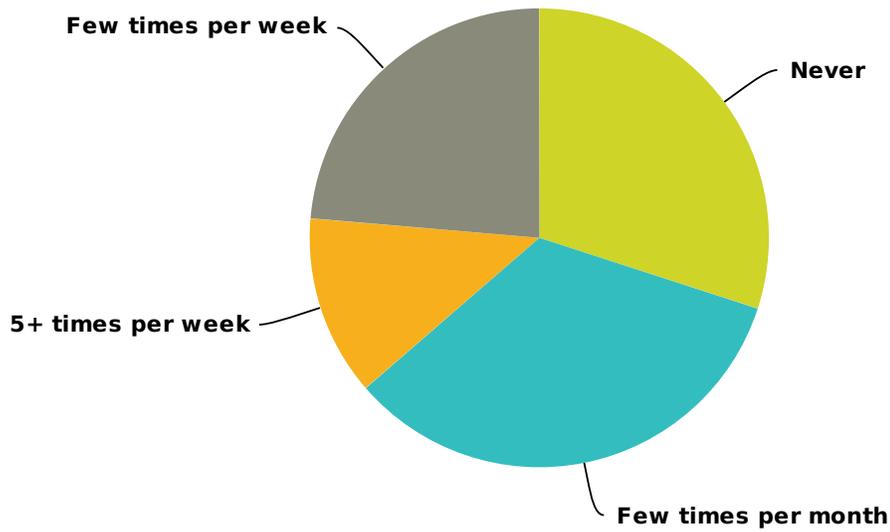


Answer Choices	Responses	
Never	12.73%	14
Few times per month	25.45%	28
5+ times per week	28.18%	31
Few times per week	33.64%	37
Total		110



Q3 How often do you bike now (select one)?

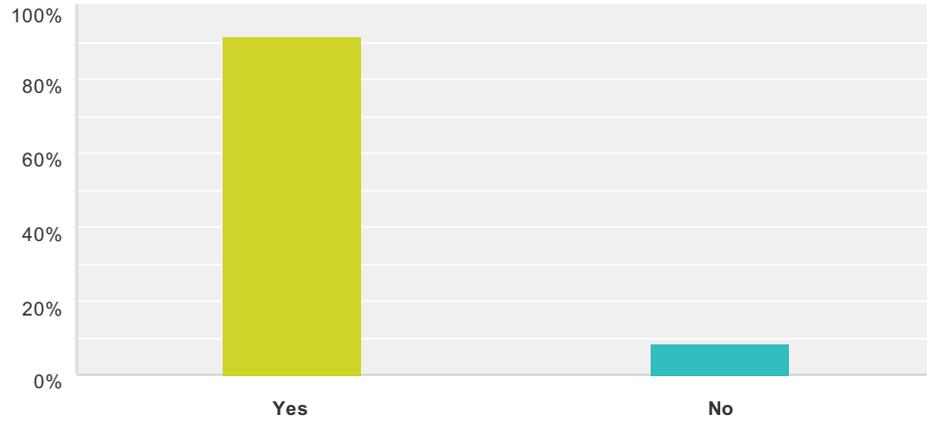
Answered: 110 Skipped: 1



Answer Choices	Responses	
Never	30.00%	33
Few times per month	33.64%	37
5+ times per week	12.73%	14
Few times per week	23.64%	26
Total		110

Q4 Would you walk/bike/run more often if you were closer to bike and pedestrian facilities (sidewalks, shared-use trails, bike lanes)?

Answered: 109 Skipped: 2

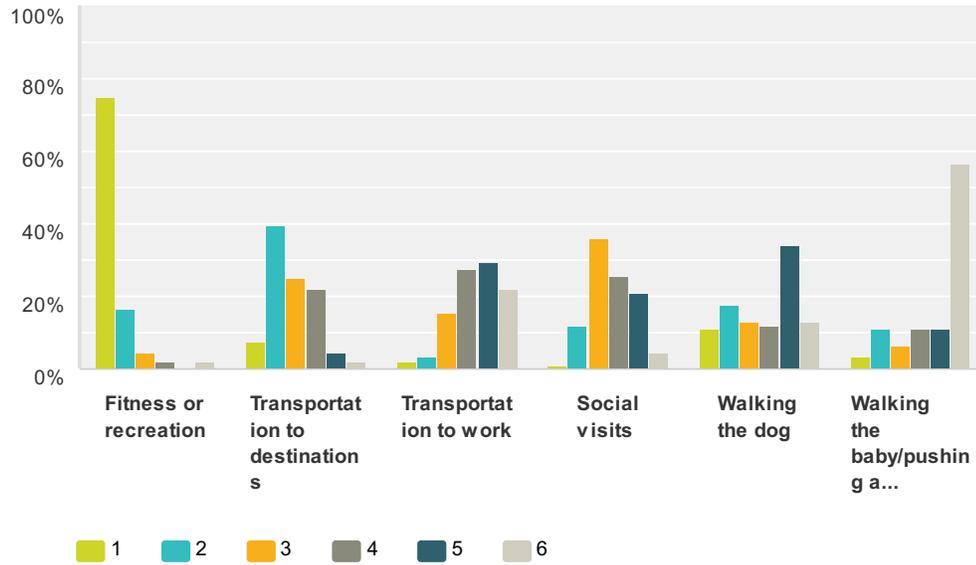


Answer Choices	Responses	
Yes	91.74%	100
No	8.26%	9
Total		109



Q5 For what purposes do you walk/bike most now and/or would you want to use facilities for in the future (Rank Top 3)?

Answered: 109 Skipped: 2

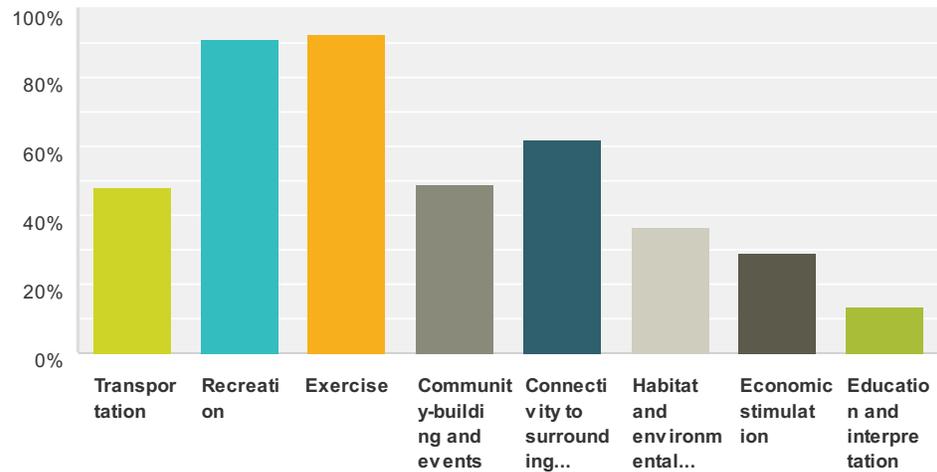


	1	2	3	4	5	6	Total	Average Ranking
Fitness or recreation	75.23% 82	16.51% 18	4.59% 5	1.83% 2	0.00% 0	1.83% 2	109	5.60
Transportation to destinations	7.34% 8	39.45% 43	24.77% 27	22.02% 24	4.59% 5	1.83% 2	109	4.17
Transportation to work	1.83% 2	3.67% 4	15.60% 17	27.52% 30	29.36% 32	22.02% 24	109	2.55
Social visits	0.92% 1	11.93% 13	35.78% 39	25.69% 28	21.10% 23	4.59% 5	109	3.32
Walking the dog	11.01% 12	17.43% 19	12.84% 14	11.93% 13	33.94% 37	12.84% 14	109	3.21
Walking the baby/pushing a stroller	3.70% 4	11.11% 12	6.48% 7	11.11% 12	11.11% 12	56.48% 61	108	2.16

Community Survey

Q6 What would be the most important benefits and uses of a complete system of shared-use trails, sidewalks and bike lanes? Select all that apply.

Answered: 110 Skipped: 1

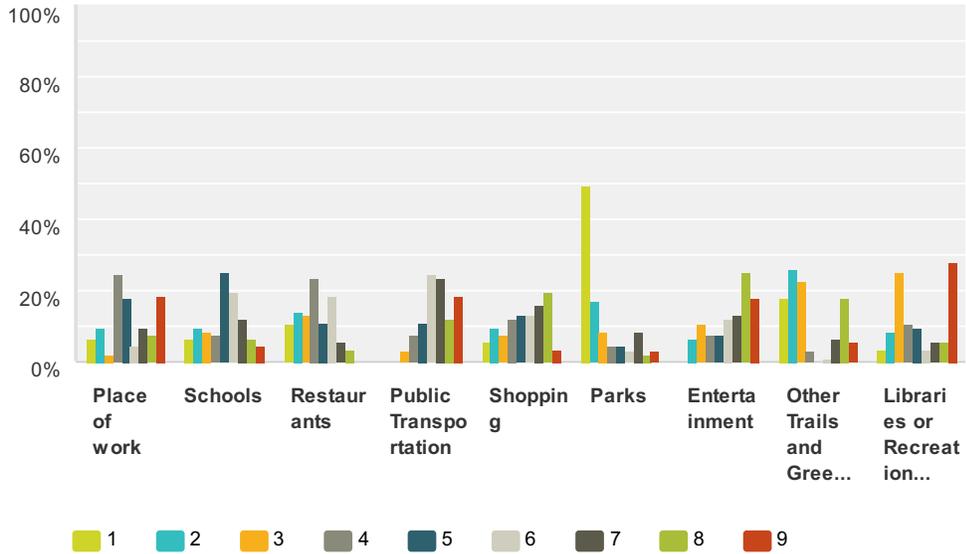


Answer Choices	Responses
Transportation	48.18% 53
Recreation	90.91% 100
Exercise	92.73% 102
Community-building and events	49.09% 54
Connectivity to surrounding areas	61.82% 68
Habitat and environmental improvements	36.36% 40
Economic stimulation	29.09% 32
Education and interpretation	13.64% 15
Total Respondents: 110	



Q7 What destinations would you most like to get to by trail? Rank Top 3.

Answered: 107 Skipped: 4



	1	2	3	4	5	6	7	8	9	Total	Average Ranking
Place of work	6.54% 7	9.35% 10	1.87% 2	24.30% 26	17.76% 19	4.67% 5	9.35% 10	7.48% 8	18.69% 20	107	4.62
Schools	6.54% 7	9.35% 10	8.41% 9	7.48% 8	25.23% 27	19.63% 21	12.15% 13	6.54% 7	4.67% 5	107	4.96
Restaurants	10.28% 11	14.02% 15	13.08% 14	23.36% 25	11.21% 12	18.69% 20	5.61% 6	3.74% 4	0.00% 0	107	5.92
Public Transportation	0.00% 0	0.00% 0	2.80% 3	7.48% 8	11.21% 12	24.30% 26	23.36% 25	12.15% 13	18.69% 20	107	3.31
Shopping	5.61% 6	9.35% 10	7.48% 8	12.15% 13	13.08% 14	13.08% 14	15.89% 17	19.63% 21	3.74% 4	107	4.59
Parks	49.53% 53	16.82% 18	8.41% 9	4.67% 5	4.67% 5	2.80% 3	8.41% 9	1.87% 2	2.80% 3	107	7.34
Entertainment	0.00% 0	6.54% 7	10.28% 11	7.48% 8	7.48% 8	12.15% 13	13.08% 14	25.23% 27	17.76% 19	107	3.63
Other Trails and Greenways	17.76% 19	26.17% 28	22.43% 24	2.80% 3	0.00% 0	0.93% 1	6.54% 7	17.76% 19	5.61% 6	107	6.07
Libraries or Recreation Centers	3.74% 4	8.41% 9	25.23% 27	10.28% 11	9.35% 10	3.74% 4	5.61% 6	5.61% 6	28.04% 30	107	4.57

Community Survey

Q8 Are there other places that you feel are important to connect to through sidewalks, shared-use trails and bike lanes?

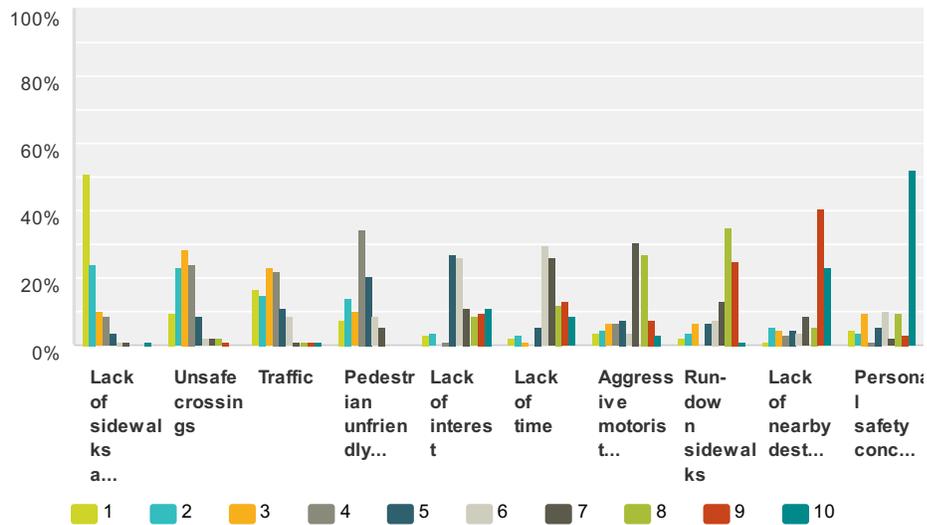
Answered: 23 Skipped: 88

#	Responses	Date
1	Connect Brownsburg, Avon, and Plainfield.	3/11/2014 10:36 AM
2	the above list covers it all I think	3/8/2014 10:44 AM
3	Center of Brownsburg. I'd love to be able to bike safely with elementary and middle school age children to town hall/ farmers market.	3/6/2014 6:06 PM
4	Neighborhoods	3/6/2014 8:49 AM
5	Indianapolis Green Way Trails	3/3/2014 2:55 PM
6	No. All are already listed.	3/3/2014 2:53 PM
7	An aside: Expense is a big factor in bringing this dream to fruition, b/c in my neighborhood, we have sidewalks in need of repair, and our street is in dire need also due to the separation of sections that are widening ever more and more!	3/3/2014 2:14 PM
8	I would love to be able to use my bike more to get groceries or to go visit people rather than using my car.	3/3/2014 2:10 PM
9	No	3/3/2014 1:24 PM
10	No.	3/3/2014 12:55 PM
11	Having a good walk/bike trail that connects arbuckle to the library, the schools and williams park would be really nice and create a safe way for families to enjoy the outdoors and have access to brownsburg's fantastic library too.	3/3/2014 12:52 PM
12	Town Hall	3/3/2014 12:51 PM
13	Adjoining neighborhoods, especially so children can safely navigate through them.	3/3/2014 12:30 PM
14	Trails need to connect to destinations. As a former resident in Broad Ripple, one of the most appealing options of the Monon Trail was its connectivity to shopping, restaurants, and parks. Brownsburg is well situated to capitalize on on a similar venture!	2/27/2014 9:36 AM
15	Our neighborhood (Arbor Springs) is only couple of minutes away from a lot of shopping but there are no sidewalks to connect us to it so we always have to drive. Also there are no connections to any other trails or close by areas.	2/27/2014 9:26 AM
16	None	2/27/2014 9:11 AM
17	It's frustrating because the current trails in the Brownsburg area are disconnected from each other. It's dangerous to ride my bike on 267.	2/26/2014 12:43 PM
18	nature, creeks, friends	2/26/2014 12:08 PM
19	between subdivisions	2/25/2014 12:30 PM
20	between neighborhoods--a safe path for children to ride/walk	2/25/2014 12:11 PM
21	Other neighborhood communities	12/22/2013 8:22 AM
22	churches, government buildings	12/20/2013 10:21 AM
23	no	12/19/2013 5:01 PM



Q9 What do you think are the biggest factors that discourage trail, sidewalk, or bicycle facility use? Rank Top 3.

Answered: 108 Skipped: 3

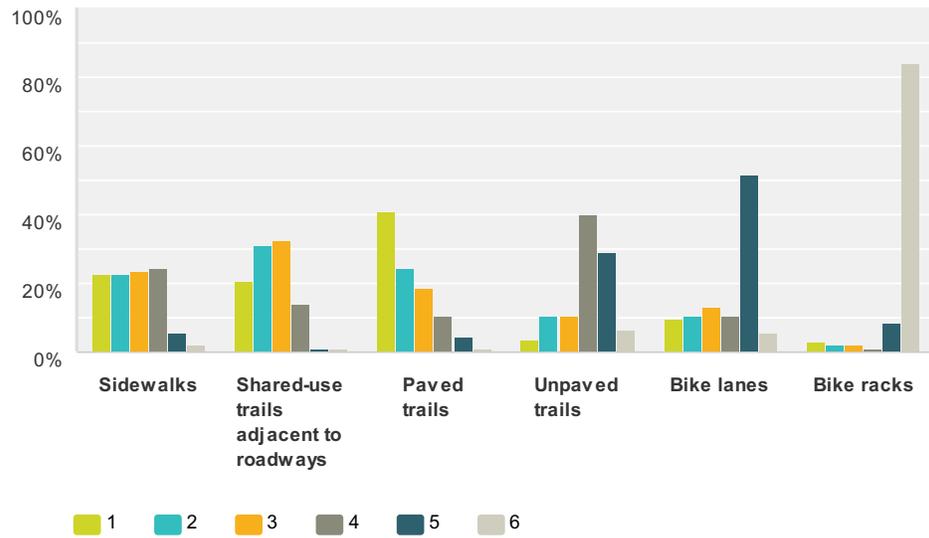


	1	2	3	4	5	6	7	8	9	10	Total	Average Ranking
Lack of sidewalks and trails	50.93% 55	24.07% 26	10.19% 11	8.33% 9	3.70% 4	0.93% 1	0.93% 1	0.00% 0	0.00% 0	0.93% 1	108	8.97
Unsafe crossings	9.26% 10	23.15% 25	28.70% 31	24.07% 26	8.33% 9	1.85% 2	1.85% 2	1.85% 2	0.93% 2	0.00% 1	108	7.73
Traffic	16.67% 18	14.81% 16	23.15% 25	22.22% 24	11.11% 12	8.33% 9	0.93% 1	0.93% 1	0.93% 1	0.93% 1	108	7.58
Pedestrian unfriendly streets	7.41% 8	13.89% 15	10.19% 11	34.26% 37	20.37% 22	8.33% 9	5.56% 6	0.00% 0	0.00% 0	0.00% 0	108	7.06
Lack of interest	2.78% 3	3.70% 4	0.00% 0	0.93% 1	26.85% 29	25.93% 28	11.11% 12	8.33% 9	9.26% 10	11.11% 12	108	4.57
Lack of time	1.85% 2	2.78% 3	0.93% 1	0.00% 0	5.56% 6	29.63% 32	25.93% 28	12.04% 13	12.96% 14	8.33% 9	108	4.06
Aggressive motorist behavior	3.70% 4	4.63% 5	6.48% 7	6.48% 7	7.41% 8	3.70% 4	30.56% 33	26.85% 29	7.41% 8	2.78% 3	108	4.59
Run-down sidewalks	1.85% 2	3.70% 4	6.48% 7	0.00% 0	6.48% 7	7.41% 8	12.96% 14	35.19% 38	25.00% 27	0.93% 1	108	3.88
Lack of nearby destinations	0.93% 1	5.56% 6	4.63% 5	2.78% 3	4.63% 5	3.70% 4	8.33% 9	5.56% 6	40.74% 44	23.15% 25	108	3.17
Personal safety concerns	4.63% 5	3.70% 4	9.26% 10	0.93% 1	5.56% 6	10.19% 11	1.85% 2	9.26% 10	2.78% 3	51.85% 56	108	3.37

Community Survey

Q10 What are your most desired bicycle and pedestrian facilities? Please select top 3.

Answered: 107 Skipped: 4

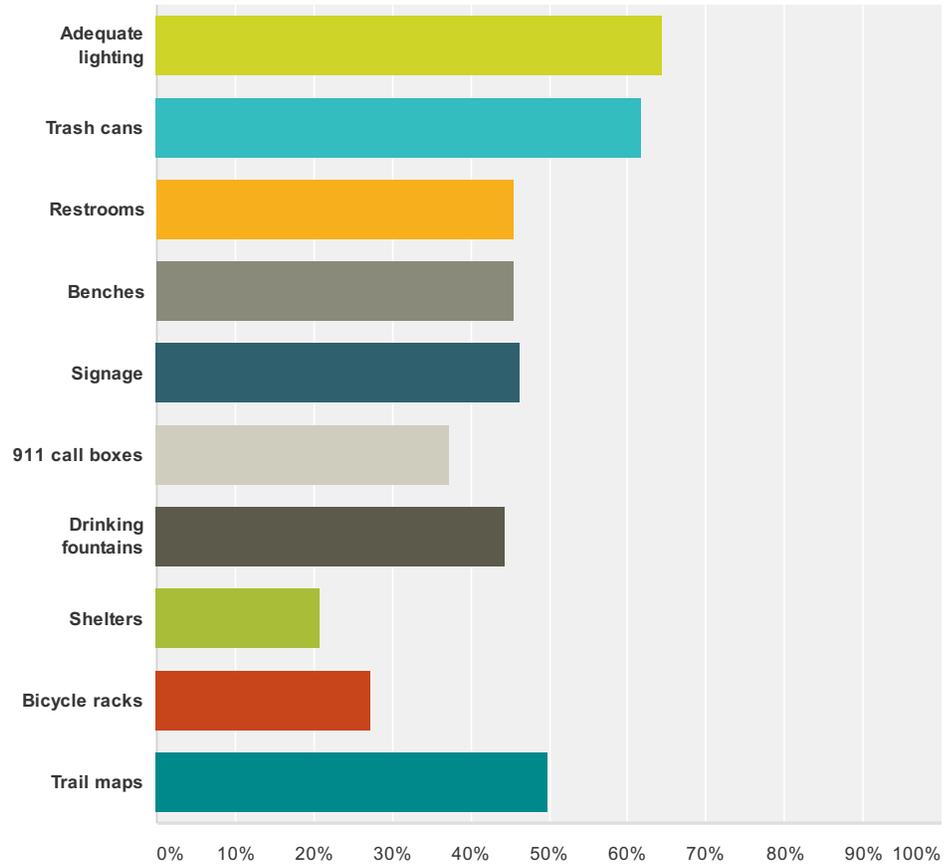


	1	2	3	4	5	6	Total	Average Ranking
Sidewalks	22.43% 24	22.43% 24	23.36% 25	24.30% 26	5.61% 6	1.87% 2	107	4.26
Shared-use trails adjacent to roadways	20.56% 22	30.84% 33	32.71% 35	14.02% 15	0.93% 1	0.93% 1	107	4.53
Paved trails	41.12% 44	24.30% 26	18.69% 20	10.28% 11	4.67% 5	0.93% 1	107	4.84
Unpaved trails	3.74% 4	10.28% 11	10.28% 11	40.19% 43	28.97% 31	6.54% 7	107	3.00
Bike lanes	9.35% 10	10.28% 11	13.08% 14	10.28% 11	51.40% 55	5.61% 6	107	2.99
Bike racks	2.80% 3	1.87% 2	1.87% 2	0.93% 1	8.41% 9	84.11% 90	107	1.37



Q11 What amenities are most important for trails? Select all that apply.

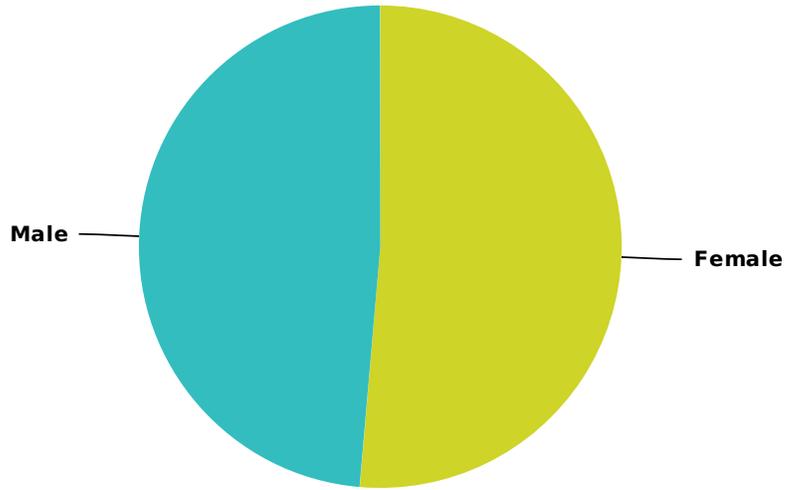
Answered: 110 Skipped: 1



Answer Choices	Responses
Adequate lighting	64.55% 71
Trash cans	61.82% 68
Restrooms	45.45% 50
Benches	45.45% 50
Signage	46.36% 51
911 call boxes	37.27% 41
Drinking fountains	44.55% 49
Shelters	20.91% 23
Bicycle racks	27.27% 30
Trail maps	50.00% 55

Q12 What is your gender?

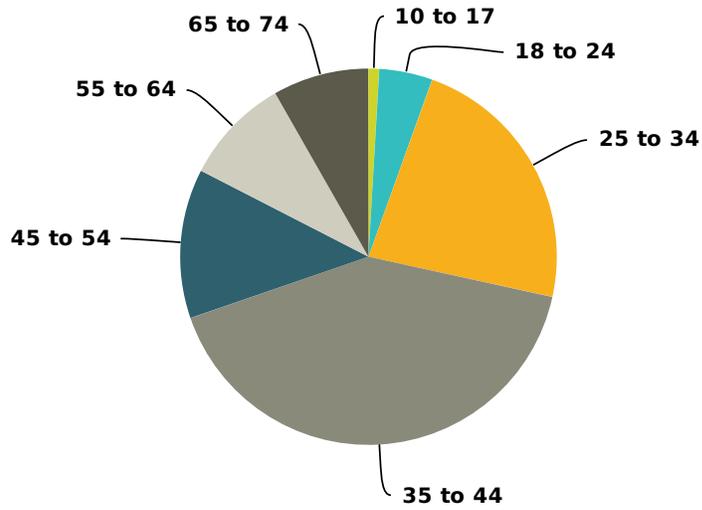
Answered: 109 Skipped: 2



Answer Choices	Responses	
Female	51.38%	56
Male	48.62%	53
Total		109

Q13 What is your age?

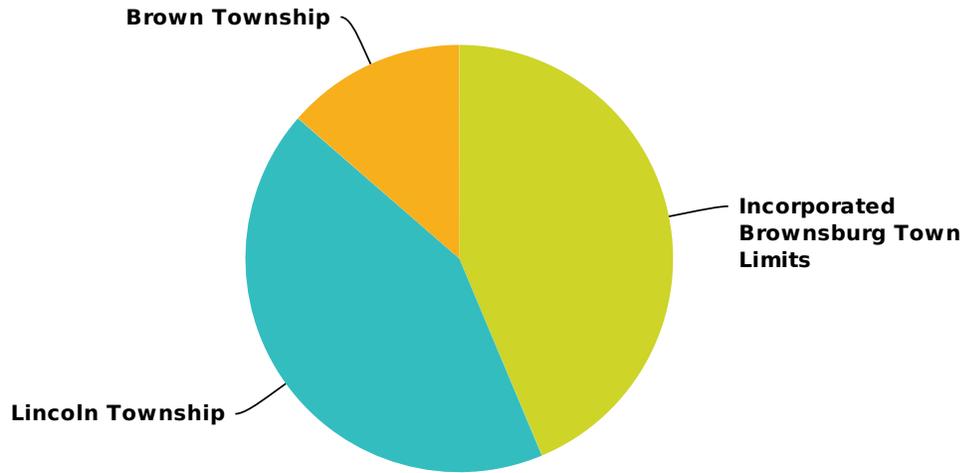
Answered: 109 Skipped: 2



Answer Choices	Responses	
1 to 9	0.00%	0
10 to 17	0.92%	1
18 to 24	4.59%	5
25 to 34	22.94%	25
35 to 44	41.28%	45
45 to 54	12.84%	14
55 to 64	9.17%	10
65 to 74	8.26%	9
75 or older	0.00%	0
Total		109

Q14 Where do you live?

Answered: 103 Skipped: 8



Answer Choices	Responses	
Incorporated Brownsburg Town Limits	43.69%	45
Lincoln Township	42.72%	44
Brown Township	13.59%	14
Total		103



Q15 Are there specific issues or problems with sidewalks and trails within your neighborhood?

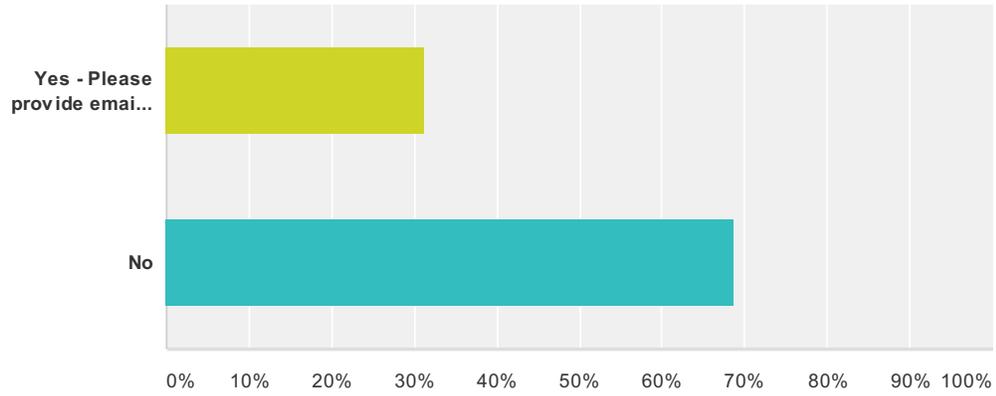
Answered: 52 Skipped: 59

#	Responses	Date
1	none	3/11/2014 6:17 PM
2	No but don' connect with anything outside the neighborhood	3/6/2014 12:18 PM
3	No	3/6/2014 8:49 AM
4	No	3/6/2014 7:10 AM
5	Some sidewalks are rough and some people block them with their vehicles.	3/4/2014 9:18 PM
6	No sidewalks outside of neighborhood	3/4/2014 5:53 PM
7	There are several uneven sidewalks in my area or town.	3/3/2014 10:24 PM
8	Some are in complete. People forced to walk in road	3/3/2014 8:49 PM
9	Yes, some are near impossible to use with stroller or wheelchair.	3/3/2014 7:36 PM
10	No sidewalks	3/3/2014 6:29 PM
11	They don't connect to anything beyond the edge of the neighborhood.	3/3/2014 5:35 PM
12	We live close to the B & O trail and I walk our dogs on it nearly every day. I wish there were receptacles for disposing of the dog waste. I do pick up after my dogs but I would rather not have to carry it with me the whole time.	3/3/2014 4:57 PM
13	No	3/3/2014 3:34 PM
14	Not enough room on the roadways for bikes and heavy traffic limit safe riding.	3/3/2014 2:55 PM
15	No	3/3/2014 2:53 PM
16	YES ALREADY MENTIONED!	3/3/2014 2:14 PM
17	Yes many of the sidewalks are broken or not connected to other neighborhoods. I walk my three dogs daily and appreciate a good sidewalk. I also love to bike to eagle creek.	3/3/2014 2:10 PM
18	As a road biker it is dangerous sometimes to travel on the road because of the lack of road care (pot holes, and dirt)	3/3/2014 1:57 PM
19	No sidewalks on 136 west of town.	3/3/2014 1:29 PM
20	People continue to walk on the side of 56th St that does not have the sidewalk and even in the road - so unsafe. Need sidewalks on 56th between Grant and N. Green St.	3/3/2014 1:10 PM
21	We do not have sidewalks in our neighborhood. Nor are there bike lanes or sidewalks on Northfield near 136.	3/3/2014 12:55 PM
22	Our neighborhood is fine, just don't leave the neighborhood... sidewalks end, or continue on the other side of the street. Who thought that was a good idea?	3/3/2014 12:52 PM
23	There are none. We cannot safely cross 267 to access grocery or restaurant.	3/3/2014 12:51 PM
24	Not in my personal neighborhood as I live in Greenstreet Village, which has amazing trails and sidewalks and connectivity with Greenstreet shopping center, but, nothing connects to it so we are stuck in an oasis in the middle of a desert... I used to live off of the Monon and would pay a yearly membership to a trail system like that if it were available (that's how much I'd love to see it happen).	3/3/2014 12:39 PM
25	lack of connectivity	3/3/2014 12:12 PM

Community Survey

Q16 15. Would you be interested in serving on a Trail Advisory Committee?

Answered: 96 Skipped: 15



Answer Choices	Responses
Yes - Please provide email address for follow-up or email ppamin@brownsburgparks.com	31.25% 30
No	68.75% 66
Total	96



THIS PAGE LEFT BLANK

Existing Document Review

INTRODUCTION

A review of existing documents was conducted to gather information and recommendations from previous work to be incorporated, where feasible, into the Active Transportation Plan. Information gathered from the previous studies will be analyzed for application to the Town considering current and anticipated future conditions. There are a number of existing studies that have been completed, or are in the process of being completed, for the study area.

Brownsburg Greenways Master Plan (2008)

The Brownsburg Greenways Master Plan was prepared to provide a conceptual framework for a system of greenways to assist the town in future planning. The purpose of the plan was to identify and plan linear corridors connecting the community's resources and the natural environment to the community.

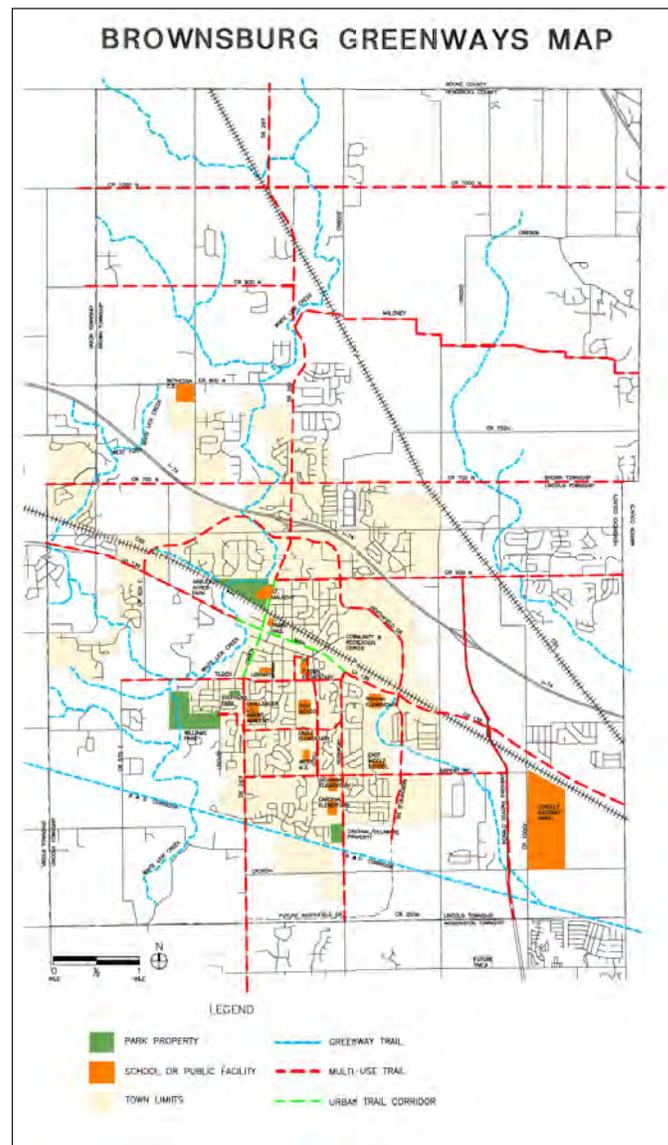
This document includes inventory and analysis of existing corridors, design considerations, recommendations, and a master plan map. Recommendations for greenway routes included 12' multi-use paths; greenway corridors along railroad corridors, the interurban corridor, White Lick Creek, and School Branch Creek; an urban pedestrian corridor within the downtown historic district; and sidewalks. The complete system is depicted on the Greenways Map.

Town of Brownsburg Comprehensive Plan (2012)

The Comprehensive Plan was adopted in 2012. The vision for the town included increased growth in the areas surrounding the downtown with revitalization of the downtown. The vision also foresees a balanced network of parks and trails creating the assets needed to attract people to the town while maintaining its home-town feel and quality of life.

Goals and objectives from the Comprehensive Plan directly related to the Active Transportation Plan include:

- Develop parks system to include both



Proposed Route Map - Greenways Master Plan 2008

neighborhood and community parks

- Strengthen links to Eagle Creek Park by establishing connecting trails along Maloney Road and 62nd Street (CR 700 N) and 56th Street (CR 600 N)
- Integrate waterways and related natural areas as green corridors travelling within and between developed areas
- Expand the trail network throughout the

community to better connect the Town's parks and the neighborhoods they serve

- Develop the trail corridors along White Lick Creek, South Branch Creek, and their tributaries
- Create a balanced transportation system that meets the needs of all modes of travel including vehicles, pedestrians and bicyclist
- Promote a complete streets approach to roadway design that accommodates all users
- Continue to develop recommendations from the Greenways Master Plan, Brownsburg Trail Study, and Trail Funding strategies
- Key traffic generators (destination points) identified include
 - o Arbuckle Acres Park
 - o Stephens Park
 - o Veterans Memorial Park
 - o Williams Park
 - o Cardinal Property (Future Park)
 - o Brownsburg Station
 - o Walmart Supercenter
 - o Brownsburg Square
 - o Green Street Station
 - o Brownsburg Shopping Center
 - o Marsh Shopping Center
 - o Downtown
 - o Club Roland Manor
 - o Brownsburg Meadows
 - o Future School Campus
 - o US Post Office
 - o Brownsburg Public Library
 - o Challenger Learning Center
 - o Brownsburg High School
 - o Brownsburg Health Care Center
 - o Hendricks Regional Health Center
 - o Indiana Orthopedic Hospital West

Brownsburg Trail Study

The Trail Study was prepared by the Town following the Greenways Master Plan. This study outlined a seven-phase construction plan for a trail system which would connect various parks, destination points, the library, and the B&O Greenway Trail.

Town of Brownsburg 2020 Thoroughfare Plan Update

The Thoroughfare Plan was prepared in November of 2009 and included all of Lincoln and Brown Township along with a portion of Middle Township. The Vision and Goals of the plan are “to possess a safe and efficient transportation network that promotes connectivity for both motorized and non-motorized transportation modes while supporting a strong, healthy economy.”

There were five goals guiding the planning process:

- Improve safety for motorized and non-motorized traffic
- Improve capacity and congestion
- Improve connectivity
- Promote motorized and non-motorized modes
- Support a strong and healthy economy

Recommendations from the Thoroughfare plan include:

- Implementing the recommendations from the MPO Bike and Pedestrian Plan including multi-use paths along streets, the B&O Rail Trail, and along White Lick Creek
- Pedestrian corridors along main routes through downtown including US136 and SR 267
- Create safer conditions within school zones
- Enhance crosswalks in areas with high pedestrian counts
- Ensure that all new or improved roads include sidewalks and/or bike paths
- Establish a maintenance plan for sidewalks and bike paths
- Promote slower traffic speeds within downtown and incorporate “complete streets” design within this area
- Provide for safe pedestrian and bicycle facilities around and between schools to encourage increased pedestrian activity
- Provide pedestrian facilities for a 10 minute walkable catchment area around the planned Mass Transit Hub
- Incorporate multi-modal facilities into the Ronald Reagan Parkway

Existing Document Review

The Thoroughfare Plan included an intensive inventory phase including obtaining existing traffic counts from INDOT (2008), Hendricks County (2006,2008), special study at US136 and O'Dell Street (2007), additional counts from Schneider Corporation (2008). The study includes a Traffic Volumes Map showing the average daily volumes for 2008. In addition the study included projected volumes, capacity analysis and capacity deficiencies utilizing year 2020 projections.

Potential projects identified in the Thoroughfare Plan include:

- Ronald Reagan Parkway extension
- Northfield Drive extension
- East Northfield Drive widening
- West Northfield Drive widening
- I-74 Bridge

Top pedestrian/bicycle priorities identified during the public input process include:

- Connections for 136 from 267 to O'Dell; O'Dell from Tilden to the airport; Airport from O'Dell to Hornaday Road
- Facilities surrounding the schools, downtown, along Northfield Drive, and along White Lick Creek
- Providing additional connections throughout Brownsburg with pedestrian and bicycle facilities

MPO Pedestrian Plan

This plan was prepared by the MPO in November of 2006 to create a network of pedestrian facilities that form a connected regional system of pedestrian facilities. Recommendations from this plan include pedestrian corridors along US 136 and SR 267 in Brownsburg. Multi-use paths are recommended throughout Brown and Lincoln Townships along major roadways, waterways, and along the former B&O Railroad corridor.

Williams Park Trail Master Plan – Maple Ridge Trail Redesign

The Maple Ridge Trail Redesign is a master plan for the reconfiguration of the soft-trail system within Williams Park. The existing trails are a system of animal paths and volunteer built trails. The organic development of trails did not always take into account the effects of erosion and user impacts. This master plan included an extensive inventory and analysis of the existing trail system and identified some issues and constraints with the current system. The master plan proposes to reconfigure the trail system to provide a more organized system of trails utilizing methods to reduce erosion and increase the longevity of the trails. Highlights of the redesigned trail system include:

- Average grades of less than 5%
- Bench cut contour trails
- Fewer miles of trails to maintain
- Trails separated by elevation
- Trails system which is easy to navigate
- Proper signage to indicate trail ratings and rules

White Lick Creek Trail Master Plan

The White Lick Creek Trail Master Plan is a feasibility study for the extension of the existing greenway from State Road 36 to Williams Park in Brownsburg. This is a 7.5 mile extension and would connect two regional park systems in Brownsburg and Avon. The plan included a field inventory, proposed greenway location and a cost estimate. Creek crossings have been identified for the greenway. This greenway would be a paved multi-use trail for different users including bicyclists, walkers, runners, and other non-motorized modes of travel. Specific locations for the greenway trail were identified in this plan.

ADA Transition Plan

The ADA Transition Plan was prepared for the Town of Brownsburg in the fall of 2013. This plan is a guide for the Town to provide access to all of its residents by upgrading facilities to



meet the recommendations of the Americans with Disabilities Act. An important component of this plan includes self-evaluation by the Town to identify where there are physical barriers to the facilities providing services to residents of the Town. The plan includes a prioritization strategy for implementation of improvements and an estimated cost for the improvements.

Ronald Reagan Corridor Master Plan

The Ronald Reagan Corridor Master Plan establishes guidelines for construction of this corridor. Key Goals and objectives for the plan include: land use planning, corridor enhancements and site design, access management, non-vehicular transportation, and preservation of unique features. In addition to aesthetic guidelines for the corridor the master plan identifies bicycle and pedestrian improvements which should be incorporated into the design of the corridor. This includes implementation of a multi-use trail for the 12 mile length of the corridor. Recommendations include minimum distances for separation from the roadway and safety features such as lighting. Recommendations also address major crossings for the corridor including a suggested tunnel for the B&O Rail Trail under the new roadway. The plan identifies that new roadway overpasses or

underpasses should incorporate bicycle and pedestrian access as a part of the Ronald Reagan Corridor construction.

Safe Routes to Schools (ongoing)

In 2010 the Town of Brownsburg was awarded a Safe Routes to Schools grant from INDOT. The grant provided funds for construction of a multi-use trail to connect Eagle Elementary, Brownsburg High School, and Brown Elementary with the public library. The multi-use path constructed along O'Dell Street from Sycamore north to Tilden and along Tilden west to the Brownsburg Public Library will provide safe connections for area school children. In addition to providing connections between the schools and the library this trail will also provide additional routes for recreational walkers, joggers and bicyclist.

Brownsburg Wayfinding & Signage Plan (ongoing RLR)

RLR developed a family of signs for implementation of a signage and wayfinding master plan for the business loop. Signage types are detailed within this document and include: vertical gateway, horizontal gateway, welcome sign, accolade sign, four-line directional signage, two-line directional signage, three-line directional signage, street identification, street banners, and vertical gateway banner.



Proposed Sign Family - Image Courtesy of RLR Associates