

JOHNSON COUNTY TRAILS MASTER PLAN



FINAL REPORT

August 26, 2019

PREPARED BY:
GRIFFIN COLLABORATIVE DESIGNS, LLC





LETTER OF INTRODUCTION

Griffin Collaborative Designs presents the Johnson County Trails Master Plan to the citizens and administrators of Johnson County Indiana, Aspire Johnson County, and the Johnson County Trails group. This master plan is the product of a coordinated effort by the Steering Committee, Griffin Collaborative Designs, and stakeholders within the community. The report is intended to serve as a guide for future alternative transportation and recreational development within Johnson County.

Each bicycle facility route and pedestrian improvement was thoroughly investigated and decisions were based on a process that consisted of a county-wide inventory and analysis, design synthesis, public input, and development of design standards before ultimately reaching the master plan stage. The resulting recommendations are the best solutions to initiating a county-wide bicycle and pedestrian network. The plan is intended to be a “living document” and will serve as a long lasting foundation for future alternative and recreational transportation development.

Griffin Collaborative Designs is very appreciative to have been able to assist Johnson County in this planning effort and looks forward to the implementation of these recommendations.

Respectfully submitted on the 26th day of August, 2019,

Griffin Collaborative Designs, LLC

A handwritten signature in black ink, appearing to read "J. Griffin".

Jason G. Griffin, P.L.A.



TABLE OF CONTENTS

<u>A. PROJECT BACKGROUND</u>	<u>PAGE</u>
Background	8
Plan Sponsors	8
Need for the Plan	9
Target Users	10
Goals and Objectives	11
Scope of the Plan	12
Project Time Frame	12
Design Process	13
<u>B. PUBLIC INVOLVEMENT</u>	
Summary of Public Input	16
Summary of Public Survey	19
Summary of Draft Plan Meetings and Comments	21
Project Website	22
<u>C. INVENTORY AND ANALYSIS</u>	
Summary of Inventory	25
Public Identified Potential Routes Map	27
Reported Crashes (2015 - 2017)	29
IDNR Owned Parcels	31
Bikeability Conditions	33
Existing BLOS Map	35
Walkability Conditions	37
Existing PLOS Map	39
<u>D. FINAL PLAN</u>	
Bicycle and Pedestrian Facility Master Plan	43
Master Plan Map	45
Total Distance of Bicycle & Pedestrian Facilities Summary	47
Preferred Location of Multi-Use Trails	47
Land Acquisition	50
Proposed Bikeability & Walkability	50
Proposed BLOS Maps	51
Proposed PLOS Maps	53
Priority Routes	55
Priority Route Table	57
Priority Tier Criteria	61
Priority Route Map	63
Development Standards	65
Funding Sources	88



TABLE OF CONTENTS

APPENDIX A

Public Survey Results

APPENDIX B

BLOS & PLOS Calculation Data

APPENDIX C

Johnson County Population Density per Census Tract

APPENDIX D

Johnson County Largest Employers

APPENDIX E

Access Johnson County Route Map

APPENDIX F

Recommended Trailhead Locations



PROJECT BACKGROUND



PROJECT BACKGROUND

BACKGROUND

Aspire Johnson County created a Trails Team made up of local business and health stakeholders and volunteers to lead a walking and biking trails movement within the community. The Trails Team was called Johnson County Trails. This Trails Team was charged with creating a comprehensive plan to encourage the development and use of pedestrian/bicycle trails within and between the county’s many cities, towns and destinations.

Johnson County Trails, with the help of Aspire, applied for an Opus grant through the Johnson County Community Foundation and received \$40,000 to create the plan. This allowed the Trails Team to seek out and hire a professional design firm to assist with the plan. In addition there were several local sponsors that helped with the plan. See below for a list of plan sponsors.

The completed plan will help improve non-motorized accessibility, promote safety for bicyclists and pedestrians, and make the communities in Johnson County a more enjoyable place to live and visit. The need for comprehensive alternative transportation has risen for several reasons. Personal economics, a movement to become a healthier society, increased safety for children (that cannot drive yet), adults that want the option of depending less on their car, and an increasing elderly population have all lead to this need.

For these reasons, Aspire Johnson County, Johnson County Trails, and Johnson County are undertaking a plan to guide the development and design of bicycle and walking facilities within the Johnson County.

PLAN SPONSOR

SPONSOR AMOUNT

Opus Foundation \$40,000



Additional Supporters:

2019 Rock the Block \$5,000

2018 Rock the Block \$2,500

Endress+Hauser \$1,000

Johnson County REMC \$1,000

Mallow Run Winery \$1,000

Horizon Bank \$500





PROJECT BACKGROUND

NEED FOR THE PLAN

In the United States of America, 30% of the population currently does not drive a motor vehicle. This includes children, the elderly, those that are physically unable to drive, those that are financially unable to afford the cost and maintenance of a vehicle, and an increasing population of those who chose to use alternative transportation for its economic, environmental, and health benefits. These three benefits coincidentally are also the three main characteristics of a community that has a well developed walking and biking network and lead to a better quality of life for the citizens of that community.

There are some very startling facts regarding the current status of health in Indiana and the United States. In the State of Indiana, 30% of adults fall into the obese category and 16% of teenagers are obese. In the United States, 30.3 million people have diabetes and spend a total of \$245 million annually in medical costs and lost wages. That is an average of \$8,085 per person. These alarming facts are partly attributed to increasingly sedentary lifestyles. In 1969, the percentage of school children walking to school was 48% and today that number is down to 13%. Adults have to keep up with the demands of their jobs and daily responsibilities and many times do not have time for physical activity.

The good news is that by providing more choices and convenient opportunities for walking and biking, we can combat these startling statistics. It is recommended that adults participate in moderate activity for 150 minutes a week. This translates to 30 minutes a day for 5 days a week. By providing biking and walking infrastructure that connects to people's everyday destinations or that are convenient to them, they are allowed to more easily incorporate this activity into their daily routine. Studies have shown that an investment of \$1 in biking and walking translates into \$3 in direct medical savings. Kids who walk or ride to school arrive ready to learn and are more focused. Workers who use alternative modes of transportation are more productive.

Bicycle and pedestrian infrastructure can provide valuable economic benefits to a community. In the Midwest we must create our attractors for both businesses and residents in order to be competitive. A study done on the role of recreation, parks, and open space suggests that owners of small businesses rank these types of amenities as one of the most important factors when choosing a location for their business. The National Association of Home Builders lists trails as the most desired community amenity homeowners seek when buying a home. In Indianapolis it was determined that the value of homes increased within 1/2 mile of a green-way by an average of \$4,400 dollars. Similar studies done around the nation report similar increases in property values.

The construction of trails also creates jobs for local businesses. A national study of employment impacts for bicycle and pedestrian infrastructure completed in 2011 indicates that 9.6 jobs are created for every \$1 million spent on construction of separated multi-use trails. This is actually higher than for the same investment in construction of road-only projects. The study indicates that these road-only projects only create 7.8 jobs. Another benefit is that jobs created for the construction of a multi-use trail tend to be more local contractors as opposed to road-only projects.



PROJECT BACKGROUND

Bicycle and Pedestrian projects create positive environmental benefits for the community. By providing more alternative transportation choices, vehicular trips are reduced as well as carbon emissions in the air. Additionally, bicycle and pedestrian infrastructure projects typically incorporate green infrastructure. Plantings from green infrastructure help to reduce storm water runoff and breakdown pollutants from vehicles before they can get into our waterways.

This plan is intended to provide guidance to local government decision-makers in terms of future community development and infrastructure.

BICYCLE AND PEDESTRIAN NETWORK TARGET USERS

The plan is intended to improve conditions for pedestrians and bicyclists who wish to or need to make daily trips for goods and services within their community, and recreational users looking to maintain or improve their health. Users that fall into the category of needing to make trips by foot are the elderly who can no longer drive, schoolchildren, and those that are unable to afford or maintain a car and therefore need to find alternative means to make connections.

This plan is also for casual bike riders that may not be comfortable riding among automobile or truck traffic. These types of riders account for 60% of the bicycling population, and require improved infrastructure or residential streets with low traffic and speed limits to make connections within the community.



PROJECT BACKGROUND

GOALS AND OBJECTIVES

At the beginning of the project, the Steering Committee identified nine overarching goals for the master plan and ranked them in order of importance. Below is the list of goals in order of importance.

1. Create connections between the communities of Bargersville, Edinburgh, Franklin, Greenwood, New Whiteland, Nineveh, Trafalgar, White River Township, and Whiteland within Johnson County.
2. Be ready for future funding opportunities when they present themselves.
3. Identify future Safe Routes to Schools opportunities.
4. Enhance community connections to neighborhoods, parks, schools, businesses, retail and dining, and government facilities.
5. Increase the number of people that exercise daily by providing safe walking and biking experiences for citizens of all ages and levels of ability.
6. Increase the number of people walking and bicycling for everyday transportation purposes such as commuting to work, to school and running errands.
7. Increase the quality of life for the residents of Johnson County in an effort to retain current citizens and attract new citizens.
8. Provide guidance and priorities for implementing infrastructure to support walking and bicycling with a broad range of funding and support.
9. Increase eco-tourism in Johnson County by attracting people that are looking for recreational activities in the region.

In order to accomplish these goals, several objectives were established:

1. Identify routes that the public may already be using or wish to use for walking and biking.
2. Identify current funding opportunities along with due dates and create a priority route ranking system that identifies the route with the highest priority for development.
3. Locate all schools within the county and identify routes to connect to them. A priority route rating system will identify which routes have the highest priority for development.
4. Identify community destinations that are most important to the public.
5. Identify barriers that create unsafe connections to desired public destinations and develop standards for facilities.
6. Identify major employers within the community.
7. Establish a comprehensive network of bicycle and pedestrian facilities throughout the entire county.
8. Develop a point system for ranking each routes priority.
9. Priorities should identify one major north / south or east / west route for attracting users from outside the county.



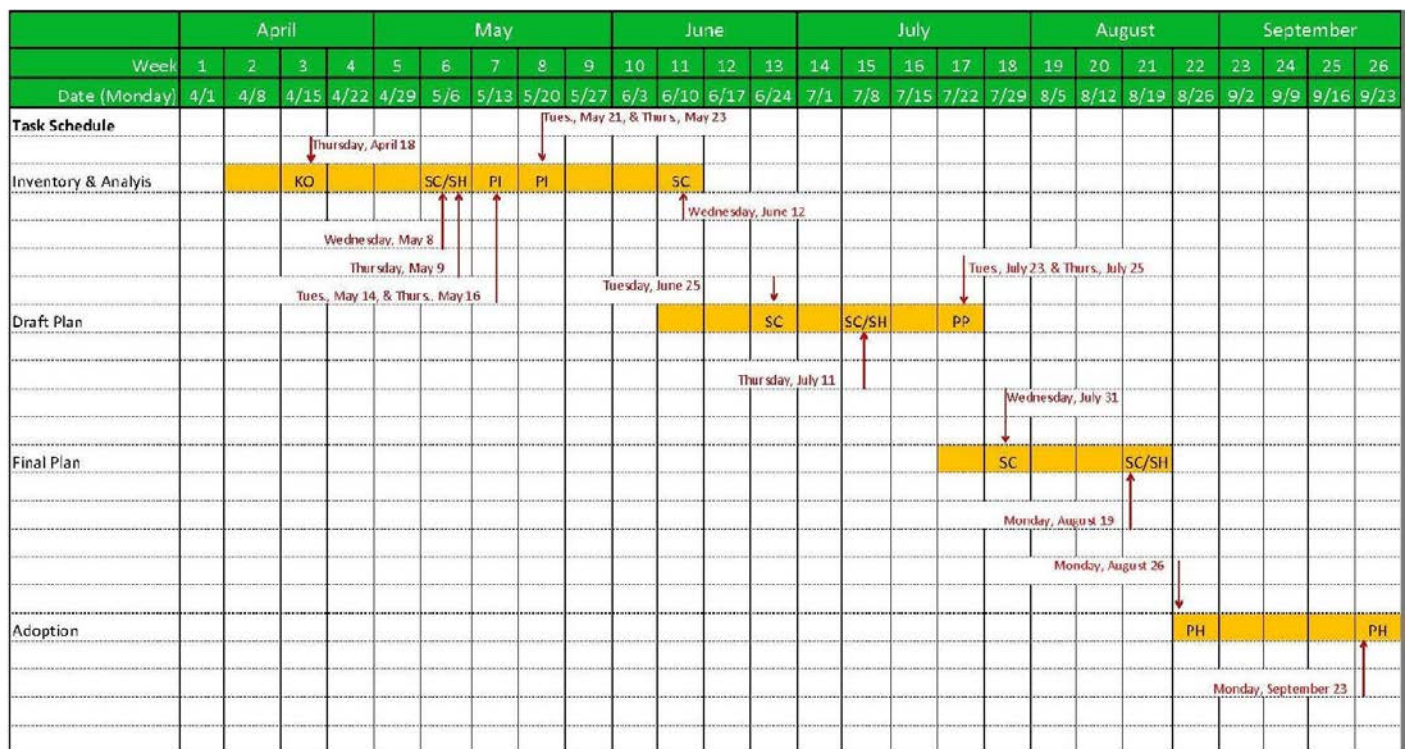
PROJECT BACKGROUND

SCOPE OF THE PLAN

The plan studies all of Johnson County. The plan investigates both on-road facilities as well as separated corridors that can be improved to enhance the existing pedestrian and bike network. Public input has been sought throughout the master plan. A public survey and several public input meetings were held throughout the county for convenience. A master plan for infrastructure improvements has been developed. A steering committee consisting of citizens from Johnson County helped guide the development of the plan. Priority corridors are identified. Development standards and possible funding opportunities are included for all routes.

PROJECT SCHEDULE

The project took 20 weeks in total from Notice to Proceed until the beginning of the adoption process. Below is a bar chart of the schedule and the dates of the meetings held throughout the process.



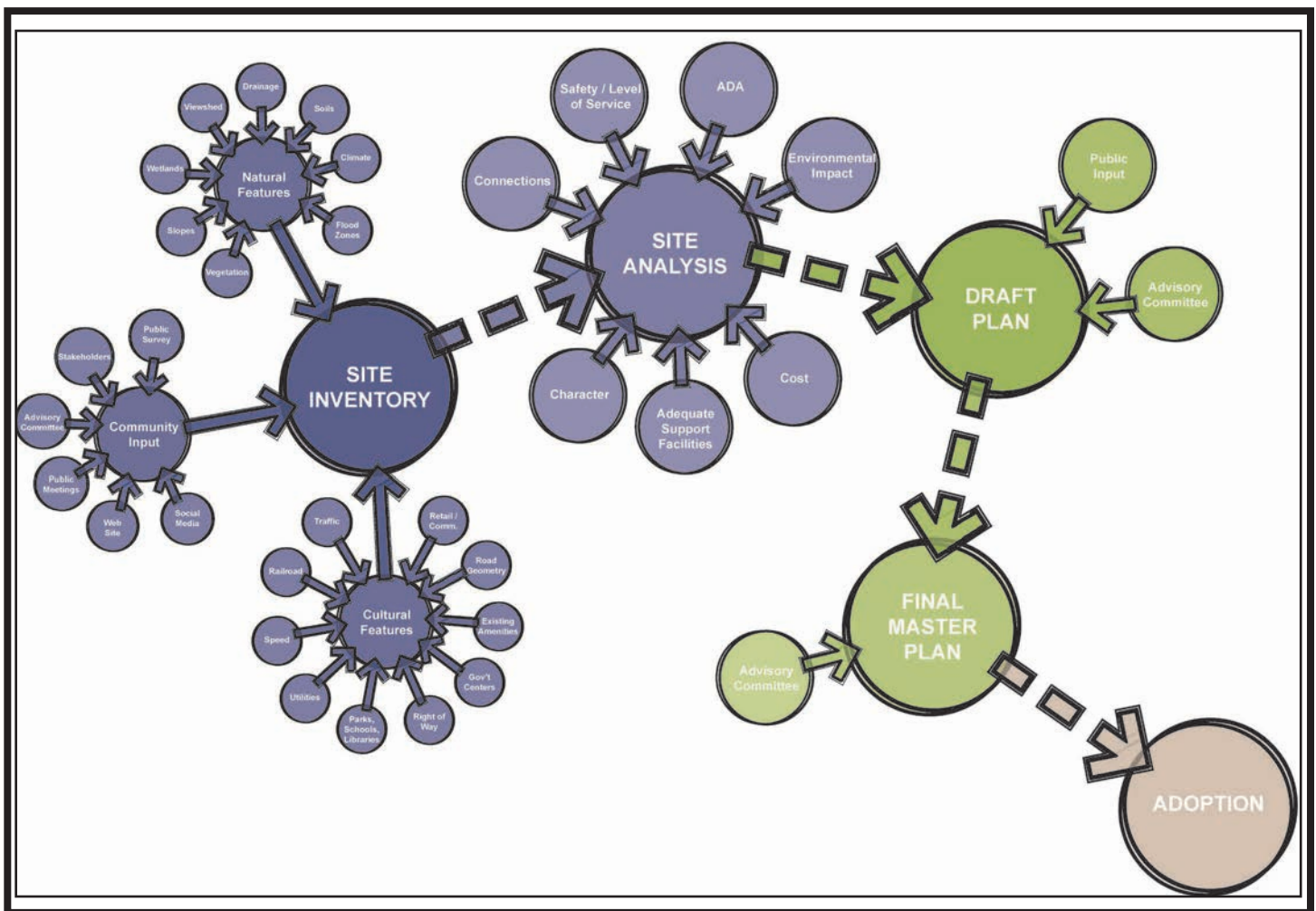
Key

- KO Kick Off Meeting
- SH Stakeholder Meetings (3)
- PI Public Input Meetings (2 Per Week)
- SC Steering Committee Meeting / Trails Team Meeting
- PP Public Presentation of Draft Plan (2 Presentations)
- PH Public Hearing (4th Monday of the Month)

PROJECT BACKGROUND

DESIGN PROCESS

The design process involved 4 distinct phases to accomplish the development of the plan. The inventory phase involved input from stakeholders and the public. Existing conditions throughout the county were investigated and documented. The site analysis phase involved making judgments about the conditions that were documented in the inventory phase. Positive and negative impacts of the existing conditions on potential users were recorded. The draft plan phase involved creating an infrastructure plan and presenting it to the steering committee, stakeholders, and the public. The final plan phase entailed documenting public comments and making final revisions to the infrastructure plan. Standards, a priority route rating system, funding opportunities, and a final report was developed before beginning the adoption process.





PUBLIC INVOLVEMENT



PUBLIC INVOLVEMENT

SUMMARY OF PUBLIC INPUT

Public participation is an integral part of any planning process and was an important component of the Johnson County Trails Plan. Opportunities for community input included public open houses, an on-line survey, and stakeholder meetings. Feedback from the survey and meetings were incorporated into the final plan recommendations. Incorporating the thoughts, ideas, and concerns of community members helps to address high priority issues and builds ownership of the plan.

Public Open Houses

Four public open houses were held in locations throughout Johnson County. Details for each are listed below. The total number of people who signed in for the public meetings was 34.

Greenwood

- Tuesday, May 14, 3:00 pm – 7:00 pm
- Greenwood Public Library, 310 South Madison, Greenwood, IN 46143
- 7 sign-ins

White River Township / Unincorporated Center Grove

- Thursday, May 16, 3:00 pm to 6:00 pm
- Johnson County Public Library – White River Branch, 1664 Library Boulevard, Greenwood, IN 46142
- 15 sign-ins

Franklin

- Tuesday, May 21, 3:00 pm to 7:00 pm
- The Elevator, 26 East Jefferson Street, Franklin, IN 46131
- 8 sign-ins

Trafalgar

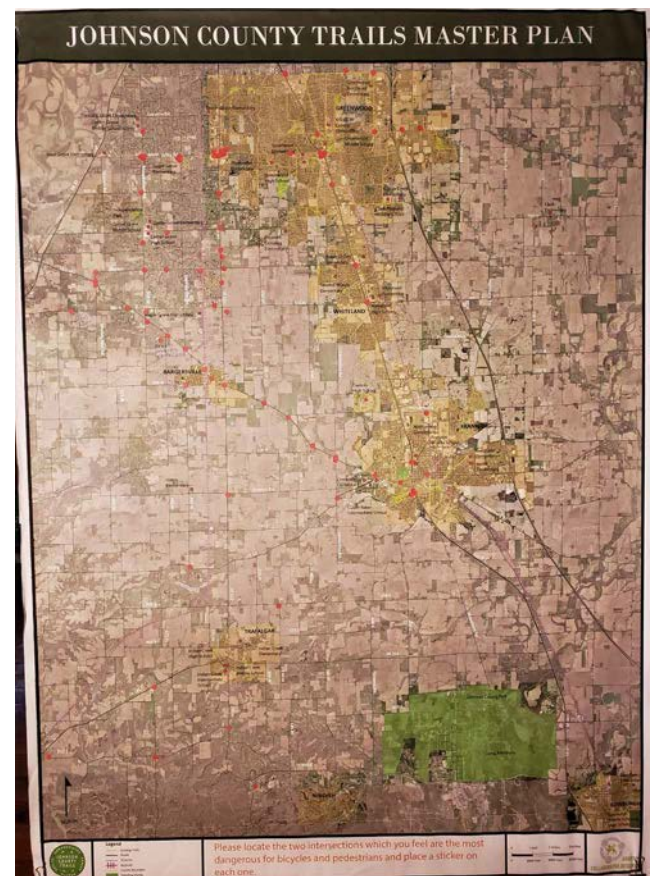
- Thursday, May 23, 3:00 pm to 7:00 pm
- Johnson County Public Library – Trafalgar Branch, 424 South Tower Drive, Trafalgar, IN 46181
- 4 sign-ins



PUBLIC INVOLVEMENT

The open houses had a welcome sign with project background, a looping PowerPoint presentation, a laptop for taking the public survey, two voting stations, and a station where the public could mark desired routes on a map of Johnson County. A summary of desired routes and map comments can be found on page 27.

At the voting stations, participants were asked to identify desired destinations and barriers with dot stickers on a map of Johnson County. The overall results of the two voting stations are shown below.



Stakeholder Meetings

Three stakeholder meetings for the Johnson County Trails Plan were held with invitations targeted at Governmental Stakeholders, Economic Development /Business Organizations, and Not-For-Profit Organizations. Attendance and other details are located on the next page. Each meeting began with an overview presentation of the plan's goals, need for the plan, and design process. Attendees then went to breakout discussion sessions where consultants provided more specific details, listened to concerns, and answered questions. Attendees also were lead through a map exercise discussing desired routes and destinations.



PUBLIC INVOLVEMENT

Governmental Stakeholders

- Thursday, May 9, 9:00 am - 10:15 am
- Johnson County Court House Annex , 86 W. Court Street St., Franklin, Indiana 46131
- 14 sign-ins

Economic Development / Businesses Organizations

- Thursday, May 9, 10:30 am - 11:45 am
- Johnson County Court House Annex , 86 W. Court Street St., Franklin, Indiana 46131
- 8 sign-ins

Not-For-Profit Organizations

- Thursday, May 9, 1:00 pm - 2:15 pm
- Johnson County Court House Annex , 86 W. Court Street St., Franklin, Indiana 46131
- 8 sign-ins

Three more stakeholder meetings were held during the project. One during the draft plan phase and two during the final plan phase. Each meeting consisted of a presentation and an update on the plan. Attendees were able to provide input on the plan and ask questions.

Joint Steering Committee / Stakeholder Meeting - Draft Plan Review

- Thursday, May 9, 8:00 am - 10:00 am
- Johnson County Court House Annex , 86 W. Court Street St., Franklin, Indiana 46131
- 14 sign-ins

Aspire Johnson County - Growth and Planning Meeting

- Thursday, August 8, 3:30 pm - 5:00 pm
- The Elevator, 26 East Jefferson Street, Franklin, IN 46131
- 20 sign-ins

Joint Steering Committee / Stakeholder Meeting - Final Plan Review

- Monday, August 19, 8:00 am - 10:00 am
- Johnson County Court House Annex , 86 W. Court Street St., Franklin, Indiana 46131
- 16 sign-ins



PUBLIC INVOLVEMENT

PUBLIC SURVEY

As part of the Johnson County Trails Plan process, a public survey was developed and distributed throughout Johnson County. The survey was modeled after similar public input surveys conducted as part of other communities' planning processes and was intended to better understand existing attitudes and behaviors related to walking and biking, as well as to collect input and ideas on potential strategies to be pursued. The full survey, with responses, can be found in Appendix A. The survey was completed by 397 respondents. The age characteristics of those taking the survey are summarized below.

- 0 – 17 years: 0.8%
- 18 – 24 years: 2.0%
- 25 – 34 years: 19.1%
- 35 – 44 years: 32.2%
- 45 – 54 years: 22.2%
- 55 – 64 years: 15.9%
- 65+ years: 7.8%

Close to 90% of respondents agree or strongly agree that safe and widespread biking and walking accommodations are important to their quality of life. Even more respondents (93.1%) agree or strongly agree that safe and widespread biking and walking accommodations are important to their community's quality of life. Nearly 95% agree or strongly agree that Johnson County needs more accommodations that promote safe walking and biking.

The majority of respondents (92.2%) believe it is important for Johnson County to increase public investment in biking and walking infrastructure, such as trails, sidewalks, and bike-ways. When asked whether they would support an increase in public funding to help pay for these improvements, 76.3% responded yes, while 16.5% were unsure, indicating some people may need more information before supporting such a proposal.

The majority of respondents, 64.6%, indicated that they only drive to the places they go. Nearly one-third responded that they use a combination of biking, walking, transit and driving to get to places they're going, but they mostly drive.

Over half of the respondents, 65.7%, indicated that they do not bike regularly, and 24.2% bike once per week or less. More than three-fourths of those surveyed reported that they want to bike more. When asked about the characteristics of good places for biking, the top responses included: bike trails or designated paths that are physically separated from traffic; good pavement conditions (road doesn't have many potholes or bumps); and low traffic (slow moving vehicles). People chose the following reasons for not biking more: lack of designated bike paths, lanes, and routes; high traffic volume; and the difficulty of crossing busy streets. Several respondents opted to write-in an "other" response and noted their lack of time to bike, showing the need to create a system that is convenient to use as part of everyday activities.



PUBLIC INVOLVEMENT

Regarding walking and running, 36.4% of respondents answered that they walk or run once per week or less and 49.2% walk or run two to three times per week or more. The majority of survey takers, 86.9%, would like to walk or run more. The top characteristics of a good place to walk or run included: sidewalks that are separated from the street by a grass strip; continuous sidewalks that do not end; and high-quality sidewalk pavement (no bumps, gaps, or tripping hazards). When asked what prevents them from walking more, the top answers were similar to the same question about biking: lack of continuous walking or jogging areas such as sidewalks or trails; high traffic volume; and the difficulty of crossing busy streets. Again, those that wrote-in an “other” response often named time as a reason to not walk or run more.

Asked what places within Johnson County they would like to walk or bike to, respondents top choices were city and county parks, restaurants, and schools. The highest rated goals for the plan were enhancing community connections to neighborhoods, parks, schools, library, businesses, retail and dining, and government facilities; improving the health of Johnson County residents by providing safe walking and biking experiences for people of all ages and abilities; and increasing the quality of life within Johnson County in an effort to retain current residents and attract new ones.

The survey asked what current behaviors respondents would change if Johnson County were to invest in creating an enhanced bicycle and pedestrian network. Top responses included increasing biking and walking for exercise and wellness; walking or biking to the park for recreation; promoting biking and walking amongst friends and family; and supporting public funding for improving the bicycle and pedestrian network.

Taken collectively and individually, survey responses provided valuable information about walking and biking in Johnson County today and offered a vision for what it can be in the future. The information collected was used to inform and develop both the infrastructure and non-infrastructure recommendations presented later in the plan and serves as a benchmark by which future progress can be measured.

Draft Plan Meetings

A draft of the Johnson County Trails Plan was presented at two public meetings. These meetings consisted of an overview presentation that included the plan process and information learned from various public participation outlets. Attendees were given copies of the plan map and comment sheets for providing feedback. A general question and answer session was held with the audience and after the presentation, attendees had the opportunity to meet with the consultants “one on one”. Feedback provided at these meetings was taken into consideration when creating the final plan. Meeting details are listed below.

Draft Plan Meeting #1

- Tuesday, July 23 6:00 pm – 8:00 pm
- Beeson Hall, 396 Branigin Blvd., Franklin, IN 46131
- 9 sign-ins



PUBLIC INVOLVEMENT

Draft Plan Meeting #2

- Thursday, July 25 , 6:00 pm– 8:00 pm
- White River Township Fire Station 53, 850 Mullinix Rd., Greenwood, IN 46143
- 5 sign-ins

Summary of Draft Plan Comments

Comments from the public at both meetings were supportive and no one spoke in opposition to the plan. In general the public wanted to know how quickly facilities could be built and when the section closest to their home would be installed.

Other comments involved questions regarding design standards. Below is a summary of these comments:

- Will the plan require the use of native plants?
- Will the plan require the use of call boxes installed along the trails?
- Will all the trails be paved or will some be stone? Runners prefer stone.
- Paved or finely packed gravel is preferred by bikers.
- Will there be lighting installed along the trails?
- Concerned for safety, especially for women in rural areas.
- Trailheads with parking, water, and restrooms are necessary.
- Cross country trails are better for bikers than those in urban environments.
- Need to make use of abandoned railroads.
- Mile markers are beneficial for runners.

Letters of support were received after the draft plan meeting and are available for review. Some of the written comments received are shown below:

- “I cannot wait to reap the benefits.”
- “I hope that the county is supportive of the plan.”
- “I believe this county trail plan will be beneficial for Johnson County.”



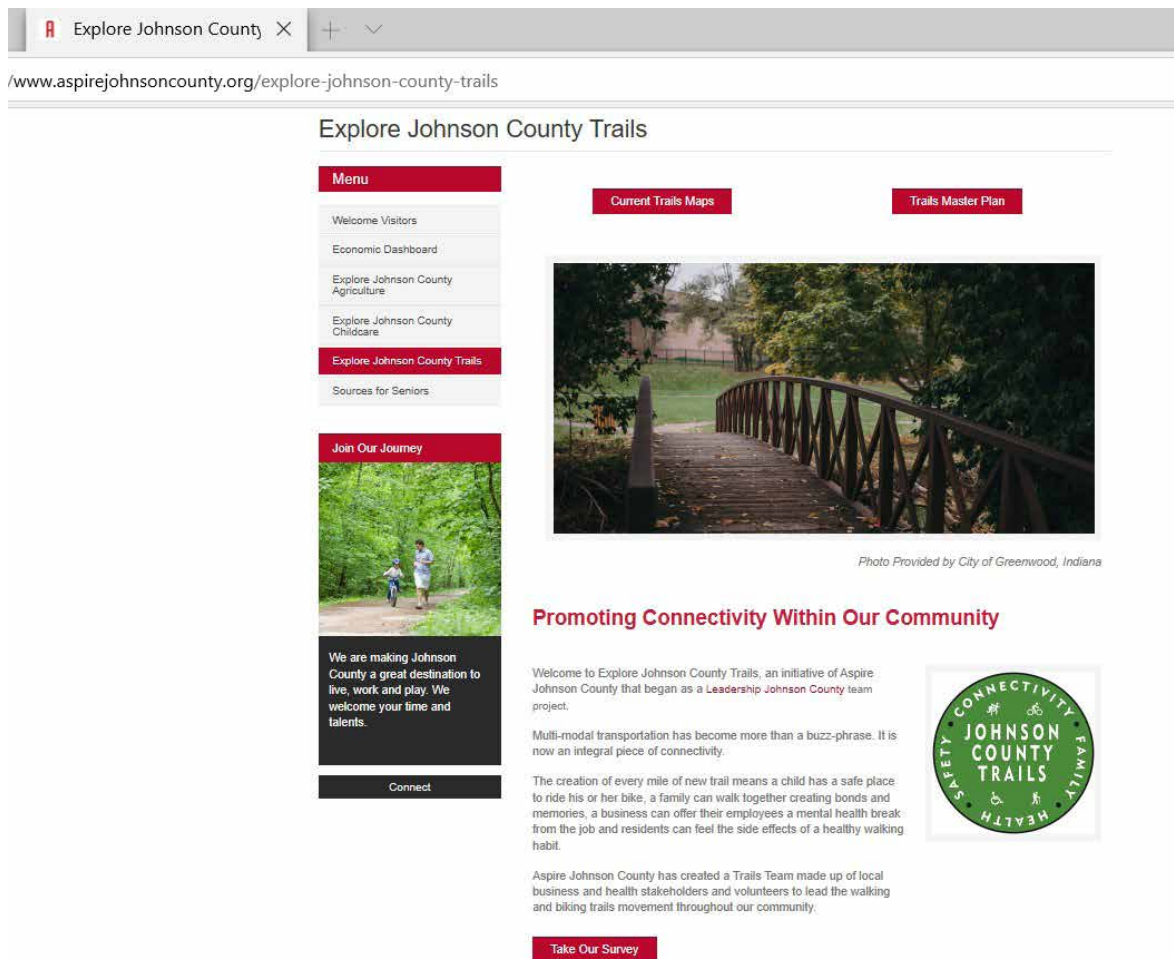
PUBLIC INVOLVEMENT

Project Website and Social Media

Social media outlets such as Facebook, Instagram, and Nextdoor were used to disseminate information and inform the public regarding upcoming meetings.

A project website was created at the beginning to distribute vital information regarding the plan and to keep the public up-to-date on the progress of the plan. Information on project background, frequently asked questions, up-coming meetings and the most current version of the plan were posted for the public to view.

Public input in the form of an on-line survey and feedback on the draft plan were all posted on the project website. The public was encouraged to check the website frequently for updates.





INVENTORY AND ANALYSIS



INVENTORY AND ANALYSIS

SUMMARY OF INVENTORY

Following the input from the community at the public input meetings and stakeholder meetings, a map was created summarizing all of the identified potential routes and desired destinations into one map. Additionally, planned community trails and planned statewide trails were added to the map. See the PUBLIC IDENTIFIED POTENTIAL ROUTES Map.

This map was then used as a guideline for conducting site visits, collecting roadway data, and existing conditions along the routes. Measurements of road lane widths, buffer widths, sidewalk widths, and traffic conditions were documented throughout the county.

An investigation of reported bicycle and pedestrian crashes reported in Johnson County was conducted. Crashes from the Central Indiana Serious Injury and Fatality Crashes website were plotted on a map of Johnson County. The crashes are for the years 2015 through 2017. See the REPORTED CRASHES Map.

Through the public input meetings and an interview with the Indiana Department of Natural Resources (IDNR) Outdoor Development, it was determined that IDNR owns several parcels along an abandoned railroad in Johnson County. The railroad runs from Morgantown northeast through Trafalgar and Franklin and then heads northeast into Shelby County. See IDNR OWNED PARCELS Map. A book was also written about the abandoned railroad, “History of an Indiana Railroad: Fairland, Franklin, and Martinsville Railway 1846-1973” by Darrell French.

The interview with IDNR confirmed that the 2006 “Hoosiers on the Move” State Trails Plan had identified a trail route paralleling US 31 through Johnson County. Several maps in the Indiana Statewide Comprehensive Outdoor Recreation Plan have regional significance. The U.S. Bicycle Route runs up through Bartholomew County to Edinburgh before heading northeast through Shelby County and there is a Priority Planned State Visionary Trail that runs through the Northwestern corner of Johnson County. See Maps Below.



The Indiana Statewide Comprehensive Outdoor Recreation Plan 2016-2020 | CHAPTER 6
FIGURE 6.5 US Bicycle Routes in Indiana

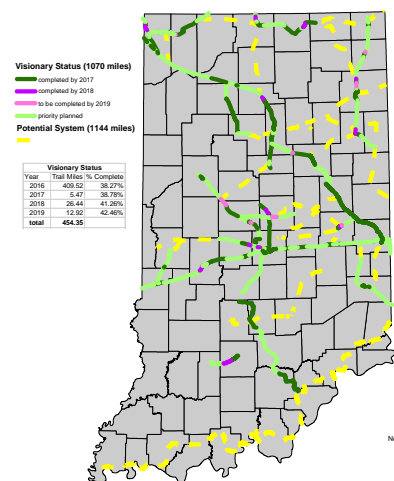


CURRENT FUNDING SOURCES FOR TRAILS

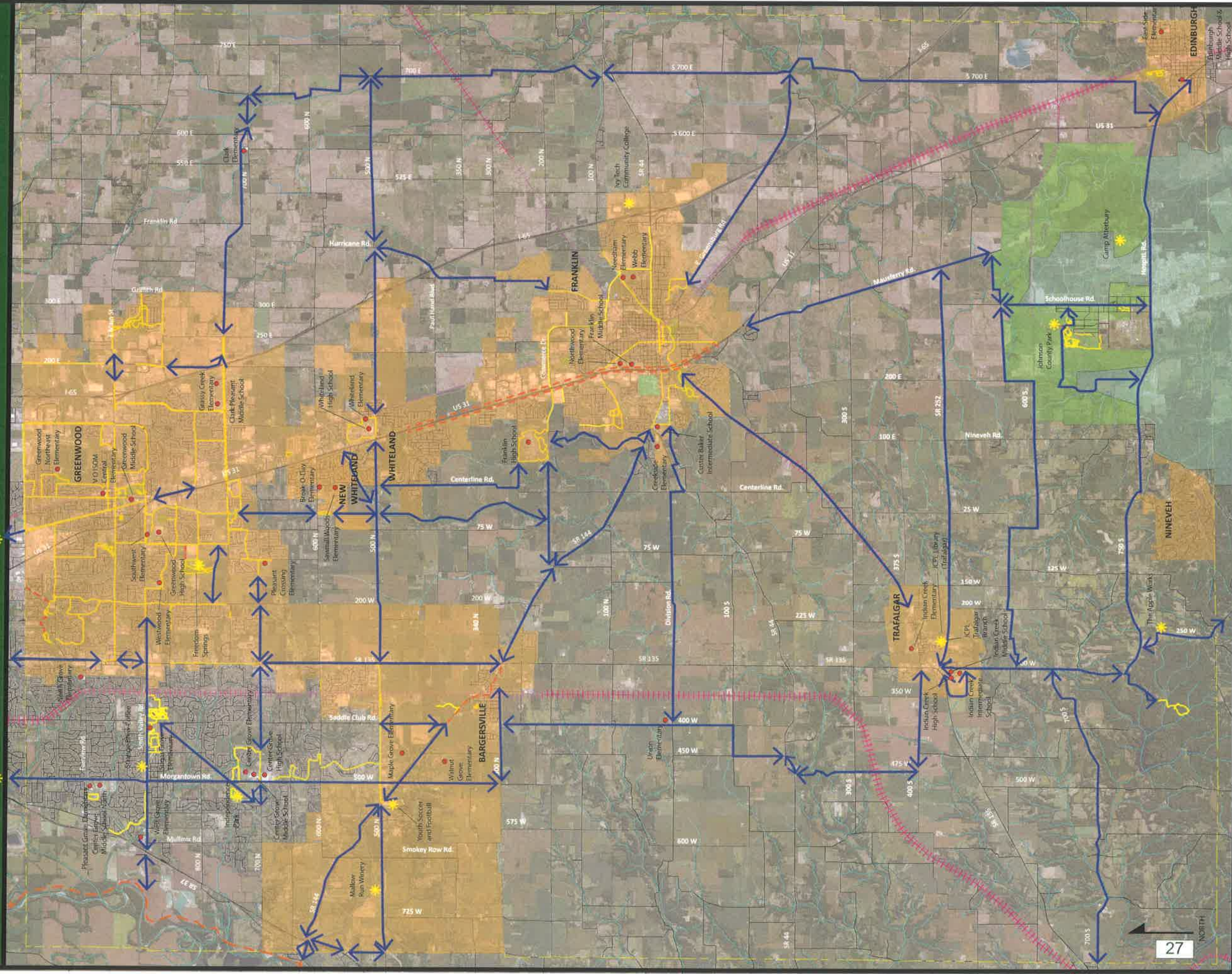
There are almost as many potential funding sources for trail land acquisition and development as there are types of trail or types of trail users. Hoosiers on the Move, the 2006 Indiana State Trails, Greenways, and Bikeways Plan, discussed at length the history and background

of many State and federal trail-funding sources as well as numerous local options. (See pages 61-64 of Hoosiers on the Move for more details). This trails plan update is going to concentrate on the most immediate and pressing changes, as well as the most current funding sources for trail acquisition and development.

Visionary Trails Progress



JOHNSON COUNTY TRAILS MASTER PLAN



Legend

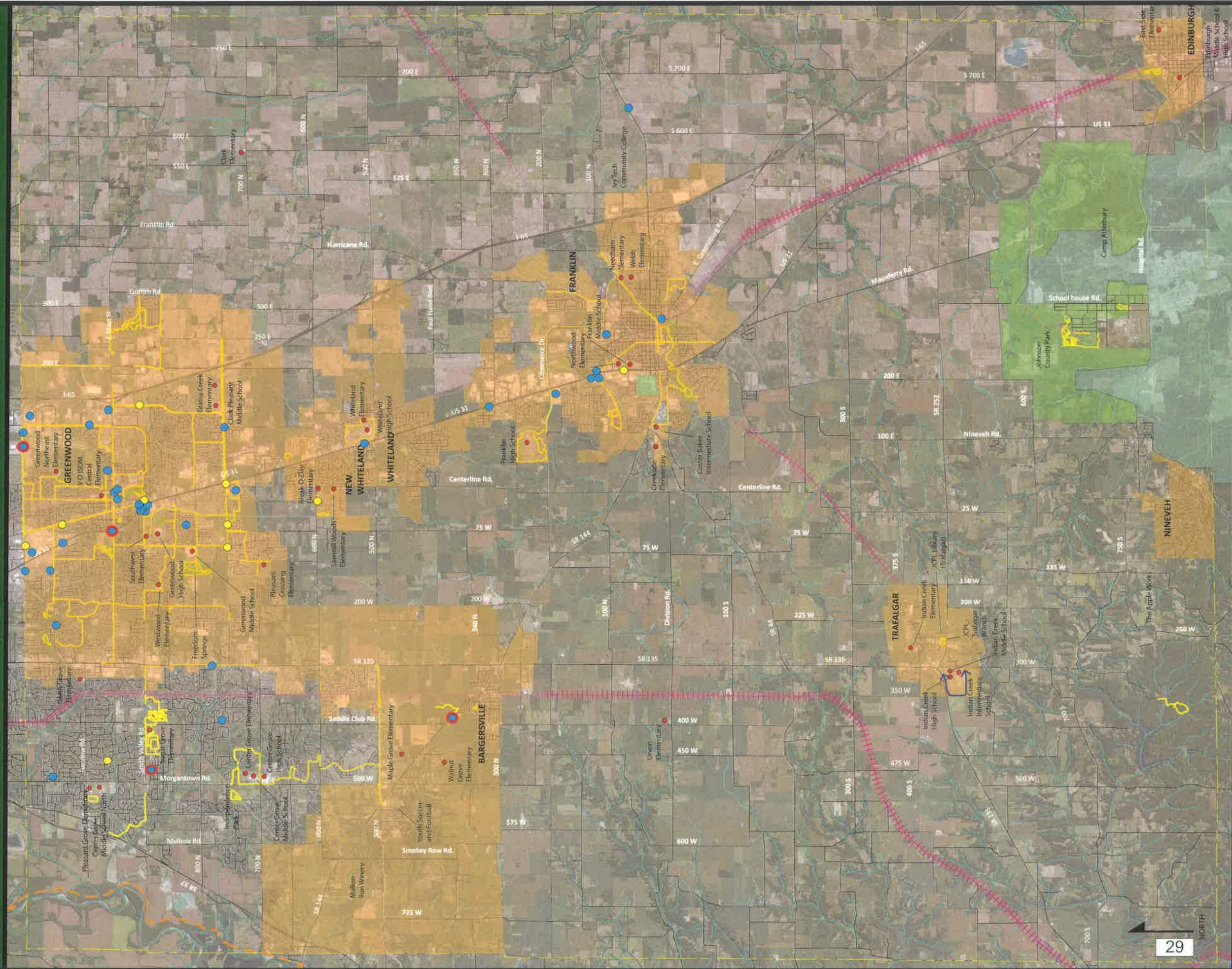
- * Public Identified Destination
- Public Desired Routes
- Proposed Trail By Others
- Roads
- Streams
- Railroad
- County Boundary
- Existing Parks

PUBLIC IDENTIFIED POTENTIAL ROUTES

0 1 Inch 2 Inches 3 Inches
 0 3000 Feet 6000 Feet 9000 Feet

JOHNSON COUNTY TRAILS
 COLLABORATIVE DESIGNS

JOHNSON COUNTY TRAILS MASTER PLAN

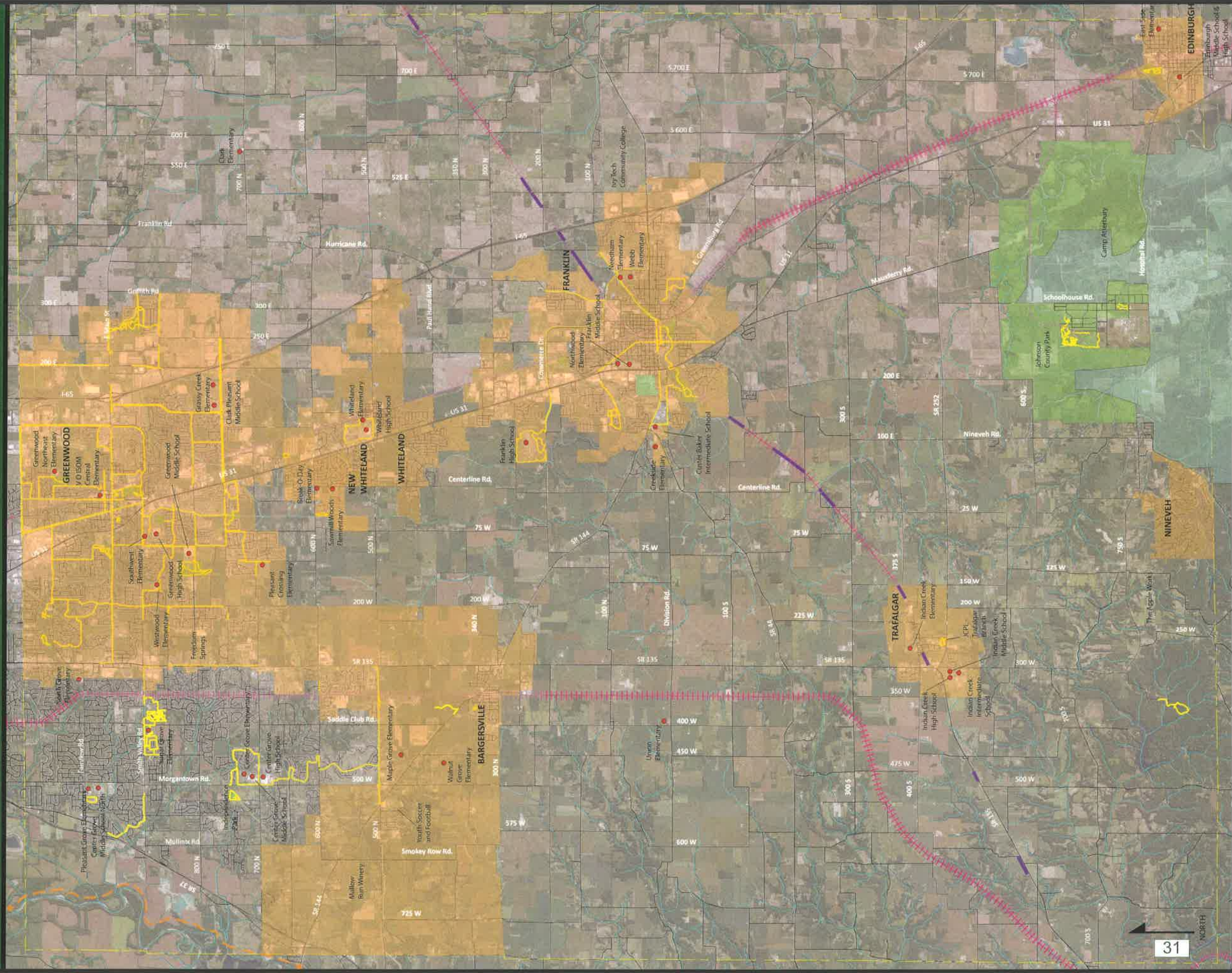


- Legend**
- Existing Trails
 - Streams
 - Railroad
 - County Boundary
 - Existing Parks
 - Pedestrian Crash
 - Bike Crash
 - Fatal Pedestrian Crash
 - Fatal Bike Crash

REPORTED CRASHES (2015 - 2017)



JOHNSON COUNTY TRAILS MASTER PLAN



Legend

- Existing Trails
- Roads
- Streams
- Railroad
- County Boundary
- Existing Parks
- IDNR OWNED PARCEL

IDNR OWNED PARCELS

Scale: 1 inch = 3000 Feet, 2 inches = 6000 Feet, 3 inches = 9000 Feet





INVENTORY AND ANALYSIS

BIKEABILITY CONDITIONS

In addition to public and stakeholder input, a Bicycle Level of Service (BLOS) calculator was used as a tool to measure bikeability. Measurements were taken at the mid-block cross section of the roadways along identified “potential” routes as part of the inventory process. The roadways were also analyzed to determine where opportunities were available to gain space for bicycle facilities along roadways. The team looked at the existing lane widths to understand if narrowing the lanes would be appropriate and how much space could be gained from that treatment. Opportunities and constraints were recognized at each mid-block section based on apparent available right-of-way, existing utilities, drainage structures, curb type, distance from street to building, and utilization of on-street parking. Measurements of the mid-block geometry of each route, along with the average daily traffic, speed limit, and percent of commercial traffic, were inserted into the Bicycle Level of Service (BLOS) calculator.

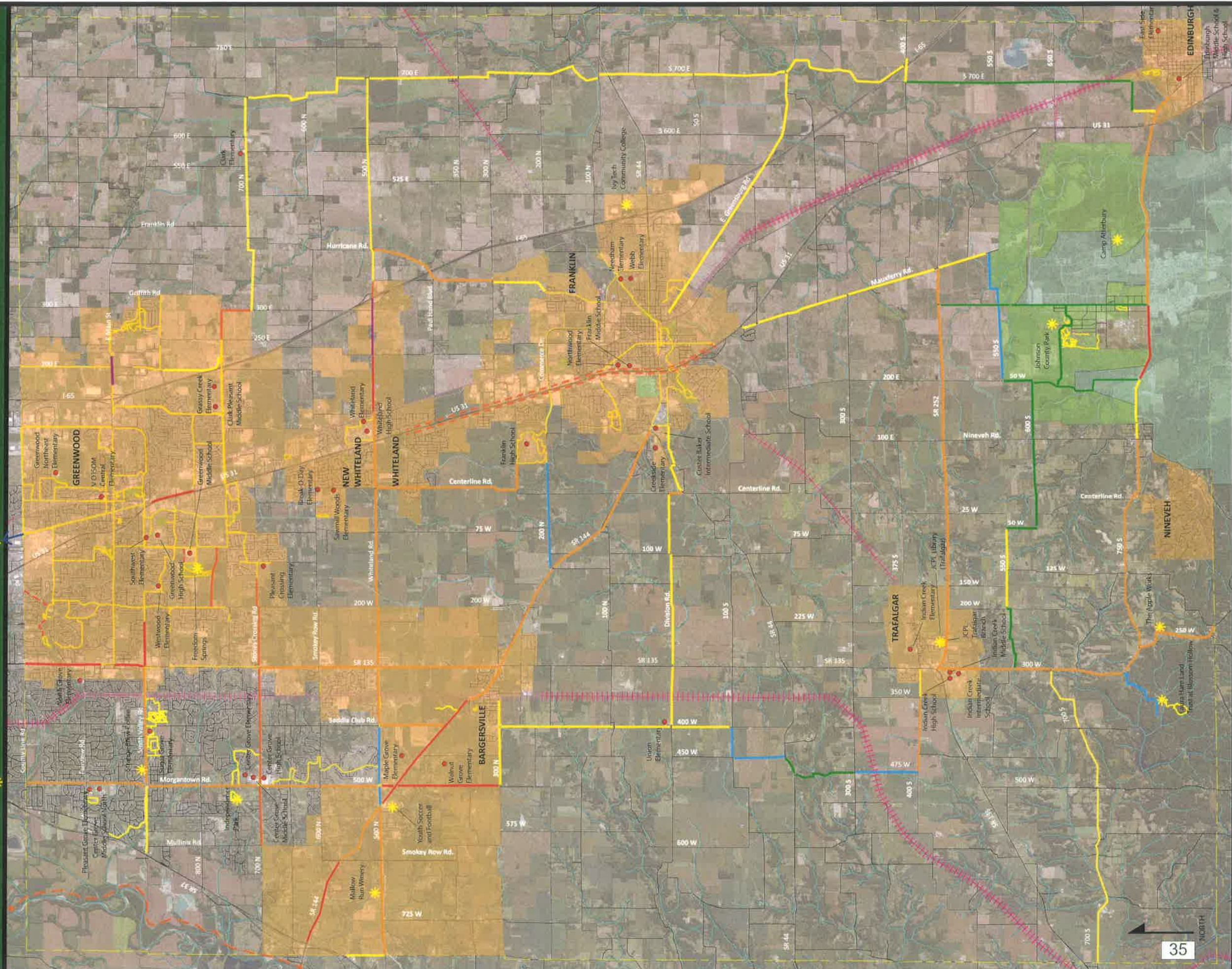
The BLOS is a nationally-used measure of on-road bicycle level of comfort based upon a roadway’s geometry and traffic conditions. Its intent is to understand the comfort level of a beginner to intermediate rider. See Appendix B for calculation data and scores.

A map was created that reveals the existing BLOS conditions by color coding those routes that are more suitable for casual riders and those that are currently more appropriate for expert riders. In general the existing biking conditions in Johnson County can be roughly divided into three distinct areas of bikeability. Generally the area south of SR 144 and Greensburg Rd has lower traffic volumes and speeds. The area east of I-65 also has low traffic volumes and speed limits. There are several county roads in these areas that are currently suitable for biking. This is backed up by input heard at the public and stakeholder meetings. A number of biking groups currently use the roadways in these areas for their weekly rides.

The wedge area created by a line north of Sr 144 and west of I-65 is not suitable for biking except by expert riders due to narrow roadways with high speed and high traffic volumes. Roadways in this area will require bicycle facilities or separated trails to accommodate less experienced riders.

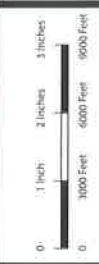
The following maps illustrate the existing BLOS for the routes studied. A grade of “A” through “B” indicates that the route is suitable for a casual rider. A grade that equals high “C” indicates that the route is borderline suitable for casual riders. A grade of “D” through “F” means that only expert riders would feel comfortable riding the route in its present conditions and that an improvement is needed.

JOHNSON COUNTY TRAILS MASTER PLAN



- Legend**
- Existing Trail
 - Road
 - Stream
 - Railroad
 - County Boundary
 - Existing Parks
 - ★ Public Identified Destination

EXISTING BLOS MAP





INVENTORY AND ANALYSIS

WALKABILITY CONDITIONS

A Pedestrian Level of Service (PLOS) calculator was used to measure walkability for Johnson County.

The same corridors analyzed for bikeability were measured for pedestrian level of service to see if the conditions would support both biking and walking. Corridors that currently had sidewalks on both side of the streets were deemed as highly walkable, corridors or sections of corridors with a sidewalk located only on one side were deemed borderline walkable, and sections that had sidewalks on neither side of the road were considered non-walkable.

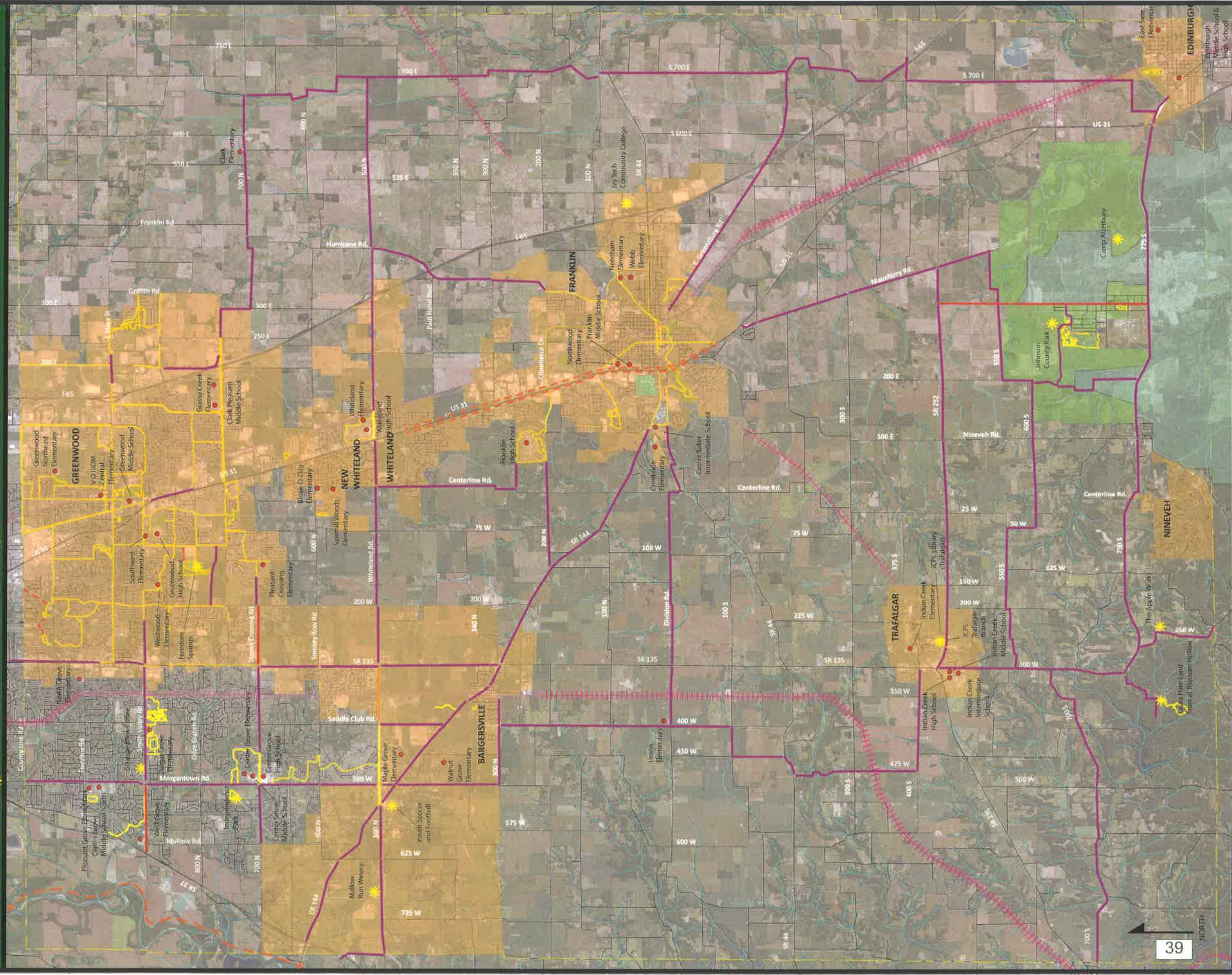
A map was then created that summarizes the existing Pedestrian Level of Service (PLOS) conditions by color coding those sections that are more suitable for walking and those that need improvement. Routes with an A and B level are considered to be on the high side of walkability. Sections that fall into the C level are considered borderline walkable, and D-F levels are considered less walkable or not walkable. See Appendix B for calculation data and scores.

As expected the only walkable corridors were located within the urban core of each community where sidewalks and trails were already present. In the county, there are very narrow roadways with little to no shoulders and no sidewalks. Walking or jogging along these roadways would be treacherous.

What is surprising is the number of routes within the highly populated and unincorporated Center Grove area that graded at level F. This is an area that will need to have separated trails or sidewalks added to accommodate walkers and joggers.

The following maps illustrate the existing PLOS for the study area.

JOHNSON COUNTY TRAILS MASTER PLAN



- Legend**
- Existing Trails
 - Proposed Trails
 - Roads
 - Streams
 - Railroad
 - County Boundary
 - * Existing Parks
 - * Public Identified Destination

EXISTING PLOS MAP





FINAL PLAN



FINAL PLAN

BICYCLE AND PEDESTRIAN FACILITY MASTER PLAN

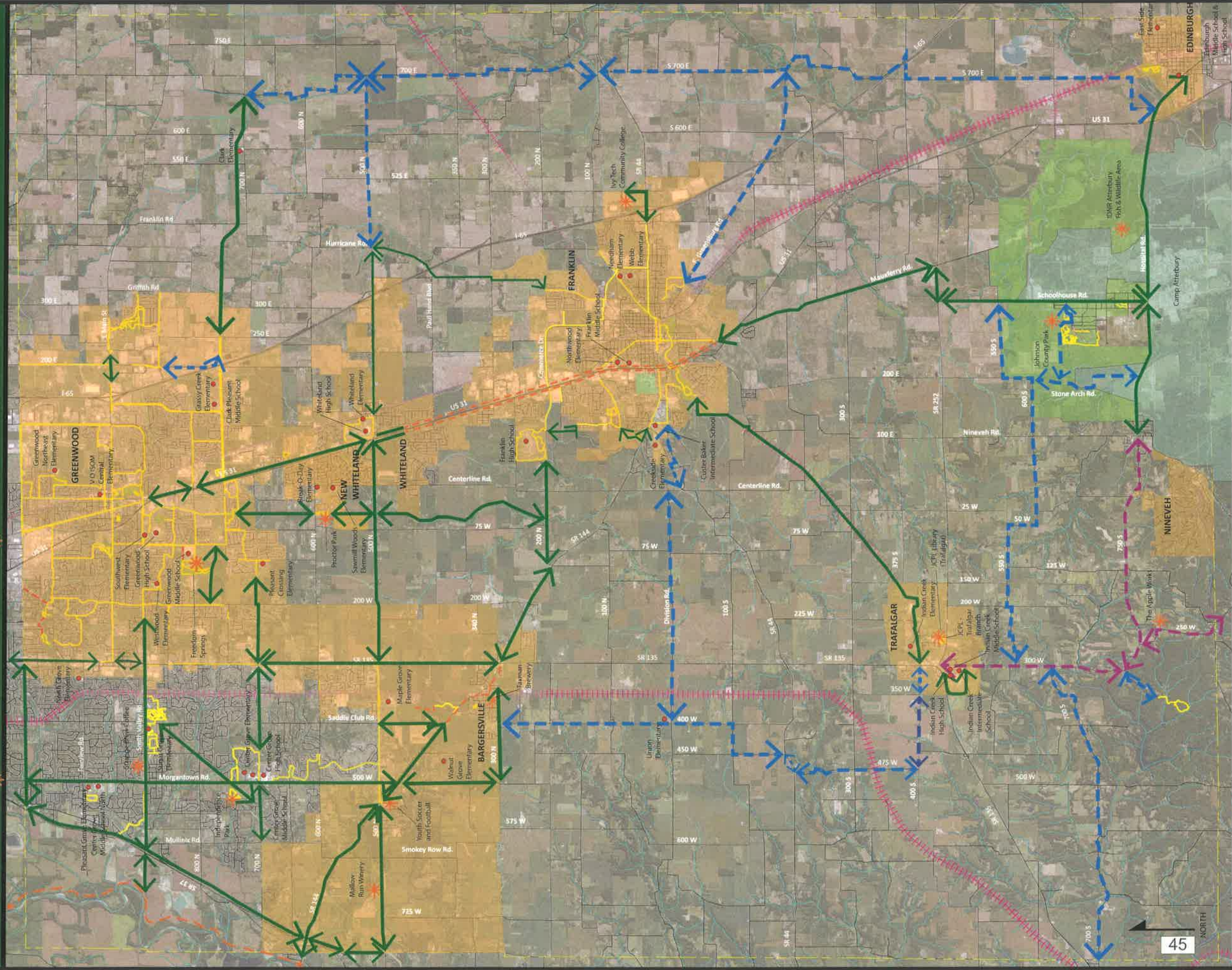
The finalized bicycle and pedestrian facility master plan identifies 35 different corridors for improvement. Two different types of bicycle and pedestrian treatments are proposed to strengthen the bicycle and pedestrian network. The plan will use Shared Roadways and Shared Use Trails for this purpose.

A Proposed **Shared Roadway** is defined as a facility which is open to both bicycle and motor-vehicle travel and has a high priority for development. It will be designated as a route for bicycle use by means of signing and marking the roadway. It is recommended that speed limits be reduced on roadways designated as shared roadways. There are 14 different Shared Roadways identified for development. See the Development Standards section for more information on shared roadways.

A **Shared Use Trail** is intended for both bicyclists and pedestrians. It is defined as a facility that is physically separated from motorized traffic and has a firm and stable surface. For the purpose of this plan, a Shared Use Trail is the same as a Multi-Use Trail or a Shared Use Path. Should the current use of the property change after this plan is adopted, then the developer shall be required to accommodate the Proposed Shared Use Trail route. There are 21 different Shared Use Trail corridors identified for development. See the Development Standards section for more information on Shared Use Trails.

See the next page for the Final Master Plan map.

JOHNSON COUNTY TRAILS MASTER PLAN





JOHNSON COUNTY TRAILS
A SAFE, HEALTHY, ACTIVE COMMUNITY

FINAL PLAN



COLLABORATIVE DESIGNS

Legend

- Existing Trails
- Proposed Shared Use Trail
- Proposed Shared Roadway
- Proposed Shared Roadway (Requires Reduced Speed Limit)
- Proposed Shared Roadway (Requires Reduced Speed Limit)
- Proposed Trail by Others
- Public Identified Destination
- Existing Trains
- Roads
- Streams
- Railroad
- County Boundary
- Existing Parks

Scale: 1 inch = 2 miles, 3 inches = 3000 feet

0 1 2 3 Miles / 0 2000 4000 6000 Feet

FINAL PLAN



TOTAL DISTANCE OF BICYCLE & PEDESTRIAN FACILITIES SUMMARY

Shared Roadways: 67.7 miles
 Shared Use Trails: 96.5 miles
 Total: 164.2 miles

PREFERRED LOCATIONS OF MULTI-USE TRAILS

Below is a summary of the locations for the Proposed Shared Use Trails along each roadway. The location is based upon the least disturbance to individual property owners and connecting to public identified destinations along the corridor. The location is suggested and final locations will be determined based on the current property use and existing and proposed development.

WEST TO EAST TRAILS

TRAIL ROUTE / STREET NAME	FROM STREET	TO STREET	NORTH SIDE	SOUTH SIDE
County Line Rd.	Bluff Rd.	Morgantown Rd.		X
County Line Rd.	Bluff Rd.	SR 135		X
Smith Valley Rd.	Irving Materials	SR 37 / I-69	X	
Smith Valley Rd.	SR 37 / I-69	Morgantown Rd.	X	
Smith Valley Rd.	Morgantown Rd.	Poplar Dr.		X
Independence Trail	Horizon Blvd.	Smith Valley Rd.	NA	NA
Cutsinger Rd.	Honey Creek Rd.	Averitt Rd.	X	
Worthsville Rd.	250 E	670 E		X
Stones Crossing Rd.	Mullinix Rd.	Morgantown Rd.	X	
Stones Crossing Rd.	Forest Hills Blvd.	SR 135	X	



FINAL PLAN

TRAIL ROUTE / STREET NAME	FROM STREET	TO STREET	NORTH SIDE	SOUTH SIDE
Stones Crossing Rd.	SR 135	Ashton Ln.		X
CR 144	County Line	SR 37 / I-69	X	
CR 144	SR 37 / I-69	500 N	X	
CR 144	500 N	Saddle Club Rd.	X	
500 N	800 W	CR 144	X	
500 N	SR 135	Tracy Ditch	X	
500 N	Tracy Ditch	Sawmill Rd	X	
500 N	Sawmill Rd	US 31		X
500 N	Center St.	I-65		X
500 N	I-65	Hurricane Rd.		X
300 N	Morgantown Rd.	Indiana St.	X	
SR 144	SR 135	200 N	X	
200 N	SR 144	Franklin High School	X	
Main Street	Pilot Gas Station	200 E		X
SR 44	Paris Dr.	Jim Black Rd.	X	
775 S	Nineveh Rd.	Stone Arch Rd.		X
775 S	Stone Arch Rd.	325 E	X	
800 S	325 E	Center Cross St	X	
SR 252	325 E	Mauxferry Rd.	X	

FINAL PLAN



SOUTH TO NORTH TRAILS

TRAIL ROUTE / STREET NAME	FROM STREET	TO STREET	EAST SIDE	WEST SIDE
800 W	500 N	SR 37	X	
I-69 Access Rd	800 W	County Line Rd.	X	
Morgantown Rd.	300 N	CR 144		X
Morgantown Rd.	CR 144	500 N		X
Morgantown Rd.	500 N	Stones Crossing Rd.	X	
Morgantown Rd.	Stones Crossing Rd.	Smith Valley Rd.	X	
Morgantown Rd.	Smith Valley Rd.	Fairview Rd.		X
Morgantown Rd.	Fairview Rd.	County Line Rd.	X	
SR 135	SR 144	500 N	X	
SR 135	500 N	Stones Crossing Rd.	X	
SR 135	Smith Valley Rd.	Main Street	X	
SR 135	Goodwill Dr.	County Line Rd.	X	
Saddle Club Rd.	CR 144	500 N		X
Tracy Ditch Trail	750 N	200 N	NA	NA
US 31	Franklin City Limits	Madison Ave	X	X
Cumberland Trail	Cumberland Dr	200 N	X (100 E)	
Cumberland Trail	SR 144	Pamela Dr.		X
Hurricane Rd.	Brokshire Dr	300 N		X
Hurricane Rd.	300 N	Paul Hand Blvd.	X	
Hurricane Rd.	Paul Hand Blvd.	500 N	X	
Indiana Railroad	Town of Trafalgar	City of Franklin	NA	NA
325 E	800 S	SR 252		X
Mauxferry Rd.	SR 252	US 31	X	
Trafalgar School Loop	NA	NA	NA	NA



FINAL PLAN

LAND ACQUISITION

Acquisition of each parcel along a trail may be handled through different means. There are several properties owned by IDNR along the abandoned railroad corridor that runs southeast from Morgantown through Trafalgar and up through Franklin. IDNR will donate these properties to the County following a letter requesting them from IDNR.

The US Army owns and controls Hospital Road from Nineveh east to the bridge over Sugar Creek. They also own Stone Arch Road from the POW Chapel south to Hospital Road. The County will be required to obtain permission and an easement from the Army Corps of Engineers before any construction can begin on facilities along Hospital Road. A Memorandum of Understanding would be required along Hospital Road to install any markings and signs along this shared roadway route.

Finally land on private property will require the county to work with property owners to acquire an easement through either fee-simple purchase or donation. All acquisition must follow the Uniform Act if it is anticipated that Federal-Aid will be used for development of the facility.

BIKEABILITY CONDITIONS

After creating the new master plan map, the BLOS calculator tool was once again used with the revised data to create a new map. The new map reflects the potential bikeability for the county once all facilities are implemented. See Appendix B for proposed calculation data and scores.

A grade of “A” through “B” indicates that the route is suitable for a casual rider. A grade of “C” indicates that the route is borderline suitable for casual riders, but would be suitable for intermediate to experienced riders. A grade of “D” through “F” means that only the most expert riders would feel comfortable riding the route in its present condition.

The following map illustrates the Proposed BLOS for the study area.

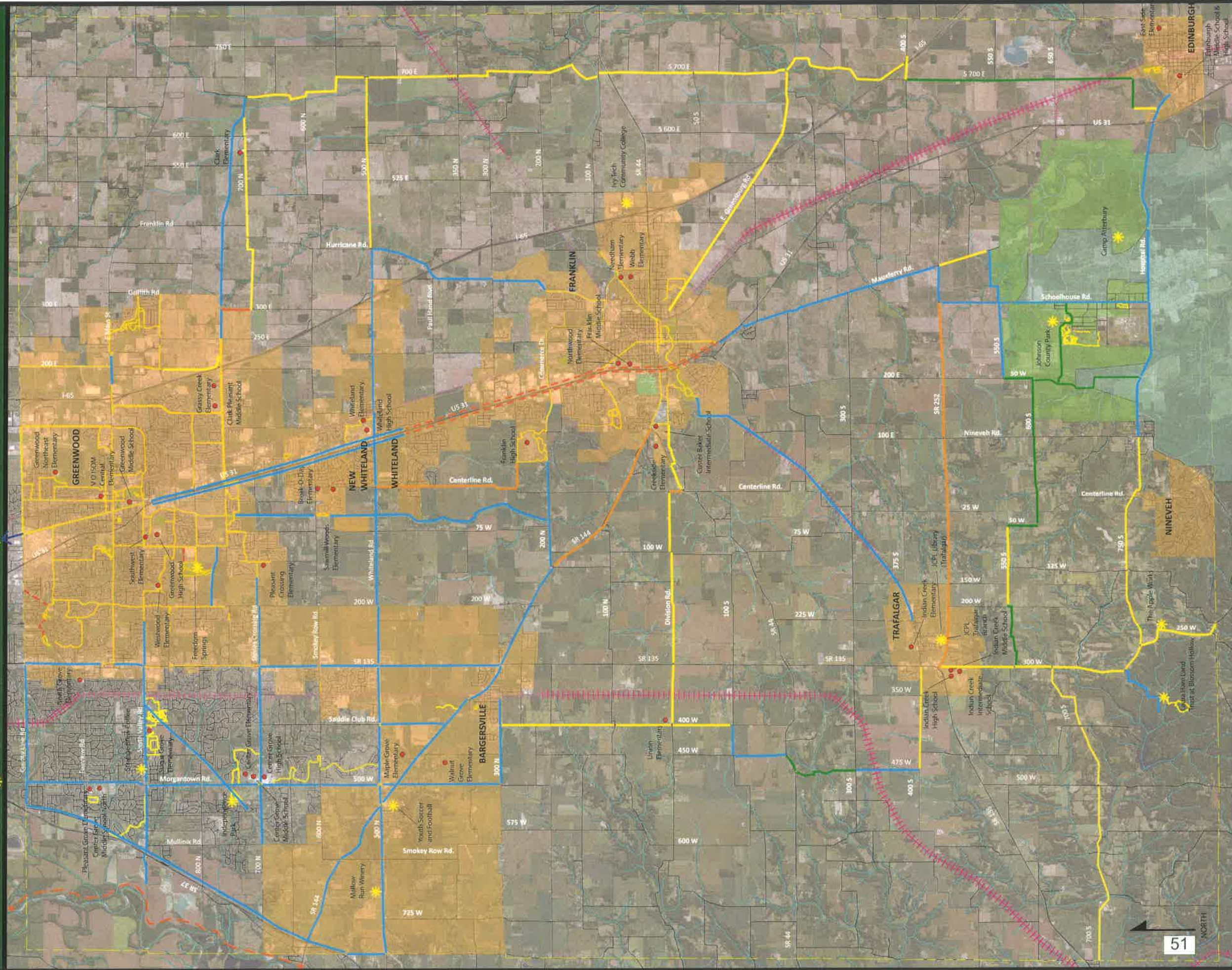
WALKABILITY CONDITIONS

After creating the new master plan map, the PLOS calculator tool was used with the revised data to create a new map reflecting the potential walkability for the county once all facilities are implemented. See Appendix B for proposed calculation data and scores.

Routes with an A and B level are considered to be on the high side of walkability. Sections that fell into the C level are considered borderline walkable, and D-F levels are considered less walkable or not walkable.

The following map illustrates the Proposed PLOS for the study area.

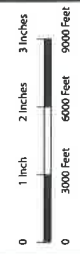
JOHNSON COUNTY TRAILS MASTER PLAN



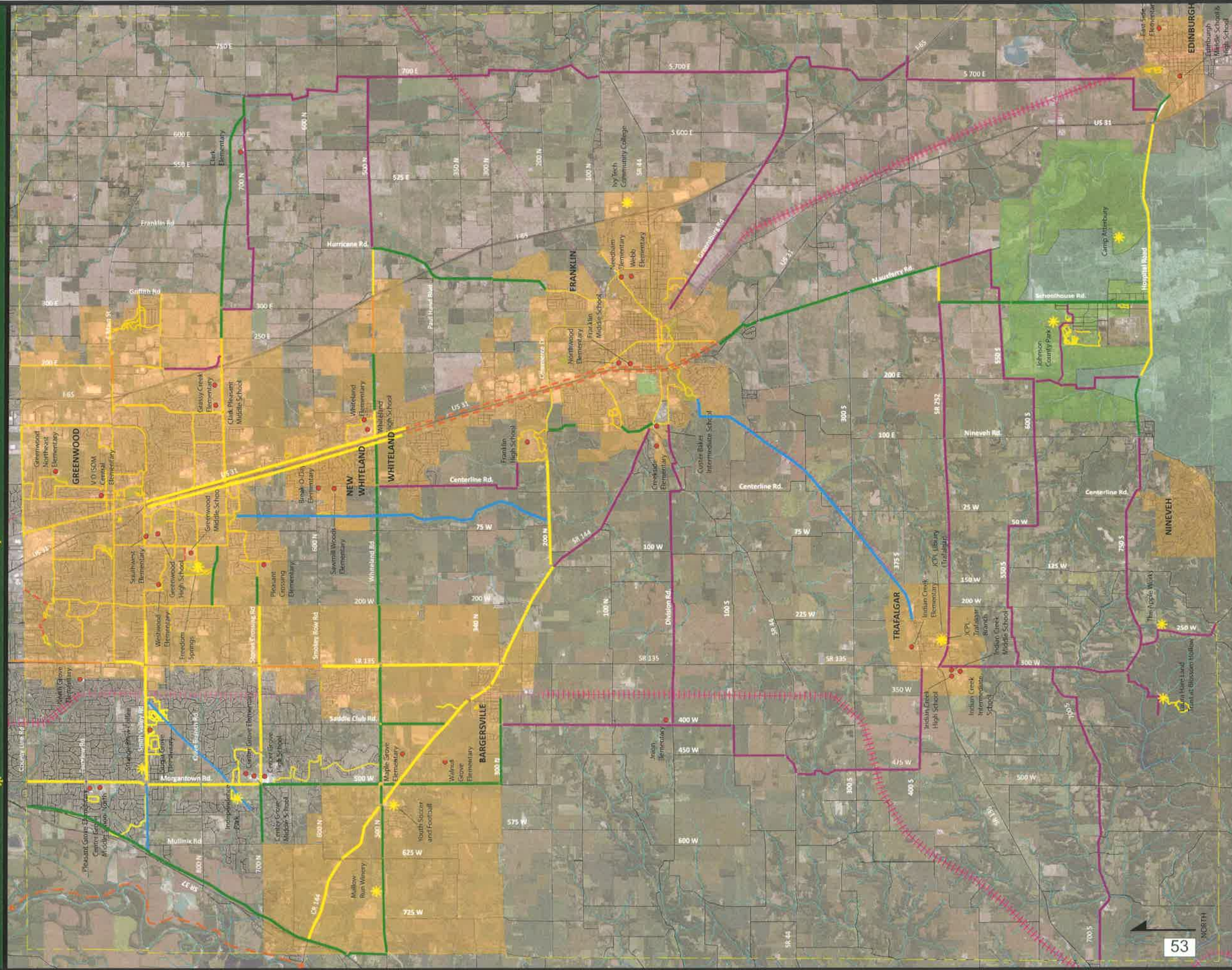
Legend

- Existing Trail
- Roads
- Streams
- Railroad
- County Boundary
- Existing Parks
- Public Identified Destination

PROPOSED BLOS MAP



JOHNSON COUNTY TRAILS MASTER PLAN



- Legend**
- Existing Trails
 - Roads
 - Streams
 - Railroad
 - County Boundary
 - Existing Parks
 - Public Identified Destination

PROPOSED PLOS MAP



FINAL PLAN



PRIORITY ROUTES

In general, the cost of most shared roadways can be installed for much less than the shared use trails and could be installed by the local agency. For this reason the shared roadway routes are not included in the priority routes. The county may choose to include the installation of the Shared Roadway routes in the County's annual striping budget, and may be installed as soon as possible.

A rating system has been developed to help with the decision making process regarding the priority of each trail facility being implemented. Each route starts with (1) one point and then points are added based upon the following criteria. There are a total of (20) twenty points available with (20) twenty being the highest priority. Below is the rating criteria for the plan.

Rating Criteria

- Route connects to 2 or more existing bicycle / pedestrian facilities (vital link) +2
- Route is a vital link to connecting two communities +2
- Route is on a Statewide Trail Plan +2
- Route is part of an upcoming county project +2
- Route is part of a Major North and South Route (Backbone Trail) +2
- Route connects to an employer with over 500 employees +2
- Route connects to a public school +2
- Route connects to an existing bicycle / pedestrian facility +1
- Route connects to a public "desired" destination point +1
- Route connects to a public transportation route +1
- Population Density Over 500 People Per Square Kilometer+1
- The route occurs in the Johnson County Trails Master Plan +1

A scoring table has been created using the rating criteria above. The scoring table and priority routes may change as development occurs. The steering committee should regularly update the scoring table to make sure the priority list is current. See Scoring Table on the next page.

It should be noted that the rating system is a guide and should be reviewed periodically. If an opportunity arises that would allow a section of trail on the map to be installed more economically or because it better fits a funding opportunity, then the Trails Committee should consider circumventing the priority list and allowing this trail section to proceed.

Johnson County Trails Master Plan - Priority Route Table

ROUTE NAME	FROM STREET	TO STREET	Route Connects to 2 or More Existing Bike / Ped Facilities	Route is a vital link to connecting two communities	Route is on a Statewide Trail Plan	Route is part of an upcoming county or State project	Route is part of a Major North and South Route	Route connects to an employer with over 500 employees	Route connects to a public school	Route connects to an existing bicycle / pedestrian facility	Route connects to a public "desired" destination point	Route connects to a public transportation route	Population Density Over 500 People Per Square Kilometer	The route occurs in the Johnson County Trails Master Plan	POINT TOTAL
County Line Rd.	Bluff Rd.	SR 135										1	1	1	3
Smith Valley Rd	SR 37 / I-69	Poplar Dr.		2		2		2	2	1	1	1	1	1	13
Independence Trail	Horizon Blvd.	Smith Valley Rd.	2					2	2		1		1	1	9
Cutsinger Rd.	Honey Creek Rd.	Averitt Rd.	2										1	1	4
Worthsville Rd.	250 E	670 E				2		2	2	1				1	8
Stones Crossing Rd.	Mullinix Rd.	Ashton Ln.	2	2				2	2					1	9
CR 144	County Line	Saddle Club Rd.								1	1			1	3
500 N	800 W	CR 144								1	1			1	3
500 N	SR 135	Tracy Ditch		2						1				1	4
500 N	Tracy Ditch	Sawmill Rd		2	2		2		2			1	1	1	11
500 N	Sawmill Rd	US 31		2	2		2		2	1		1	1	1	12
500 N	Center St.	I-65								1		1		1	3
500 N	I-65	Hurricane Rd.												1	1
300 N	Morgantown Rd.	Indiana St.									1			1	2
SR 144	SR 135	200 N		2							1		1	1	5
200 N	SR 144	Franklin High School		2				2	2	1	1			1	9
Main Street	Pilot Gas Station	200 E	2					2				1		1	6
SR 44	Paris Dr.	Jim Black Rd.								1	1	1		1	4
775 S	Nineveh Rd.	325 E		2				2			1			1	6
800 S	325 E	Center Cross St		2	2		2	2			1		1	1	11
SR 252	325 E	Mauxferry Rd.		2	2		2				1			1	8
800 W	500 N	SR 37												1	1
I-69 Access Rd	800 W	County Line Rd.				2							1	1	4
Morgantown Rd.	300 N	500 N		2		2		2	2					1	9
Morgantown Rd.	500 N	Stones Crossing Rd.		2		2		2	2	1				1	10
Morgantown Rd.	Stones Crossing Rd.	Smith Valley Rd.		2		2		2	2	1			1	1	11
Morgantown Rd.	Smith Valley Rd.	Fairview Rd.		2		2		2	2				1	1	10
Morgantown Rd.	Fairview Rd.	County Line Rd.		2		2		2	2				1	1	10

Johnson County Trails Master Plan - Priority Route Table

ROUTE NAME	FROM STREET	TO STREET	Route Connects to 2 or More Existing Bike / Ped Facilities	Route is a vital link to connecting two communities	Route is on a Statewide Trail Plan	Route is part of an upcoming county project	Route is part of a Major North and South Route	Route connects to an employer with over 500 employees	Route connects to a public school	Route connects to an existing bicycle / pedestrian facility	Route connects to a public "desired" destination point	Route connects to a public transportation route	Population Density Over 500 People Per Square Kilometer	The route occurs in the Johnson County Trails Master Plan	POINT TOTAL
SR 135	SR 144	500 N		2						1			1	1	5
SR 135	500 N	Stones Crossing Rd.		2						1				1	4
SR 135	Smith Valley Rd.	Main Street		2						1		1	1	1	6
SR 135	Goodwill Dr.	County Line Rd.		2						1		1	1	1	6
Saddle Club Rd.	CR 144	500 N						2	2	1				1	6
Tracy Ditch Trail	750 N	500 N	2	2	2		2				1		1	1	11
Tracy Ditch Trail	500 N	200 N					2							1	3
US 31	Franklin City Limits	Madison Ave	2	2	2		2	2				1	1	1	13
Cumberland Trail	Cumberland Dr	200 N	2					2	2					1	7
Cumberland Trail	SR 144	Pamela Dr.	2					2	2			1	1	1	9
Hurricane Rd.	Brokshire Dr	500 N								1				1	2
Indiana Railroad	Town of Trafalgar	City of Franklin	2	2							1	1		1	7
325 E	800 S	SR 252		2	2		2	2			1			1	10
Mauxferry Rd	SR 252	US 31		2	2		2	2			1			1	10
Trafalgar School Loop	NA	NA						2	2	1				1	6
															0
															0
															0



FINAL PLAN

TIER CRITERIA AND PRIORITY ROUTE MAP

Tier 1 is the highest priority. A score of 11-20 on the priority route scoring table will be considered a tier 1 route.

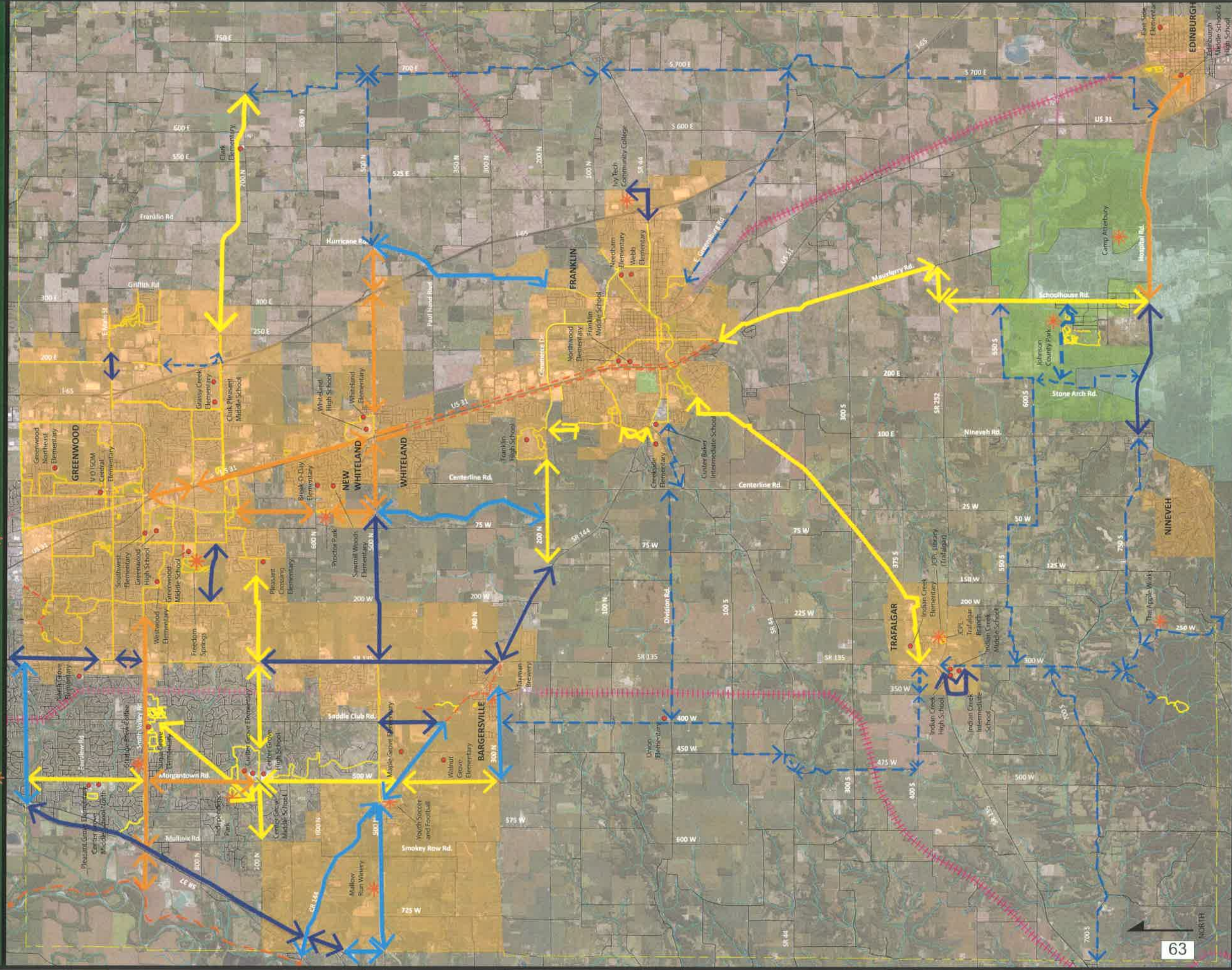
Tier 2 is the second highest priority. A score of 7-10 on the priority route scoring table will be considered a tier 2 route.

Tier 3 is the second lowest priority. A score of 4-6 on the priority route scoring table will be considered a tier 3 route.

Tier 4 is the lowest priority route and is targeted for completion after all other tiers. A score of 1-3 on the priority route scoring table will be considered a tier 4 route.

See the next page for the Priority Trail Routes Map.

JOHNSON COUNTY TRAILS MASTER PLAN



PRIORITY TRAIL ROUTES

Legend

- Existing Trails
- Streams
- County Boundary
- Editing Parks
- Public Identified Destination
- Tier 1 Priority
- Tier 2 Priority
- Tier 3 Priority
- Tier 4 Priority
- Proposed Shared Roadway
- Proposed Trail By Others

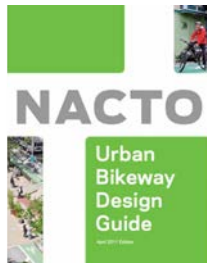
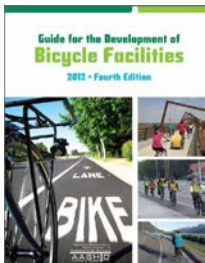


FINAL PLAN: DESIGN STANDARDS



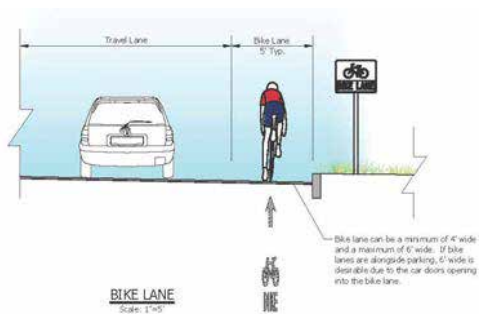
BIKE FACILITY TYPES AND STANDARDS

All long term plans are meant to be adaptable to new information. This one should be reviewed at regular intervals to see if any standards have changed. At the time this document was created there were several guidelines that apply, including The 2012 American Association of State Highway and Transportation Officials Guide for the Development of Bicycle Facilities (AASHTO), and The National Association of City Transportation Officials Urban Bikeway Design Guide (NACTO). It is recommended that these guidelines as well as the standards outlined below be followed unless new standards or information become available.



BIKE LANE WIDTH

Both NACTO and AASHTO recommend that the minimum width of a bike lane shall be 4 feet where there is a clear graded shoulder for recovery. The consultant team would further recommend that the clear graded shoulder be at least 5 feet wide before any drop off greater than 2 feet and that the closest vertical object be at least 2 feet from the edge of the bike lane. A bike lane shall have a minimum width of 4.5 feet next to a straight curb and only for short distances. The standard width of bike a lane should be 5 feet or wider where there is a curb present and there is no on street parking. Where on street parking is adjacent to the bike lane, then the width of the lane shall be 6 feet minimum to allow for cars to open their doors into the bike lane without conflict. If possible, where parking is adjacent to the bike lane, then a 7 feet lane should be installed. Bike lanes shall be delineated from vehicular lanes by a solid white 6 inch stripe and between adjacent parking by a 4 inch solid white stripe.

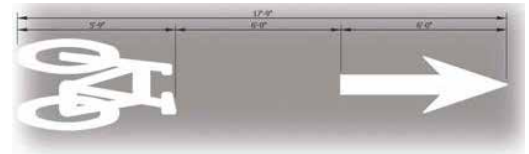




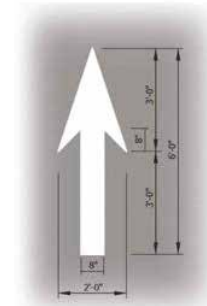
FINAL PLAN: DESIGN STANDARDS

BIKE LANE MARKING AND SIGNAGE

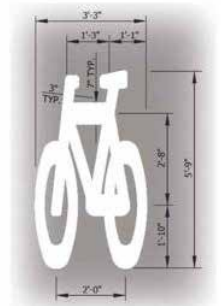
Bike lane markings shall consist of a bicycle symbol and an arrow placed together in the center of the lane. MUTCD sign R3-17 will also be used in conjunction with these markings. The bicycle symbol shall be placed so that it is the first symbol to be seen followed by the arrow. Bike lane markings and signage shall be placed at the start of each bike lane, after an intersection, after a bike path crossing, and after a major approach. Bike lane markings should be placed no more than a 1,000 feet apart in rural sections and no more than 350 feet apart in urban sections. Signs can be placed further apart in-between intersections and can be placed every other occurrence of placing the bike lane markings. See illustrations to the right for more information on standard sizes. Signs should also be placed warning users of a bike lane ending and when the bike lane continues on the other side of an intersection with a supplemental “AHEAD” plaque. Bike lanes are appropriate on roadways with speeds under 45 mph.



BIKE & ARROW DETAIL



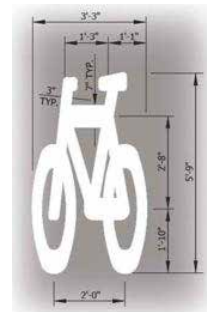
BIKE LANE ARROW



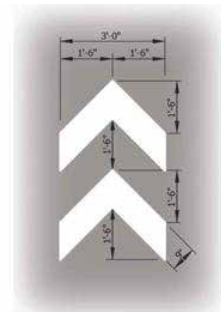
BIKE LANE SYMBOL

SHARED ROADWAY MARKING

Markings shall consist of a bicycle symbol and chevrons placed together to create a “Sharrow”. Sharrows shall be placed in the center of the lane to indicate where the bicyclist should ride. MUTCD signs W11-1 (Bike Symbol) with W16-1P (Share the Road) will also be used in conjunction with these markings. The bicycle symbol shall be placed so that it is the first symbol to be seen followed by the chevrons. Bike lane markings and signage shall be placed at the start of each shared roadway, after an intersection, after a bike path crossing, and after a major approach. Markings should be placed no more than 250 feet apart on low volume roads and no more than 100 feet apart in urban sections. For wayfinding purposes, the orientation of the chevron in the sharrow symbol marking may be adjusted to direct bicyclists along discontinuous routes.



SHARROW SYMBOL



SHARROW CHEVRONS



MODIFIED SHARROW SYMBOL

FINAL PLAN: DESIGN STANDARDS



W11-1



W16-1



R4-11



SHARED ROADWAY SIGNAGE

Signs can be placed further apart in between intersections and can be placed every other occurrence of placing the bike lane markings. Signs should also be placed warning users of the shared roadway ending.

On roadways where vehicles and bikes share the same route, alternate signs “W11-1” and “W16-1” with sign “R4-11.” This will bring extra attention to vehicles using the roadway that cyclists have the right to use the entire width of the travel lane. Use sign “R4-11” to indicate where bikes merge into traffic when a designated bike lane comes to an end. See illustrations to the left for standards.

At non-signalized roadway intersections where a non-bike and pedestrian route crosses with a designated bike and pedestrian route, place the “2-Way Crossing” sign at either side of that intersection. Additionally, place the “2-Way Crossing” sign at the exit of commercial drives if it crosses with a shared-use path.



EPOXY COATING ON ASPHALT

CONFLICT ZONE MARKINGS

Vehicular crossings of bicycle facilities can happen at intersections and at private drives or entrances. Care must be taken by both bikes and vehicles to watch out for one another in these transition zones. Marking these crossings to bring attention to these conflict areas can be helpful. Several options are available for marking these areas:

1. An epoxy-modified, acrylic, waterborne coating has been successfully used for bike lanes. There are several colors available and selection should be based upon the color choice that provides the most contrast and matches with the amenities color scheme along that particular route.
2. Cabot DeckStain is another option that might be considered on a trial basis. This coating has been used by the City of Portland, Oregon, to color neighborhood road intersections with less than 2,500 VPD.



FINAL PLAN: DESIGN STANDARDS

SHARED USE TRAIL TYPE

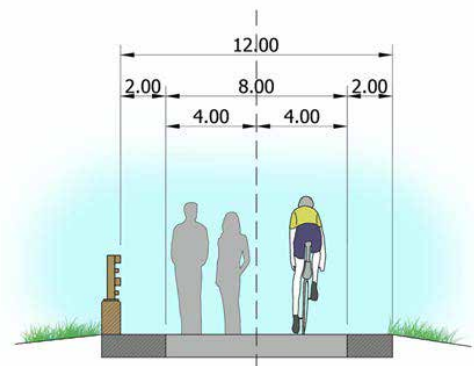
It is recommended that each shared use trail be universally accessible. For the purposes of this plan a shared use trail is the same as a shared-use path or multi-use trail. The American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities (2012) and Chapter 51 of the Indiana Department of Transportation (INDOT) Design Manual defines a shared-use path as an off-road, two-way facility designed for use by bicyclists, in-line skaters, wheelchair users, and pedestrians on exclusive right-of-way with minimal cross flow by motor vehicles. This means that the paths will have to be wide enough to accommodate two way travel for each type of use. In order to allow accessibility to each use, the path's surface must be adequate and slopes must follow guidelines developed by the US Access Board or regulations from the US Department of Justice. At the time this document was created there were several guidelines that apply: 1) Guidelines for Shared Use Paths; 2) Guidelines for Outdoor Developed Areas; and 3) Guidelines for Pedestrian Facilities in the Public Right-of-Ways. Although INDOT and AASHTO regulations may not be required for all shared-use paths, it is recommended that these guidelines be followed on all paths applications.



Shared-Use Trail
Tracy Ditch Trail - Greenwood, IN

SHARED-USE TRAIL WIDTH

AASHTO recommends a minimum width of 10 feet for shared use paths, with 2 foot wide graded shoulders on either side of the path. However, when a higher number of users are anticipated, a 12 foot wide trail with shoulders should be employed. This allows for two 6 foot wide lanes that will accommodate several different types of users. Therefore, the design team recommends using a 10 foot wide path (minimum) with 2 foot grass shoulders wherever possible. Only where absolutely necessary should an 8 foot path with shoulders be implemented. This instance should only happen when the shared-use path is considered a connector path (a path that will have minimal traffic and isn't a through path) and/or when it is not feasible to fit a larger width of path due to right-of-way or other limitations.



Typical 8' Wide Shared Use Trail (Min. Trail Width)

FINAL PLAN: DESIGN STANDARDS



Shared Use Trail & Non-Mowable Slope
Fall Creek Trail - Indianapolis, IN

SHARED-USE TRAIL SLOPE

It is important that the trail cross slope provide positive drainage, but not create a non-traversable slope for trail users or those in wheelchairs. For this reason all cross slopes shall be no more than 2%. Trail shoulders create recovery areas for bicycle users and should not have cross slopes greater than 4%. Side slopes beyond the shoulders should not be greater than 4:1. Steeper slopes are non-mowable and therefore create maintenance issues. Additionally, slopes steeper than 3:1 within 5 feet of the trail's edge must be protected. Longitudinal trail slope should be no greater than 5% in most circumstances. The INDOT Design Manual gives more guidance on when it is permissible to exceed this guideline and appropriate mitigation techniques.



Wilbur Wright Trail - Henry County, IN

SHARED-USE TRAIL SURFACE

The primary concern with path surfacing is accommodating a variety of path users and providing accessibility. While crushed stone is less expensive to construct and is more forgiving for runners and walkers, it does not accommodate all users. It is non-traversable for in-line skaters and can be difficult for people in wheelchairs because not all stone paths meet the definition of firm and stable. Asphalt, on the other hand, can accommodate all types of users, and even though initial construction costs are higher, it lasts longer and requires less annual maintenance. In order to preserve the asphalt, consideration should be given to using an oil sealant right after construction. One popular product is a bio based / soy bean product called RePlay. Regular treatment will help to keep the asphalt from becoming dry and rigid which can lead to failure and cracking. See the Shared-Use Trail Maintenance Section for further recommendation.



FINAL PLAN: DESIGN STANDARDS

SHARED USE TRAIL - STREET INTERSECTION DESIGN:

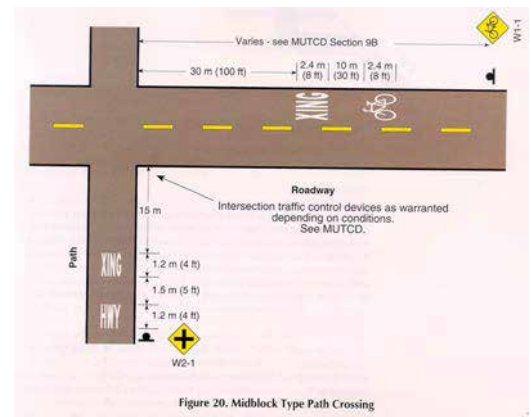
Intersection design for shared use trails should be based upon sound “engineering judgment” at each intersection and each should be treated individually as each has unique characteristics. Uniformity in the use of traffic control devices is critical to encourage proper and predictable behavior by shared-use path users. The Manual on Uniform Traffic Control Devices (MUTCD) shall be followed for size, shape, color and placement of signs on both the path and the street. In addition, coordination with the City should ensure the proper design and layout of traffic control devices necessary to warn vehicular traffic on public streets of path crossings. The North American Cities and Towns Organization (NACTO) Urban Bikeway Design Guide can also be consulted for unique situations. All street crossings will occur as at-grade. Traffic will have the right-of-way and path users, at most crossings, will have to stop. The team devised three different types of street crossing treatments to deal with the various at-grade crossings throughout the city. The following treatments are minimum recommendations.



Shared Use Trail Street Crossing
Monon Trail - Carmel, IN

At-Grade Road Crossing - Level 1:

- Used on local roads with a maximum of two lanes. Speed limit should be under 40 mph and a gap study should be done to assess user risk at the crossing.
- Warning Signs of an upcoming intersection will be placed on the roadway based upon MUTCD standards.
- No Motor Vehicles signs placed facing the street at all path intersections.
- Stop sign along the path placed approximately 10 feet from the edge of the street.
- Crosswalk pavement markings at crossing point.
- “Trail Xing” markings on the roadway.



Example of an At-grade Crossing Level 1 -
‘Guide for the Development of Bicycle Facilities’ -
AASHTO 1999

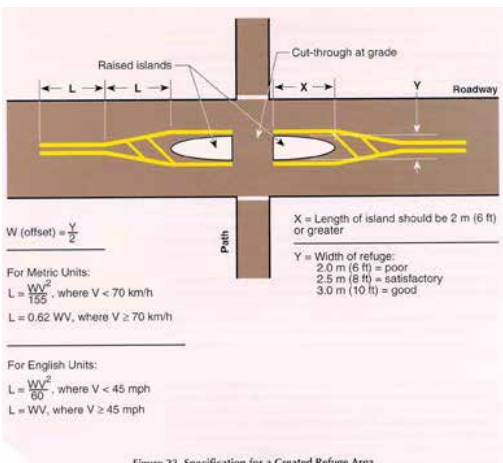
FINAL PLAN: DESIGN STANDARDS



At-grade Crossing Level 2
Monon Trail - Carmel, Indiana

At-Grade Road Crossing - Level 2:

- Should be considered on all roads with a maximum of two lanes and speed limits over 40 mph or greater. A gap-study should be performed to assess user risk at the crossing.
- All treatments of a Level 1 Road Crossing apply.
- In addition to Level 1 treatments, at a minimum it is recommended that overhead flashers (or a rapid flashing beacon) with signage be used and that a HAWK signal be used if warranted by traffic conditions. Rapid flashing beacons should preferably be used in combination with a motion activated warning signal. Flashers that are always on tend to be ignored or not noticed by vehicular drivers because they do not necessarily indicate that a path user is in the area.



Midblock Crossing Level 3 - "Guide for the Development of Bicycle Facilities" -AASHTO 1999



Speed Table
Munger Trail - Lafayette, IN

At Grade Road Crossing - Level 3:

- Should be considered on all roads where there are more than two lanes of travel to cross. A gap study should be performed to assess pedestrian risk.
- All treatments of a Level 2 Crossing apply.
- In addition to Level 2 treatments, median refuge areas are recommended that allow path users to cross one direction of traffic at a time (additional street right-of-way may be required).
- If, and ONLY IF, a refuge island isn't feasible, speed tables are a secondary option.



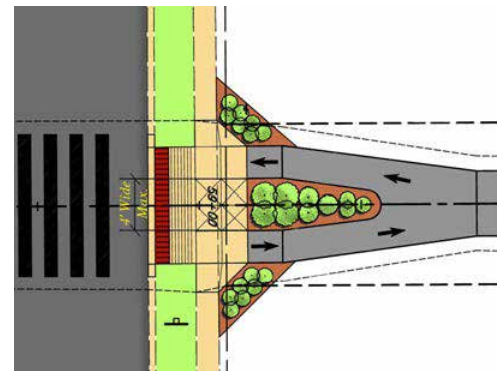
FINAL PLAN: DESIGN STANDARDS

Access of Shared-Use Trail At Public Road Crossings

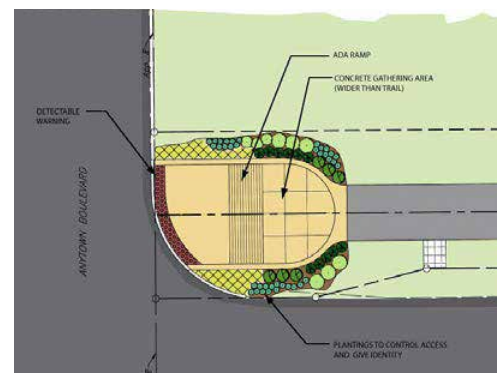
A public road crossing provides an opportunity to bring identity and attention to the trail. It also should provide plenty of room for trail users to cross without having conflicts with other users crossing in the opposing direction. Restricting vehicular access without restricting maintenance vehicles can also be a concern.

The following is a list of options to consider based upon available right-of-way.

- Option 1: Split entry with a 4 foot wide median. The plantings shall be no taller than 6 inches. This will allow for easy flow of trail traffic, while allowing maintenance vehicles access. See detail at right.
- Option 2: Concrete node without a bollard or central median. This option should be used if the area appears to be too narrow or there is not enough right-of-way for a split entry, and the risk of motor vehicles entering the path is low.
- Option 3: Concrete node with bollard. If the area appears to be too narrow and it is believed that public vehicles might try to access the trail in that area, a bollard should be added. The bollard should be easy to collapse or remove and only used when absolutely necessary, as the bollard itself is an obstacle for path users to negotiate around. See the Site Furnishings section for bollard types.



Example of Split Entry
Munger Trail - Lafayette, IN



Example of Concrete Node without a Bollard

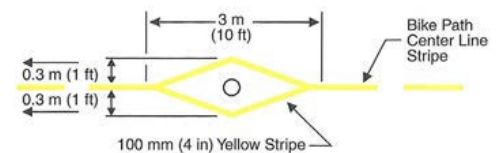


Figure 26. Barrier Post Striping

Example of a Bollard Location and Striping -
'Guide for the Development of Bicycle Facilities' -
AASHTO 1999



Example of Concrete Node with Bollard

FINAL PLAN: DESIGN STANDARDS



Rubber Panel Rail Crossing - Amtrak Rail Line
Michigan City, IN

RAILROAD / SHARED-USE TRAIL INTERSECTION DESIGN

Due to the speed of train travel, sight distance needed to stop a train, and regulatory stipulations, it is recommended that proposed railroad crossings occur at existing road crossings wherever possible. If an existing road crossing is not available then a bridge or tunnel may have to be utilized. Railroad crossings will follow the guidelines established in the Federal Highway Administration's 'Railroad-Highway Grade Crossing Handbook – 2nd Edition FHWA-TS-86-215', AASHTO, the MUTCD, and the requirements and specifications of the individual railroad companies.

It is advised to abide by the following treatments as a minimum for railroad crossings:

- A rubber panel crossing will be used with an asphalt approach.
- A railroad warning sign shall be placed a minimum of 115 feet from the nearest rail.
- A Crossbuck sign will be placed 15 feet from the nearest rail and shall have a sign denoting number of track crossings.
- Where there are existing gate arms, a new pedestrian gate shall be placed if the path must go outside the post.
- A 24-inch stop bar will be placed approximately 15 feet from the nearest rail.
- The shared-use path will have a minimum 45 degree skew from the center line of the rail with 90 degrees being desirable.
- The path's pavement width will be widened to 14 feet.
- Railroad pavement markings will be placed adjacent to the rail warning sign.

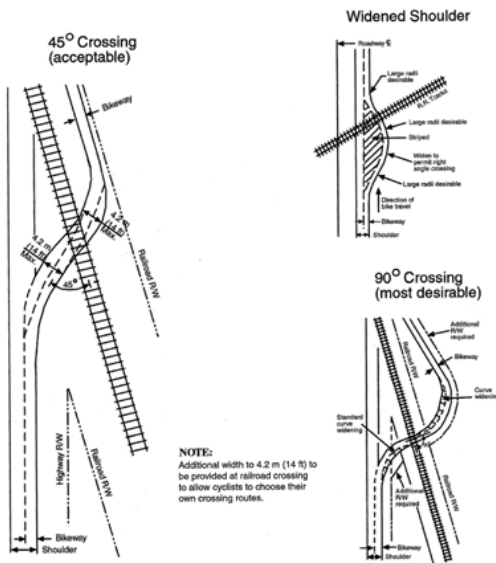
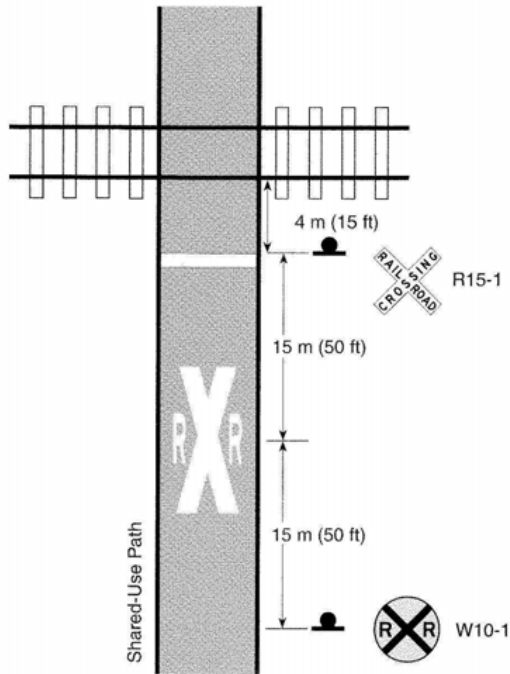


Figure 27. Railroad Crossings

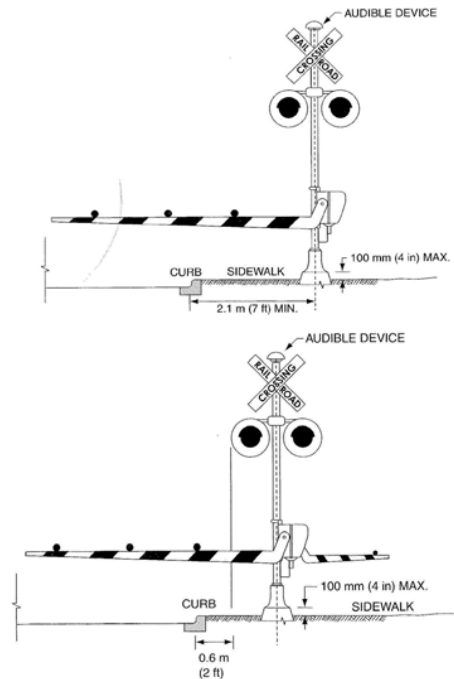
Rail Crossing Standards - 'Guide for the Development of Bicycle Facilities' - AASHTO 1999



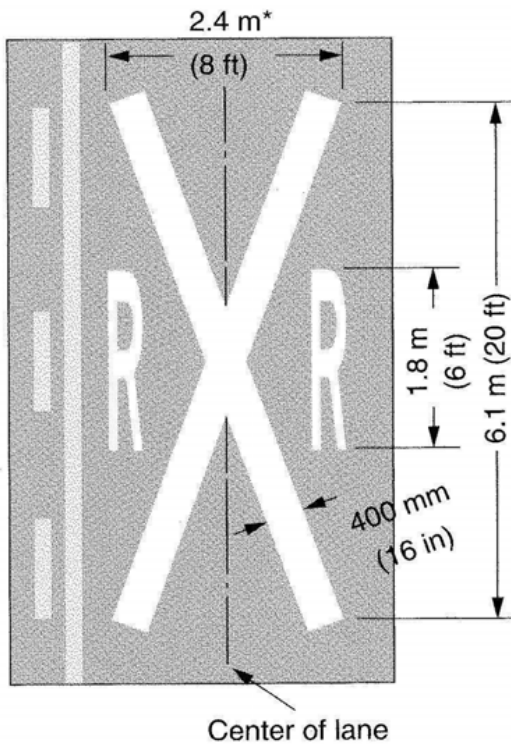
FINAL PLAN: DESIGN STANDARDS



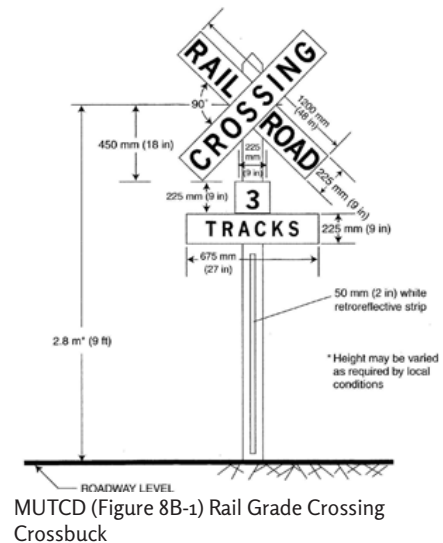
MUTCD (Figure 9B-3) Railroad Sign and Markings Locations for Shared-Use Paths



MUTCD (Figure 10D-3 and 10D-4) Typical Gate Arm Placement in Relation to Paths



MUTCD (Figure 8B-3) Pavement Markings for Rail Grade Crossings



MUTCD (Figure 8B-1) Rail Grade Crossing Crossbuck

FINAL PLAN: DESIGN STANDARDS



SHARED-USE TRAIL SIGNAGE

There are many different issues to consider in the design of signs for a shared-use path. Signs along the system will need to serve a variety of purposes, including: providing traffic control along the path, alerting users to potential hazards, identifying path access points, providing historic information, providing educational information, indicating path distance, and providing orientation on the path and to surrounding communities.

Signs will need to be located so they are legible to path users and must be constructed in methods and materials that are somewhat vandal resistant and easy to maintain.



The need for different types of signs must be balanced with the idea of creating a visually pleasing landscape in which to use the shared-use path. The paths will feature a system of signage to clearly communicate a variety of messages in a graphically consistent manner. The signage system is divided into the following categories: Shared-Use Path Traffic Signs, Shared-Use Path Identity Signs, Shared-Use Path Guidance and Interpretive Signs, and Mile Markers.



Shared-Use Trail Traffic Signs:

The shared-use path system will be a transportation corridor and, therefore, must have recognizable transportation signs that follow MUTCD guidelines. The shared-use path traffic signs will include regulatory and warning signs, such as: STOP, YIELD, and TRAIL NARROWS signs.

The design of the shared-use path traffic signs should be consistent from path to path. Signs can have graphic information on one or both sides, reducing the overall number of signs needed. Signs should be placed 3 feet from the path's edge and be mounted at a height of 5 feet.



If the shared-use path is parallel with a roadway, “Yield To Trail Users” signage should be placed to warn motorists when turning that pedestrians and bicyclists may be crossing the roadway or drive intersection. This provides added safety for both the motorist and pedestrian.



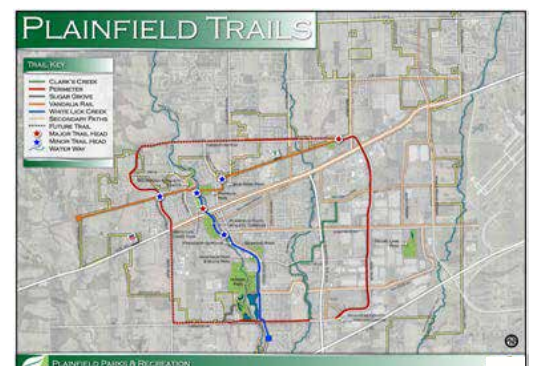
FINAL PLAN: DESIGN STANDARDS

Shared-Use Trail Identity Signs:

The shared-use path system will have numerous points of access. It is important that these points of entry be identified for the public in an appropriate and consistent manner. The shared-use path identity sign is intended to serve two functions: identify the main entry points to the path and establish for the public a consistent and lasting identity for the path. By selecting a consistent treatment for each path it will help the user to know which route they are currently on. Each sign should be designed to incorporate a unique feature of each path. The municipality's logo or Johnson County logo should be incorporated into each sign and the identity sign should follow the same color scheme as the route it is representing. The identity sign should be 9 feet to the bottom of the sign, minimum, to provide visibility and clearance. The signs should be visible by the public at the shared-use path and street intersections and at other significant access points.

Shared-Use Trail Guidance:

Along the path, there should be several different types of signs that provide the user with guidance information such as points of interest, path support facilities, and orientation. Shared-use path guidance signs can be placed into two different categories. One type would be a directory sign which would show the path users how they can reach key destination points within the entire community. This sign would give an overall view of the entire shared-use path system and would need to be 30" x 42" in size to show enough detail. There should be a consistent layout for all these signs so they match and give a cohesive design throughout the system. Directory signs would typically be placed at major trailheads or key path access points. The second type of guidance sign is a wayfinding sign. This type of sign is a map indicating amenities that are within close proximity to your current location on the path. These signs should be located at intersecting routes. A wayfinding sign should be no larger than 24" x 36", but at a scale that shows much more detail than the directory signs. The image located at the top of the next page represents an example of this type of sign.



FINAL PLAN: DESIGN STANDARDS



Interpretive Signs:

Interpretive signs are another type of sign that provide educational information to path users and enhance their experience. These signs help to convey the historical, cultural, or ecological significance of certain points along the path. Examples would be the importance of protecting wetlands or water bodies, geological formations unique to the area, or a historically significant feature within the community.

With all these functions, the materials that the signs are made of must be flexible enough to incorporate a variety of graphic information and, yet, be consistent in appearance and presentation. It is recommended that a high pressure laminate be used for the directory, wayfinding, and interpretive signs. High pressure laminates provide high quality graphics and longevity at a reasonable price. A 1/2 inch thick sign should be employed to avoid the use of a frame. A high pressure laminate sign has a very clean print, has a low replacement cost, and resists shattering, and typically has a warranty period of 10 years. The interpretive signs and directory signs should be mostly conveyed graphically, with minimal text and at a size that is at a comfortable height.



FINAL PLAN: DESIGN STANDARDS

SHARED-USE TRAIL SUPPORT FACILITIES:

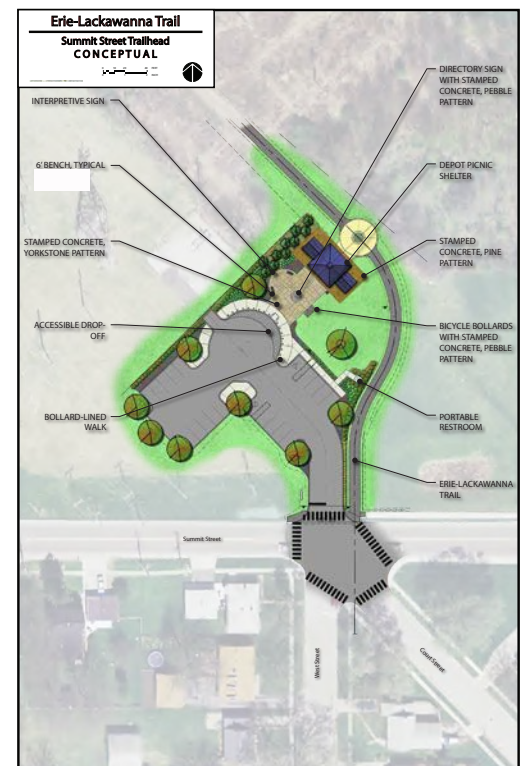
Providing accessibility to all users at key locations throughout the town is important to the success of each shared-use path. Along with accessibility, users require that the path have certain facilities to meet the needs of its use. These support facilities can be broken down into four categories: major trailheads, shared use trail heads, minor trail heads, and community access points. In addition to these public facilities, partnerships should be developed between the community and local businesses to provide secure bicycle parking and other path support facilities as a part of their building or property. This will not only enhance their business but it will also enhance the opportunities given to the path users.

Major Trailheads:

Major trailheads provide the greatest amount of amenities to path users and are recognizable points of access. They are like mini parks alongside the path that may include parking areas, shelters, restrooms, drinking fountains, benches, trash receptacles, picnic tables, bicycle racks, path signage, corridor access, and landscaping. Due to the scope and type of facilities normally required for a major trailhead, it can be difficult to locate them within the narrow constraints of a shared-use corridor. Typically it is necessary to find parcels of land adjacent to the corridor for development. These can be community-owned, such as parks or street right-of-way, or privately-owned properties that are created and operated with the owner's cooperation. These usually require the development of all new amenities for users' needs.



Major Trailhead Example
Summit Street Trailhead - Crown Point, IN



Major Trailhead Example
Summit Street Trailhead - Crown Point, IN

FINAL PLAN: DESIGN STANDARDS



Shared Use Trailhead Example - Twigg Rest Park
Terre Haute, Indiana

Shared Use Trailheads:

Shared use trailheads are similar to major trailheads except they share amenities with other existing or potential uses. They are usually city owned and in many cases need only to have their amenities slightly upgraded in order to meet path users' needs. These trailheads may or may not have existing shelters. This trailhead should be easily accessible from the path, and include amenities such as trash receptacles, bicycle racks, and benches.



Minor Trailhead Example - Clear Creek Trail
Bloomington, Indiana

Minor Trailheads:

Minor trailheads are similar to major trailheads in that they provide amenities to serve shared-use path users, but on a smaller scale. They usually occur more frequently and can be situated within the trail right-of-way. Minor trailheads are located between major trailheads and at certain path intersections. Minor trailheads may provide benches, trash receptacles, bicycle racks, landscaping and signage, but usually will not provide parking.



Community Access Points:

The last type of shared-use trail support facility is the community access point, which provides a minimal amount of amenities such as a trail directory sign or wayfinding sign and a connector path. It is the most frequently occurring type of support facility and provides citizens of adjacent neighborhoods access to the path. Community access points simply provide an informal and direct access between community and trail much like the driveway connects to the street. They are important in fostering a community's adoption of the path and getting users to respect the rights of private property owners by establishing designated points of access. Locations of community access points should be determined in consultation with adjacent landowners and through the selection of logical places to enter the right-of-way from surrounding communities.



FINAL PLAN: DESIGN STANDARDS

BICYCLE FACILITY AMENITIES:

Bicycle Parking should follow the Association of Pedestrian and Bicycle Professionals (APBP) Bicycle Parking Guidelines 2nd Edition. At a minimum bicycle parking should offer a rack that supports the bicycle in at least two spaces, allows locking the frame and at least one wheel with a “U-Lock”, resists rusting, resists cutting, resists bending, and is securely anchored to the ground. An example of a rack meeting this criteria would be a “U-rack”. The rack should be coated with powder coating or thermoplastic to reduce maintenance. Racks that only support the bike by the front wheel should not be used. Bicycle racks should be spaced a minimum of 36 inches apart from one another when placed side by side and a minimum of 24 inches from the nearest obstruction. Design should take into account that a bicycle is a minimum of 6 feet long.

Further considerations should be made for bicycle parking that is intended to be for longer than 2 hours. An example would be an area where a considerable number of people use the parking for commuting. Bicycle parking that is intended for longer than 2 hours should provide shelter or enclosure, be as close as possible to building fronts and in a secure location with active surveillance. It might even be wise to consider bicycle lockers or a supervision.



FINAL PLAN: DESIGN STANDARDS



BICYCLE FRIENDLY CASTINGS

Bicycle friendly castings for drainage inlets are necessary where bicycle facilities are present. It is important to make sure that a bicycle tire will not fit into the grate opening and cause a bicycle user to be thrown from the bike causing injury. The gap between the drainage grate and its frame should be 1 inch or less. Several casting types are available. The most versatile is the octagon style.



BICYCLE FRIENDLY CASTING



OCTAGON OR HONEYCOMB STYLE CASTING

MILE MARKERS

Mile markers provide orientation for the path users and emergency personnel as well as traveled distance along the path. Distance should be marked in quarter-mile intervals or less by transverse pavement markings placed directly on top of the path. Information included on the markers should be distance in miles and each trail's logo. The top mile marker image to the right shows a type that is easily readable and reduces conflicts during routine maintenance such as mowing.



Another option to marking the mileage of the trail is to stripe the center line of each trail at half mile increments in different colors. The color of each half mile can be recorded in the county's GIS system and will allow emergency personnel to identify the location of trail users by the color they see on the trail.



FINAL PLAN: DESIGN STANDARDS

SITE FURNISHINGS

In addition to signage, the design of the shared-use trail system will include site furnishings to accommodate the needs of the path users along the length of the entire route. Amenities such as benches, informal seating areas, trash receptacles, bicycle racks, and bollards will be clustered together at major, minor, and shared-use trailheads.

Locations of amenities along paths will depend on the characteristics of each path segment and should be addressed on a case by case situation. The purpose of most shared-use paths is to move people between various locations and for recreation. As such people are less likely to stop in between access points. Benches generally should be located at overlook points along paths where appropriate and where enough right-of-way exists. Paths located in sections of the county where there is a more elderly population or where there might be a need for people to stop more frequently may require benches to be placed in between access points. Paths located near hospitals may need to have benches placed more frequently if the hospital plans to use the route for rehabilitation programs.

Along with path signage, site furniture will be among the most frequently utilized elements along the path, setting the tone for the overall image of the path system in the minds of the users. It is important that design standards for the paths' site furnishings be established to ensure overall consistency of design and path image. The colors should be consistent with the route color scheme that the furnishing is located along. Along with consistency of color, a consistent style of furnishings needs to be established and followed as paths begin to be constructed. Establishing a color and style to use throughout the path will minimize the amount of cost for the county because replacement parts can be stockpiled for one style of bench instead of five styles. See the following product information for consistency in site furnishings.

For federally funded projects it will be important to use the information in this document to complete the proprietary selection form.



FINAL PLAN: DESIGN STANDARDS



Benches:



- Minimum of 6 feet long.
- Color and style should match other amenities along the trail for a cohesive look.
- Arm rests should be provided to help those that are more physically challenged.
- A backrest should be provided to help those that are more physically challenged.
- Powder or plastisol coating should be applied to reduce maintenance.
- Option: Center Arm can be provided to keep people from sleeping on the bench.
- The bench must have a firm and stable pad underneath it and provide a 3 foot wide area for a wheelchair to sit next to it



Trash Receptacle:

- Color and style shall match benches and other amenities to help with cohesion.
- Minimum size of 32 gallons to reduce emptying.
- A flare top lid will help to keep water from collecting in the trash bag.
- A liner helps to reduce leaking of refuse on to surrounding surfaces.
- The receptacle must have a firm and stable access path to it.



Bicycle Rack:

- 36" Bike Loop.
- Color: Color to be based on designated trail color.
- Installation: In accordance with manufacturer's instructions.
- Style: Loop (supports bicycle in two spots).



Bollard:

- Use: Only in problem areas where motorized vehicle access seems to be more prevalent.
- Collapsible is preferred to allow access for maintenance or emergency vehicles.
- Color to match other amenities for cohesion.





FINAL PLAN: DESIGN STANDARDS

Drinking Fountain:

- Color: To match other amenities for cohesion.
- Installation: In accordance with manufacturer’s instructions.
- Style: Two fountain heights with one fountain ADA accessible and dog bowl fountain.
- The fountain must have a firm and stable access path to it.



SHARED-USE TRAIL LANDSCAPING

The shared-use trail system, due to its overall length and diverse scenery, may require more landscaping in urban areas and less in rural areas. The presence of mature vegetative cover not only adds to the natural beauty of the path experience, but also minimizes the amount of new landscaping necessary to improve the appearance of the path system and screening of the path from undesirable views and adverse adjacent path conditions.

In areas along the path where the appearance warrants improvement and no existing vegetation is present, planting of trees, shrubs and ground cover should be considered to create a linear park effect alongside the route. New plantings should also be used to identify and improve “entrances” to parks (trail access points) and street crossings.



In addition, plantings should be used to screen certain land uses adjacent to the corridor (such as business service areas and industrial sites) and to separate the path from other improvements within the right-of-way (such as parking lots).

Native plant material shall be used in an effort to keep landscape maintenance to a minimum and to maximize the ecological benefits of the plantings. Native plantings are much more equipped to deal with the climate of Indiana which means less watering and care. Native plants are less likely to take over an area creating a mono-culture. They also support a huge food source for birds and therefore play an effect in the food chain of the ecosystem.



Installation of plantings shall follow methods as outlined in the “Urban Watershed Forestry Manual, Part 3: Urban Tree Planting Guide” by the United States Department of Agriculture and Forest Services (www.in.gov/dnr/forestry/files/fo-UrbanWatershedForestryPart_3.pdf). Special attention shall be given to soil volumes, proper street tree species, and size limitations. Plants shall fit the location where they are placed as outlined in the “Right Tree for the Right Place” bulletin by the National Arbor Day Foundation. Special attention shall be given to planting under power lines and proper form of tree species for planting over paths.

FINAL PLAN: DESIGN STANDARDS



SHARED-USE TRAIL LIGHTING

The installation of security lighting at trailheads, road crossings, bridges, and other activity areas should be considered if conditions warrant. Should conditions deem lighting to be necessary, there should be a standard lighting choice throughout all of the system.



SHARED-USE PATH MAINTENANCE ISSUES AND SAFETY

Maintenance costs are expected to be a minimum for the first 5-10 years. Costs will vary depending on the amount of paths needing to be maintained and the location of the paths. On a typical mile-long trail, maintenance could cost approximately \$3,000 per year. Long term maintenance costs could consist of repairing any asphalt damage. Over 20 years it could be anticipated to spend approximately \$10,000 to \$20,000 on asphalt repair. A general maintenance fund should be set aside for this. Below is a list of general system maintenance items to keep in mind during the upkeep of the shared-use paths:

- Treat any wooden railing at least every 5 years to keep from rotting.
- Properly prune trees above trails and shoulders to maintain 12 feet of vertical clearance.
- Properly prune trees and shrubs to maintain at least 5 feet of horizontal clearance from trail pavement edge. Use horticultural accepted pruning techniques and do not “top” trees (do not cut mid branch). Improper pruning can put stress on trees and cause more harm to the public in the long run.
- Properly prune any dead limbs out of trees to protect trail users. Remove any existing trees within close proximity that may die over time to protect trail users.
- Perform routine maintenance: mowing, clearing, trimming, vandalism repair, and litter control.
- Edge pavement or shoulder periodically to prevent roots/ vegetation from compromising pavement.
- Seal cracks in pavement every 2 years to prevent debris build up, water from entering base, and continued deterioration. Rubberized sealant is recommended.
- Consider using a seal coat every 4 years to arrest deterioration, prevent water infiltration, restore oils to upper surface, and prevent loss of fines.





FINAL PLAN: DESIGN STANDARDS

Path maintenance costs could be reduced by utilizing local volunteers and other programs for simple tasks like litter removal and storm clean-up. A full time employee could be the designated volunteer coordinator and help manage resources and efforts. The Cardinal Greenway is a good example of where a volunteer system has been used to reduce maintenance costs and would be a good resource for how to make one successful. Also, youth scouting organizations, community corrections programs, community service programs, and youth programs could be utilized to do these tasks. More stringent repairs, like sealing asphalt and repairing cracks should still be handled with city forces or a contractor.



Another area where volunteers can help reduce cost is through regular patrols of the shared-use path systems. Since many path users will use the system daily for recreational or commuting needs, they can monitor any unwanted behavior simultaneously. Their responsibility would not be to address any unwanted behavior, but rather report it immediately to the proper authorities. In this way, the program can help to reduce the number of law enforcement officers that would need to be dedicated to the trail system and the need to install call boxes along the trails. Examples for places to find local volunteers would be local bicycle clubs, avid cyclists, alternative transportation advocates, etc.



ACCESSIBILITY

As mentioned previously, all new path construction must follow guidelines developed by the US Access Board or regulations from the US Department of Justice. At the time this document was created there were several guidelines that applied: 1) Guidelines for Shared Use Paths; 2) Guidelines for Outdoor Developed Areas; and 3) Guidelines for Pedestrian Facilities in the Public Right-of-Ways. Some of these accessibility standards have already been addressed in other sections of the design guidelines, but there are a few others to consider:

- Ramps – See Guidelines for Pedestrian Facilities in the Public Right-of-Ways.
- Detectable warnings – See ADA Chapter 7: Communication Elements and Features, Section 705 and Guidelines for Pedestrian Facilities in the Public Right-of-Ways.
- Push buttons (activation)/signalization standards – See Guidelines for Pedestrian Facilities in the Public Right-of-Ways.
- Site amenities – See Accessibility Guidelines for Outdoor Developed Areas.

FINAL PLAN: DESIGN STANDARDS



PEDESTRIAN FACILITIES

While the plan does not propose specific pedestrian only facilities, the proposed facilities do connect to pedestrian facilities throughout Johnson County in urban areas. Below are some basic design treatments that these pedestrian only facilities should follow as outlined in the AASHTO Guide for the Planning, Design, and Operations of Pedestrian Facilities.

1. Crosswalks shall have “piano bar” striping to provide more visibility.
2. Intersection Treatments.
 - a. Install refuge islands where the width of the lanes to be crossed is greater than 75 feet or a pedestrian walking at 2.5 feet/second cannot completely cross the street during a signalized walk cycle.
 - b. Consider bump outs at intersections where on-street parking is present to lessen the crossing distance.
 - c. Mid-block crossings should consider Hawk signalization.
3. Street trees should be planted a maximum of 40 feet apart. Street trees should have the following characteristics.
 - a. Non-invasive varieties
 - b. Vase shaped as to not impede pedestrian or vehicular traffic
 - c. Maximum height of 40 feet
 - d. Maximum width of 20-25 feet
4. Tree grates should be considered to give street trees a maximum root zone, while not impeding the pedestrian walking area. This will help to cut down on tree roots heaving the existing walks as well
5. Install a downtown pedestrian support facility including the following:
 - a. Benches for resting
 - b. Trash receptacles
 - c. Trees for shade
 - d. Pedestrian directory signs
 - e. Drinking fountain
 - f. Pet waste disposal
 - g. Bike racks
 - h. Public art
6. Countdown crosswalk signals with auditory warning.
7. More trash receptacles.
8. More benches for resting.
 - a. Benches should have arm rests and back rests to help those people that are more physically challenged.



FINAL PLAN: FUNDING SOURCES

There are various sources of funding available for the design, development and construction of bicycle facilities and pedestrian projects. The following is a summary of some of the most often utilized sources at the time this plan was prepared. While some of the funding options do have more over-site and can cause an increase in design and construction costs, they are still viable options that decrease the amount of local money that has to be spent.

TRANSPORTATION ALTERNATIVES PROGRAM (TAP)

The current federal highway bill, Fixing America's Surface Transportation or FAST Act, is a four year bill that will provide transportation funding from December 4, 2015, through the year 2020. The FAST Act eliminates the MAP-21 Transportation Alternatives Program (TAP) and replaces it with a set-aside of Surface Transportation Block Grant (STBG) program funding for transportation alternatives (TA). These set-aside funds include all projects and activities that were previously eligible under TAP. The national total for TA is \$835 Million per year in 2016 and 2017 and the national total for TA is \$850 Million in years 2018-2020. FHWA administers the TA set-aside identically to funding under the prior TAP. The following discussion is related to all of these programs. Information specific to each program is addressed in later sections.

The Secretary is directed to set aside, for TA, an amount from each State's STBG apportionment such that the total TA for each year is divided among the states based upon each state's proportionate share of FY 2009 TE Funding. Unless the Governor opts out of RTP, the RTP funds are set aside, and the remaining TA funds are divided equally into two categories. The first half is sub-allocated based on population, in which INDOT will distribute half of the TAP funds to communities according to their share of population within the state. These population categories are as follows:

- MPOs with populations greater than 200,000: INDOT will sub-allocate funds to Metropolitan Planning Organizations (MPOs). MPOs will distribute their funds through their own competitive application process.
- Other urbanized and rural areas: FAST Act allows state DOT's to hold a competitive application process for communities to compete for these funds. INDOT is currently developing their process, including the possibility of sub-allocating to smaller MPOs.

The second half of the remaining TA funds will be distributed state-wide by a competitive application process through INDOT, where population is not considered. Eligible entities include local governments, school districts, tribal governments, and public lands agencies. In FAST Act, the State has the ability to transfer funds both into and out of TAP for other transportation programs.

Federal TA funds provide 80% of the costs for preliminary engineering (survey, design, and construction documents), right-of-way (engineering, management, acquisition), construction, and construction supervision. The local agency is required to provide the matching 20%. The local match for TA funds can be obtained from various sources, such as budget appropriations, cash donations, right-of-way donations, and other grant sources, provided the other grant programs allow their funds to be used as a match for FAST Act. Currently, Indiana has received approximately \$23 million for funding the TAP program.

FINAL PLAN: FUNDING SOURCES



Approximately \$1 million is taken off the top and distributed to Recreational Trails Program, and the other \$22 million is distributed to Transportation Alternatives and Safe Routes to School.

RECREATIONAL TRAILS PROGRAM (RTP)

As part of TAP, funding for the Recreational Trails Program (RTP) is set aside as a separate program. Each state has the option to “opt out” of the RTP. This program is a federal financial assistance program administered through IDNR. It provides grants for 80% of the cost of land acquisition and/or development of multi-use recreational trail projects. Both motorized and non-motorized projects are eligible. The program is administered at the federal level by the Federal Highway Administration (FHWA), but is operated at the state level by IDNR. Previously provided funds for individual projects have ranged from \$10,000 to \$150,000. Currently, Indiana has received approximately \$1 million for RTP funding. All units of government and not-for-profit organizations with 501(c)(3) tax exempt status are eligible to participate. Applications are typically available in February and due back to IDNR by May 1 of each year.

Contact for RTP:

Bob Bronson
State & Community Outdoor Recreation Planning Section
Division of Outdoor Recreation
Indiana Department of Natural Resources
402 W. Washington Street, Room W271
Indianapolis, IN 46204
317-232-4075
bbronson@dnr.in.gov
www.state.in.us/dnr/outdoor

TRANSPORTATION ALTERNATIVES (TA)

Under FAST Act, eligible activities included in the former Transportation Enhancement (TE) program are now referred to as Transportation Alternatives (TA) activities, and are included in TA funding that remains after RTP funds are set aside. Although some former TE eligible activities are not included in TA, the activities most closely related to the development of trails, greenways, and bike/pedestrian facilities are still eligible. These activities include: on-road and off-road facilities for pedestrians, bicyclists, and other non-motorized forms of transportation; developing safe routes for non-drivers; conversion of abandoned railroad corridors for trails; and, historic preservation and rehabilitation of historic transportation facilities. The details for the State’s program and process for acquiring and using the funds is being developed. In recent years, approximately \$16 million to \$20 million in TE funds were available annually in Indiana. At this time, Indiana has received approximately \$22 million to be split between TA and Safe Routes to School.



FINAL PLAN: FUNDING SOURCES

Contact for TA Funds:

Indianapolis Metropolitan Planning Organization
Steve Cunningham, Principal Planner
200 East Washington Street, Suite 1922
Indianapolis, IN 46204
Email: steve.cunningham@indympo.org
Phone: 317-327-5403

SAFE ROUTES TO SCHOOL (SRTS)

Past funding bills made specific funds available for the Safe Routes to School (SRTS) program. The MAP-21 bill did not provide specific funds this time for SRTS projects, but they are eligible for TA funds.

The SRTS program is based on federal programs designed to make walking and bicycling to school safe, more convenient, and routine, providing a true option for school travel. Growing areas of emphasis of the program are the physical activity, environmental, and social benefits of walking and biking. INDOT is responsible for administering SRTS as part of the TA. Kindergarten through 8th grade is the primary focus and these projects should help improve access for children with physical disabilities.

In the past, the maximum infrastructure improvement project award was \$250,000. The process for applying for the funds and the funding cycle has not yet been determined.

Contact for SRTS:

Indiana Department of Transportation
Kathy L. Eaton-McKalip, LPA/MPO Grant Administrator
100 N. Senate Ave. IGCN 955
Indianapolis, IN 46204
Email: kaeaton-McKalip@indot.in.gov
Phone: 317-234 -5142

FINAL PLAN: FUNDING SOURCES



STELLAR COMMUNITIES PROGRAM

The Stellar Communities program is a multi-agency partnership designed to fund comprehensive community development projects in Indiana’s smaller communities. The Indiana Housing and Community Development Authority, Indiana Office of Community and Rural Affairs, and Indiana Department of Transportation are participating in this innovative program.

A call for letters of interest is made through an announcement to Indiana communities. Each community then submits a letter of interest. The state team chooses finalist communities from the letters of interest. Finalist communities are then asked to put together a strategic investment plan. Once a community becomes a “Designated Community”, they are elevated to a status of non-competitive funding for a 3-year cycle. It also means that the community will not be able to receive funds through other regular agency programs.

For more information visit: <http://www.in.gov/ocra/2601.htm> or contact your Office of Community and Rural Affairs Community Liason.

SURFACE TRANSPORTATION PROGRAM (STP) & HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP)

The Surface Transportation Program (STP) provides funding that may be used by States and localities for projects to preserve and improve the conditions and performance on Federal-aid projects. Eligible projects include highway, bridge and tunnel projects on any public road, pedestrian and bicycle infrastructure, and transit capital projects, including intercity bus terminals. Therefore, any pedestrian or bicycle facility that has been previously funded by federal-aid can use this funding to “preserve and improve the conditions and performance.” Eligible activities that relate to bicycle and pedestrian projects are as follows: fringe and corridor parking facilities and programs, bicycle transportation and pedestrian walkways, ADA sidewalk modifications, transportation alternatives, and recreational trails projects.

Similarly, under FAST Act there appear to be opportunities for bicycle and pedestrian facilities funding in the Highway Safety Improvement Program (HSIP). Traffic and accident data would need to support the development of bicycle and pedestrian facilities as a means to improve overall safety.

Contact for STP and HSIP

Indianapolis Metropolitan Planning Organization
Steve Cunningham, Principal Planner
200 East Washington Street, Suite 1922
Indianapolis, IN 46204
Email: steve.cunningham@indympo.org
Phone: 317-327-5403



FINAL PLAN: FUNDING SOURCES

NEXT LEVEL TRAILS

Next Level Trails will invest \$90 million toward the development of regionally and locally significant trails throughout Indiana. As part of Governor Holcomb's broader Next Level Connections infrastructure program, Next Level Trails (NLT) is designed to incentivize collaborative efforts to accelerate trail connections. The DNR Division of Outdoor Recreation will administer the program in conjunction with the Indiana Department of Transportation.

Round one of the grant has already been awarded. Applicants received \$19,844,839 for Regionally Significant Projects and \$5,067,881 for Locally Significant Projects. Round two has been announced and the application period begins October 1, 2019 and closes at 5pm ET on November 1, 2019. There is a total of \$25 million dollars available for Regionally Significant Projects and \$5 million available for locally significant projects. Applicants may receive up to \$5 million for a Regionally Significant Project and up to \$2 million for a locally significant project. Local units of government or 501(c)(3) non-profit organization may apply, but must be responsible for the project through completion and meet the role requirements of the grant. A match of 20% is required and may consist of monetary contributions, land value, and in-kind donations of materials and labor. More consideration will be given to projects that exceed the 20% contribution.

Trail construction (including upgrading surface type), land acquisition, design and engineering, and basic trail amenities are all eligible costs. All eligible costs must occur within contract period of 4 years.

Preference will be given to:

- Projects that connect multiple cities, towns or counties.
- Projects that further the completion of the State Visionary Trail System (regionally significant projects only).
- Projects that connect schools, parks, neighborhoods, commercial centers or local attractions (locally significant projects only).
- Projects that connect or extend existing trails.
- Projects that maximize partnerships.
- Projects that are part of an existing regional, local, or comprehensive plan.
- Projects on an accelerated timeline.

There will be one more round of the Next Level Trails grant.

For more information visit <https://www.in.gov/dnr/outdoor/9800.htm>

FINAL PLAN: FUNDING SOURCES



TAX INCREMENT FINANCING (TIF)

Tax Increment Financing (TIF) is a way of subsidizing redevelopment, infrastructure, or other community improvement projects. Future gains in taxes from the completion of a community improvement project are dedicated within a certain defined district to finance the debt that is issued or money that is borrowed to pay for the project. Gains can come from the projected increase of surrounding real estate as a result from the project, which generates additional tax revenue. Tax revenue increases can also come from increased sales-tax and the addition of more jobs within the community as a result of the project. Defined districts are usually areas of distressed, underdeveloped, or underutilized parts of the community that might not otherwise see development and that would benefit from the completion of a the project.

LAND AND WATER CONSERVATION FUND (LWCF)

Land and Water Conservation Fund (LWCF) is a federal financial assistance program administered through IDNR. It provides matching grants for 50% of the cost of land acquisition and/or development of outdoor recreation sites and facilities. Funds for this program come primarily from federal off-shore oil lease receipts. The program is administered at the federal level by the National Parks Service (NPS), but is operated at the state level by IDNR. Individual projects typically receive \$10,000 to \$200,000 in funds. Only legally established park boards with an approved 5-year Park and Recreation Master Plan are eligible to participate. Applications are available on or after March 1 and are required to be submitted or post-marked by June 1 of each year.

Contact for LWCF:

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317-232-4075
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www.state.in.us/dnr/outdoor



FINAL PLAN: FUNDING SOURCES

PRIVATE FOUNDATIONS

There are a number of foundations and trust funds which support the planning and development of trails and greenways, in the interest of conservation, preservation, and outdoor recreation. Although many of them fund only nonprofit organizations, some will assist local public agencies. A few of these organizations include:

1. Kodak American Greenways Awards through the Conservation Fund
www.conservationfund.org/?article=2106
2. Nina Mason Pulliam Charitable Trust
<http://www.ninapulliamtrust.org/index.php/grant-information/>

CORPORATE SPONSORSHIP

In addition to the federal and private foundation options, corporate sponsorship presents another opportunity for funding. As trails and roadways are developed, especially in close proximity to businesses or industries, there are opportunities for corporations to sponsor trails. Sponsorships can be direct financial support of construction activities for trails, trailheads, specific trail or trailhead amenities, or even trail maintenance. The donation of land for the development of trails is also an excellent method of corporate support that can become a sponsorship opportunity. Sponsorship often includes granting naming rights to the sponsor for the items or areas that were financed or donated. Contacting adjacent or area corporations should be considered for these types of sponsorships.

LOCAL BUSINESSES AND ORGANIZATIONS

Corporations and organizations within the community are often willing to help with projects that attract employees and residents to the community through bettering the amenities available. The municipality should continue to identify organizations within the community that would be willing