FOCUS FORWARD: JASPER

JASPER MULTI-MODAL TRANSPORTATION PLAN

ADOPTED MARCH 17, 2021

CITY OF JASPER INDIANA

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To the City of Jasper Stakeholders:

I am pleased to complete an open action and now include the recently adopted Jasper Multimodal Transportation Plan into our "Impact Jasper" Comprehensive Long-Range Plan. This Transportation plan was needed to address several challenges and opportunities identified during the development of our long-range plan.

1. Need for safe and better connectivity for pedestrians and bicyclists to contribute to the overall enhanced quality of life. This also includes looking at connectivity with other communities.
2. Improvements to the overall roadway network with prioritization of projects to improve safety and flow of traffic in and around our community.
3. Need for safe regional connectivity while considering the growth in the area and the constraints anticipated.

The plan has been delivered by Lochmueller Group after many hours of research, staff meetings and forums to provide public input. The Lochmueller Group took into consideration the possibility of a Mid-States Corridor or by-pass around the city to provide relief to the current environment and the anticipated increase in use of U.S. 231 through the middle of our community. Identifying potential relief by developing new and revising existing routes North to South and East to West gives us options for short-term relief vs the potential a Mid-States Corridor or by-pass may provide as a long-term solution. The recommended route and decision is to be made by INDOT and the Federal Department of Transportation in 2022.

Jasper is a regional economic development hub which draws from neighboring counties on a daily basis for access to medical facilities, jobs, recreation, entertainment, and education. Tourist attractions include the Dubois County Museum, Indiana Baseball Hall of Fame, The Spirit of Jasper Train, the Jasper City Mill, The Parklands, the Sports Complex, Sultans Run and Buffalo Trace Golf Course, The Thyen-Clark Cultural Center, and many historical buildings in the Heart of Jasper. Connectivity to these sites are important to our future.

Our Multimodal Transportation Plan is intended to be a roadmap to prepare for the future. This plan is no different in that it is dynamic and will change over the course of time. However, it is the intent to have a plan that will serve the community for years to come and will guide our decision-making along the way. I am pleased to have this Multimodal Transportation Plan inserted as a component of our "Impact Jasper" Long-Range Comprehensive Plan.

Now, the challenge of executing the plan and revising as needed, must be underway. It must be embraced as a document that drives our decision-making and project prioritization.

Thank you to the residents of Jasper for your input and thoughtful recommendations. It was truly a pleasure to see the engagement of our community in creating this plan.

In service to our community,

Dean Vonderheide

Dean Vonderheide

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How To Read This Plan

The Jasper Multi-modal Plan is the next step to implementing the City of Jasper's long-term commitment to safe streets and a livable community. The Jasper Multi-modal Plan incorporates input from the Jasper Multi-modal Plan Core Committee, Impact Jasper Comprehensive Plan, and insight from community members. The Multi-modal Plan builds on existing plans, namely Impact Jasper Comprehensive Plan and the Jasper Downtown + Riverfront Masterplan.

The success of this plan does not rest in one City department or partner agency. It is a citywide, multi-agency collaborative. The City will focus efforts on City-owned streets while working in tandem with Dubois County and the Indiana Department of Transportation on streets they own. The Jasper Multi-Modal Transportation Plan outlines where the City can make proactive investments, prioritize improvements, and implement policies to improve safety, mobility, and reliability for all residents regardless of age, income, or ability.

Jasper will create a multi-modal community by tackling the challenge from multiple channels at the same time: quick implementation and long-term programming to create the culture shift necessary to make Jasper a community where every resident regardless of age or ability has safe, healthy, and affordable access to their choice of transportation.

This multi-modal plan identifies 21 street and bikeway projects that the City will undertake to provide every resident access to safe and efficient opportunities for biking, walking, and driving. All are important and contribute to shifting our mobility paradigm.

To focus our efforts, the City, its partners, and the community have identified 8 high priority street and bikeway projects for implementation. While the goal is to achieve results by 2040, the priority actions will be the focus of a five-year span from 2021–2026. The City will update the Multi-modal Transportation Plan in the future to guide the initiative as it evolves.

Jasper needs everyones help implementing the Multi-modal Transportation Plan. Residents must make it known that everyone has a right to safe, healthy, and affordable transportation. It is important for the public to bring to light the challenges and barriers to accessing critical destinations, like schools, grocery stores, and parks. Review all the projects, strategies, and metrics and advocate for community transformation.

Important Terms

Traffic
Traffic refers to all modes of transportation. This can include vehicle traffic (cars, trucks, motorcycles), pedestrian traffic, and bicycle traffic. Other referenced terms may include motorized and non-motorized traffic.

Mobility
Mobility in the context of transportation addresses refers to how freely and efficiently traffic and goods can move through the transportation system.

Complete Streets
Complete Streets is a design approach which uses the entire right-of-way to prioritize safety, accessibility, and mobility. These streets accommodate and prioritize safety for all people despite mode choice, age, or disability. There is no single design for a Complete Street. Rather, each Complete Street is designed for of the area's specific conditions and need.

Access
Access describes the physical ease with which people are able to reach their destinations. Access can also refer to the quality and availability of options available to help increase mobility.

Bikeway
A bikeway is a path or route specifically dedicated to bicycles. Bikeways provide a separate path for bikes from other mode options, resulting in a safer experience for cyclists.

Green Infrastructure
Green Infrastructure relies on natural resources such as plants, soils, rocks, and more to promote a resilient and sustainable approach to managing stormwater runoff and drainage impacts. Green Infrastructure includes permeable pavement, green roofs, stormwater harvesting, and more to reduce the amount of water which reaches sewer systems or surface water sources. This process helps to economically restore water management to more natural processes.

Equity
Equity in the context of mobility includes addressing social and spatial disparities in transportation systems. Social factors, including race and income, and spatial components, such as land use and how much street space we dedicate to vulnerable road users, are priorities for ensuring equitable approaches and outcomes on our streets, sidewalks, and bikeways.

Crash (Not Accident)
The term "accident" implies nothing could have been done or nothing at fault to prevent the event from happening. This is rare. Most times, traffic deaths and serious injuries are preventable incidents for which proven solutions exist, and so the preferred term is crashes, not accidents.

Walkshed
A walkshed is the area around any central destination that is reachable on foot for the average person. This is typically measured by 5 or 10 minute walk times. The average person can walk approximately 1/4 of a mile in 5 minutes. An analysis of "walksheds" can help us understand the difficulties of walking to and from central points.

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Executive Summary

Following the adoption of the Impact Jasper Comprehensive Plan in 2019, the City immediately began work to implement one of the plan's primary recommendations-- the completion of a Multi-modal Transportation Plan. This document is a culmination of that effort. The primary objectives of the Multi-modal Plan were to provide the City with the following:

- Develop a list of desired projects including new connections and enhancements to existing infrastructure;
- Provide conceptual route layouts;
- Identify any rights-of-way requirements & environmental concerns;
- Provide probable construction and non-construction costs;
- Identify targeted funding resources at the Local, State or Federal level; and,
- Provide a timeline for planning, design and construction for each project.

The scope of the Plan is comprehensive and includes assessments of roadways, pedestrian and bicycle facilities, and multi-modal connections. The Plan contents are organized around two main topics: The Multi-modal Plan and The Roadway Plan.

Owing to the very robust public engagement process for the recently completed Impact Jasper Comprehensive Plan and with support of the project core committee, strategic engagement was employed in the Multi-modal Transportation Plan. Relevant background data, including public response from Impact Jasper and other studies, served as a baseline for planning and network design. The public was involved during the planning process through a virtual community open house and an online community survey.

The Plan goals reflect community and stakeholder input in combination with overarching Federal and State transportation goals and priorities as well as the community's vision for the future articulated in the Impact Jasper Comprehensive Plan. They involve the following topics:

- Safety
- Mobility
- Reliability
- Livability
- Connectivity

Multi-modal Plan Findings and Recommendations

The Jasper Bicycle Plan encompasses a planning horizon of twenty years (2040). Recommendations consider parameters set by the City of Jasper for staff time and budget. The planning priorities are:

- Safely connecting schools, businesses, and parks
- Traffic calming infrastructure that supports walking, biking and accessibility for people of all ages and abilities
- Education and promotion of walking, biking in Jasper
- Financial responsibility and consideration of multiple funding sources

The priorities guided the selection and prioritization of recommendations in the plan.

Roadway Plan Findings and Recommendations

The Jasper Roadway Plan encompasses a planning horizon of twenty years (2040). The recommendations made for the roadway plan sought to address regional system issues, but also identified intersection-level issues at likely problematic intersections. The capacity analysis showed that several affected intersections will likely continue to work well in the future even with future growth, such as 30th Street and Mill Street, but others will need improvement, such as 36th Street and St. Charles Street.

The safety analysis generally revealed that Access Management is a significant issue along US 231. Implementing a plan to reduce the number of access points will be a long and arduous process. As has been called for in Jasper's Downtown plan and Comprehensive Plan, the downtown core area should be enhanced with complete streets practices to make the area safer for all modes of travel, create renewed attraction between downtown and the riverfront, and generally heighten economic activity.

Implementation

The Bicycle and Roadway Plans sections yielded a total of 21 project recommendations. These projects were prioritized based on their anticipated impact, in combination with stakeholder and public input.

Eight of the 21 projects were selected as high priority projects based on guidance from the consultant team and input from the City Staff. These 8 projects represent priorities for the community, which should be pursued for implementation in the short-term:

- Mill Street from 15th to 36th
- 15th Street Extension to SR 56
- 36th & St. Charles (Convert to roundabout)
- East-West Connector from US 231 to Mill St North of Home Depot
- Main Street from 1st to 9th (Create Complete Street)
- E 6th from Courthouse Square to Mill Street (Create Complete Street)
- US 231 & Baden-Strasse/Walmart (Adjustments to frontage road on west side)
- Phase 1 Multi-modal Network (Complete the Loop)

Twenty-six plan objectives were identified and accompanied a menu of 99 strategies and corresponding performance indicators. Performance indicators are recommended to be used for periodic monitoring to track the community's progress towards achieving the Plan's goals.

As recommendations are implemented and projects come online, improvements in key performance indicators should be realized.

Challenges

This project's challenge is to prepare a multi-modal transportation plan to guide City investments in transportation over the next 20 years. It is a citywide look at capital projects and priorities, and is separate from Operations & Maintenance.

Building on the broad elements identified in the Impact Jasper Comprehensive Plan, this plan focuses on the transportation elements, vetting issues identified in the Comprehensive Plan and diving deeper into other matters such as feasibility of improvements.

For complete details on the existing conditions analysis, see **Appendix A**.

Automobile Dependence

Despite having a mean travel time to work of 15.6 minutes (33% below the state's average), 90% of Jasper commuters drove alone (more than 10% higher than the state's average). With nearly 40% of commuters reporting their travel time to work is 9 minutes or less, there is ample opportunity to promote and use active transportation modes that increase health and reduce congestion.

Jasper

15.6 minutes

Mean travel time to work

Indiana

24.2 minutes

Mean travel time to work

Table 1-1. Means of Transportation to Work (2019: ACS 5-Year Estimates Detailed Tables)

	Jasper	Indiana
Drove Alone	89%	83%
Carpooled	5%	9%
Public Transit	0%	1%
Bicycle	<1%	<1%
Walked	1%	2%
Other	<1%	1%
Worked at home	4%	4%

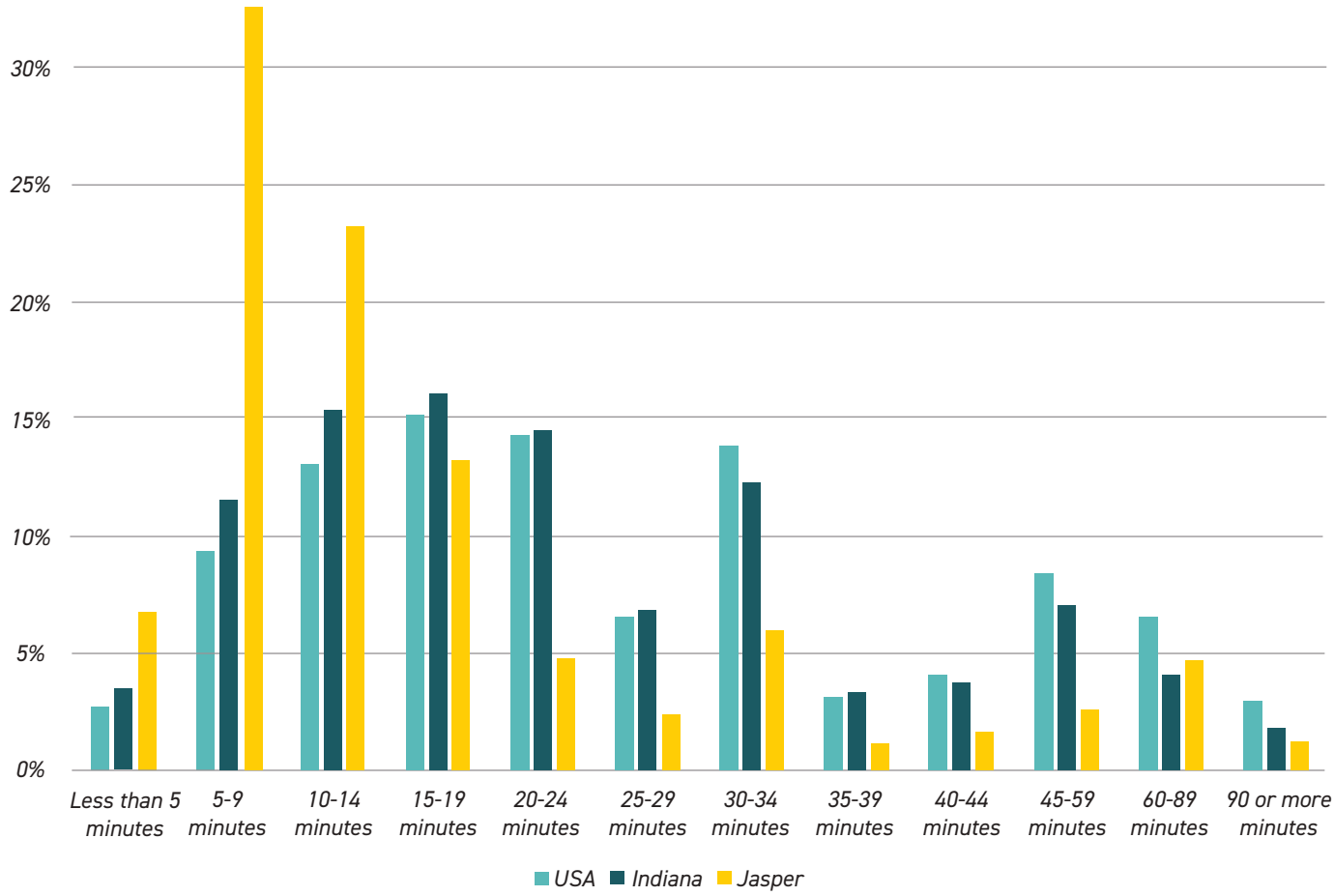


Figure 1-1. Travel Time to Work for City of Jasper, State of Indiana, and United States (2019: ACS 5-Year Estimates Detailed Tables)

Access to Alternatives

Public transit service is not offered in Jasper. Residents who do not have access to a car or are unable to drive due to age or disability must rely on friends, family, taxi services, walking or biking.

According to the US Census, approximately 5% of Jasper residents do not own a car. Additionally, 11.3% of Jasper residents report having a disability which may prevent them from operating an automobile. With the addition of children under 16 who cannot legally drive, as many as 1/3 of Jasper's population does not have the option to drive a car.

According to GIS analysis, currently 28% of Jasper is located within 1/4 mile walkshed of trails. This means that over half of Jasper residents do not have safe and convenient access to walking and biking facilities near their home.

Vehicles at Home

4.9
percent
No vehicle at home

Disability

11.3%
percent
Population with a Disability

Table 1-2. Poverty Status By Age

	Jasper	Indiana
Under 5 years	0%	22.6%
5 to 17 years	29.1%	18.7%
18 to 34 years	13.6%	18.9%
35 to 64	10.0%	10.5%
65 and over	3.7%	7.5%

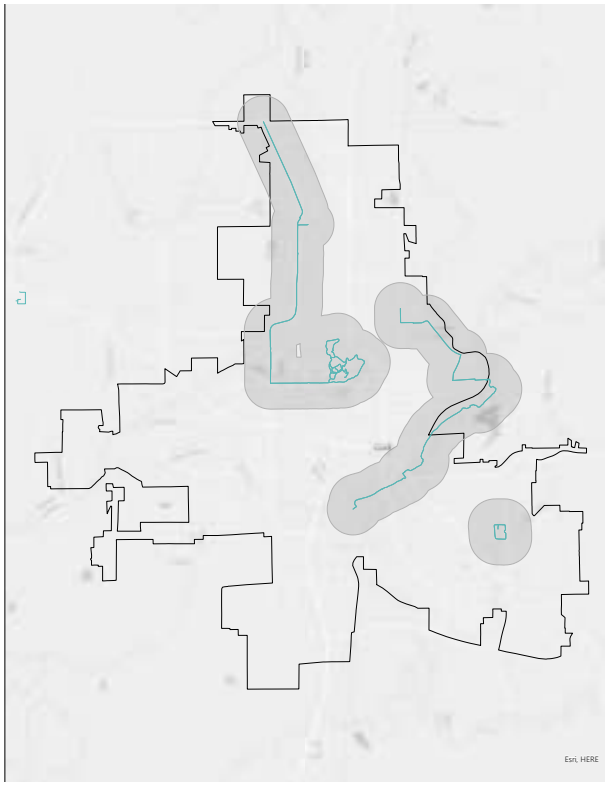


Figure 1-2: Walkshed of Existing Bikeways

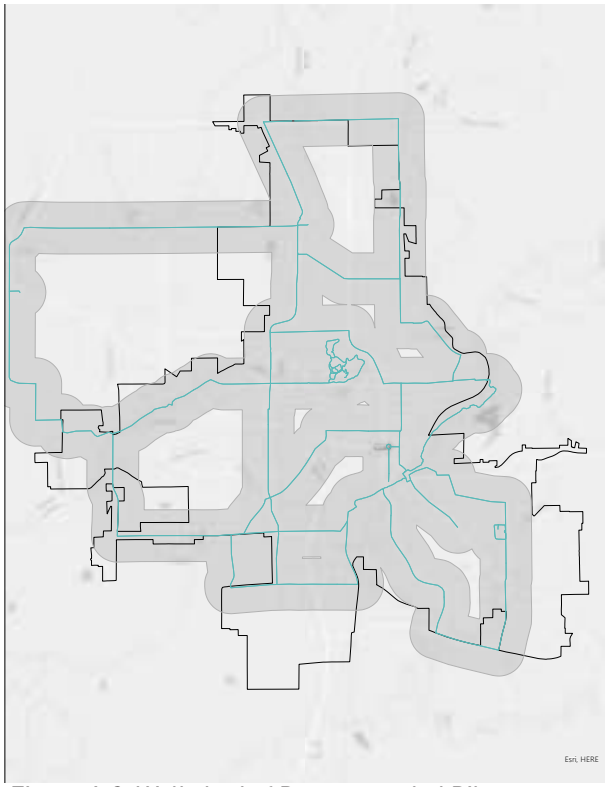


Figure 1-3: Walkshed of Recommended Bikeways

Safety

Transportation safety performance is linked to a variety of elements, including roadway design, traffic law enforcement, road user behavior, and emergency response time. Therefore, effective transportation safety warrants a multidisciplinary approach. Traffic deaths and serious injuries involve a variety of contributing factors and happen throughout Jasper. Factors such as vehicle speed and dangerous driving behaviors, like disregarding stop lights, distracted driving, and impaired driving, play a large role in fatalities and serious injuries. Socially vulnerable communities have a higher number of traffic deaths and serious injuries per resident compared to less vulnerable communities. The City of Jasper averages 660 crashes annually. Overall, the frequency of crashes in Jasper is trending downward, and yet 3 people have died and 343 were injured due to crashes in the past five years. Many of the crashes occurring in the city are located along the major corridors of US 231, SR 164, and SR 56.

Traffic deaths and serious injuries are avoidable. By implementing best practices in engineering, traffic enforcement, education, and emergency medical services, Jasper can create a create a safe, accessible transportation network where people feel they belong.

Injuries

343
Crashes
Resulting in injury

Fatalities

3
Crashes
Resulting in fatality

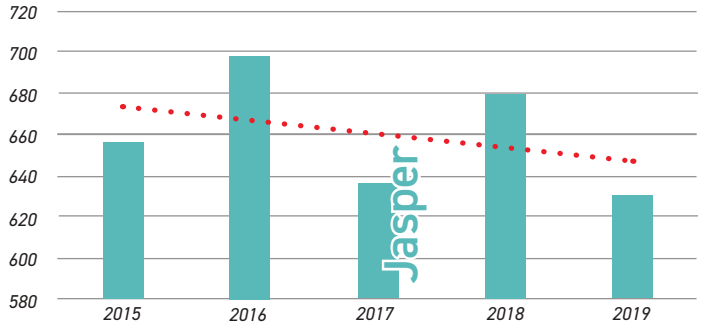


Figure 1-3. Total Annual Crashes Reported (2015-2019)

Table 1-3. Collisions by Type (2015-2019)

	2015	2016	2017	2018	2019	Total
BACKING CRASH	146	162	156	150	159	**773**
REAR END	146	165	152	141	155	**759**
RIGHT ANGLE	100	114	103	96	88	**501**
OTHER - EXPLAIN IN NARRATIVE	57	81	54	92	53	**337**
SAME DIRECTION SIDESWIPE	42	40	53	52	48	**235**
RAN OFF ROAD	43	53	54	41	43	**234**
COLLISION WITH DEER	35	25	--	32	21	**113**
LEFT TURN	24	15	20	26	13	**98**
OPPOSITE DIRECTION SIDESWIPE	15	9	15	12	14	**65**
HEAD ON BETWEEN TWO MOTOR VEHICLES	15	7	9	11	9	**51**
RIGHT TURN	9	6	11	8	7	**41**
COLLISION WITH OBJECT IN ROAD	6	5	5	6	4	**26**
LEFT/RIGHT TURN	6	6	2	7	4	**25**
NON-COLLISION	7	3	--	1	6	**17**
COLLISION WITH ANIMAL OTHER	4	3	--	3	4	**14**
REAR TO REAR	--	1	1	--	--	**2**
GRAND TOTAL	**656**	**697**	**637**	**680**	**631**	**3301**

Goals

We will improve the mobility for Jasper residents regardless of age, income, or ability by focusing on these primary goals:

Safety:

Create a safe transportation system that strives to end traffic deaths and prevent serious injuries.

Mobility:

Create an equitable transportation network that provides all residents access to mobility choices that are affordable, safe, and efficient.

Reliability:

Ensure that the transportation system is reliable, efficient, and well maintained.

Livability:

Encourage transportation solutions that promote community health, economic activity, and ecosystem vitality.

Connectivity:

Provide a transportation network that connects neighborhoods to places of employment, education, goods, and services.

How do we improve mobility?

Enhancing mobility and transportation options bring many benefits to a city. Reduced traffic congestion, shorter trip times, improved public safety and less pollution are just a few. This collection of strategies are just a few of the tools and best practices traffic engineers and transportation planners use to enhance urban mobility.

Access management

Providing adequate access management helps to improve safety while reducing congestion along roads and preserving public roadways. By properly managing access, drivers are still able to reach their destinations with fewer turn choices and fewer slow-downs, alleviating frustration. This not only improves traffic congestion and vehicle speeds, but it also improves pedestrian safety and mobility as they encounter fewer conflicts with vehicles. Both vehicles and pedestrians experience improved mobility through less frequent stops and safer connections to destinations.

Connecting land use and transportation solutions

By connecting land use and transportation solutions, access to destinations can be improved to provide more efficient mobility throughout the system. By providing targeted transportation solutions for a specific land use, mobility will be improved because specific transportation solutions and opportunities, such as the availability of public transportation between residential and industrial uses, will be available for the coordinated land use. This will allow people to reach their desired destinations more freely.

Coordination with state and local agencies

Coordination between state and local agencies is necessary to align project priorities and funding. Projects with a focus on mobility can be prioritized through both a state and local level to improve the project's outcome and increase mobility throughout the transportation network.

Interparcel access/Cross Access Agreement

Interparcel access and cross access agreements allow for improved ingress and egress throughout a transportation network. By creating better cross access, the mobility of a network is improved because people will have more connectivity and will be able to reach their destinations with more ease.

Connectivity Index

A connectivity index provides a way to quantify the connectivity of a transportation network. If a transportation network is well connected and people are able to freely move throughout the network, then the connectivity index will score highly. A high connectivity index indicates a high mobility within the transportation network as people are able to reach their destinations with ease.

Estimating future demand

The future demand of a transportation system indicates where future projects and funding may be needed. By addressing and accommodating for future demand, areas requiring more mobility can be addressed early and connections to future demand areas can be provided.

Bicycle Plan

Fostering and investing in a safe and efficient multi-modal transportation system is crucial to creating a bike friendly Jasper. A well-connected high quality multi-modal network encourages active living and is also important for developing healthy neighborhoods, improving equity, increasing access to affordable transportation options, and enhancing recreational opportunities.

The priorities of the plan were created with the help of subject matter experts and the City Staff, to ensure the priorities fit residents' needs, while staying within City resources (see **Appendix D**).

The Jasper Bicycle Plan encompasses a planning horizon of twenty years (2040), and follows the generally accepted "Five E's" of bicycle planning as outlined by the League of American Bicyclists:

1. Education
2. Ecouragement
3. Equity, Diversity, & Inclusion
4. Engineering
5. Evaluation

Recommendations consider parameters set by the City of Jasper for staff time and budget. The planning priorities are:

- Safely connecting schools, businesses, and parks
- Traffic calming infrastructure that supports walking, biking and accessibility for people of all ages and abilities
- Education and promotion of walking, biking, and greenspace in Jasper
- Financial responsibility and consideration of multiple funding sources

The priorities guided the selection and prioritization of recommendations in the plan.

The following recommendations on education, encouragement, and equity were based on the third and fourth priorities. The first, second, and fourth priorities formed the basis of the prioritization process for the walking and biking infrastructure recommendations.

Education

Education on traffic law and safety helps residents of all ages share the road, whether they are biking, walking, or driving. For people interested in bicycling, education on best commuting routes or on-road cycling can help them make bicycling a habit. For pedestrians, it is important to understand how to walk safely, including children walking to and from school. For drivers, proper education includes full understanding of bicycle markings and rules of the road when it comes to non-motorized travel.

Recommended Programs

Safety literature for all roadway users

In order to share the roads safely, pedestrians, cyclists and drivers must understand the laws and statutes at the local and state level. Distributing safety literature at civic buildings, recreational centers, local shops, or even as a law enforcement warning, helps the public learn about traffic laws in a cost-effective way. Safety literature should be easy to read, concise, and visually appealing in order to reach the widest audience possible. The City can also increase awareness of bicycle safety by sharing online education, such as the League of American Bicyclist's Bike Safety Quiz (http://www.bikesafetyquiz.com/). A Bicycle Resource Guide and education literature can be ordered for free from Bicycle Indiana: https://www.bicycleindiana.org/.

Online Resources:
• RAGBRAI Ride Right Coloring Book: https://ragbrai.com/wp-content/uploads/2009/09/RideRightBook2013.pdf

Education in schools

It is important to encourage children to walk and bike to school safely and educate parents, school district staff on the benefits of walking and bicycling to school. Biking and walking education in schools is the most effective way to teach children how to use the roads safely. In Jasper, as many children live within walking and bicycling distance to school, education will help students to improve their own safety and get exercise.

Lessons incorporated into the classroom will reach all students. These lessons can also be effective at reaching parents, who are the ones driving to and near schools. Typically, biking and walking education is incorporated into Physical Education courses. Several model curricula are available online through the Safe Routes to School National Partnership (https://www.saferoutespartnership.org/state/best practices/curriculum). The national Safe Routes to School program is a major resource for biking and walking programming in schools. It was founded to educate children on safety and to encourage families to incorporate physical activity into their daily routines. Programs that help children to walk and bike safely include Walking School Buses, Bike Trains, Bicycle Rodeos, National Walk to School Day, and Safe Routes to School walking maps.

Resources

- National Center for Safe Routes to School: http://www.saferoutesinfo.org/
- FHWA Safe Routes to School: https://www.fhwa.dot.gov/environment/safe_routes_to_school/

Bicycle education classes

It is important to encourage safe and confident biking by providing education to residents in Jasper. Though most adults know how to drive a car, they have never learned the rules of the road in terms of biking. The proper knowledge and skills make biking safer, more relaxed, and more enjoyable. Bicycle education courses can be organized through the City or through community organizations, such as churches. In addition to the fee for hiring an instructor, a bicycle education course typically requires meeting space for 3 hours and access to an empty parking lot.

There are several trained bicycle safety instructors in Indiana. It is also possible for a Jasper staff person to become a trained instructor by attending a three-day workshop. Workshops are periodically held in throughout the state. League Certified Instructors can be found here: https://bikeleague.org/bfa/search/map/Indiana?bfaq=Indiana.

Encouragement

Encouragement allows residents to share in the joy of biking and walking. Creating a safe and positive environment for residents to try out active transportation is a powerful tool in becoming more bikeable and walkable. The following programs are recommendations based on the responses in the community survey, along with national best practices for encouraging walking and biking.

Recommended Programs

Active transportation rewards programs

Working with local businesses to offer rewards for those who arrive on foot or by bike can be a great way to promote local businesses and active transportation. Bicycling incentives are common in communities throughout the country. For example, businesses can reward those who have a helmet to show they biked. As it's more difficult to prove that a customer arrived on foot, walking incentives are more rare. A few ways to incentivize walking and biking to local retail include:

- Retailers offer specific rewards to those who arrive by bicycle. Usually, the incentive is small, like a 5% discount at a restaurant, or a free upgrade on drink size at a café. Individual retailers can opt to offer bicycle incentives and choose to promote them on their own or work with other businesses.
- Retailers coordinate to offer rewards on a specific day. The Bike Friendly Business program in Peoria, Illinois is an example of coordination among businesses and the local bicycle advocacy group to promote local shops and restaurants, while encouraging people to bicycle, and reduce parking demand. Participating businesses put a sticker on their helmet and receive recognition on the Bike Peoria website. In return, they agree to offer discounts or incentives, like a free soft drink at a restaurant, to cyclists on Saturdays. A similar program could encourage residents to try bicycling, and it can also encourage them to explore local businesses.
- Work with local businesses to encourage them to become certified Bicycle Friendly Businesses through the League of American Bicyclists. This program will help them identify ways to better serve cyclists, including by providing bicycle parking, or places for cyclists to store their helmets.

Community walks and rides

Community rides and walks encourage residents to be active and get to know each other in a friendly and supportive environment. Community rides or walks help residents to discover the joy of being active and help strengthen community. Events have designated routes, typically loops, which end at the starting place. The pace should be accessible for all participants. Organizing a community ride or walk is a great way to get volunteers involved in promoting walking and biking, while building community support. Community rides can also be an opportunity for partnership.

Walking and biking maps

Being able to safely get around the city will help encourage more people to bike and walk. The creation of a walking and biking transportation map will help residents understand the best routes and how to access city destinations such as schools, library, and the business district by walking, biking, or taking transit. As part of the planning process, walking and biking maps will be created.

National Bike Month activities

National Bike Month is in May. The City can encourage residents and employees of all ages to bike in and around Jasper for transportation and recreational purposes during National Bike Month. Jasper can participate in National Bike To Work Day, by working with a local café that is interested in hosting a Bike To Work Day Station.

Other common events include family group rides, adult and children cycling classes, and bike-to-school days. The League of American Bicyclists has a number of valuable online resources to help make local efforts successful, including an event organizing handbook, a calendar linking to local events and activities, and tips for people interested in commuting to work.

Resources

League of American Bicyclists
The League of American Bicyclists is the oldest bicycling organization in the US. It works through its members to promote better education and better facilities for bicyclists. Hosts the annual National Bike Summit.
https://bikeleague.org/

Advocacy Advance Program
A partnership between the League of American Bicyclists and the Alliance for Biking and Walking. Includes research and policy reports on rumble strips, highway safety programs, bicycling and climate change, and other topics.
https://www.advocacyadvance.org/

Ped Bike Info
Ped Bike Info provides several ideas for promoting walking, including examples of successful programs. http://www.pedbikeinfo.org/resources/resources_details.cfm?id=4916.

Equity

The Five E's of bicycle planning generally originate from guidance provided by the League of American Bicyclists. Effective June 9, 2020, the "Enforcement & Safety" section of the Bike Friendly Community application was taken offline to allow the League to assess all Enforcement-related questions and begin to determine how the program can best contribute to policy and cultural changes that reduce the potential for police violence and discriminatory enforcement.

In August, the League of American Bicyclist re-published an updated version of the application with key changes that fundamentally shifted how enforcement is framed in those applications. Some enforcement-related questions remained offline while the majority were revised and integrated into other sections of the applications.

In October, the League announced that these changes were to become official, including the permanent removal of "Enforcement" as its own pillar within the 5 E's Framework. Over the coming year, the League will determine what further changes are needed. To truly achieve the vision of a Bicycle Friendly America for everyone, Equity, Diversity & Inclusion (EDI) are the essential lenses through which all other elements must be viewed.

Throughout the E's and in every Bike Friendly program application, communities will find EDI-focused questions and multiple choice answer options that are designed to help applicants consider the ways in which they can address and correct for historical disparities and systemic inequities across each of the other E's.

Engineering

Multi-modal transportation networks increase quality of life for all residents. They provide safer and more accessible routes to key destinations, improve equitable transportation for all income levels, and promote active lifestyles by accommodating non-motor vehicle-oriented travel.

The desired outcome of any improvements or additions to a multi-modal network is to improve safety, convenience, and accessibility for all ages and all mobilities. Achieving this outcome involves two types of efforts; separating motor vehicle traffic from those walking or bicycling, and slowing motor vehicle traffic so speeds are compatible with walking and cycling speeds.

The proposed walking and biking networks are presented in prioritized maps and tables on the following pages. Prioritization provides a framework for phased implementation, given constrained resources. The prioritization is based on community preferences, feasibility, and impact. The prioritization methods emphasize creating a network for walking and biking to community destinations.

If the opportunity to implement a project arises before the proposed phase, the phasing schedule should not prevent it from being implemented. Recommendations that require re-striping should be implemented when roads are scheduled to be repaved and painted. Likewise, shared lane markings should not be added when a street is scheduled to be repaved in the next year. Ultimately, the recommendations should be balanced by the City Engineer to ensure coordination with planned maintenance schedules.

Recommended Routes

The exact route and alignment of each of the specific routes identified on the Recommended Multi-modal Facilities Map have not been determined. Land acquisition has not been studied. Therefore, suggestions for funding, implementing, and prioritizing of the proposed facilities contained herein are recommendations.

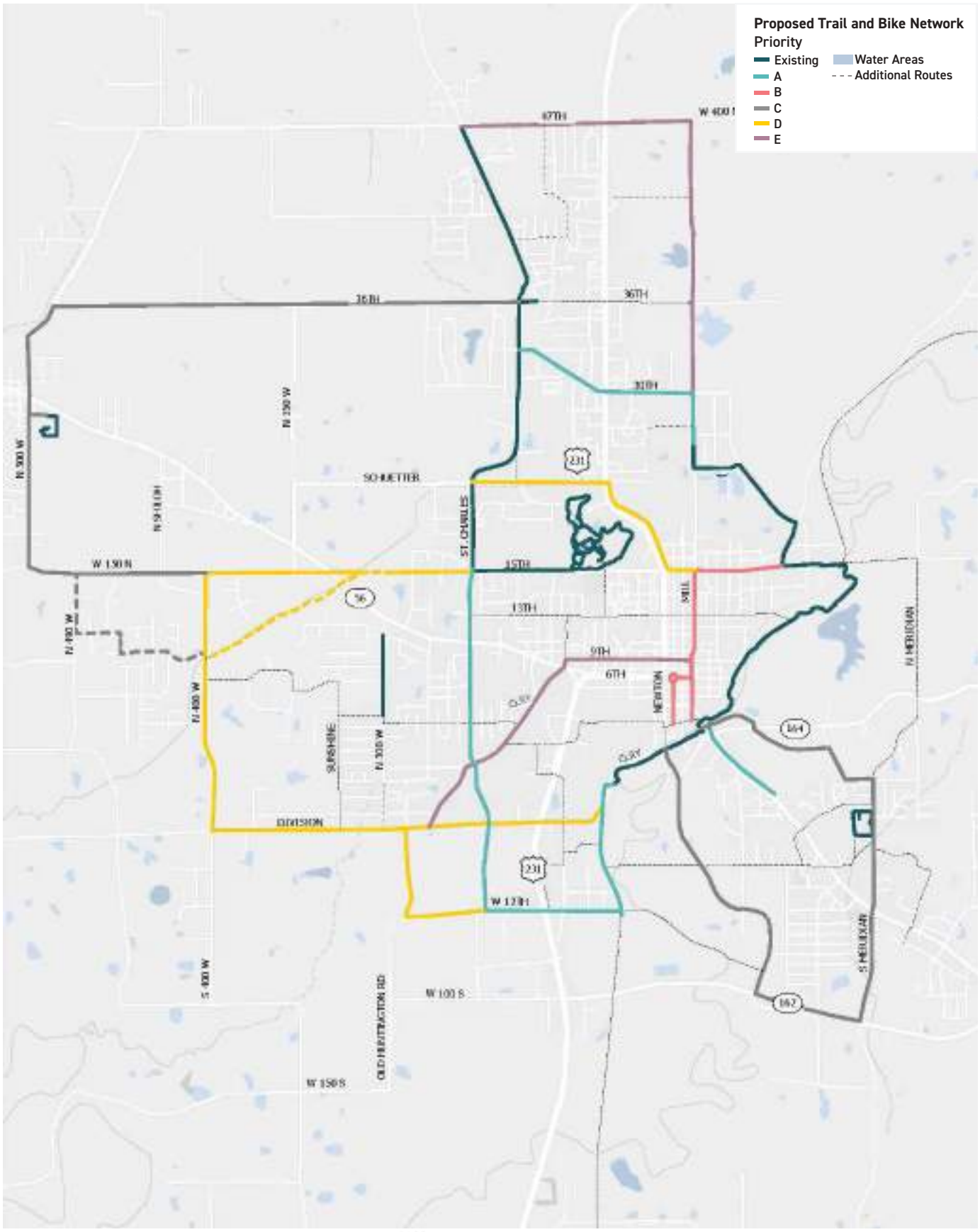
The recommendations are based on national practices, information relevant to the project and recent experience with construction and funding of similar project types. The City of Jasper should continue to evaluate the priorities as opportunities for funding become available. When considering these opportunities some general priorities should be considered.

Map 1-1 on the following page displays the recommended priority bicycle network for the City of Jasper. In addition to the priority recommended routes, the project team identified additional bikeway opportunities, shown as dashed lines, on low stress roadways within the city that would be good candidates for shared roadway or visually separated facilities.

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

- ***Proposed facilities on publicly owned land:*** Access to the land where the facilities are planned, either through fee simple ownership or through easement rights is critical to implementation. Facilities that are proposed on publicly owned land such as parks or in conjunction with public rights-of-way should be given high priority.
- ***Proposed facilities associated with other public or private improvements:*** Planned improvements to land or along corridors where facilities are planned often provide opportunities for implementation. As plans are developed by the City of Jasper or the Indiana Department of Transportation (INDOT) for road improvements where a bicycle and pedestrian facility is proposed, coordination should occur to incorporate these new facilities into those improvements. Opportunities might also exist when private development occurs through coordination with the developers and the Planning and Zoning process.
- ***Expansion of existing system:*** Proposed trail segments which close a gap to complete existing links between neighborhoods and key destinations shall be given higher priority. Filling in these gaps will provide the maximum benefit to a greater number of existing users with minimal financial commitment.
- ***Source of funding:*** As funding becomes available which is most applicable to a particular project those projects will receive priority.
- ***Increase safety for alternative modes of travel:*** Projects which provide safe use for all users including people traveling along and across roadways, railways, waterways, and other barriers shall receive higher priority.
- ***Ease of construction:*** Projects where construction of the project is considered to be simple and easy to build according to criteria such as costs and design constraints such as grading and drainage and structures required for the project shall receive higher priority.

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



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Map 1-1. Recommended Multi-modal Facilities

Phase 1: Complete the Loop

N
Not to Scale

DESTINATIONS

- Jasper Engines
- Kimball Electronics
- The Schnitzelbank
- Jasper High School
- Jasper Rubber Products
- Meyer Distributing
- Holy Trinity School
- Jasper Elementary and Jasper Middle Schools
- Masterbrand Cabinets
- Ruler Foods
- Dubois County Museum

ESTIMATED COST

Segment 1.1

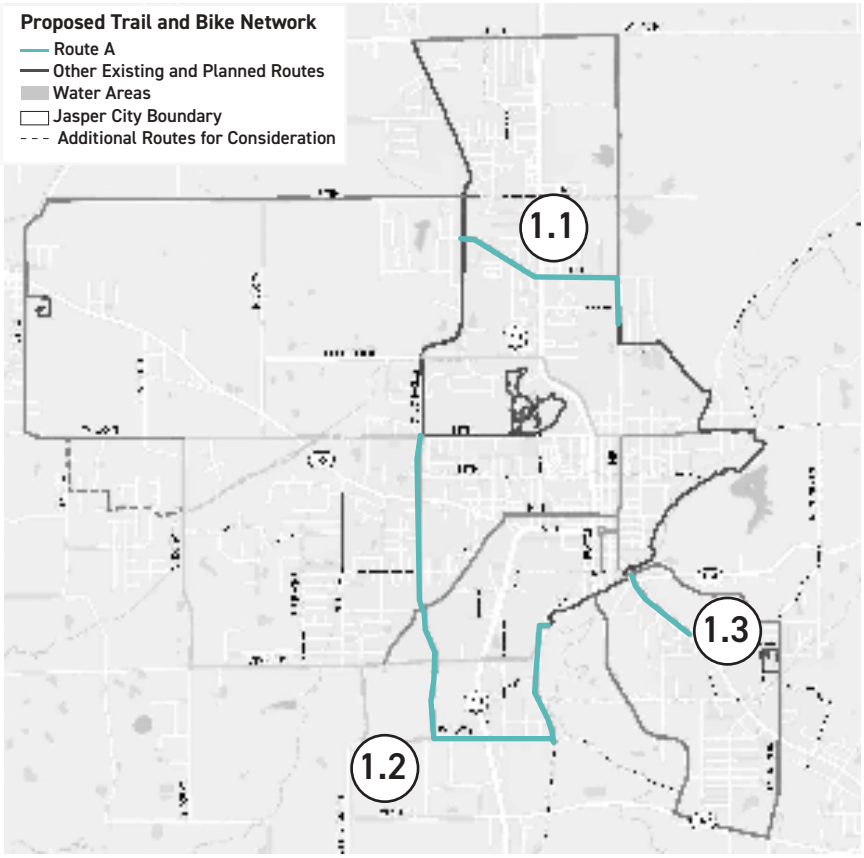
Estimated Cost: $300,000-680,000

Segment 1.2

Estimated Cost: $1,700,000

Segment 1.3

Estimated Cost: $100,000



Map 1-2. Phase 1

PRIMARY FACILITY TYPE

Shared Use Path: Off-Road, Physically Separated

SECONDARY FACILITY TYPE

Bicycle Lane: On-Road, Visually Separated

Phase 2: Connect the Core

N
Not to Scale

DESTINATIONS

- Jasper City Hall
- Jasper Public Library
- Thyen-Clark Cultural Center
- Courthouse Square
- Masterbrand Cabinets
- Astra Theatre
- Kimball International
- Jasper City Mill
- River Centre
- Jasper River Walk
- Jasper Police and Fire Departments

ESTIMATED COST

Estimated Cost: $400,000*-$880,000*

Map 1-3. Phase 2

PRIMARY FACILITY TYPE

Bicycle Lane: On Road, Visually Separated

SECONDARY FACILITY TYPE

Shared Roadway: On-Road, Mixed Traffic

Phase 3: Embrace the Edges

N
Not to Scale

DESTINATIONS

- Town of Ireland
- Ireland Elementary School
- Vincennes University Jasper
- Habig Center
- Purdue Extension
- Southern Indiana Education Center
- Garden Meadow Estates
- Holy Trinity School
- Jasper Middle School
- Jasper Elementary School

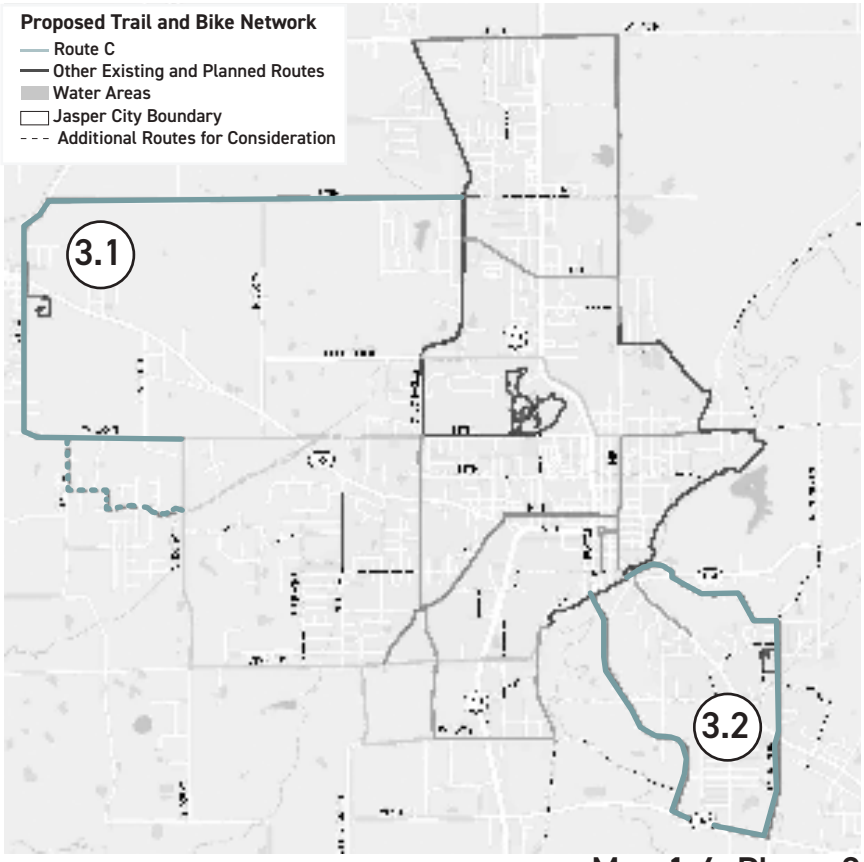
ESTIMATED COST

Segment 3.1

Estimated Cost: $1,400,000-$2,800,000

Segment 3.2

Estimated Cost: $2,200,000-$2,300,000



Map 1-4. Phase 3

PRIMARY FACILITY TYPE

Shared Use Path: Off-Road, Physically Separated

SECONDARY FACILITY TYPE

Paved Shoulder: On-Road, Visually Separated

Phase 4: Recreation Route

N
Not to Scale

DESTINATIONS

- Dubois County Health Department
- Jasper Youth Sports Complex
- Kimball Electronics World Headquarters
- Buffalo Trace Golf Course
- Indiana State Police

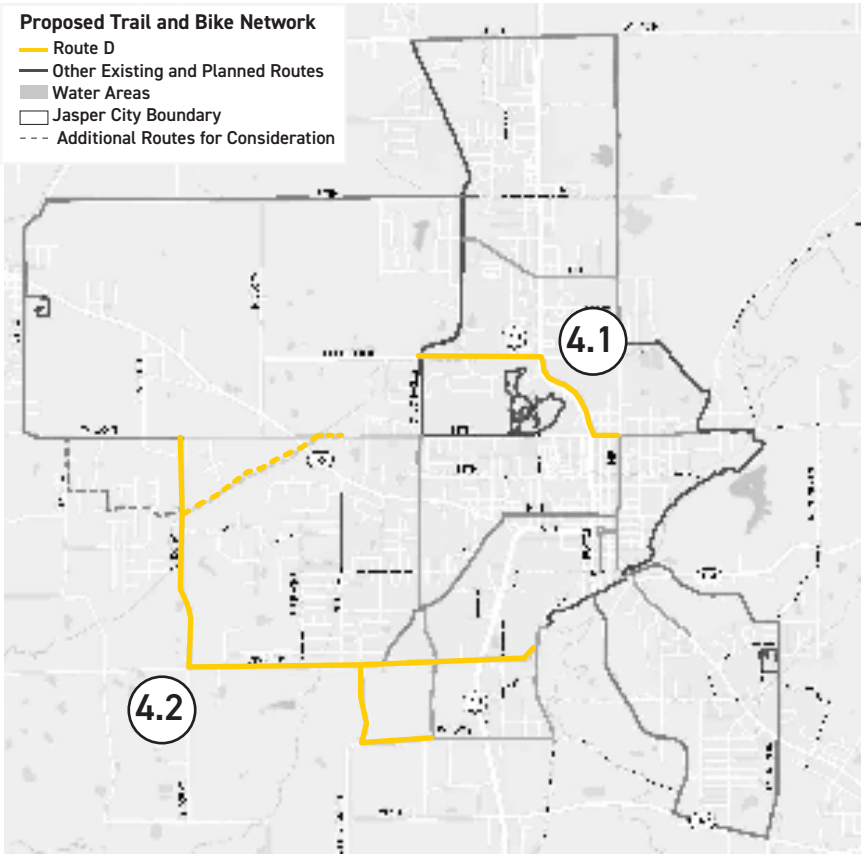
ESTIMATED COST

Segment 4.1

Estimated Cost: $1,500,000-$1,800,000

Segment 4.2

Estimated Cost: $350,000-$780,000



Map 1-5. Phase 4

PRIMARY FACILITY TYPE

Shared Use Path: Off-Road, Physically Separated

SECONDARY FACILITY TYPE

Bicycle Lane: On-Road, Visually Separated

Phase 5: Knit the Network

N

Not to Scale

DESTINATIONS

- Memorial Hospital and Health Care Center
- Robert E. Parker Park
- Jasper Rubber Products

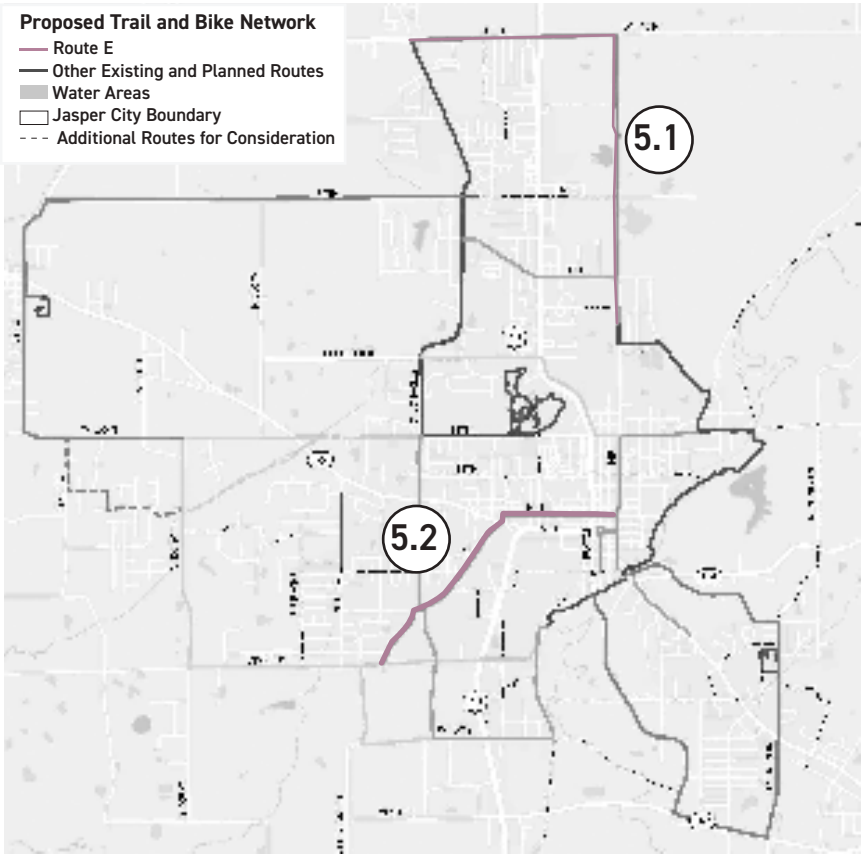
ESTIMATED COST

Segment 5.1

Estimated Cost: $200,000-$980,000

Segment 5.2

Estimated Cost: $1,400,000



Map 1-6. Phase 5

PRIMARY FACILITY TYPE

Shared Use Path: Off-Road, Physically Separated

SECONDARY FACILITY TYPE

Bicycle Lane: On-Road, Visually Separated

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Recommended Facilities

When considering the range of potential bicycle facilities for Jasper, it is important to utilize the latest design guidance available and understand the best practices for their application. While it may be the first time the City of Jasper is considering certain facilities, guidelines allow the City to use lessons learned in other municipalities and construct the most comfortable and appropriate facility possible. Drawing on nationally-recognized best publications for bicycle, pedestrian, and multi-modal facility design, this section provides an overview of design guidance and a review of facility types.

The design guidance for this Plan draws from best practices developed by The American Association of State Highway and Transportation Officials (AASHTO) and the Federal Highway Administration (FHWA), the agency responsible for the publication and periodic updating of the Manual on Uniform Traffic Control Devices (MUTCD). These manuals ensure traffic control devices, such as signs, pavement markings, and signals, are consistently used so that they may be understood and predictable for all roadway, trail, and sidewalk users. The FHWA Small Town and Rural Multi-modal Networks Guide provides design guidance specifically for small towns where the needs of both motorists and bicyclists may be different than in urban areas.

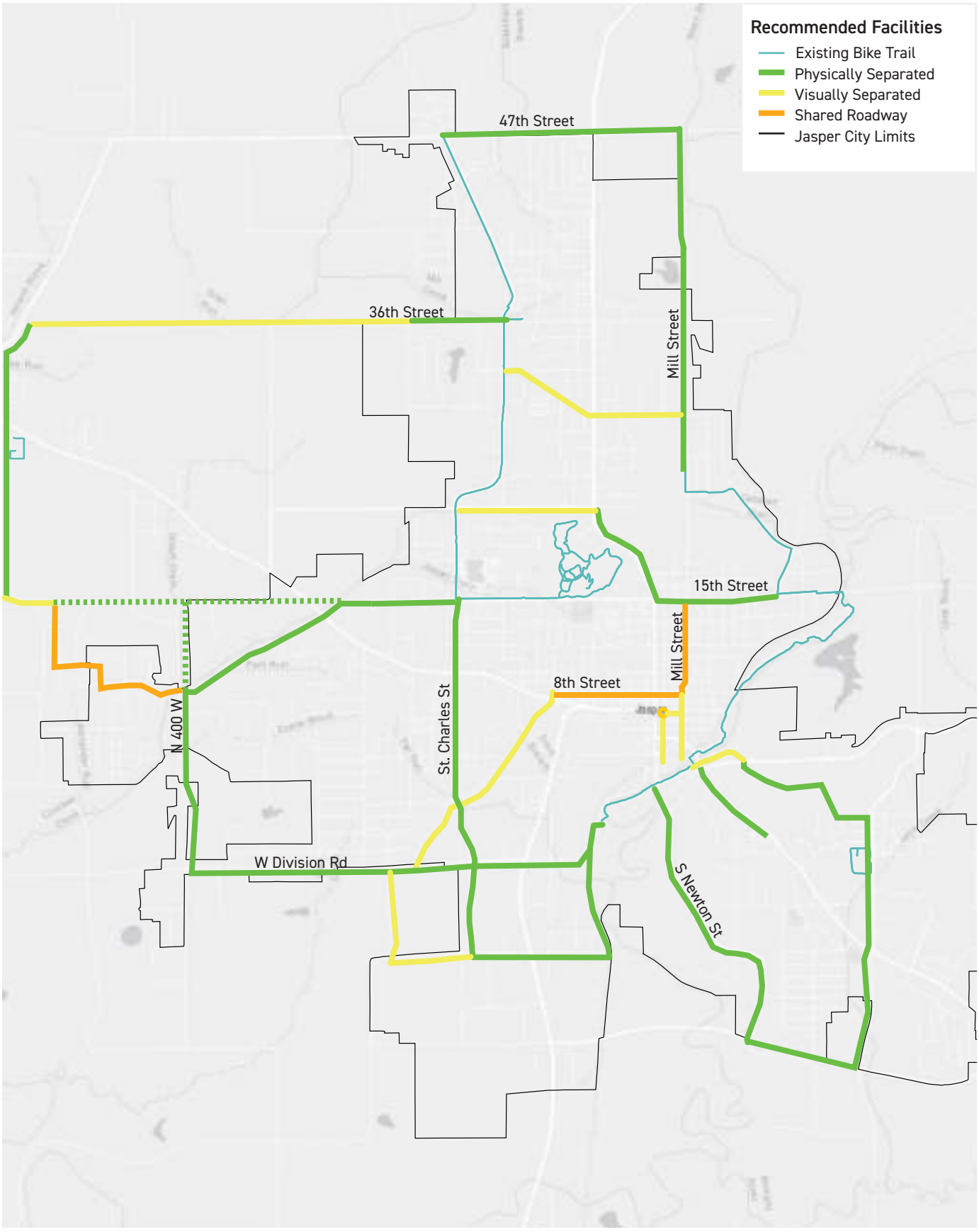
The guidelines in these manuals are important tools for stakeholders when building the Jasper bicycle network. They let stakeholders know how much space is required for each facility type, anticipated impacts to traffic and access, and include context for application based on roadway speed, traffic volume, number of travel lanes, and land use. This guidance ensures recommendations proposed in this document are feasible and provide a cohesive, comfortable, and context-sensitive bicycling network. While design guidelines included in this plan provide an introduction and a high-level understanding of treatments available, design guidance continues to evolve. When implementing this plan, it is recommended that Jasper and its stakeholders continue to refer to these guidelines as well as the source publications for the most up-to-date design guidance.

A variety of bicycling facilities are available to meet the varying needs and abilities of a range of bicyclists. Bicyclist comfort is impacted by how much space they are provided in a roadway or trail environment, and how much separation they are provided from automobile traffic – particularly in the presence of high speed traffic and heavy vehicles. As categorized by the Federal Highway Administration, bicycle facilities generally fall into three categories:

- Shared roadway environments where cyclists and drivers operate in the same space. Appropriate for low-speed, low-volume roadways.
- Visually separated facilities use pavement markings and lateral spacing to separate roadway users on roadways that are busier than the first category.
- Physically separated facilities use physical elements – curbs, parkways, medians, or other barriers–separates motorized traffic from all other users.

Each of these types of facilities have benefits and trade-offs that should be considered such as width, cost of installation, and maintenance needs. It is important for bicyclists of all skill levels and ages to feel comfortable using the bicycling network. Families bicycling with children tend to feel more comfortable on slower or physically separated facilities, while commuters and confident adult bicyclists may feel comfortable riding with traffic in shared lane or visually separated facilities. A well-designed bicycle network considers all users and provides a network of facilities that offers a choice of safe bicycling facilities.

The recommended facility types in **Map 1-7** are for general planning purposes and each corridor must be analyzed to determine what requirements must be met. The following pages provide illustrative design guidance for a variety of facility options recommended for Jasper.



Map 1-7. Recommended Facility


Bicycle Boulevard in Clintonville, OH

clintonvillegreenways.org

Shared Roadway: Bicycle Boulevards

Bicycle boulevards are designed to prioritize cyclists as equally rightful users of the road as vehicles along particular corridors. They are most effective and safe when applied to residential roads with low traffic volumes and lower speeds.

Traffic calming tools like chicanes and traffic circles are helpful along bicycle boulevards as they reinforce the desire for lower speeds along these residential roads. Bump outs should be applied to help calm traffic by visibly narrowing the road. Bump outs serve the principal purpose of shortening crossing distances for pedestrians, making pedestrians more visible at intersections, and ensuring cars do not park too close to the intersection.

Bicycle boulevards are best on roads with two-way traffic and should be marked with sharrows. The street centerline should not be marked. Omitting the centerline results in more cautious driving which is ideal in residential areas.

Way-finding signs indicating the direction of the boulevard and how to reach key destinations make bicycle boulevards more user friendly and help keep cyclists on designated routes.

At minor intersections, stop and yield signs need to be easily visible to cyclists. Continental crosswalks and stop bars to signal to both cyclists and vehicles of potential conflicts and the presence of crossing pedestrians should be applied to major intersections. At higher conflict intersections or higher volume intersections, flashing beacons and other high visibility crossing signals may be warranted.

Figure 1-3. Bicycle Boulevard Cross Section

Advisory Shoulder in New Hampshire

https://streets.mn/2014/09/30/writers-round-up-advisory-bike-lanes/

Visually Separated: Advisory Shoulders

Advisory shoulders are designed for multi-modal traffic and are placed along the edges of collector roads. These collectors should connect to community origins and destinations and have few intersections or access points.

Bicycle and/or pedestrian demand should ideally already exist in order to justify expanding the roadway to add advisory shoulders. When considering communities new to on-street cycling, advisory shoulders are appropriate to implement after installing lower-stress facilities to grow ridership and increase the level of comfort of riders to the point where they would be comfortable using an advisory shoulder.

Advisory shoulders require applying wide shoulders (6 ft preferably but not less than 4 ft) to each side of the road. Contrasting pavement for the shoulder and the travel lanes helps drivers visually see the difference between their travel lanes and cyclists/pedestrian travel lanes. Shoulder areas should be marked as separate from the travel lanes with striped white lines. Signage indicating two-way vehicle travel, no parking on pavement, no centerline present, and the presence of cyclists should be used liberally along advisory shoulder routes, particularly when first introduced.

Two-way vehicle travel can be allocated 15-18 ft total. While this is not the typical width for two lanes, vehicles are expected to use the wide shoulders when cars are passing from opposite directions and then move back to the middle of the travel lane. The higher the daily traffic, the larger the two-way vehicle travel lane should be as the likelihood of conflict between these different modes increases. This design assumes it will be unlikely that cyclists/pedestrians, and two cars, each from an opposing direction, will be present all at once.

To apply an advisory shoulder facility, an approved Request to Experiment is required as detailed in Section 1A.10 of the MUTCD.

Figure 1-4. Advisory Shoulder Cross Section


Paved Shoulder in Ridgecrest, CA

FHWA Rural Design Guide

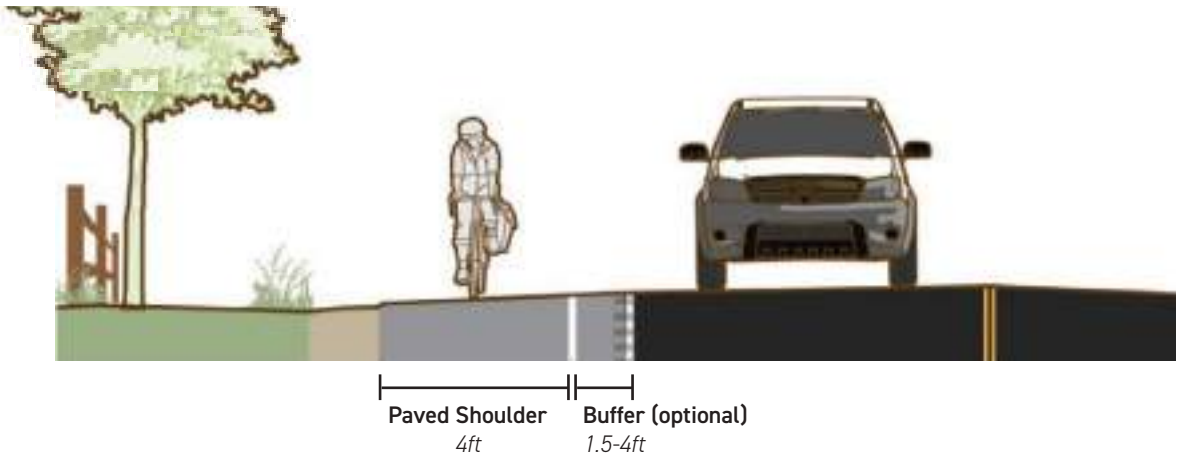
Visually Separated: Paved Shoulders

Paved shoulders should be applied to rural roads with moderate to high traffic volumes and moderate to high speeds. These are higher stress bicycle and pedestrian facilities. The likely users of these facilities would be experienced cyclists using them for recreation or long-distance commuting. Paved shoulders are appropriate outside of built up areas where bicycle and pedestrian activity is expected.

Walkable shoulders should be provided along both sides of the county roads and highways used by pedestrians. In the Jasper area, paved shoulders to facilitate safer pedestrian usage could be applied to the roads that connect the pockets of residential development surrounded by agricultural land.

Contrasting pavement should be used to delineate vehicle travel from cyclists and pedestrian travel along the shoulders. A striped centerline for vehicle travel lanes is expected along with double white striped longitudinal markings between shoulder and vehicle travel lanes with rumble strips. It is important to add auxiliary bypass lanes at intersections to the right side of the roadway. No signs are required, but signs indicating the road is also a bicycle route may be helpful.

Figure 1-5. Paved Shoulder Cross Section




Bike Lane in Long Beach, CA

Visually Separated: Bike Lanes

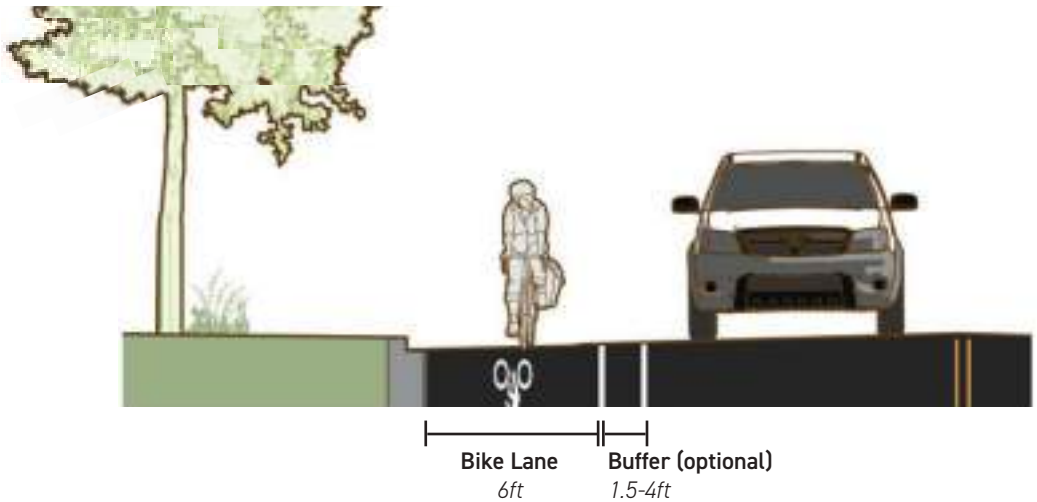
Bike lanes are some of the most common or well-known on-street bicycle facilities. They provide a designated space for cyclists separate from vehicle traffic. They are appropriate along roads with moderate speeds and volumes, particularly local residential and collector roads between built up areas where increased pedestrian and cyclist activity is expected. Bike lanes can be one-directional on each side of the road or two-directional and combined on the same side of the road,

In contrast to paved and advisory shoulders, bike lanes separate cycling from pedestrian activity. Providing a designated bike lane can provide a consistent area for bicyclists to travel outside the path of motor vehicles and pedestrians.

Bike lanes should be 6.5 ft wide (minimum of 4ft) with a 1.5-4 ft buffer. Signage identifying the bike lane and route is helpful for cyclists and drivers. Bike decals should be applied to the street as well as no parking signs where appropriate so cars do not park in the bike lanes. When possible, provide a minimum of 1.5 ft buffer area distancing the bike lane from the adjacent motor vehicle travel lane. Buffers can include visual and physical barriers.

Bike lanes at intersections should be designed to reduce speeds, minimize exposure, raise awareness, and communicate right-of-way priority. Green paint can be used to highlight conflict areas between cyclists and pedestrians or vehicles.

Figure 1-6. Bike Lane Cross Section



Scioto Mile Shared Use Path in Columbus, OH

https://www.imtravelinglocal.com/2019/08/12/self-guided-tour-columbus-oh/

Physically Separated: Shared Use Path

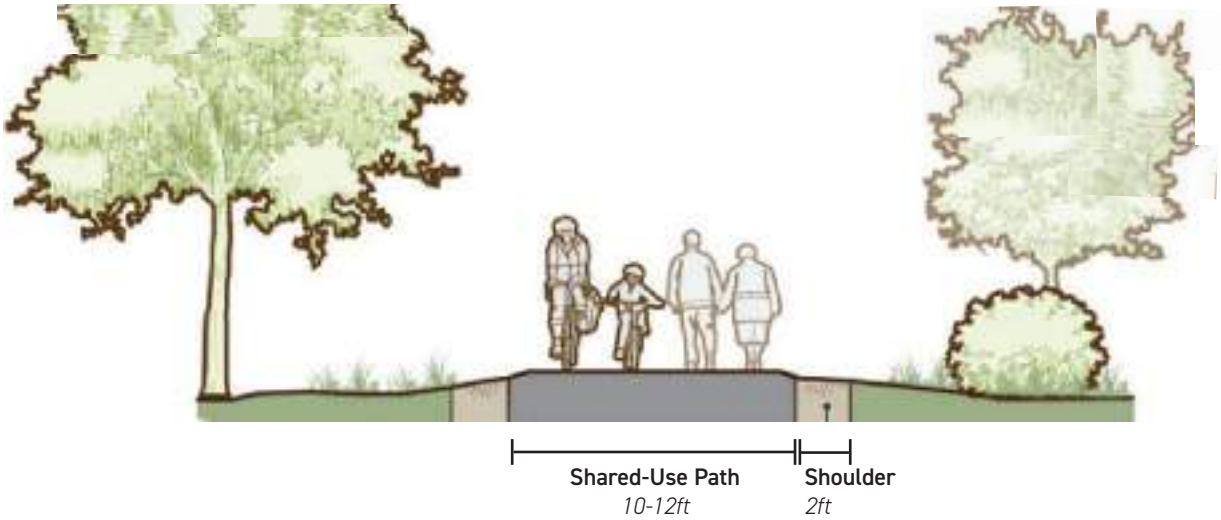
Shared use paths, or trails, operate independent of streets and roads. They can serve connectivity, recreation, and tourism functions and can be built in rural areas outside of city centers and within built-up areas. They act as multi-modal corridors connecting people to destinations via safer, convenient, and interesting routes.

Typically, shared use paths range from 10-12 ft wide for two-directional path with 2 ft shoulder on each side. For heavily used paths, at least 12 ft wide is recommended. Around turns and forks in the path, centerline striping may help people move safely in opposite directions but otherwise, no centerlines are necessary. Travel speeds along shared use paths should not exceed 20 mph. Cyclists that travel at higher speeds are not the intended users of these off-street facilities except at off hours where other modes of travel are not present.

Marking the outer edges of the path is helpful for evening users. Applying yield and way-finding signs where appropriate improve user experience and can promote attendance at local attractions and activity centers.

In most cases, when a trail crosses a road with vehicle traffic, some form of marked crosswalks and sometimes a flashing beacon or other indicators are necessary.

Figure 1-7. Shared Use Path Cross Section




Sidepath, Colorado River Valley

FHWA Rural Design Guide

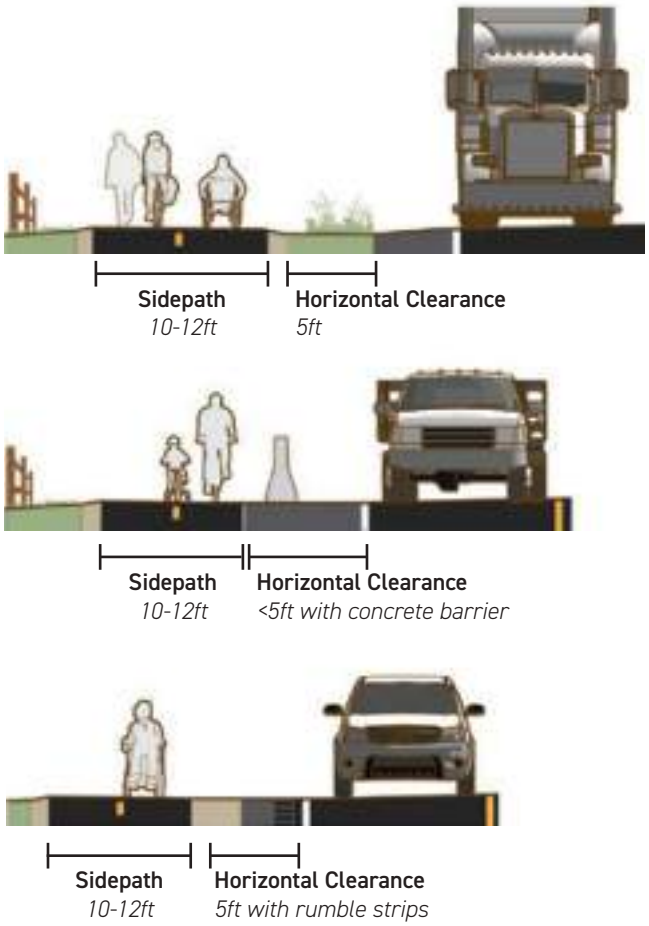
Physically Separated: Sidepath

A sidepath is a bi-directional shared use path adjacent or parallel to a roadway. Sidepaths are ideal multi-modal facilities for heavy traffic roadways with any speed. They are often applied adjacent to highways and major thoroughfares.

Paths are usually between 10-12 ft wide with a small shoulder and at least a 6.5 ft buffer between traffic. Landscaping between the path and the road also helps improve user comfort. Additional painted markings along the edges of the path and the centerlines are useful for evening users and when there are high volumes of multi-modal traffic on the sidepath.

Signs should be used to mark the shared use path, its bi-directionality, and wayfinding to local destinations or connections other types of multi-modal facilities like bicycle boulevards or shared use paths/trails.

Figure 1-8. Sidepath Cross Section



Separated Bike Lane, Indianapolis Cultural Trail

https://bikeokc.wordpress.com/2014/01/21/innovative-bike-infrastructure-for-ok/

Physically Separated: Separated Bike Lane

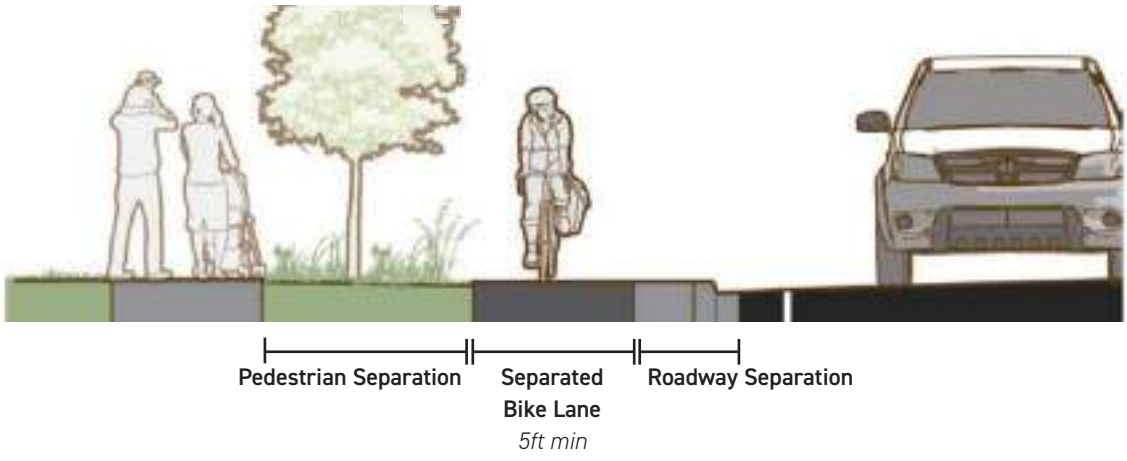
A separated bicycle lane runs adjacent to the roadway but separate from the roadway by a vertical element. This vertical element can be bollards, landscaping, or curb if the separated bike lane is at sidewalk grade. A separated bike lane can run in one direction on each side of the road or in two-directions on one side of the road.

This type of bike facility is more protective than bike lanes separated by painted buffers. Because separated bike lanes offer a high level of protection, they are appropriate in almost any context but are most effective on roads that function like collectors with vehicle volumes over 3,000 ADT and speeds over 10 mph. They are generally used in a more urban atmosphere where a decent volume of cyclists and pedestrians are present (i.e. college campuses, downtown areas, commuter routes).

Separated bike lanes should be 7 ft (absolute minimum is 5 ft) wide in each direction. They can be at road or sidewalk grade. Important considerations include stormwater management, transit stops and routes, maintenance, debris clearing, and snow plowing.

If at sidewalk grade, separated bike lanes need to be visually or physically separated from the sidewalk. Bike lane signage is often helpful as well as signage for wayfinding and direction of travel.

Figure 1-9. Separated Bike Lane Cross Section



Evaluation

Performance management techniques promote informed decision making by relating community goals to the measurable effects of public investments. Key steps in performance management are to decide what to measure in order to capture the current state of the system, to set targets to improve those measures, and to use the measures to evaluate and compare the effects of proposed projects and policies. The goals identified in the Impact Jasper Comprehensive Plan serve as the basis for the performance measures. In particular the goal of connecting people and places serves as the foundation for this report and specifically call out strategies to become a more bicycle friendly community. To achieve these goals, the following objectives are recommended with correlated performance measures to be evaluated annually:

Objective	Strategy
Increase amount and mode share of bicycle riding in Jasper for all trip purposes.	Provide community incentives for bicycle commuting
	Celebrate Bike to Work Day
	Increase the number of community hosted bike rides
Improve safety for pedestrian and bicycle riders in Jasper.	Adopt a community wide Safe Routes to School Program
	Increase visibility of law enforcement and other public officers on bikes
	Develop a specific plan or program to reduce cyclist/motorist crashes
Create a high-quality bicycle and pedestrian network that connects to places people want to go and provides an alternative travel options.	Increase the number and location of bike parking facilities throughout Jasper
	Designate a bicycle program manager
	Increase the miles of high quality bicycle facilities in Jasper as recommended by this plan
	Adopt a complete streets ordinance
Improve bicycle riding for all through equity in public engagement, program delivery, and capital investments.	Host annual bicycle safety courses for adults
	Develop an up to date bicycle map for public use
	Evaluate local ordinance to ensure they treat bicyclist equitably
	Dedicate a percent of all capital improvement budgets to bicycle facilities
	Establish a bicycle advocacy organization
Build vibrant communities by creating a welcoming environment for bicycle riding.	Create a community education program to educate motorist and cyclist on their rights and responsibilities as road users
	Host National Bike Month activities
	Develop a Bicycle Advisory Committee

Estimates

The following information provides a general opinion of probable construction costs for the recommended bicycle facilities. Costs are based on conceptual design evaluation of the facilities and pre-engineering design development. The unit cost numbers are based on cost data from FHWA's Costs for Pedestrian and Bicyclist Infrastructure Improvements (2013).

The costs were adjusted for inflation to reflect the year 2021 construction market. They are subject to traditional market place fluctuations. Costs do not include estimated cost of right-of-way purchase or utility relocation. The estimates are intended for planning purposes only.

Table 1-4. Unit Costs for Bicycle Improvements

Infrastructure Type	Description	Avg Cost	Cost Unit
Bicycle	Bicycle Lane	$135,047	per mile
Bicycle	Signed Route	$25,423	per mile
Bicycle	Shared Lane Marking	$202	each
Bicycle	Multi-Use Trail - Paved	$487,924	per mile
Bicycle	Multi-Use Trail - Unpaved	$123,101	per mile
Bicycle Parking	Bicycle Locker	$2,119	each
Bicycle Parking	Bicycle Rack	$669	each

Table 1-5. Estimated Cost for Bikeway Improvements

	Description	Estimated Cost Range		Length
		Recommended Facility	100% Paved Multi-use Trail	
Phase 1.1	Northern Segment	$300,000	$680,000	1.4 miles
Phase 1.2	Southern Segment	$1,700,000	$1,700,000	3.5 miles
Phase 1.3	Schnitzelbank Spur	$100,000	$100,000	0.2 miles
Phase 2	Connect the Core	$400,000*	$880,000*	1.8 miles
Phase 3.1	Ireland Loop	$1,400,000	$2,800,000	5.8 miles
Phase 3.2	Vincennes U. Loop	$2,200,000	$2,300,000	4.7 miles
Phase 4.1	Youth Sports Complex Connector	$1,500,000	$1,800,000	3.6 miles
Phase 4.2	Mill Street to Schuetter Rd Connector	$350,000	$780,000	1.6 miles
Phase 5.1	Trueman Road to 9th Street	$200,000	$980,000	2.0 miles
Phase 5.2	Mill Street and 47th Street	$1,400,000	$1,400,000	2.9 miles
TOTAL		**$9,550,000**	**$13,400,000**	**27.5 miles**

*Cost of bicycle infrastructure only, does not reflect additional considerations for Complete Streets improvements

Implementation

Bicycle and pedestrian improvements can be funded through a variety of federal and local sources. Federal funds are well suited to higher cost infrastructure projects, such as sidewalks or the Jasper River Walk. Improvements that involve mainly paint, such as Shared Lane Markings, could be implemented through routine maintenance, set-aside funds, or grouped as one federal funding application.

The City of Jasper should plan for the cost of ongoing maintenance for general maintenance (e.g. debris cleaning, snow plowing, filling potholes) and paint, as grants for maintenance are rare.

Federal Funding Sources

The primary source of federal funds for transportation projects is the Fixing America's Surface Transportation Act, commonly known as the FAST Act[1]. The FAST Act is set to expire in September 2021. It is possible that a new funding bill will replace the FAST Act, instituting new rules for funding. It is reasonable to expect that many of the same funding opportunities will exist under a new transportation bill, however the names or performance measures may change slightly. In addition to funding sources through the FAST Act, there are other federal funding options. Federal funding sources are described below in more detail.

There are several federal funds that INDOT can use. Some funds, such as the Major Bridge Fund, can be used only for bridges, while other funds are unrestricted. Certain funds, such as Surface Transportation Block Grants (STBG)-Urban can be used only in an urbanized area. However, other funds, such as STBG-Rural, must be used outside an urbanized area in locations such as Jasper.

Counties also receive dedicated federal funds. Dubois County receives an annual allotment of federal bridge funds known as HBP (Highway Bridge Program). Each county's allotment is based on the total need of deficient local bridges in the county as compared to that which exists statewide. These funds are limited to use on existing local structures within the county which meet eligibility criteria based solely on their deficient need and only when authorized by counties in coordination with INDOT. Counties also receive an allocation of federal STBG-Rural funds which may only be used to address needs on county highways or other rural federal-aid eligible routes throughout the county that are outside of the urbanized area and only when authorized by counties in coordination with INDOT. Counties may compete for other statewide transportation funds such as Major Bridge funds.

1 *https://www.fhwa.dot.gov/fastact/factsheets/transportationalternativesfs.cfm*

Municipalities do not receive automatic individual allocations of federal funds to build and maintain infrastructure. Municipalities can apply for competitive grants such as BUILD, HSIP, and HPP4 . The required match for these grant programs comes from the jurisdiction's share of Motor Fuel Tax revenues, and a combination of sales taxes and/or property taxes.

In addition to the federal funding sources discussed above, there are other, smaller sources of federal funds for multi-modal transportation projects. For example, local jurisdictions can compete for funding through the Transportation Alternatives (TA) program for projects related to transportation enhancements and the former Safe Routes to School program.

The City of Jasper should plan for the cost of ongoing maintenance for maintenance and paint, as grants for maintenance are rare.

Highway Safety Improvement Program (HSIP)

The HSIP emphasizes a data-driven, strategic approach to improving highway safety on all public roads that focuses on performance. Eligible projects include safety improvements for all roadway users. The Indiana Department of Transportation oversees the distribution of HSIP funds, with an emphasis on proactive, system wide improvements. Projects should align with the goals of the Indiana's Strategic Highway Safety Plan[2].

State and Community Highway Safety Grant Program (Section 402)

Section 402 funds are used to support State and community programs to reduce deaths and injuries. Pedestrian safety has been identified as a national priority. Section 402 funds can be used for a variety of safety initiatives including conducting data analyses, developing safety education programs and conducting community-wide pedestrian safety campaigns. The funds must be consistent with the State Highway Safety Plan[3].

Recreational Trails Program (RTP)

The RTP[4] is a program incorporated into the FAST Act, Transportation Alternatives Program. However, funding for this program is administered by the Indiana Department of Natural

2 *https://www.in.gov/indot/2357.htm*
3 *https://safety.fhwa.dot.gov/legislationandpolicy/policy/section402/, https://www.in.gov/indot/files/shsp.pdf*
4 *https://www.fhwa.dot.gov/environment/recreational_trails/, https://www.in.gov/dnr/outdoor/4101.htm*

Resources. Grants are available for trail development and renovation. Projects require a minimum of a 20% local match.

Environmental Protection Agency

The Environmental Protection Agency[5] offers a variety of grants that address community health. Grants may help fund green infrastructure that can also be used enhance walkability and bikeability. These broad-based community grants require significant collaboration with local coalitions. As grants opportunities are always evolving, the EPA website should be checked regularly.

Local Funding Sources

Local funding for bicycle and pedestrian projects and programs is an important component when considering developing new facilities. Many federal programs require a local match, the funding sources below can be used to fund projects in full or to be used as a local match when using federal funds.

Capital Improvement Budget Set-Aside

Jasper could make a policy decision to set aside a percentage of capital improvement budget to fund bicycle and pedestrian projects. These projects could be incorporated into other road work being done (complete streets) or stand-alone projects. These funds can be leveraged as a local match to secure federal funds.

Municipal Bonds

Local government units can also consider general obligation bonds and cumulative capital improvement funds for funding transportation improvement projects.

Economic Improvement Districts

Economic Improvement Districts ("EIDs") are public-private partnerships in which local property and business owners elect to make a collective contribution to the maintenance, development, and promotion of their property.

Economic Development Income Tax (EDIT)

This tax revenue is set to pay for infrastructure to promote business growth, or for other facilities. Revenues collected from this tax are divided among county, cities, and towns based on property tax levy shares or based on population shares.

Tax Increment Financing (TIF)

As per the State of Indiana Code 36-7-14, Tax Increment Financing is a government finance mechanism for development and redevelopment which captures increases in taxable assessed value within a defined area and then uses property tax revenue derived from these increases to finance public improvements within the specified area.

Private Funding Sources

Several national and state foundations provide grants for pedestrian and bicycle projects. These grants can play a significant role in funding projects and providing match for federal funds.

Bikes Belong Grant Program[6]

Bikes Belong is a national organization dedicated to putting more people on bikes. The organization funds multi-use trails with a strong desire to leverage federal funding.

Robert Wood Johnson Foundation (RWJF)[7]

The RWFJ offers a wide range of funding opportunities to promote healthy and active living. The website offers details on various grants and calls for proposals.

AARP Community Challenge Grants[8]

The AARP Community Challenge provides small grants to fund "quick-action" projects that can help communities become more livable for people of all ages. Applications are being accepted for projects to improve housing, transportation, public space, technology ("smart cities"), civic engagement and more.

5 *https://www.epa.gov/grants*

6 *http://www.bikesbelong.org/grants/*

7 *https://www.rwjf.org/en/our-focus-areas/focus-areas/healthy-communities.html*

8 *https://www.aarp.org/livable-communities/community-challenge/info-2020/2020-challenge.html¬*

Roadway Plan

Fostering and investing in a safe and efficient transportation system is crucial to improve economic conditions in an increasingly competitive economy, and at the same time enhance accessibility and quality of life for residents. Unsafe, unreliable and inefficient transportation systems can have a significant economic cost, such as reduced or missed economic opportunities and a lower quality of life. A well-maintained transportation network encouraging active transportation options is also important for developing healthy neighborhoods, emergency services, increased freight movement, and recreational opportunities.

The Roadway Plan proposes strategies to improve the transportation network considering the diverse functions and users of the road system, including travel that reaches beyond Jasper's boundaries. Jasper's economy relies upon strong connections to major highways on the region's periphery such as US-231 and US-164. As Jasper has continued to grow and expanded in the late 20th century, transportation within the City has become critical to connecting residents to centers of activity and employment.

The Impact Jasper Comprehensive Plan recognized the importance of transportation in the City's future success. One of the plan's four primary goals is to Connect People and Places. To accomplish the goals of Impact Jasper, it is necessary to think holistically about Jasper's transportation system. This Roadway Plan is a guide for implementing a well-functioning, connected, and multi-modal transportation system for all. Policies, best practices, and projects are proposed to enhance the functionality of the road system, improve the movement of freight, and support a robust network of pedestrian and bicycle facilities.

The priorities of this plan were created with the help of subject matter experts and the City Staff, to ensure the priorities fit residents' needs, while staying within City resources (see **Appendix B and C** for more detailed analysis).

The Roadway Plan encompasses a planning horizon of twenty years (2040). Recommendations consider parameters set by the City of Jasper for staff time and budget. The planning priorities are:

- Prioritize the safe movement of people and goods
- Strengthen the viability and connectivity between the Courthouse Square and the Riverfront
- Improve transportation infrastructure and expand connectivity
- Financial responsibility and consideration of multiple funding sources

The priorities guided the selection and prioritization of recommendations in the plan.

The following recommendations on infrastructure, policy, and programs were based on these priorities.

Recommended Roadway Improvements

The recommendations made for the roadway plan sought to address regional system issues, but also pointed intersection-level issues at likely problematic intersections. The capacity analysis showed that several affected intersections will likely continue to work well in the future even with future growth, such as 30th Street and Mill Street, but others will need improvement, such as 36th Street and St. Charles Street.

The safety analysis generally revealed that Access Management is a significant issue along US 231. Implementing a plan to reduce the number of access points will be a long and arduous process. As has been called for in Jasper's Downtown plan and Comprehensive Plan, the downtown core area should be enhanced with complete streets practices to make the area safer for all modes of travel, create renewed attraction between downtown and the river, and generally heighten economic activity.

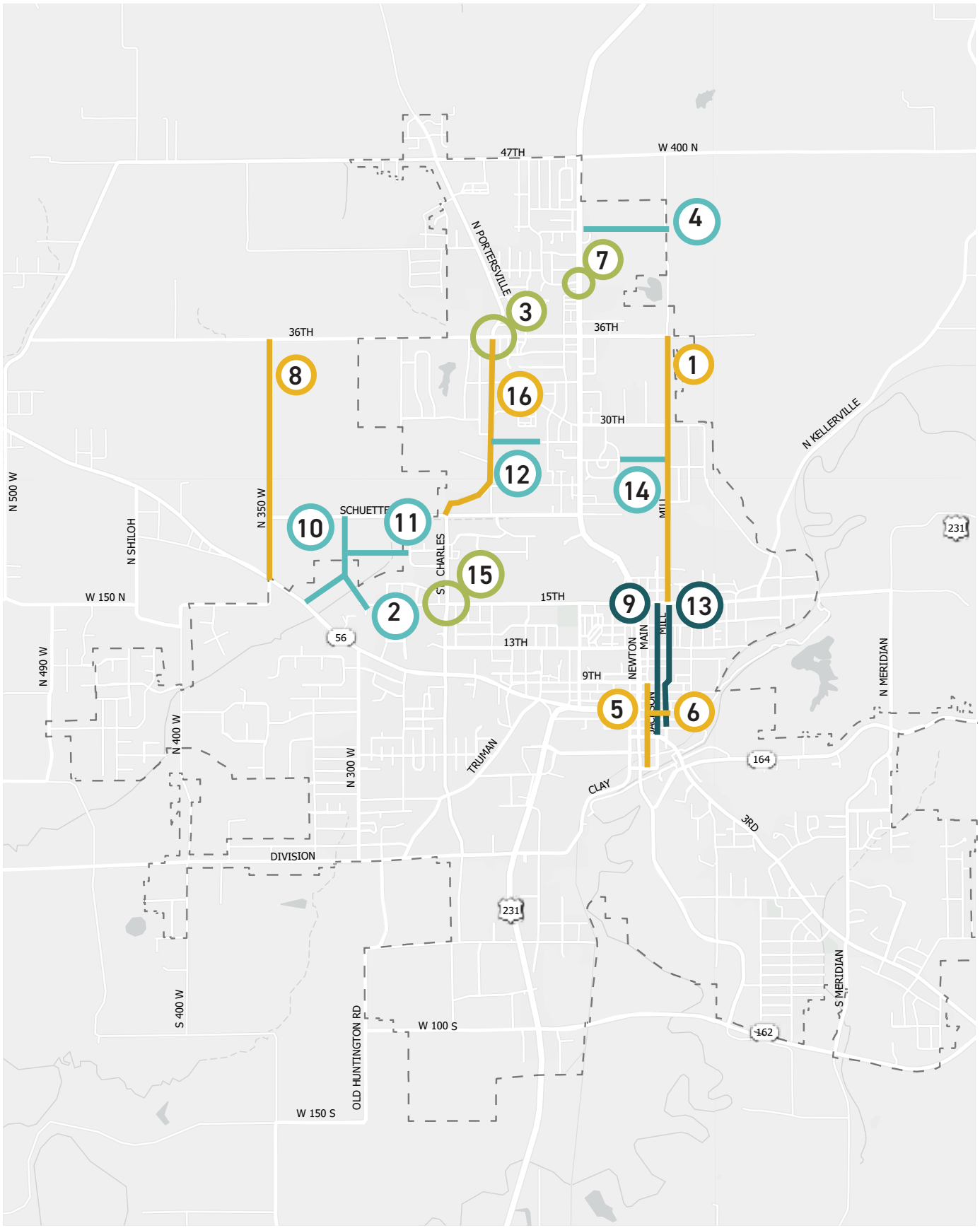
The recommendations listed in **Table 1-6** and shown in **Map 1-8** included both physical improvements, as described further in this section, as well as policy or programmatic recommendations such as proactively creating and implementing an Access Management plan and revisiting the 2015 Downtown Parking Study.

The physical improvements were categorized in four ways:

- Corridor improvements – these are more systematic improvements to existing routes that address travel over longer distances. These changes can affect a driver's route choices, and may have benefits and impacts to other regional roadways.
- Intersection improvements – these improvements are local in nature, and likely would not impact a driver's route choice.
- One-way to two-way conversion – these conversions are called out separately from corridor and intersection improvements, as these will need special public outreach when implementing due to the change in driving habits. These also tend to have additional benefits, such as economic benefits, that should be recognized.
- New roadways – similar to corridor improvements in that these improvements will affect driver's choices and reduce volume on nearby regional routes, except these improvements add new connectivity within the network where none existed before.

Table 1-6. Recommend Roadway Improvements

Project ID	Project Name	Project Type
1	Mill St from 15th to 36th (Widen to accommodate more trucks, multi-modal path)	Corridor Improvement
2	15th St Extension to SR 56	New Roadway
3	36th & St. Charles (Convert to roundabout)	Intersection Improvement
4	East-West Connector from US 231 to Mill St North of Home Depot	New Roadway
5	Main Street from 1st to 9th (Create Complete Street)	Corridor Improvement
6	E 6th from Courthouse Sq. to Mill St (Create Complete Street)	Corridor Improvement
7	US 231 & Baden-Strasse/Walmart (Adjustments to frontage road on west side)	Intersection Improvement
8	N 350 W from SR 56 to 36th (Upgrade to carry increased future traffic)	Corridor Improvement
9	Jackson St from 3rd to 15th	One-Way Conversion
10	North-South Connector from 15th St Extension to Schuetter	New Roadway
11	20th St Extension	New Roadway
12	Extend 28th St to St. Charles (Extend dead-end streets)	New Roadway
13	Mill St from 4th to 15th	One-Way Conversion
14	Extend 26th St to Mill St	New Roadway
15	15th & St. Charles (Convert to roundabout)	Intersection Improvement
16	St. Charles from Schuetter to 36th (Convert to boulevard, reduce speeding)	Corridor Improvement

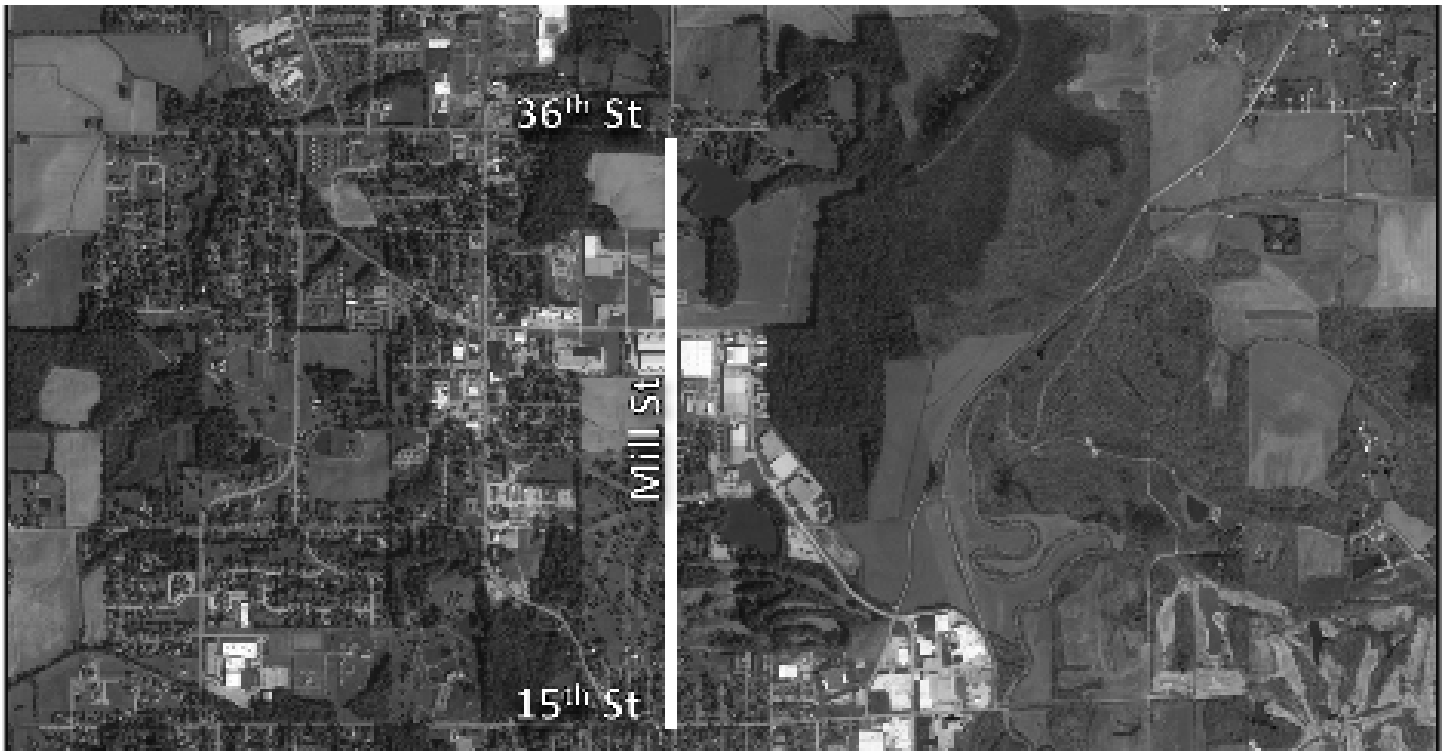


Map 1-8. Recommended Roadway Improvements

1) Mill St from 15th to 36th

N

Not to Scale



Issue

Volume is anticipated to increase on this existing north-south connector road, providing relief to the US 231 corridor and accommodating future growth of the City, particularly trucks to and from the industrial areas on the east side of the City. Geometry and the cross-section are not ideal for the anticipated increase in trucks.

Solution

Improve the cross-section to include shoulders where feasible and add an adjacent Shared Use Path on the west side of the road from the existing trail head north to 36th Street. Correct ADA non-compliance along existing sidewalks.

Estimated Cost

Estimated Cost: $5 Million+

Priority Level

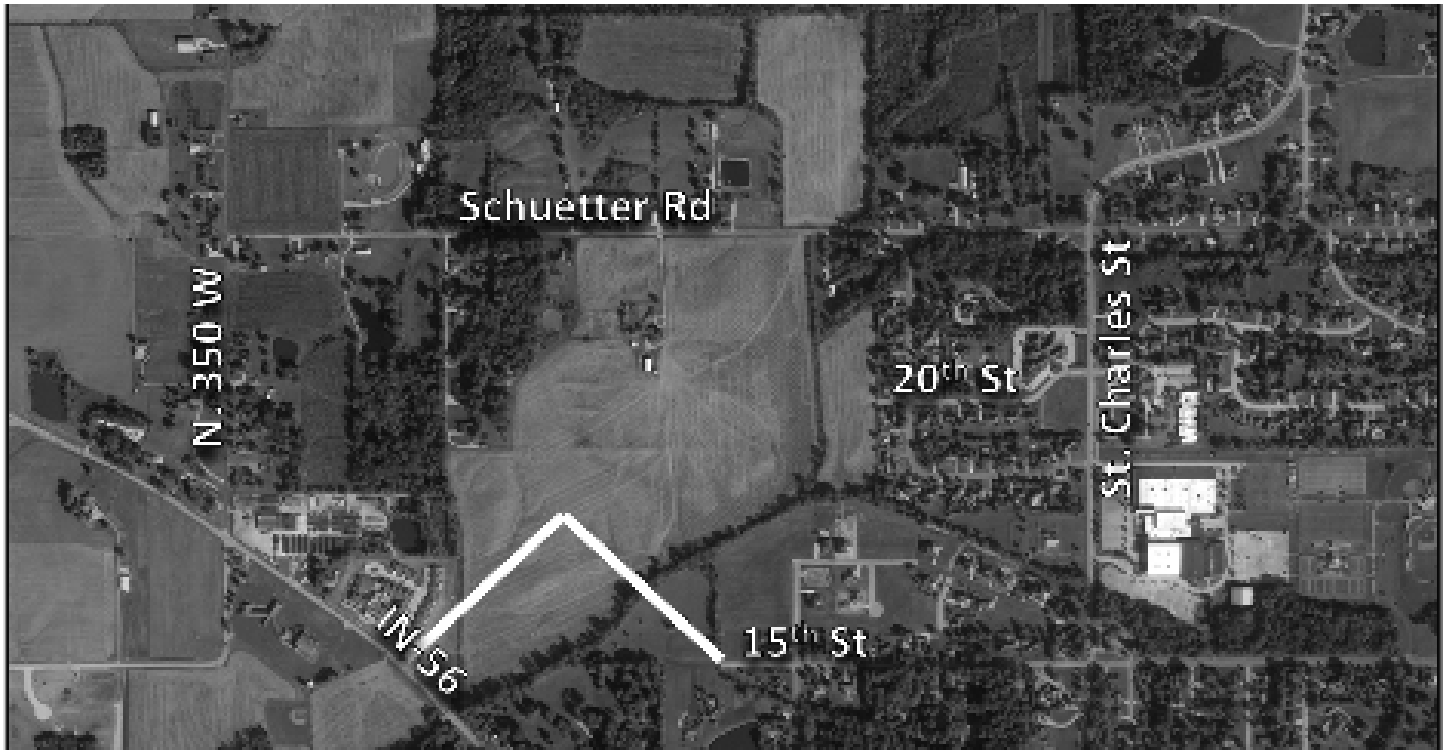
High

Goals

2) 15th Street Extension

N

Not to Scale



Issue

The SR 56 corridor leads to the heavily traveled US 231 and has seen growth in recent years as I-69 was constructed. The City expects development in this area, with a desire to extend an efficient multi-modal local grid network connectivity, rather than relying on parcel level access to the primary arterial network.

Solution

Extending 15th Street to SR 56 provides more direct access to the high school and other destinations for residents in the west areas of the City. This improves multi-modal connectivity, rather than limiting the network with cul-de-sacs. It sets up future growth of the urban area to the west and helps disperse traffic load.

Estimated Cost

Estimated Cost: $5 Million+

Priority Level

High

Goals

3) 36th & St. Charles

N

Not to Scale

Issue

Unacceptable driver delay, particularly in the morning peak hour when school traffic is highest. Afternoon peak also demonstrates intersection is nearing capacity. Multiple lanes at an all-way stop contributes to driver confusion on who goes next, causing even longer delays and potential safety concerns.

Solution

Convert this all-way stop to a roundabout, the design of which should:

1. Be suitable for buses to easily maneuver through, and
2. Accommodate non-motorized modes of transportation.

Estimated Cost

Estimated Cost: $1-3 Million

Priority Level

High

Goals

4) Home Depot Access Road

N

Not to Scale

Issue

There is a lack of connectivity between retail uses along US 231 and Mill Street, adding to the traffic burden of US 231. There is currently no multi-modal connectivity in this area of the City.

Solution

Provide relief to US 231 by extending an east-west connector north of what is currently Home Depot. This should accommodate bicyclists and pedestrians as well, providing easy multi-modal access between downtown and these popular retail establishments along an extended Mill Street trail.

Estimated Cost

Estimated Cost: $1-3 Million

Priority Level

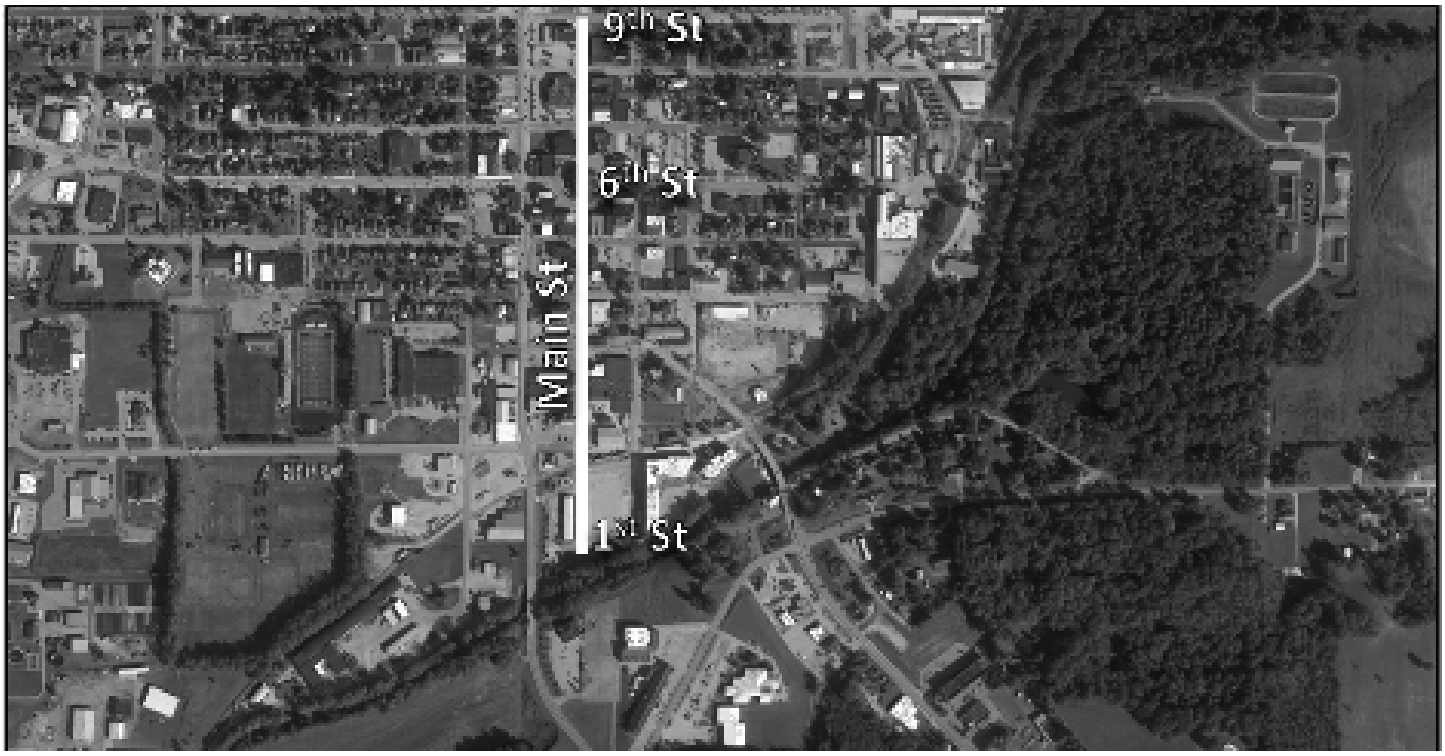
High

Goals

5) Main Street from 1st to 9th

N

Not to Scale



Issue

There is lack of bicycle and pedestrian connectivity between the courthouse and the river. The segment is very vehicle-focused. No pedestrian facilities exist at the crossing of 3rd Street.

Solution

Implement complete streets concepts from the Downtown Plan along the corridor. Create a focal point on the north bank visible from the courthouse, and extend two paths (one ADA accessible, one natural surface amongst the trees) along the riverfront to connect Main Street and farmers market area to the existing pedestrian bridge.

Estimated Cost

Estimated Cost: $5 Million+

Priority Level

High

Goals

6) E 6th from Courthouse to Mill

N

Not to Scale

Issue

The wide cross-section is too accommodating for vehicles, resulting in speeding, and high stress conditions for pedestrians and bicyclists.

Solution

Fulfill the Downtown Plan by implementing complete streets concepts along this segment. Wider sidewalks and bicycle facilities have proven to attract businesses and customers to downtown areas. Reduce the speed through downtown.

Estimated Cost

Estimated Cost: $250k - $1 Million

Priority Level

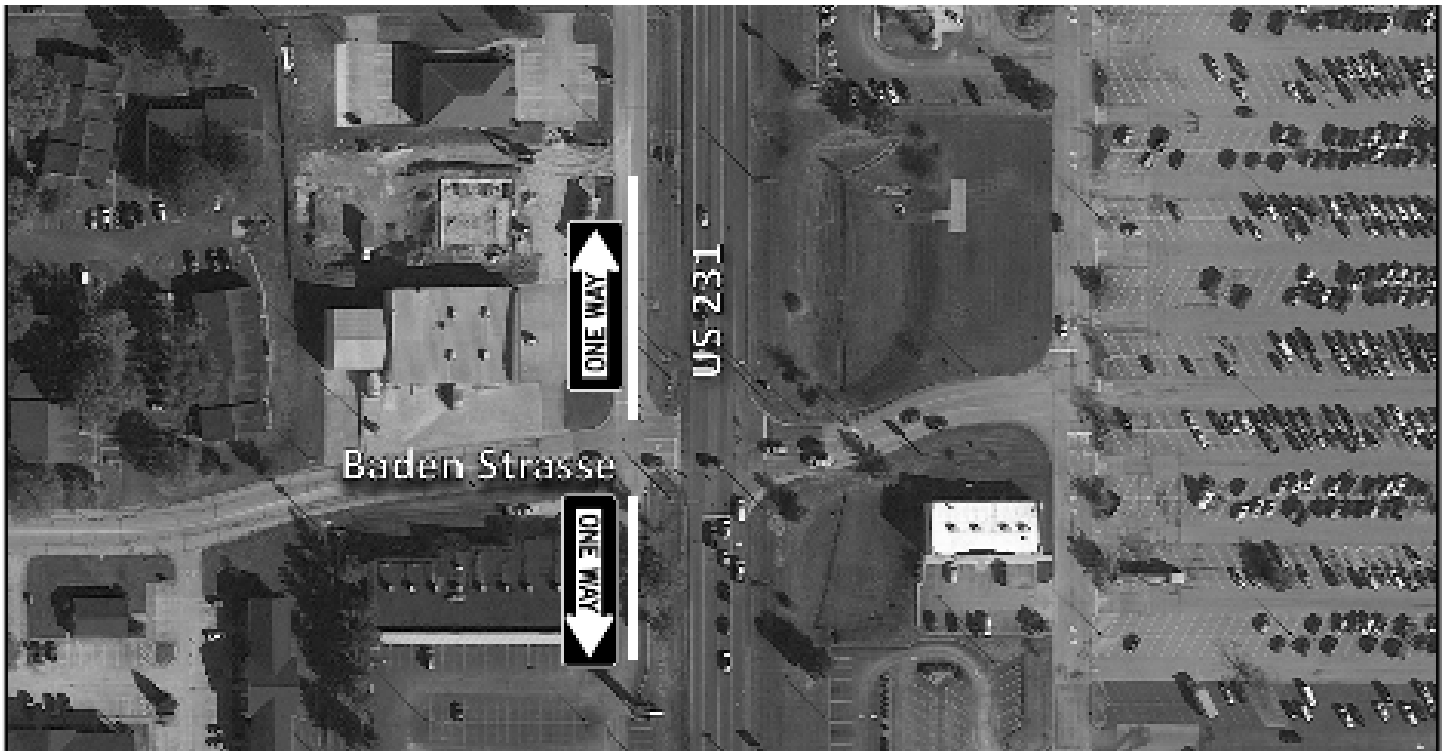
High

Goals

7) US 231 & Baden Strasse

N

Not to Scale



Issue

Close proximity of the frontage road to US 231 causes driver confusion and frequent near misses and reduces the effectiveness of the signal to serve Baden Strasse. If frontage road is blocked along Baden Strasse, it creates a potential safety hazard for northbound left turns from US 231 turning onto Baden Strasse.

Solution

In the frontage road blocks closest to Baden Strasse, implement one-way circulation. Remainder of frontage road beyond this closest block can remain two-way. This increases the spacing between the access from the shopping centers and the signal, creating a safer condition and smoother, more efficient, signal operations.

Estimated Cost

Estimated Cost: $250k - $1 Million

Priority Level

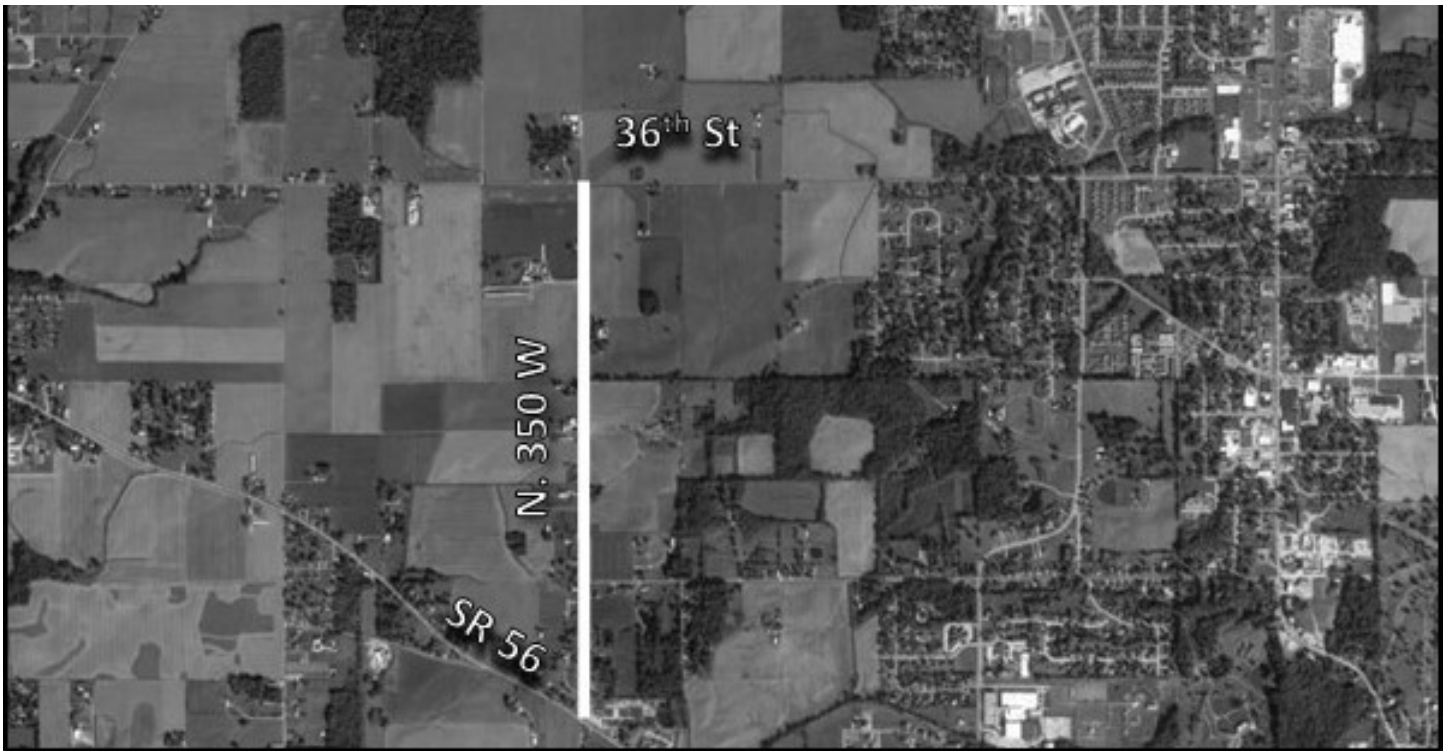
High

Goals

8) N 350 W from SR 56 to 36th

N

Not to Scale



Issue

Volume is anticipated to increase on this existing north-south connector road, providing relief to the US 231 corridor and accommodating future growth of the City. It currently has vertical curvature concerns and has little to no shoulder, which is recommended for the amount of anticipated future traffic.

Solution

Improve roadway cross-section to accommodate higher traffic and truck volume. Plan, coordinate, and manage the number of future access points on this road by following INDOT Access Management requirements for intersection spacing.

Estimated Cost

Estimated Cost: $5 Million+

Priority Level

Med

Goals

9) Jackson Street from 3rd to 15th

N

Not to Scale

Issue

One-way pairs reduce opportunities for circulation, particularly with bicycles, and lead to wrong-way cycling. Studies have proven that one-way vehicle operations reduce access to businesses, resulting in negatively impacting the economic prosperity and operations of those businesses.

Solution

From 3rd to 7th, convert the existing 38' cross-section to one 11' travel lane and 8' on-street parking for each direction. From 7th to 15th, parking would either need to be eliminated from one side of the road, or the road may operate as a yield street. Crosswalks should be clearly marked, and stop signs installed per MUTCD guidance. Adjust the north leg at 3rd Ave to be one lane in each direction. Eastbound left turns at 3rd can be installed, but operate with protected arrow only due to sight lines.

Estimated Cost

Estimated Cost: $1-3 Million

Priority Level

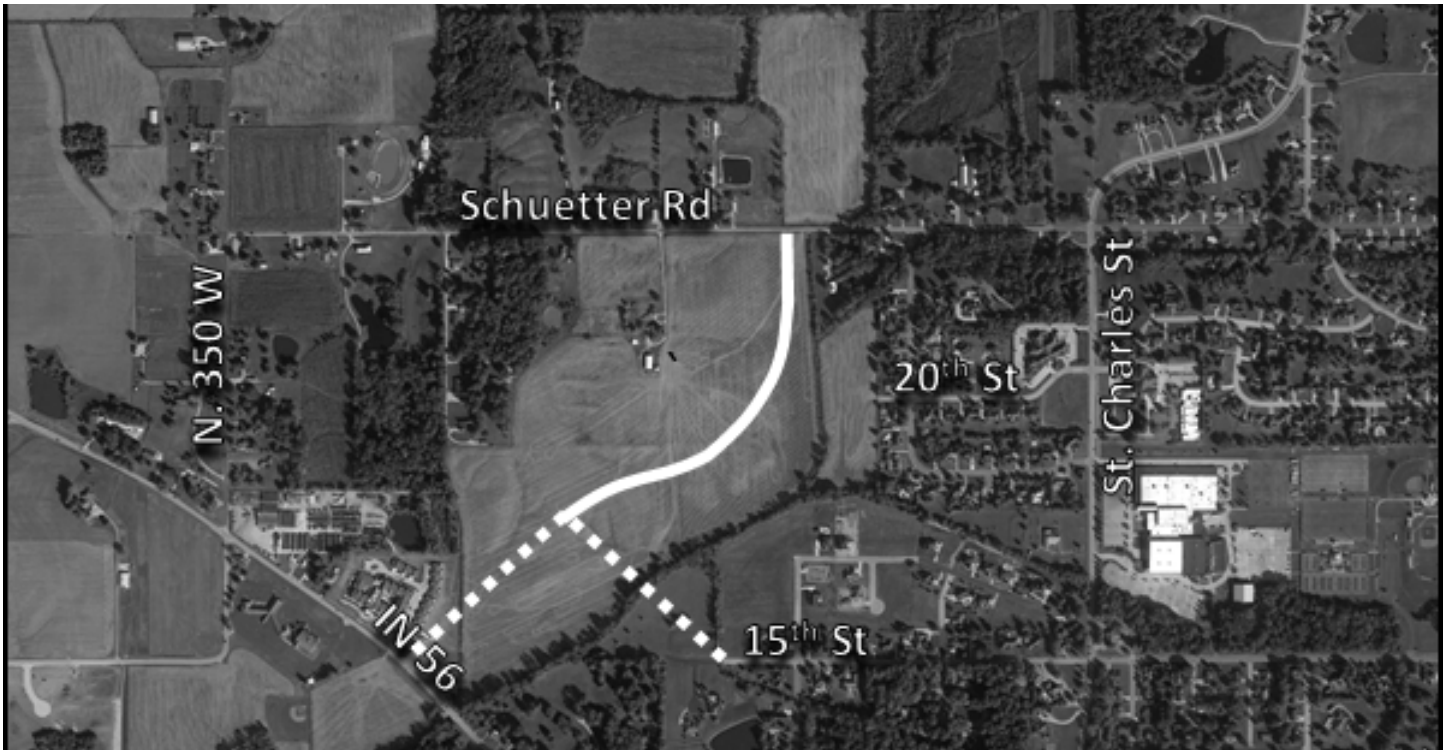
Med

Goals

10) North/South Connector

N

Not to Scale



Issue

The SR 56 corridor leads to the heavily traveled US 231. It has seen growth in recent years as I-69 was constructed. The City expects development in this area, with a desire to extend an efficient multi-modal local grid network connectivity, rather than relying on parcel level access to the primary arterial network.

Solution

15th Street Extension to SR 56 would be built prior to this improvement. This connector road would provide access to Schuetter Road, giving future residents options in their route of travel, rather than adding more volume than necessary to heavily-traveled SR 56.

Estimated Cost

Estimated Cost: $1-3 Million

Priority Level

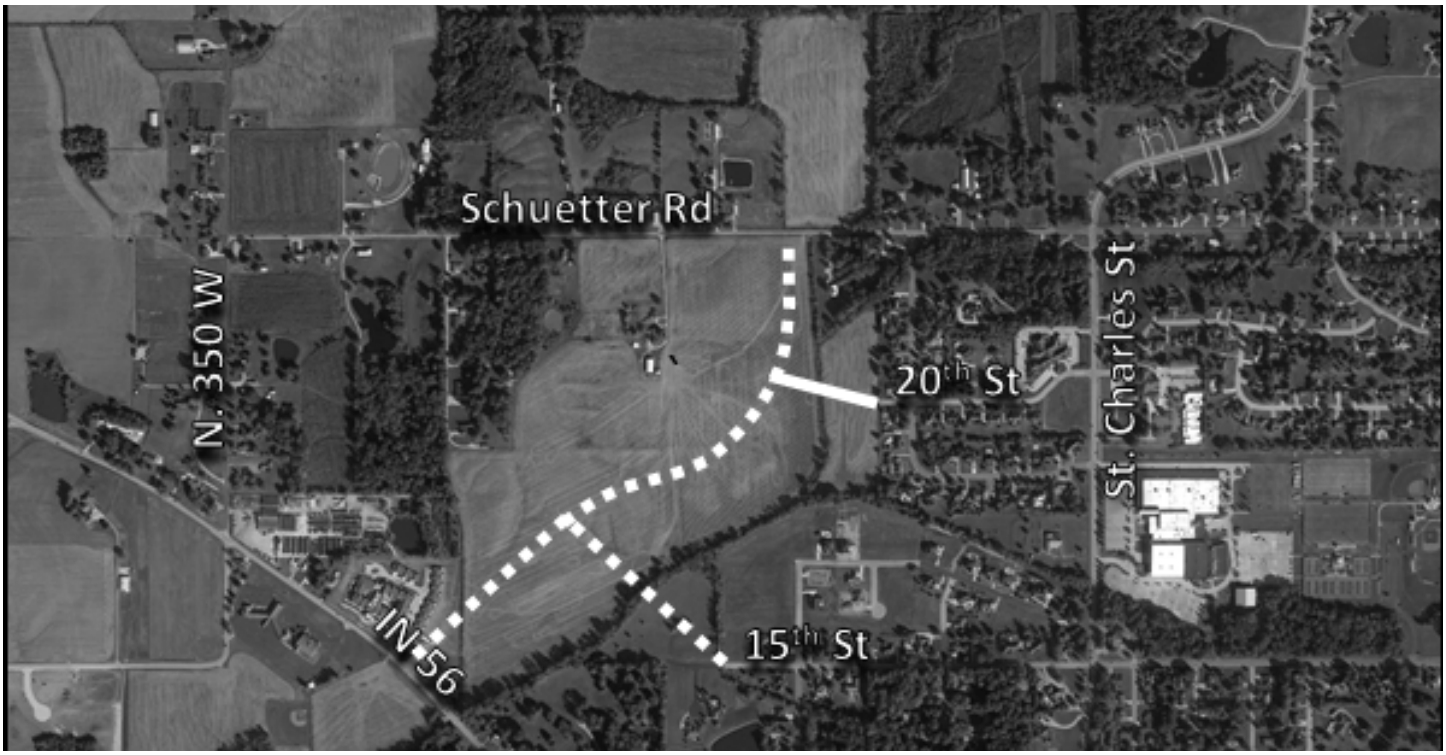
Med

Goals

11) 20th Street Extension

N

Not to Scale



Issue

The SR 56 corridor leads to the heavily traveled US 231 and has seen growth in recent years as I-69 was constructed. The City expects development in this area, with a desire to extend an efficient multi-modal local grid network connectivity, rather than relying on parcel level access to the primary arterial network.

Solution

15th Street Extension to SR 56 and north-south connector would be built prior to this improvement. Continue building out the grid network that is accessible for all modes of travel, providing easier and safer access than relying on heavily-traveled SR 56.

Estimated Cost

Estimated Cost: $1-3 Million

Priority Level

Med

Goals

12) Extend 28th Street to St. Charles St

N

Not to Scale

Issue

The lack of grid network in this area requires residents and businesses to be highly dependent on unsignalized access along heavily-traveled US 231.

Solution

Extend 28th Street to connect the grid, which is the most efficient road network possible giving drivers' options when deciding their route of travel. This helps reduce traffic and conflicts on US 231. A multi-modal connection can provide access between the existing trail along St. Charles St and the neighborhood near Howard Drive, allowing children an off-street path to bicycle or walk to school.

Estimated Cost

Estimated Cost: $1-3 Million

Priority Level

Med

Goals

13) Mill Street from 4th to 15th

N

Not to Scale

Issue

One-way pairs reduce opportunities for circulation, particularly with bicycles, and lead to wrong-way cycling. Studies have proven that one-way vehicle operations reduce access to businesses, resulting in negatively impacting the economy and operations of those businesses.

Solution

From 4th to 9th, convert the existing 43-44' road cross-section to an 8' parking lane, 7' buffered bike lane, one 11' northbound travel lane, one 11' southbound travel lane, and a 6-7' buffered bike lane. From 9th to 15th, the cross section should be one northbound vehicle lane with shared bicycle lane symbol, one northbound parking lane on the east side, and a southbound contra-flow bicycle lane on west side to keep the two-way bicycle network in tact from 4th to 47th Street. The segment from 3rd to 4th should remain one-way northbound. Stop control on Mill St should be considered at 6th, 9th, 12th, and 15th Streets. Clearly mark all pedestrian crosswalks.

Estimated Cost

Estimated Cost: $1-3 Million

Priority Level

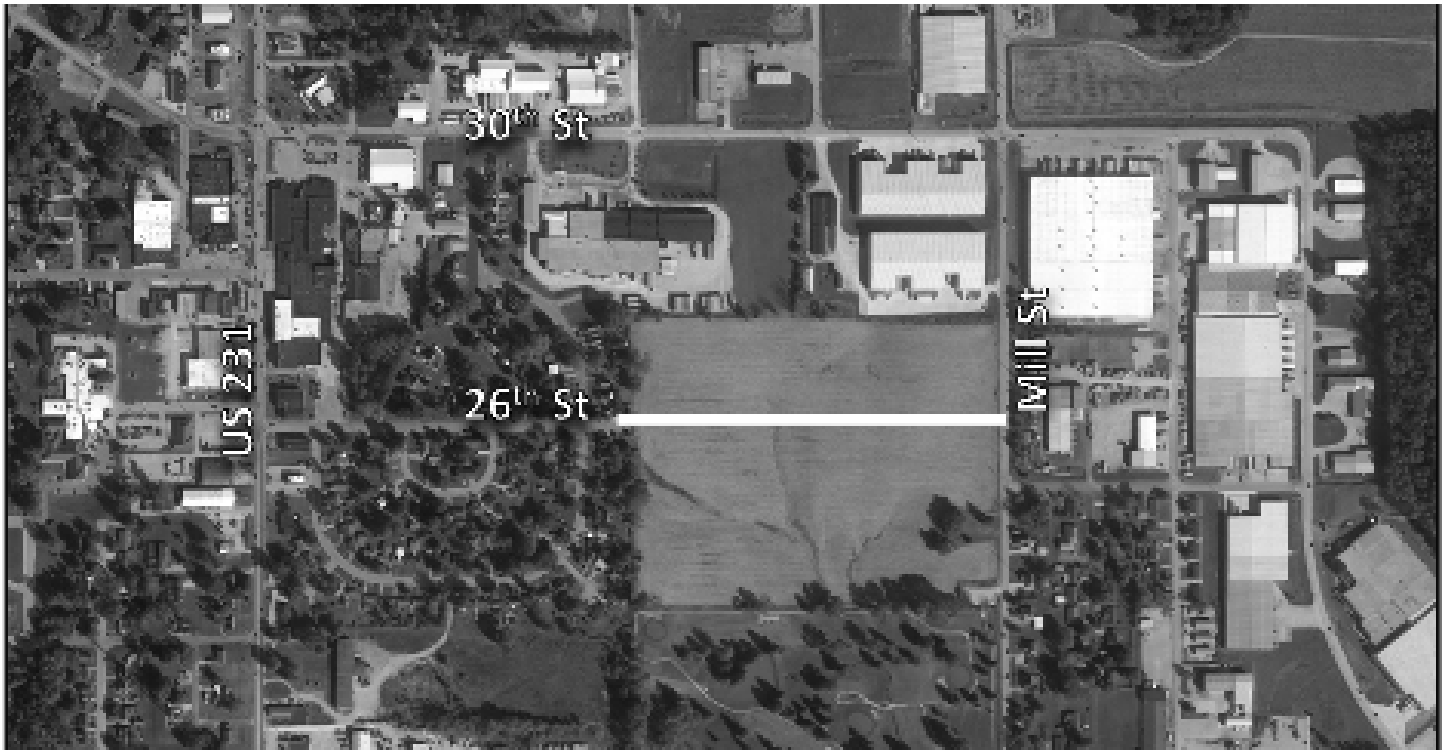
Low

Goals

14) Extend 26th Street to Mill Street

N

Not to Scale



Issue

There is a lack of connectivity between neighborhoods adjacent to US 231 and Mill Street due to the golf course and undeveloped land, adding to the traffic burden of US 231.

Solution

Extend 26th Street to Mill Street, giving residents easier multi-modal access to the nearby trail head on Mill Street as well as downtown. This helps reduce traffic and conflicts on US 231. It also ensures that future development of this parcel will not be subject to access only to Mill Street.

Estimated Cost

Estimated Cost: $1-3 Million

Priority Level

Low

Goals

15) 15th & St. Charles

N

Not to Scale

Issue

Unacceptable driver delay and queuing, particularly in the morning peak hour. Multiple lanes at an all-way stop contributes to driver confusion on who goes next, causing even longer delays and potential safety concerns.

Solution

Convert this all-way stop to a roundabout, the design of which should:

1. Be suitable for buses and trucks under 10 tons to easily maneuver through, and
2. Accommodate non-motorized modes of transportation.

Estimated Cost

Estimated Cost: $1-3 Million

Priority Level

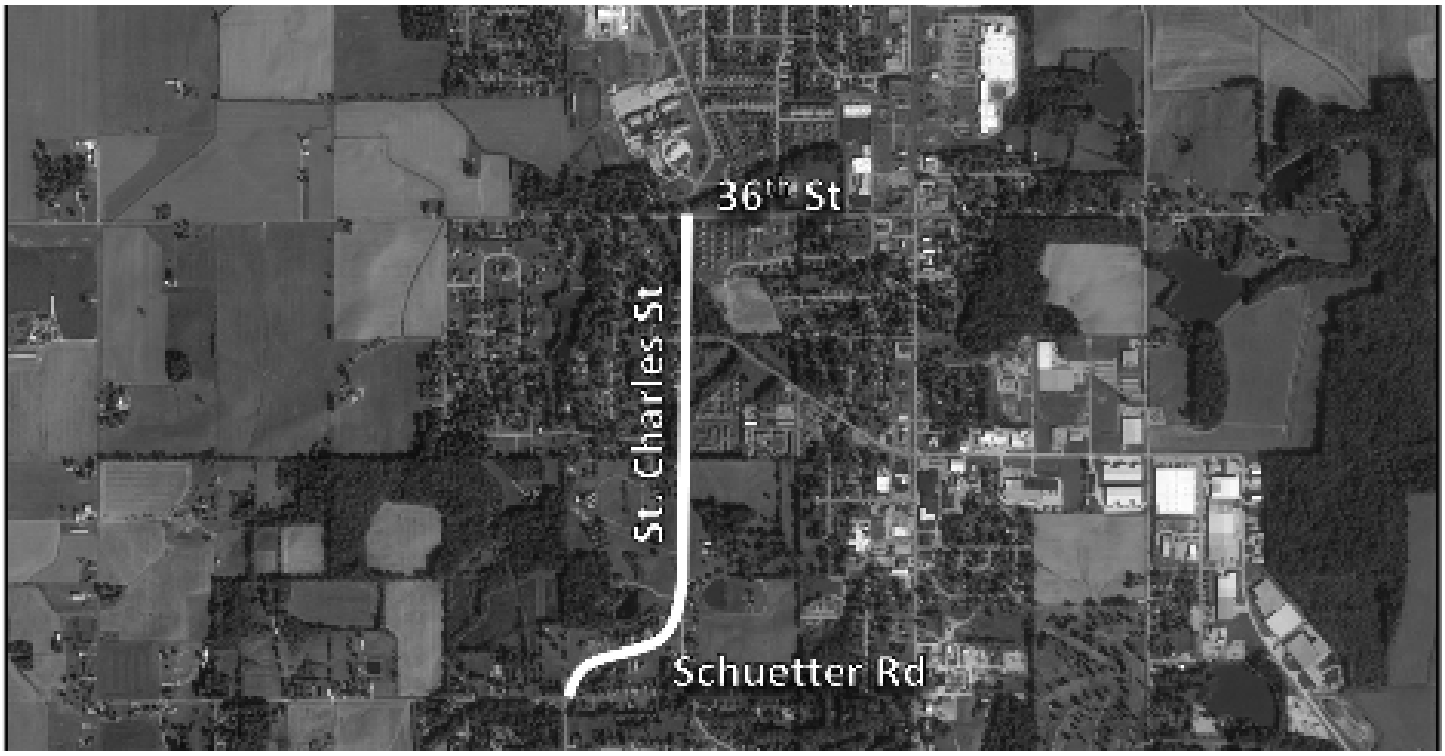
Low

Goals

16) St. Charles from Schuetter to 36th

N

Not to Scale



Issue

Speeding along St. Charles is leading to crashes along the 'S'-curve on the south end of the segment. St. Charles Street carries more volume than is desired due to capacity constraints along the parallel north-south route of US 231.

Solution

Implement traffic calming measures along the segment. It is recommended to be converted to a boulevard, with a center landscaped median dividing the north and southbound lanes. Alternatively, reduce to a two-lane segment, splitting the remaining pavement cross-section to provide on-street bike lanes in each direction.

Estimated Cost

Estimate depends on selected solution.

Priority Level

Low

Goals

Other Recommendations and Facilities

Two additional projects were suggested during the preparation of this plan, and are described below. The Festival Street would be something to consider at the time that complete streets projects were implemented Downtown in and around the Courthouse. The 'Y' Study would require INDOT support and input since this the confluence of two major state highways, though the City should be involved in any study of this intersection for input and guidance on future land use decisions.

The City has decided to not move forward with these recommendations at this time, but may reconsider at a later date.

'Y' Intersection Study

Issue

Configuration is confusing for non-locals traveling on US 231, and an excess of access points along horizontal curves with little intersection control leads to safety concerns and poor operations.

Solution

Coordinate a study of the 'Y' operations, sight distance, and nearby transportation neighborhood network connectivity. Determine if better land use would be suitable for parcels within the 'Y' space.

6th Street 'Festival Street'

Issue

Predominant traffic movements at this intersection consist of eastbound left turns and southbound right turns, following US 231. Drivers use 6th Street through the Courthouse area as a cut-through. The Downtown plan for Jasper calls for the area around the Courthouse to be more bicycle and pedestrian friendly.

Solution

Remove the east leg to create a 'T'-intersection at 6th St/Newton St/US 231, simplifying signal operations and reducing delay. Create a curbless urban "festival street" that accommodates pedestrians, bicyclists, outdoor dining such as cafe tables, etc. The design could allow westbound emergency vehicles, if desired.

47th Street Upgrades

Issue

Volume is anticipated to increase on this existing east-west connector road to accommodate future growth of the City, particularly trucks. Geometry and the cross-section are not ideal for the anticipated increase in truck and multi-modal traffic.

Solution

From US231 to Portersville Rd, improve the cross-section to include shoulders where feasible and add an adjacent Shared Use Path on the south side of the road as indicated in the multi-modal plan.

Evaluation

Performance management techniques promote informed decision making by relating community goals to the measurable effects of public investments. Key steps in performance management are to decide what to measure in order to capture the current state of the system, to set targets to improve those measures, and to use the measures to evaluate and compare the effects of proposed projects and policies. The goals identified in the Impact Jasper Comprehensive Plan serve as the basis for the performance measures. Performance measures should be monitored over time to track the community's progress towards achieving the Plan's goals. As recommendations are implemented and projects come online, improvements in key performance indicators should be realized.

Performance measures are provided for each Plan goal and include the objective, strategy, and performance measure. Numerous measures are available through public sources. Others reflect information collected by the City of Jasper (i.e., sales tax receipts) and some require professional planning staff with GIS capabilities to calculate (i.e., miles of bicycle facilities). A commitment to ongoing monitoring places the region in compliance with federal transportation planning guidelines, and is advantageous when seeking funding for projects.

To achieve these goals, the following objectives are recommended with correlated performance measures to be evaluated annually:

Safety: Create a safe transportation system that strives to end traffic deaths and prevent serious injuries.

Objective	Performance Measure	Data Source
Reduce the number of crashes	Improve visibility through improved lighting, striping, signage, visibility triangles, and access control	Total Number of Crash, Crash Type, Crash Locations
	Increase enforcement in priority safety areas (e.g. Click It or Ticket/Distracted Driving)	No. and Duration of Safety Awareness Programs
	Prepare and submit applications for Highway Safety Program funding	No. of HSTP submittals, No. of projects funded
Eliminate traffic fatalities and serious injuries	Prioritize funding for projects that address safety issues or are located on high crash corridors	Rate of Fatalities per 100 MVMT, Total Number of Fatalities, Rate of Serious Injuries per 100 MVMT, Total Number of Serious Injuries, Total of Non-Motorized Crashes resulting in fatalities and injuries
	Adopt a Vision Zero Strategy	Strategy Adopted
	Use design as a tool to support and enforce pedestrian right-of-way at intersections and crosswalks	No. of crosswalk/intersection improvements implemented
	Identify high-risk roadway features and develop templates to simplify consistent safety redesigns	Features ID's and redesigns implemented
	Evaluate roadway reconstruction project for multi-modal safety needs and opportunities at project inception	No. of reconstruction projects annually, no. that include safety improvements
Reduce modal conflicts	Encourage the development of safety education programs to inform the public of bicycle/pedestrian rules and regulations	Bike Safety Programs, Frequency, Duration
	Reduce physical obstructions/barriers that impede safe bicycle/pedestrian travel	Barriers removed annually and type
	Increase pedestrian signal crossing time	No. of signals with crossing times increased, Percent of total signals
	Where feasible, utilize railroad right-of-way, levees, and parkways for alternative transportation routes to avoid traffic conflict, including adequate grade separation at intersections	No. and Miles of off road multi-modal projects completed
	Utilizing established evaluation criteria, identify “bicycle friendly” streets that will accommodate on-road bicycle travel	Miles of bike friendly streets as percent of network
Eliminate system vulnerability to risks and hazards	Prioritize transportation infrastructure projects that protect key facilities and services	No. of projects that protect key facilities and services
	Emphasize mitigation techniques during new and renovation construction of critical facilities	No. of mitigation techniques applied to projects
	Whenever possible, implement green infrastructure to reduce or minimize stormwater issues and flooding	No. of projects with green infrastructure. Gallons of stormwater removed/diverted from sewer system

Mobility: Create an equitable transportation network that provides all residents with access to mobility choices that are affordable, safe, and efficient.

Objective	Strategy	Performance Measure
Increase the options for alternative modes of transportation	Conduct a transit/micro-transit feasibility study	Study completed
	Explore ride-sharing and car sharing services	Number of types of services explored
	Provide incentives for alternative commuting	Incentives offered
	Identify locations of commuter park and ride facilities	No. of potential sites identified
	Coordinate with major employers to establish vanpools	No. of vanpools established
	Implement standardized wayfinding throughout Jasper	Wayfinding installed and maintained annually
	Encourage tele-work whenever possible through marketing and education	No. and type of tele-working promotions
Improve transportation access for the transportation disadvantaged including the elderly and low-income residents and people with disabilities	Conduct a parking study for Downtown Jasper	Study completed
	Encourage shared parking agreements, especially in Downtown Jasper	No. of shared parking agreements
	Prioritize bicycle and pedestrian improvements in environmental justice zones	Miles of bikeways and sidewalks in environmental justice zones
	Complete recommendations from the Jasper ADA Transition Plan	No. and percent of projects completed
	Improve parking enforcement (cars ticketed for parking or idling in bike lanes), especially in downtown Jasper	No. and frequency of parking violations reported
	Create and adopt ordinances for the removal of snow and ice from sidewalks, bikeways, and driveway entrances	Ordinance adopted
	Support training programs for disability sensitivity	Training programs supported or offered
Reduce automobile dependency	Prioritize bicycle and pedestrian infrastructure at major destinations	Miles of bikeways and sidewalks within 1/4 mile of major destinations
	Encourage medium-density mixed use development to increase access to the number and variety of services within active travel distances	Acres of new mixed use and medium density development

**In addition to objectives and strategies recommended in the Bicycle Plan.*

Reliability: Ensure that the transportation system is reliable, efficient, and well maintained.

Objective	Strategy	Performance Measure
Manage the transportation system efficiently	Implement a Dig Once policy	Adopt Dig Once policy
	Increase investments in ITS to better manage traffic incidents, special events, construction, and logistics	Number of projects using latest technologies (Intelligent Transportation Systems) to improve system capacity and efficiency
Reduce transportation demand	Coordinate land use development and transportation	Reduction in land used for new projects
	Increase access to high speed internet to residents across the City of Jasper	No. of residences with access to high speed internet
Improve system capacity as needed	Plan for efficient system expansion as needed to support anticipated travel demand	System congestion and delay
	Address system capacity constraints and operational bottlenecks through system expansion when necessary	Study road inventory to provide a reduction in bottlenecks
Reduce the cost of roadway maintenance	Improve engineering and design standards for road design and construction	Coordinate design standards with State and ADA design standards
	Develop a citywide asset management plan	Plan developed
	Educate municipalities and individuals about the benefits of Road Diets	No. of meeting, promotional materials, and public surveys
	Encourage non-motorized travel, transit, and carpooling	Implement recommendation of this plan
	Explore public-private partnerships (P3s) to address infrastructure and funding deficiencies	No. of public-private partnerships established
	Prioritize funding for regionally significant projects and programs	Develop a list of high priority projects
	Coordinate utility upgrades with transportation infrastructure upgrades	No. and frequency of coordination meetings with utilities to align projects
	Promote regional coordination through the use of mutual-aid agreements	No. of agreement established iwth outside entities
Improve Traffic Flow	Implement traffic circles and roundabouts at intersections	No. of traffic circle projects completed
	Synchronize traffic signals to improve the movement of traffic	No. of traffic signals coordinated
	Adopt access management policy	Policy adopted
	Increase investments in ITS to better manage traffic incidents, special events, construction, and logistics	Number of projects using latest technologies (Intelligent Transportation Systems) to improve system capacity and efficiency

Livability: Encourage transportation solutions that promote community health, economic activity, and ecosystem vitality.

Objective	Performance Measure	Data Source
Promote the efficient movement of people and goods by linking the various modes of transportation	Maintain or improve the current farm-to-market road system and ensure they are not being degraded at a faster than normal pace	Reduction of trucks on farm-to-market road system
	Explore policies to support integration of autonomous vehicles	Adoption of autonomous vehicle policies
	Study drone delivery solutions	Adoption of drone delivery study
	Explore and implement curb management policy to improve first-last mile service	Reduction in distance between first/last stop to destination
Focus system improvements to support and promote tourism	Provide comfort stations at destinations and attractions	No. of comfort stations
	Provide bicycle and sidewalk accommodations at destinations and attractions	No. of bicycle and sidewalk accommodations
	Ensure attractions are ADA accessible	No. of ADA compliant locations
Reduce transportation cost burden for Jasper residence	Favor policies and projects that encourage greater fuel efficiency	No. of fuel efficient vehicles
	Support projects that improve commute options for disadvantaged workers	No. and availability of commute options
	Provide transportation mode choices including public transit, bicycling, walking, and ridesharing	Reduction in household commuting cost
Reduce reliance on fossil fuels in transportation	Encourage public agencies and businesses to install Electric Vehicle Charging Stations at their parking facilities	No. of electric vehicles charging stations installed
	Encourage public entities to install LED street and parking lot lighting	No. of LED lights installed
Minimize negative impacts to the environment	Avoid sensitive environmental features and identifying relevant mitigation measure when possible and feasible	Identify and protect environmentally sensitive areas
	Use recycled materials in road construction	Reduction in construction waste
	Construct noise barriers where appropriate to prevent noise pollution in neighborhoods	Reduction in noise pollution
	Encourage the installation of International Dark Sky Association compliant light features in new roadway projects	No. of Dark Sky Association features installed
Improve water quality	Minimize land disturbance during construction, particularly on steep slopes	Reduction in acres disturbed
	Aim for zero run-off from road projects by utilizing best management practices (BMP's)	Track BMP violations
	Reduce the water quality impacts of herbicide, de-icing, and other chemical agents used for road maintenance	Establish use of environmentally friendly products

Connectivity: Provide a transportation network connects neighborhoods to places of employment, education, goods, and services.

Objective	Strategy	Performance Measure
Support an integrated transportation system	Explore pedestrian connections to nearby streets where cul-de-sacs are present	No. of pedestrian throughways opportunities identified/established
	Develop a connectivity index	Index developed
	Employ a connectivity index in all development review decisions	Percent of development reviews which include index evaluations
	Encourage a grid-network of transportation infrastructure in all future subdivision development	New subdivisions without cul-de-sacs
	Support state and local regulations that promote multi-modal use	No. and type of regulation supported
Coordinate with other Jurisdictions	Coordinate with local healthcare providers and the Dubois County Health Department to provide bike and walking incentives	No. and frequency of coordination meetings, incentives developed, incentives offered
	Coordinate with other transportation agencies and adjacent communities and counties for the extension of existing and planned arterial and collectors	No. and frequency of coordination meetings
	Examine the potential of a coordination of public, private, and university transit systems	Study complete
	Coordinate with Dubois County and nearby communities to promote development along existing and planned infrastructure	Intergovernmental agreement adopted
Encourage new development to include multi-modal facilities and accommodations	Provide development incentives for buildings to include bicycle and pedestrian amenities	Incentives developed, incentives offered
	Dedicate a percent of development fees to bicycle facilities (similar to Percent for the Arts[1] ordinances championed by the National Endowment for the Arts)	Amount of fees generated, facilities provided

1 *https://www.americansforthearts.org/by-program/reports-and-data/legislation-policy/naappd/percent-for-art-ordinances*

Cost Estimates

Planning level opinions of probable cost were estimated for the recommended roadway projects. The costs were placed into the following five general cost ranges for roadway projects:

For all projects but two, these prices were based on past experience with comparable engineering projects. Several of the short "connector" projects may have reduced land acquisition costs, as their incorporation into the network may be negotiated with a developer. These costs do not reflect any land acquisition or utility relocations.

The 15th Street Extension and Mill Street Improvements from 15th to 36th Streets were identified by the City as special topics needing early attention. Concepts and a preliminary environmental screening assessment was completed, and itemized preliminary costs based on those concepts was projected. These special topics are included in **Appendix C**.

Implementation

Funding

The funding for the Jasper Multi-modal Transportation Plan can be estimated based on the following assumptions:

- The City of Jasper is expected to continue to receive additional funds from the recently increased gasoline tax.
- The City of Jasper will continue to be eligible to submit grant applications for federal programs including Highway Safety Improvement Program and National Highway Performance Program.
- The City of Jasper can collect additional revenue through Wheel Tax and Excise Surtax. Indiana Local Technical Assistance Program estimated that maximum revenue from these taxes for Dubois County would be approximately $3 million per year.
- Public Private Partnerships (PPP) - The private sector, such as developers and business associations, often supports transportation projects through impact fees, right-of-way donations, and cost sharing. Developing public-private partnership will help to finance the projects identified in the transportation plan.

Assuming the revenue and expenditure will remain consistent over the plan period, the total amount available for capital improvements over the next 20 years is anticipated to be $223,927. This was calculated assuming a 1.9% annual inflation rate (average rate of inflation in the United States over the past 10 years). If those funds were only used to match federal grants at 20%, they could be leveraged to secure approximate $1,119,635 in capital improvements by 2040. In order to implement the projects identified in this plan, the City of Jasper will need to explore additional funding sources to supplement revenue from the City of Jasper's Local Road and Street Fund and Motor Vehicle Highway Account. To review the financial plan, see **Appendix D**.

Project Prioritization

Project prioritization is an essential part of the development of the Jasper Multi-modal Transportation Plan. A number of factors were used to develop the recommended list of priorities including alignment with the community vision, potential impact on the plan's goals and objectives, community feedback, and local priorities. For complete details on the analysis of community feedback and local priorities, see **Appendix E.**

The prioritizations were ranked High, Medium, and Low. High was defined as either implemented in the next five years, or for larger projects, begin to find or dedicate funding over the next five years for implementation within ten years. Medium priority would be defined as being implemented within ten to fifteen years, and Low having an implementation horizon of more than fifteen years.

Priority Rank	Project Name	Project Type	Estimated Cost
High	Mill St from 15th to 36th (Widen to accommodate more trucks, multi-modal path)	Corridor Improvement	
High	15th St Extension to SR 56	New Roadway	
High	36th & St. Charles (Convert to roundabout)	Intersection Improvement	
High	East-West Connector from US 231 to Mill St North of Home Depot	New Roadway	
High	Main Street from 1st to 9th (Create Complete Street)	Corridor Improvement	
High	E 6th from Courthouse Sq. to Mill St (Create Complete Street)	Corridor Improvement	
High	US 231 & Baden-Strasse/Walmart (Adjustments to frontage road on west side)	Intersection Improvement	
Med	N 350 W from Schuetter to 36th (Upgrade to carry increased future traffic)	Corridor Improvement	
Med	Jackson St from 3rd to 15th	One-Way Conversion	
Med	North-South Connector from 15th St Extension to Schuetter	New Roadway	
Med	20th St Extension	New Roadway	
Med	Extend 28th St to St. Charles (Extend dead-end streets)	New Roadway	
Low	Mill St from 4th to 15th	One-Way Conversion	
Low	Extend 26th St to Mill St	New Roadway	
Low	15th & St. Charles (Convert to roundabout)	Intersection Improvement	
Low	St. Charles from Schuetter to 36th (Convert to boulevard, reduce speeding) *	Corridor Improvement	

** Cost significantly depends on selected alternative.*

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Appendix A

EXISTING CONDITIONS

CITY OF JASPER INDIANA

Table of Contents

Maps, Tables, and Figures

Introduction

Existing conditions is a critical attribute of the multi-modal transportation plan and identifies the estimated revenue from existing and proposed funding sources over the plan period and compares it against estimated project costs of constructing, maintaining, and operating the existing and planned transportation system through 2040.

This chapter details the existing conditions of Jasper and their relationship to transportation and mobility. Measures such as population characteristics, land use, roadways, bicycle and pedestrian facilities, and more are detailed and discussed. The following sections describe the existing transportation network in the community, as well as traffic conditions and safety.

This report is separated into four sections:

- Demographic Analysis
- Land Use Analysis
- Mobility Analysis
- Roadway Analysis

Demographic Analysis

Overview

Several factors impact transportation within the City of Jasper. In this section, demographic and population analysis, economic conditions, and housing and development considerations will be address, particularly as they relate to their impact on transportation.

Demographics and Transportation Choices

The face of the United States of America is undergoing change. The population is more ethnically diverse, is getting older, and is increasing in numbers. These trends are forecast to continue. At the same time, telecommuting and alternative work arrangements are gaining adoption, and one-person households are increasing. With dynamic changes in national and global economic activity, uncertainty about the availability and cost of energy, and rapid advances in technology, a different picture emerges of the United States in 2050.

All of these factors have significant implications for the transportation system. The sociodemographic and economic characteristics of the population influence transportation demand for different modes. Age, income, gender, ethnicity, household size, and automobile availability are some of the variables that influence travel behavior. Providing safe mobility for the aging baby boom generation, for a more ethnically diverse population, and for a larger population is critical for Jasper's economic vitality and quality of life.

Population Trends

According to the most recent American Community Survey 5 year average, the population of Jasper is approximately 15,827 people. As noted in the Impact Jasper Comprehensive Plan, the city has grown by almost 500 people since 2010, and approximately 3,400 people since 2000 (22%). Jasper experienced a higher percentage of growth from 2000, but is expected to grow at a slower pace in the upcoming decade. By 2030, Dubois County is projected to grow by an additional 3,000 people. These projections are based on historic trends of Jasper, taking into account the migration rate, birth/death rate, and ages of the population that are currently there. It does not consider other economic or social influences. While population increase was greater in the last decade and growth for Jasper is expected to continue at a slower pace,

Across the country, and in the region, baby boomers and millennials are choosing to live in more traditional neighborhoods with walking, biking, and shopping. It is reasonable to expect that with these trends, by improving transportation options Jasper will attract residents that demand active lifesyles.

Of note, a number of residents cannot drive due to age, health, or lack of access to a vehicle. Approximately 20% of Jasper's population is under 16 and depends on being driven, walking, or biking. Driving ability declines with age, and it is also reasonable that some of the 18% of residents over 65 may be aging out of driving. Jasper has a higher proportion of children 18 and under and adults over 65 than the State of Indiana. Both of these age groups have mobility limitations and require more access to opportunities for traveling around town.

Map A1-1 show the population density of Jasper by census block group. The highest concentration of residents are located north and west of Jasper's historic downtown. **Table A1-1** compares the age cohorts of Jasper and Indiana by total number and percent of the population.

Jasper **22.7** percent Age 18 or under

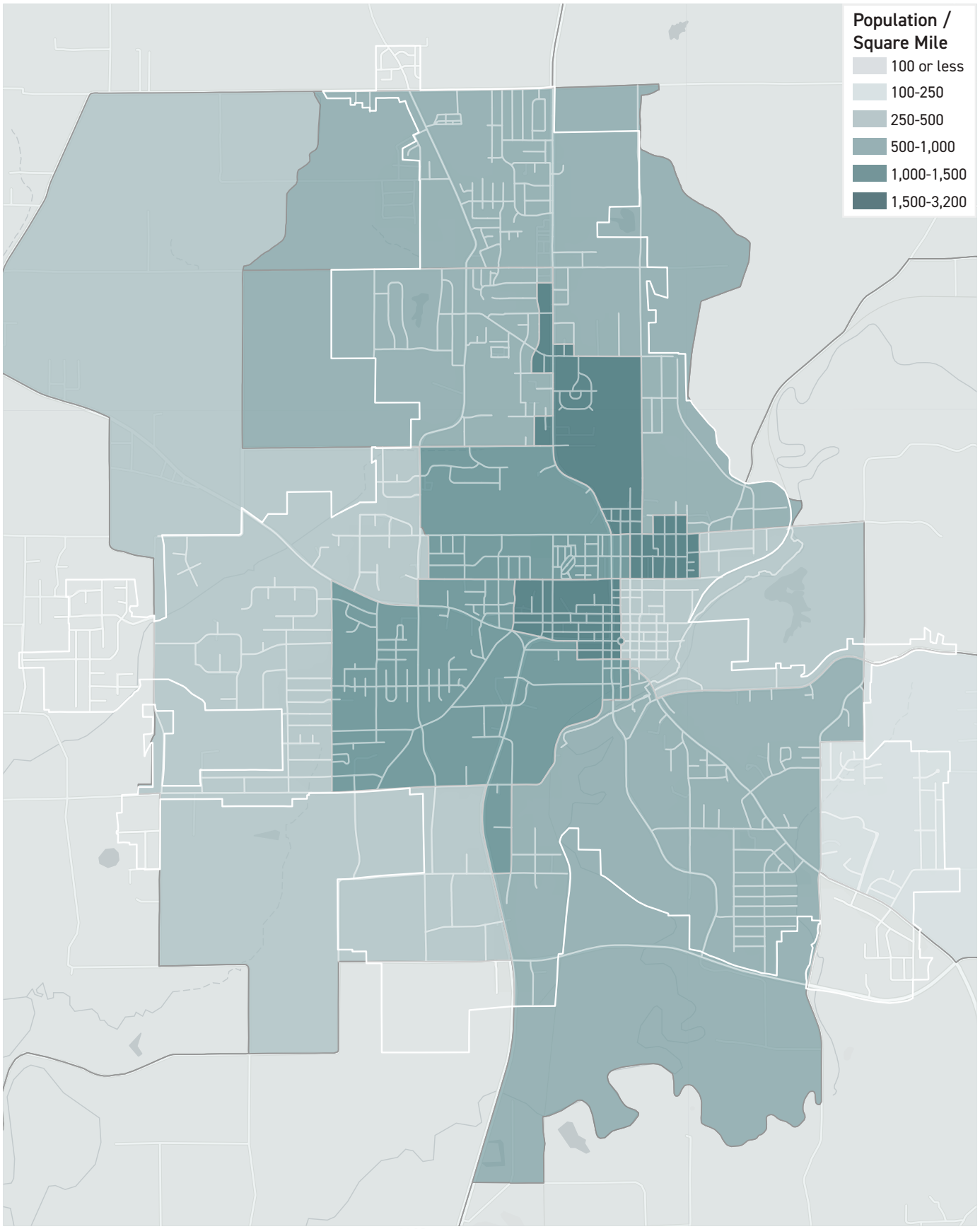
Indiana **23.3** percent over age 65

Jasper **18.2** percent over age 65

Indiana **16.1** percent over age 65

Table A1-1. Total Population by Age

	Jasper		Indiana	
	Population	Percent	Population	Percent
0-9	2,332	14.7%	850,967	12.8%
10-19	1,557	9.8%	908,893	13.6%
20-29	1,818	11.5%	921,015	13.8%
30-39	2,151	13.6%	843,906	12.7%
40-49	1,906	12%	814,816	12.2%
50-59	2,016	12.7%	882,664	13.2%
60-69	1,971	12.5%	764,565	11.5%
70-79	1,174	7.4%	432,220	6.5%
80+	902	5.7%	246,657	3.7%



MAP A1-1. POPULATION DENSITY A5

Disability Status

Transportation is an extremely important policy issue for those with disabilities. People with disabilities have consistently described how transportation barriers affect their lives in important ways. Over the last two decades the National Organization on Disability (NOD) has sponsored three successive Harris polls with people with disabilities, and respondents in each survey have reported that transportation issues are a crucial concern. In the last survey, undertaken in 2004, just under a third of those with disabilities reported that inadequate transportation was a problem for them; of those individuals, over half said it was a major problem. The more severe the disability of the respondent was, the more serious were the reported transportation problems.

As seen in **Table A1-2**, over 11% of Jasper residents report having a disability. Though reports indicate the disability rate in Jasper is lower rate of disability that the state and county (**Figure A1-1**), this may indicate that getting around Jasper is too difficult for residents with mobility needs. As people age, they are more likely to develop a disability. Nearly 37% of Jasper residents over 75 report a disability. These numbers underscore the importance of a transportation system that allows residents to bike, walk and take transit safely in order to access daily needs and enjoy a high quality of life as they age in place. **Map A1-2** displays where the highest concentrations of residents are located who report a disability.

Jasper **11.3** percent have a disability

Indiana **13.6** percent have a disability

Table A1-2. Disability Status By Age

	Jasper	Indiana
Under 5 years	0.0%	0.6%
5 to 17 years	3.2%	5.7%
18 to 34 years	11.5%	7.3%
34 to 64 years	10.0%	14.4%
65 to 74	22.9%	26.0%
75 and older	36.9%	48.1%

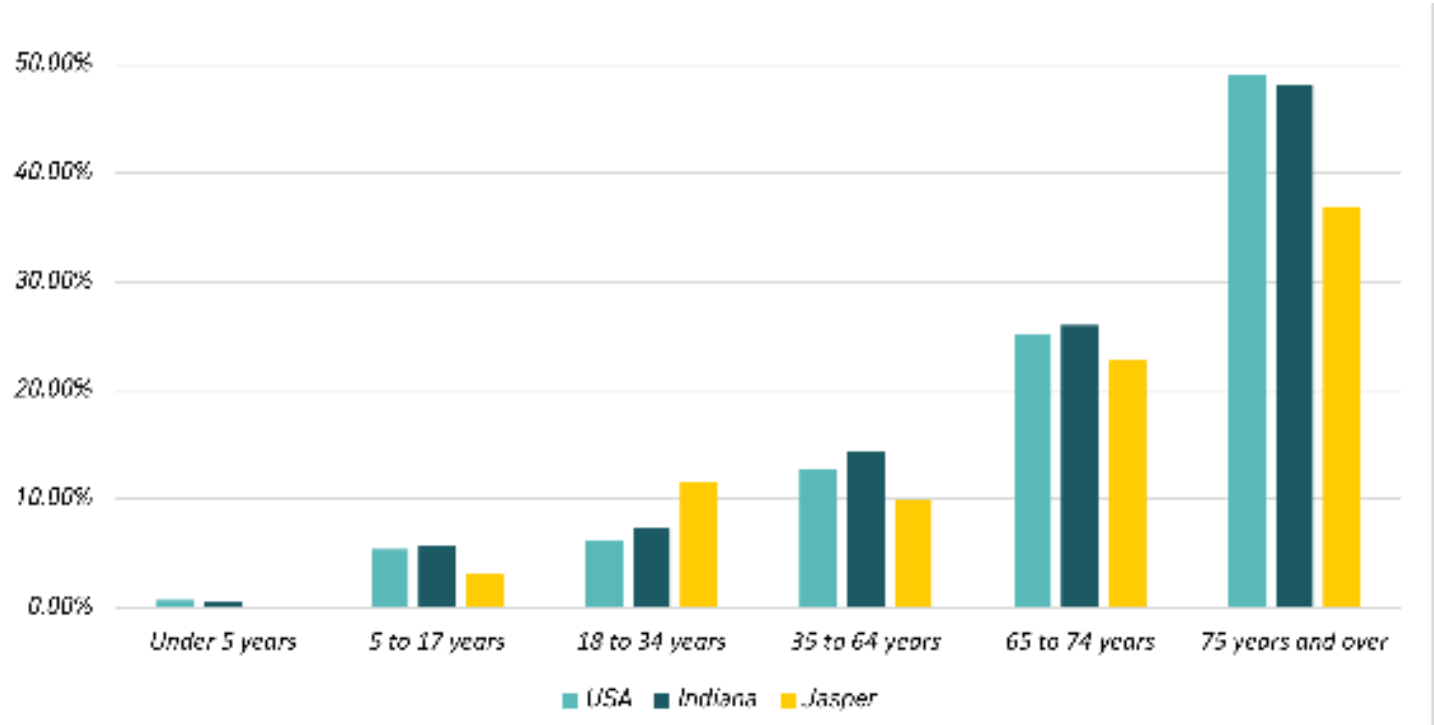
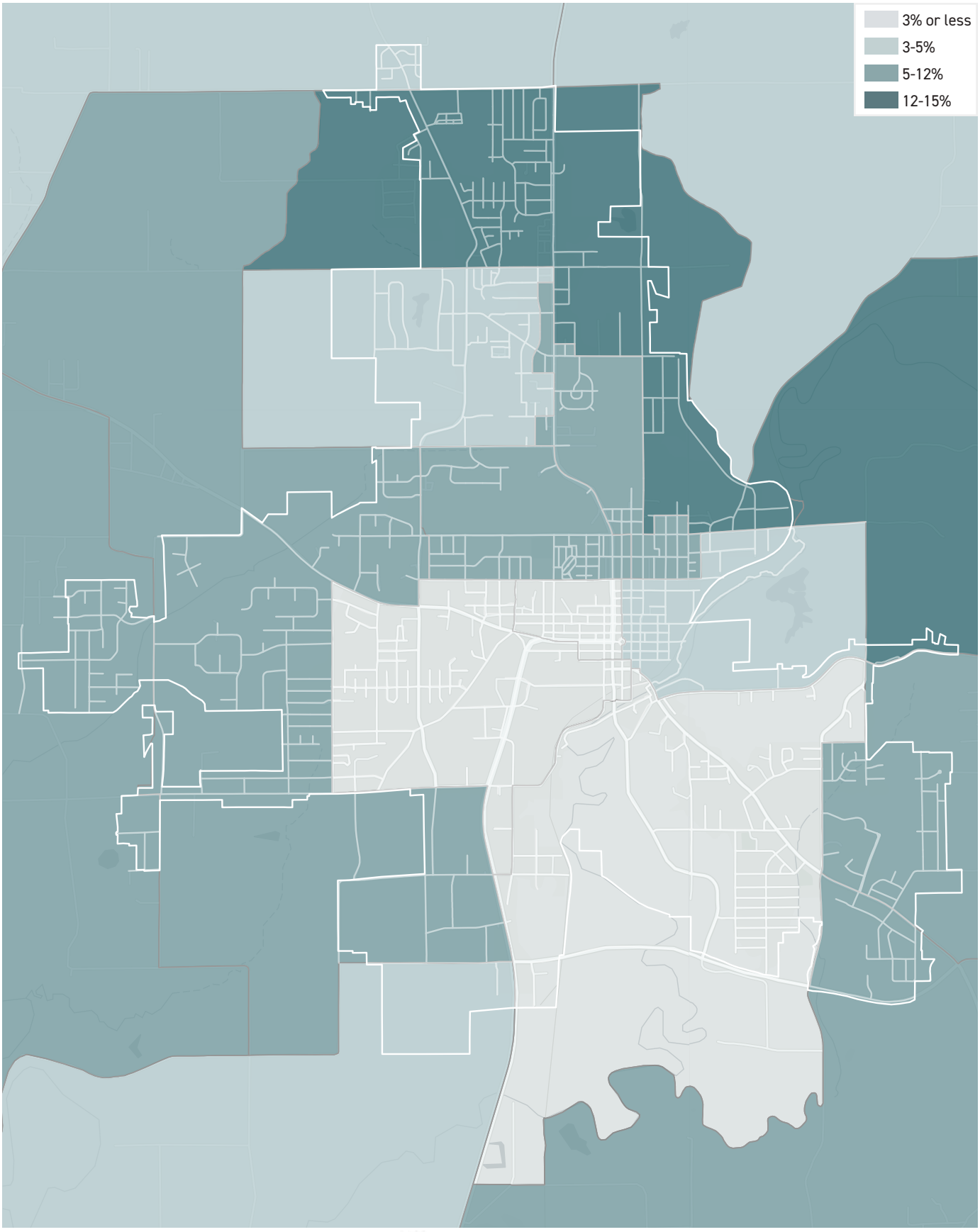


Figure A1-1. Disability Status By Age



MAP A1-2. PERCENT DISABLED

Vehicle Access

People need transportation to travel to jobs, childcare, healthcare, and reasonably priced goods and services. Everyone needs reliable transportation access and in most American communities that means a car. Public transportation systems have increasingly ensured greater accessibility for many people, but the City of Jasper does not offer transit service at this time.

People in poorer households without a reliable vehicle, or with no vehicle at all, have a greatly reduced level of mobility. When they have vehicles, the vehicles are more likely to be older models, which often require more maintenance; moreover, the lower vehicle efficiency increases the cost of travel for the household.

As seen in **Table A1-3**, 4.9% of Jasper households did not have access to a car. Without access to transit these residents are dependent on ride services, friends, family, or neighbors with cars to get around. Providing transportation alternatives to allow people to safely and efficiently travel without the use of a car can expand opportunity for employment, education, and recreation. Though Jasper has a lower rate of homes with no vehicle available (**Figure A1-2**), this may be because the community does not adequately accommodate the needs of people who either by choice and necessity do not own a car.

Jasper **4.9** percent No vehicle at home

Indiana **6.1** percent No vehicle at home

Table A1-3. Access to Vehicles at Home

	Jasper	Indiana
No Vehicle Available	4.9	6.2
1 Vehicle Available	34.3	31.8
2 Vehicles Available	37.2	38.3
3 Vehicles Available	19.7	15.8
4 or More Vehicles Available	3.9	7.9

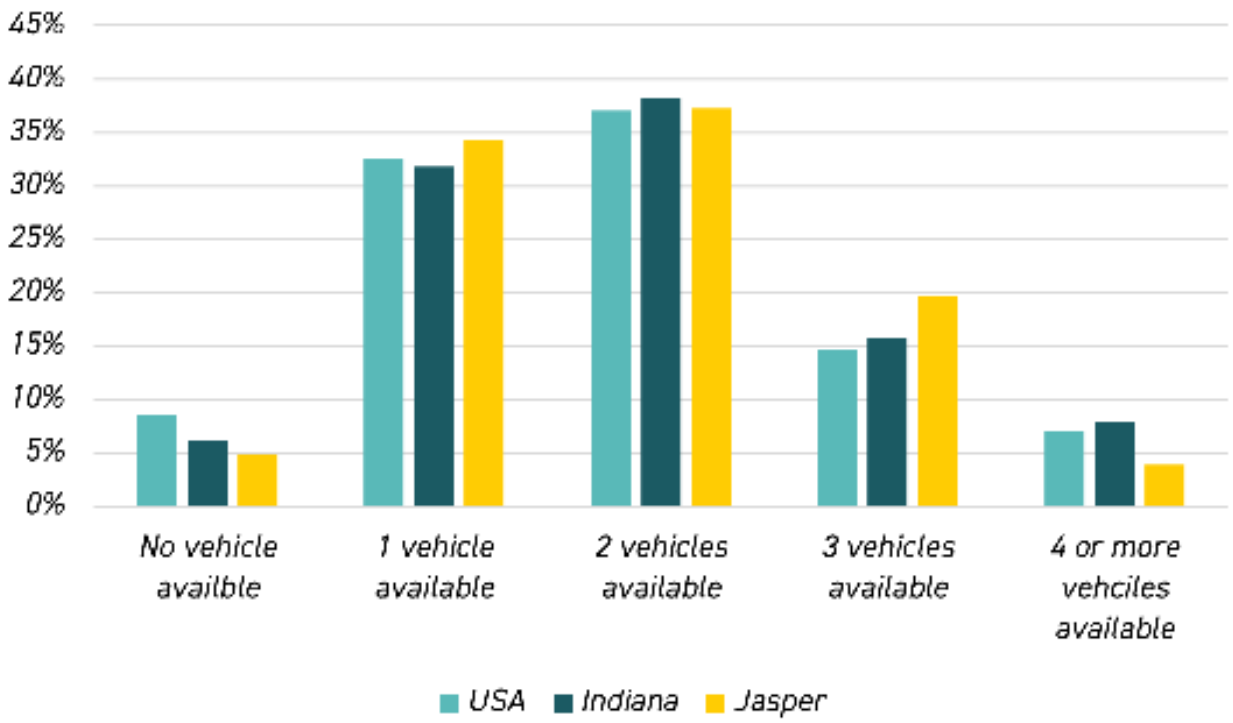
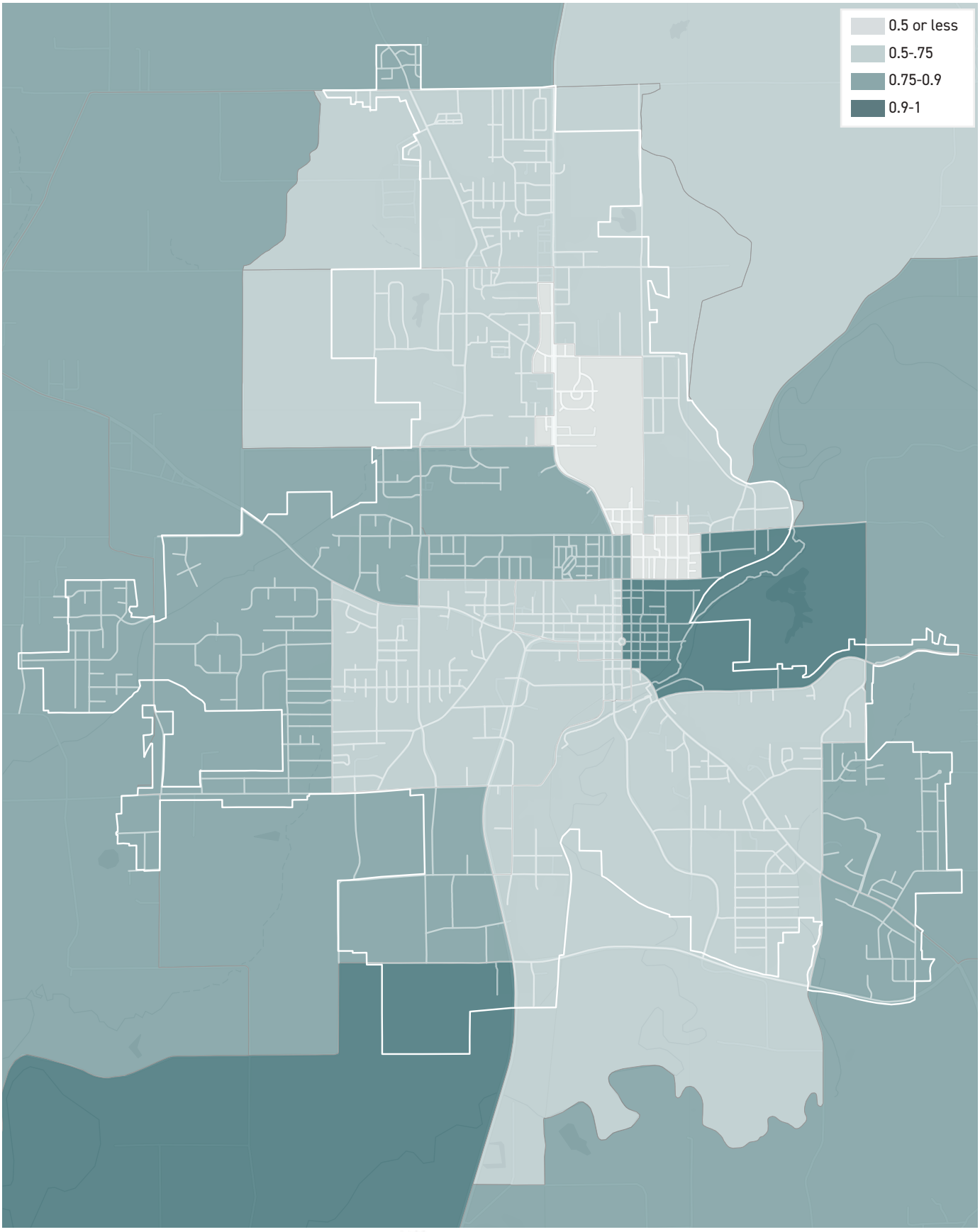


Figure A1-2. Access to Vehicles at Home



MAP A1-3. VEHICLES PER PERSON

Poverty

The spatial mismatch of jobs and residences for low-income families has been a well-known problem that has not been dealt with effectively. Two related problems faced by low-income households and workers are the rapid rise of the cost of housing, which has shrunk the disposable income for families, and the limited access to transportation choices that provide access to jobs, childcare, healthcare, and reasonably priced goods and services.

Jasper's percent total population in poverty is 16%. Many of these people have very few mobility options to meet their basic travel needs and, as members of the transportation disadvantaged population, they face chronic problems that reduce their quality of life and productivity. As seen in **Table A1-4**, the majority of Jasper's residents living in poverty are disproportionately children age 5-17 (**Figure A1-3**). Providing targeted resources to this disadvantaged population can increase their economic mobility, health, and overall quality of life. **Map A1-4** on the following page shows areas of Jasper where poverty is concentrated and resources should be targeted.

Jasper **16.0** **percent** population with poverty status

Indiana **26.6** **percent** population with poverty status

Table A1-4. Poverty Status By Age

	Jasper	Indiana
Under 5 years	0%	22.6%
5 to 17 years	29.1%	18.7%
18 to 34 years	13.6%	18.9%
35 to 64	10.0%	10.5%
65 and over	3.7%	7.5%

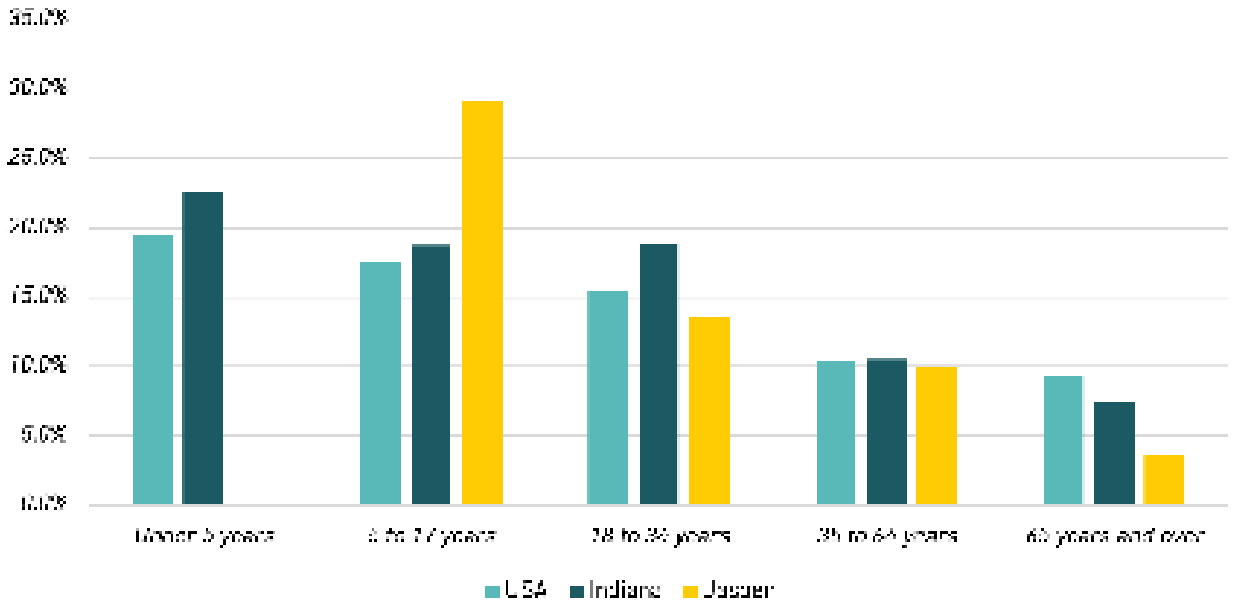
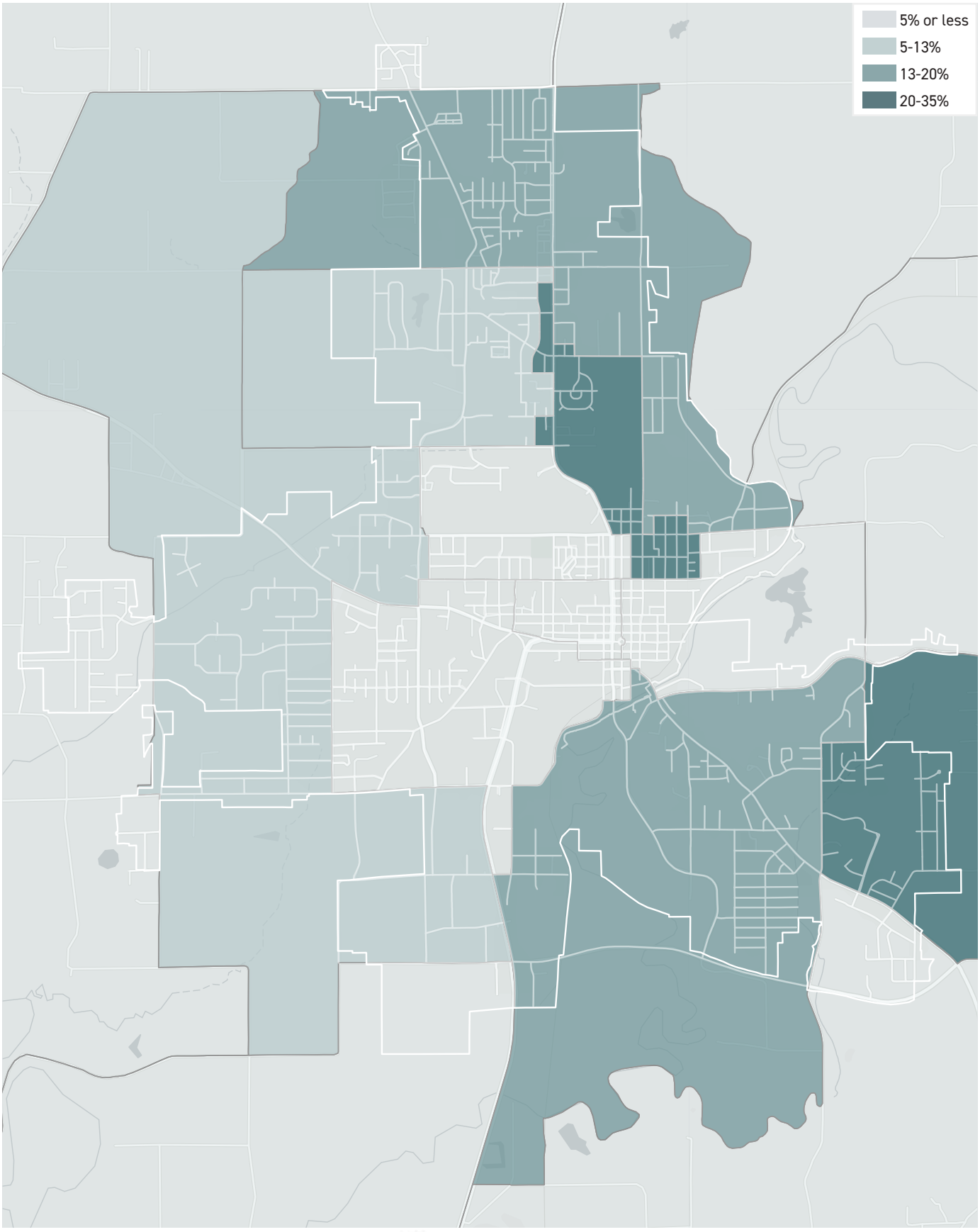


Figure A1-3. Poverty Status By Age



MAP A1-4. PERCENT IN POVERTY

Commuting to Work

The commuting patterns of Jasper residents largely resemble those of the Indiana overall (**Table A1-5**). The majority of commuters in both categories are car dependent. However, residents of Jasper are more likely to drive alone and less likely to walk, use public transit, and carpool. Jasper has a significant potential to increase biking and walking commuting as 24% of residents work within Jasper, according to the 2019 American Community Survey (ACS) as shown in **Figure A1-4**. While ACS data does not track how far people live from their places of work, it is reasonable to assume that some of the residents that work within Jasper live within bicycling (3 miles) or even walking (1 mile) distance of their place of work, given Jasper's size. As shown in F5 on the opposite page, residents along US 231 north of the downtown core are more likely to have a shorter commute. By providing important bicycle and pedestrian infrastructure in this area, particularly safe crossing of US 231, Jasper may be able to encourage more active commutes.

Jasper
15.6 minutes
Mean travel time to work

Indiana
24.2 minutes
Mean travel time to work

Table A1-5 Means of Transportation to Work

	Jasper	Indiana
Drove Alone	89%	83%
Carpooled	5%	9%
Public Transit	0%	1%
Bicycle	<1%	<1%
Walked	1%	2%
Other	<1%	1%
Worked at home	4%	4%

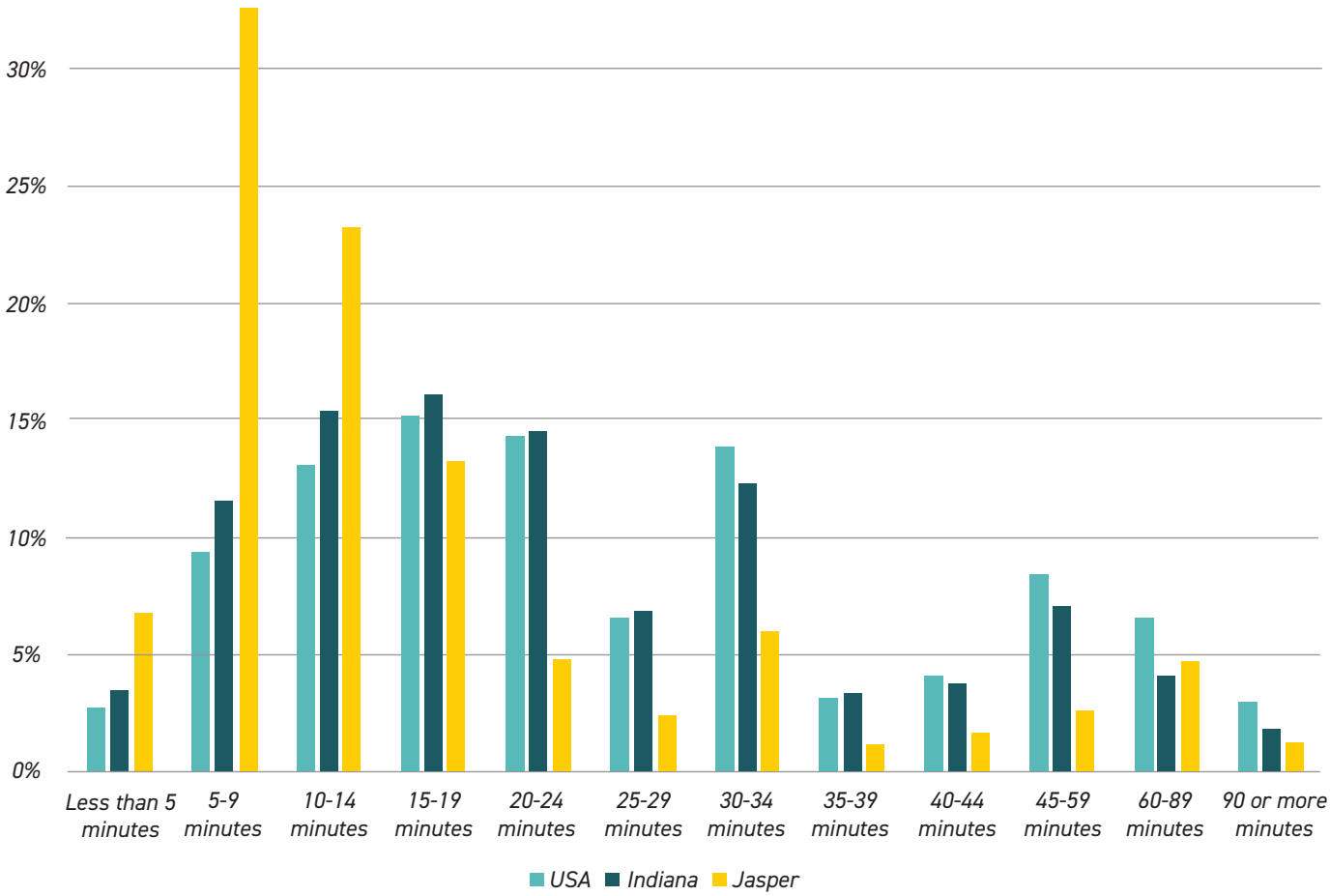
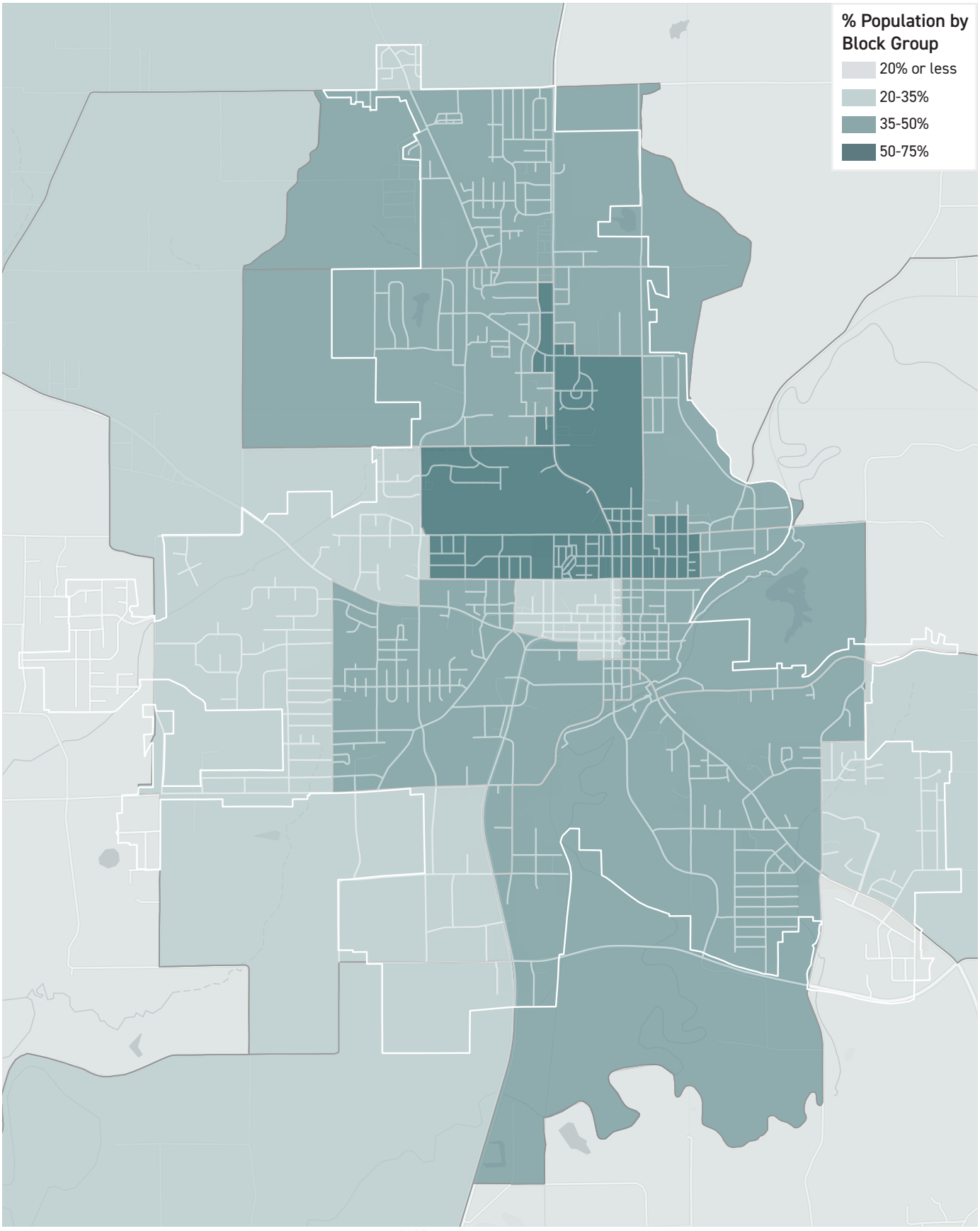


Figure A1-4. Travel Time to Work for City of Jasper, State of Indiana, and United States



MAP A1-5. 10 MINUTE COMMUTE

Land Use Analysis

Overview

Land use decisions directly impact the transportation system and facilities in the region. Land use generates vehicle trips leading to traffic congestion and costly, expansive roadway capacity improvements. By evaluating the existing land use and development patterns, Jasper can be better prepared to address future needs. Strategic investments in walking and biking can improve quality of life and health for residents and ease congestion and parking demand. The following analysis looks at how to expand support for walking and biking in order to improve life and business in Jasper.

Land Use and Transportation Network

The City of Jasper was founded in 1818 before motor vehicles or modern bicycles. As such, the traditional neighborhoods were designed on a walkable scale, and the town was served by a railroad depot along the Patoka River in downtown. The rail line remains an active and distinct feature of Jasper's heritage. The restored Spirit of Jasper Train Depot currently offers scenic trips for locals and tourist to nearby destinations via the French Lick Scenic Railroad.

The city has grown, and now contains roughly seven distinct urban forms: Traditional Town Center, Suburban Commercial, Industrial, Rural Residential, Agriculture, Conservation and Recreation, and Suburban Residential. Each of these development patterns offers different opportunities for improving mobility and impacting transportation demand.

Jasper Districts

Town Center
The Town Centers is located between McCrillus St and Clay St, adjacent to the riverfront to the south. Newton St serves as the north-south spine. It is bound to the north by E 13th St to the north. The Town Center has a cohesive and tight grid system with a concentration of store-front retail and restaurants. The district is walkable with a charming historic aesthetic and most streets have on-street parking. Most of the district is commercial with a few residential uses.

Suburban Commercial
This district follows major north-south roads including 3rd Ave up to the riverfront, US Highway 231 up to 6th St, and north of 15th St on Newton St. There are little suburban commercial districts near the Town Center district. Suburban commercial is characterized by box store retail, office parks, and strip malls. Almost all businesses have their own parking lot or are a part of a complex where a large portion of the lot area is used for parking.

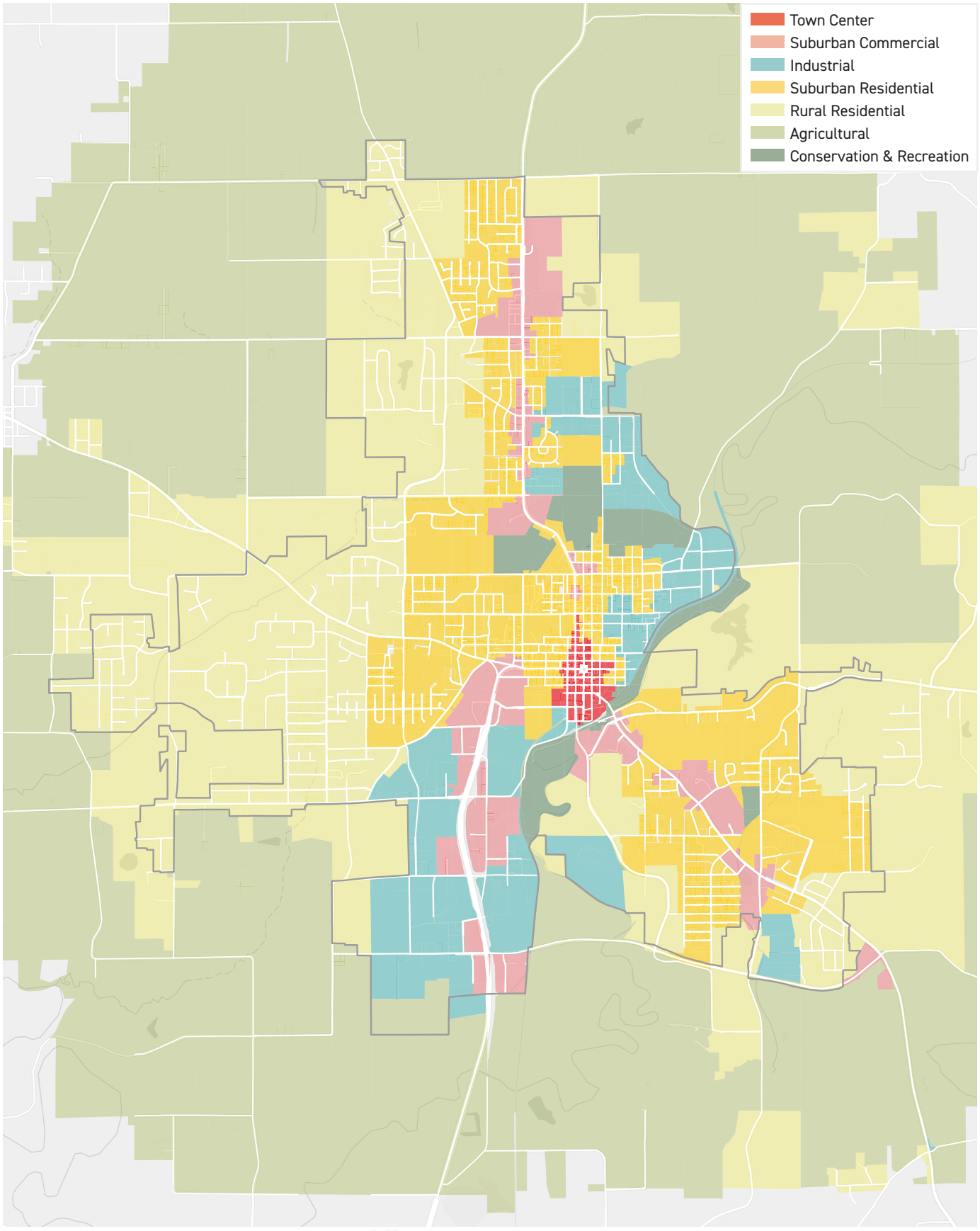
Industrial
Industrial districts are adjacent to suburban commercial areas and along the riverfront. Industrial districts are clustered in the southwest and northeast portions of the city, opposite the suburban residential districts. Industrial districts are characterized by larger lots and warehouse style development. Industrial and manufacturing land uses are most present in these districts.

Suburban Residential
Most suburban residential districts surround the Town Center and Suburban Commercial districts. Suburban Residential is clustered in the northwest and southeast of Jasper, opposite the industrial districts. Suburban Residential is characterized by lower density, moderate to larger lot sizes with almost exclusively single-family residential uses with few duplex or multi-family developments.

Rural Residential
Rural Residential districts are newer developments surrounding the suburban residential districts and abutting some industrial districts to the southwest. These districts follow the same clustering pattern as the suburban residential – northwest and southeast. There are some pockets of rural residential development where suburban style development is placed in the middle of an agricultural area. Rural Residential districts have larger lot sizes and are surrounded by mostly agricultural land and consists of single-family homes almost exclusively.

Agricultural
The agricultural district surrounds the city and almost exclusively abuts rural residential land uses. It is characterized by agricultural land uses with a few homes. There are no planned developments.

Conservation & Recreation
Conservation and Recreation districts are located along the riverfront, outlining the floodplain, and north of 15th St where several golf courses and sports field complexes are located. Much of the existing trail infrastructure is in this district. The conservation and recreation districts include parks, outdoor sports fields, golf courses, and riverfront floodplain areas. Both environmental conservation and public and private recreational land uses are within this district typology.



MAP A2-1. JASPER DISTRICTS

Mobility Analysis

Overview

Strategic investments in walking and biking can improve quality of life and health for residents and ease congestion and parking demand. The following analysis looks at how to expand support for walking and biking in order to improve life and business in Jasper.

The Economics Transportation

Providing travel choices – walking, bicycling, and public transportation – can reduce the demand for peak-hour travel in cars, the principal cause of daily congestion. About 44% of all vehicle trips in both congested areas and other areas made during the morning peak are not to work or related to a work trip.[1]

Walking and biking to work can reduce the demand for parking at workplaces. The average annual cost of a space in a surface parking lot can range from $430 in a suburban setting to $2,000 in a central business district.[2]

Bicycle commuting rates increased by 62% nationally between 2000 and 2013, and, in some communities, the increase has been even more drastic. Not catering to this growing demographic means missing out on their business.[3] One study found that bicycling before work can increase productivity by up to 15%, while also reducing sick days by 15%.[4]

1 *http://smartgrowthamerica.org/app/legacy/documents/cs/factsheets/cs-congestion.pdf*
2 *https://www.vtpi.org/tca/*
3 *https://www.bikeleague.org/commutingdata*
4 *https://bikesiliconvalley.org/bike-to-work-day2014/employers/*

Existing Facilities

Sidewalks

The existing network of pedestrian are shown on the Sidewalk Inventory Map, Figure X. Many of the streets in the downtown core include sidewalks on both sides of the streets. Beyond the downtown core, low density and suburban development do not provide sidewalks.

In areas where sidewalks do exist in Jasper, some of the existing facilities need improvements to upgrade to current standards. As noted in the Jasper ADA Transition Plan, sidewalks are sometimes narrow and do not meet ADA guidelines for minimum standards. In total, there are approximately 96 miles of documented sidewalks in the City of Jasper.

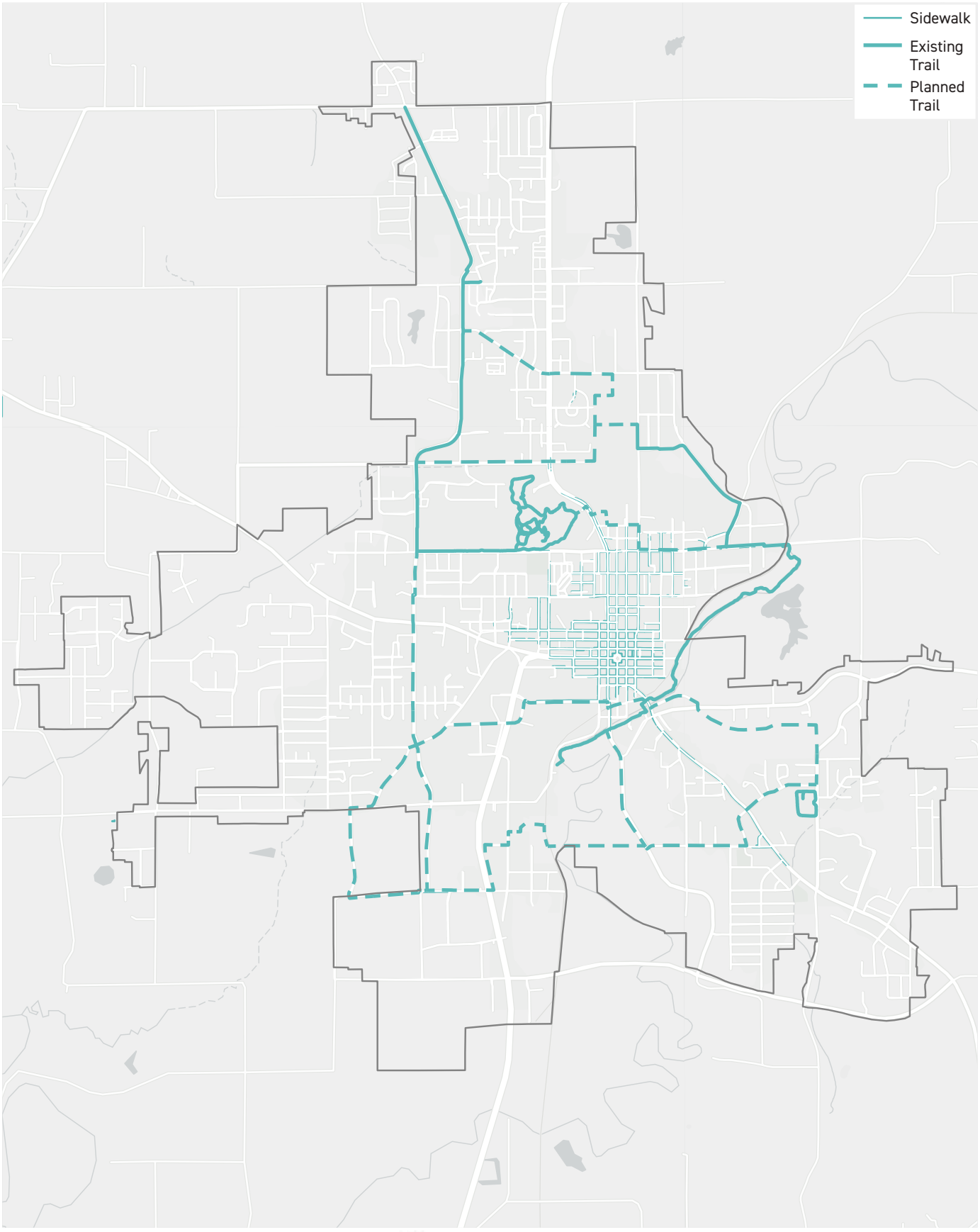
Multi-Use Trails

The existing and planned multi-use trail network can be seen Figure X. Currently, 28% of the city is located within walking distance (1/4 mile) of a high-quality, physically separated, multi-use trail network.

As shown in **Table A3-1**, 10.3 miles of walking trail have been construction in Jasper and an additional 14 miles are planned. The lack of connections between multi-use trail and sidewalk limit the use for pedestrians and bicyclist as seen in **Map A3-1**. The multi-use trails provide off-road accommodations for pedestrians and cyclist, though gaps in the system provide limited opportunities for connectivity. The gaps in the system require many bicycle and pedestrian trips to begin with the use of an automobile. Completing the system by connecting these gaps will provide opportunities for residents to reach their destinations without the use of a car.

Table A3-1. Existing and Planned Trails

Trail Status	Trail Type	Trail Name	Trail Length (miles)
Existing	Gravel	Parklands	0.5
	Paved	Bohnert Park Trail	0.5
		Parklands	2.6
		Riverwalk	2.3
		Jasper Multi-Use Path	1.5
		Unnamed	3.5
		Total	10.3
Planned	Unspecified	Undefined	14.0



MAP A3-1. TRAIL & SIDEWALK INVENTORY

Existing Plans and Policies

Federal Policy

Planning for bicycle and pedestrian facilities and transportation enhancements was strongly supported in the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) transportation legislation. Support is reinforced since then in the TEA-21, SAFETEA-LU, MAP21, and FAST bills. In addition to providing funding opportunities, the U.S. Department of Transportation (DOT) has taken a proactive approach in encouraging non-motorized transportation as an efficient and environmentally sound alternative for commuter travel. The DOT issued a Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations in 2010, which reflects their support for the development of fully integrated active transportation networks.

The policy statement is:

- The DOT policy is to incorporate safe and convenient walking and bicycling facilities into transportation projects. Every transportation agency, including DOT, has the responsibility to improve conditions and opportunities for walking and bicycling and to integrate walking and bicycling into their transportation systems. Because of the numerous individual and community benefits that walking and bicycling provide — including health, safety, environmental, transportation, and quality of life — transportation agencies are encouraged to go beyond minimum standards to provide safe and convenient facilities for these modes (FHWA, 2017).

State Policy

The Indiana Department of Transportation (INDOT) is committed to advancing and promoting multi-modal and active transportation planning; working with planning agencies to ensure multi-modal solutions are identified and implemented; and supporting healthy Indiana lifestyles.

Since fall of 2018, INDOT has been working towards completing the State's first-ever Active Transportation Plan. Moving Indiana Toward an Active State focuses on bridging the gaps for those who commute and travel outside of automobile traffic, in order to meet their needs and integrate active transportation into our daily lives. In addition, INDOT has been working on a draft guidance document to help the general public, planning partners, and communities determine when and where to use certain facilities and designs. The matrix puts into account roadway characteristics such as: land use context (e.g., urban vs. rural), posted speed limit, motor vehicle traffic volume, and other considerations, in order to help users pick the most appropriate bicycle/pedestrian facility. When complete, these documents will serve as critical guidance for Indiana.

Local Policy

Impact Jasper (2019)

Impact Jasper, the comprehensive plan for the city of Jasper, was adopted in August of 2019. The vision for the city included becoming a dynamic and innovative community with a focus on families, healthy neighborhoods, connecting people, and employment growth. Jasper will achieve these things by becoming the ideal choice for residents, businesses, and investors. Throughout the community engagement process of the plan, the public shared ideas that varied from local trails, bike lanes and sidewalks, to regional connections to nearby community such as Ireland and Huntingburg. Residents noted that not only can these connections serve for recreational purposes, but also safe access for pedestrians and bicyclists to jobs and destinations.

Goals and objectives from Impact Jasper directly related to the Bicycle and Pedestrian Master Plan include:

- Improve transportation infrastructure and expand connectivity.
- Objectives:
- Create better pedestrian connectivity in Jasper by connecting trail systems, destinations, and neighborhoods.
- Become a more bicycle-friendly community.
- Develop a complete streets ordinance.

Jasper ADA Transition Plan (2012)

The Americans with Disabilities Act (ADA) Transition Plan addresses accessibility issues within the City of Jasper throughout its City buildings, parks and major pedestrian routes to public facilities, transportation nodes and commercial districts within public right-of-ways. The Transition plan provides ADA requirements that define the current conditions as outdated and unacceptable and provides information for standards and sanctions for facilitating the City of Jasper's accessibility.

Jasper City Unified Development Ordinance

The Unified Development Ordinance (UDO) was developed to help guide the growth and development of the City in accordance with the City of Jasper's Comprehensive Plan. The UDO ensures that improvements made within the City Limits adhere to a level of standard to preserve the desired character for the community.

Policy standards directly related to pedestrian transportation in the UDO include:

- Sidewalks are not required in Rural Residential (RR), Low Density Residential (R1), and Industrial (I) Districts.
- Sidewalks are required in the US 231 Overlay District and Mixed-Use Overlay District.

In US 231 Overlay District the following apply:

- Sidewalks shall be provided along the frontage adjacent to a public or private street. The sidewalk shall be a minimum of five (5) feet wide.
- Sidewalks shall be provided along both sides of the major access drive and one side of a secondary access drive.
- A continuous, delineated pedestrian pathway network no less than six (6) feet wide, that continues from the perimeter public sidewalk to the principal customer entrance of all principal buildings on the site shall be provided.
- Sidewalks, no less than eight (8) feet wide, must be provided along the full length of the building along any facade that features a customer entrance.

In Mixed-Use Overlay Districts, the following apply:

- Minimum sidewalk width shall be five (5) feet.
- Special paving is encouraged for sidewalks in the downtown core.
- Special paving shall be used for crosswalks to distinguish the pedestrian areas from vehicular areas.

Within all Subdivisions, the following apply:

- Sidewalks shall be built to a minimum five (5) feet wide.
- Pedestrian multi-use paths, when provided, shall be a minimum of eight (8) feet in width in order to accommodate a service vehicle.
- All internal sidewalks are required to meet MUTCD, ADAAG, or PROWAG requirements.
- All internal sidewalks shall connect at property lines to adjacent commercial areas, schools, parks, places of worship, and other points of public interest.
- When sidewalks or pathways cross major street intersections within or adjacent to a subdivision, necessary safety devices such as painted crosswalks, signs, or other traffic control devices shall be installed at the subdivider's expense.
- Curb ramps for handicapped accessibility shall be provided at all intersections with streets, alleys and drives.
- Curb ramps shall comply with INDOT Standard Details or the City of Jasper Design Standards and Specifications Manual, based upon the jurisdiction of the right-of-way.

Policy standards directly related to bicycle transportation in the UDO include:

- Bike lanes are not required in any zone or district in Jasper, but if required the must be designed consistent with AASHTO standards and the requirements of the City Engineer.
- Bicycle parking is recommended, but not required in accordance with Section 7. 5 Parking Standards

Within all Subdivisions:

- Bicycle Lanes shall be built to a minimum five (5) feet wide.

Destinations

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

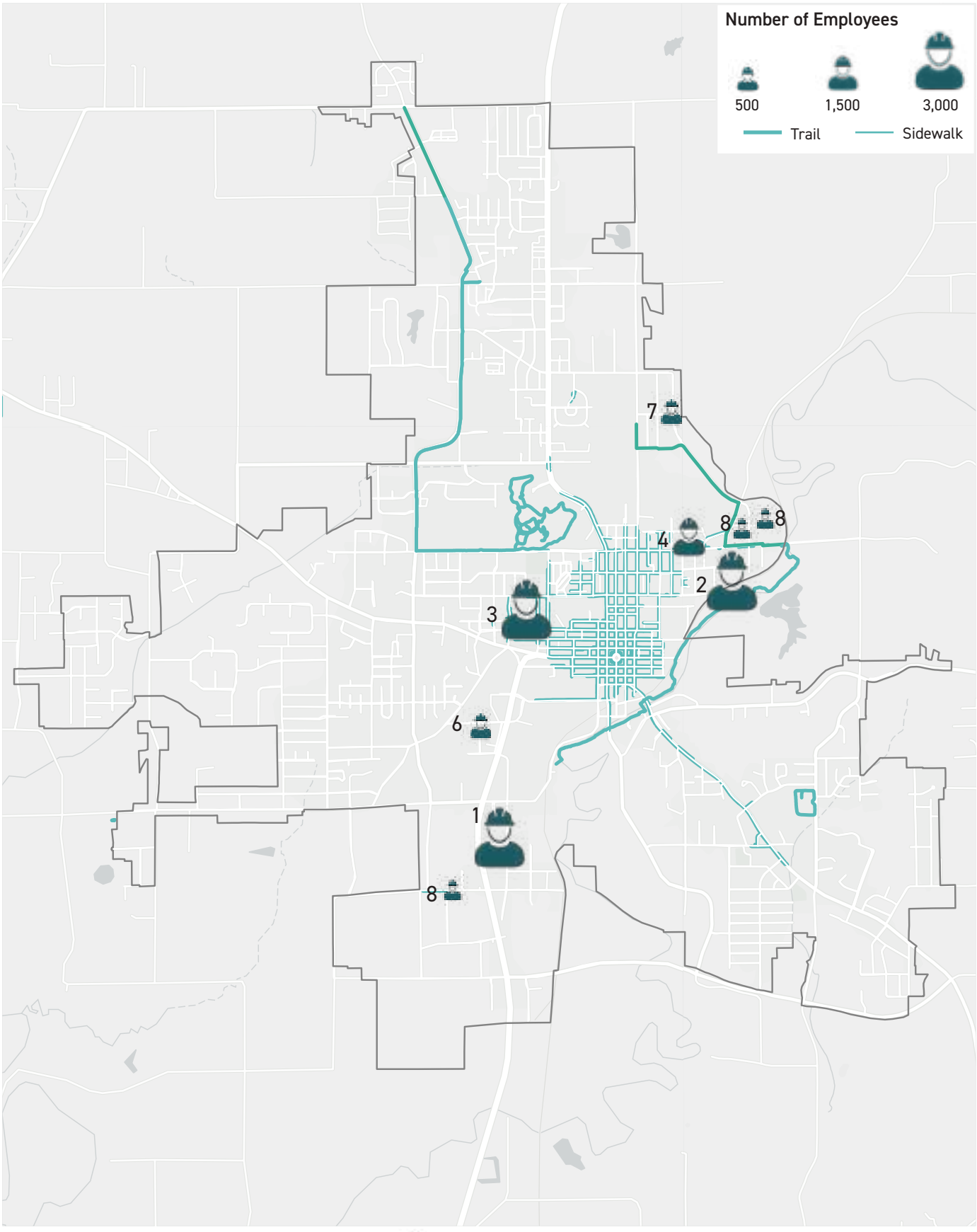
There are numerous destinations within the study area. These include major retail areas, employment centers, government center, schools, parks, and libraries. In addition, there are regional destinations that must be considered for connections within the system such as French Lick Casino, Holiday World & Splashin' Safari, Lincoln's Boyhood Home, Marengo Caves, Paoli Peaks, Saint Meinrad Archabbey, Patoka Lake, and Ferdinand State Forest.

Major Employers

Need something about the major industries in Jasper. It is odd to have this as the section header and then immediately talk about commuting patterns. Or just rename the section "Commuting Patterns" since that implies that people are commuting to work/major employers anyways. **Table X** lists the major employers by industry and number of employees. **Figure X** illustrates their location in Jasper.

Table A3-2. Jasper's Major Employers

Employer	Industry	Number of Employees
1. Jasper Engines and Transmissions	Automotive	2,600+
2. MasterBrand Cabinets	Cabinet Manufacturing	2,500+
3. Memorial Hospital Healthcare Center	Healthcare	1,500+
4. Kimball International	Furniture Manufacturing	1,400+
5. OFS	Furniture Manufacturing	1,300+
6. Jasper Rubber Products	Elastomer Manufacturing	800+
7. Meyer Distributing	Wholesale Distributor	800+
8. Kimball Electronics	Electrical/Electronics Manufacturing	525+



MAP A3-2. MAJOR EMPLOYERS

Schools

Jasper has excellent, and conveniently located, public and private schools. In Jasper, 32.4% of households has children under 18. For some students, schools are within walking or bicycling distance.

Though some of the schools are located along the existing or planned multi-use trail network, walking and biking is not encouraged. None of the schools are located within neighborhoods with sidewalks. The Campus of Vincennes University is completely remote from any bicycle or pedestrian infrastructure. **Table A3-3** detailed the schools identified in Jasper and their locations.

Table A3-3 Jasper Schools

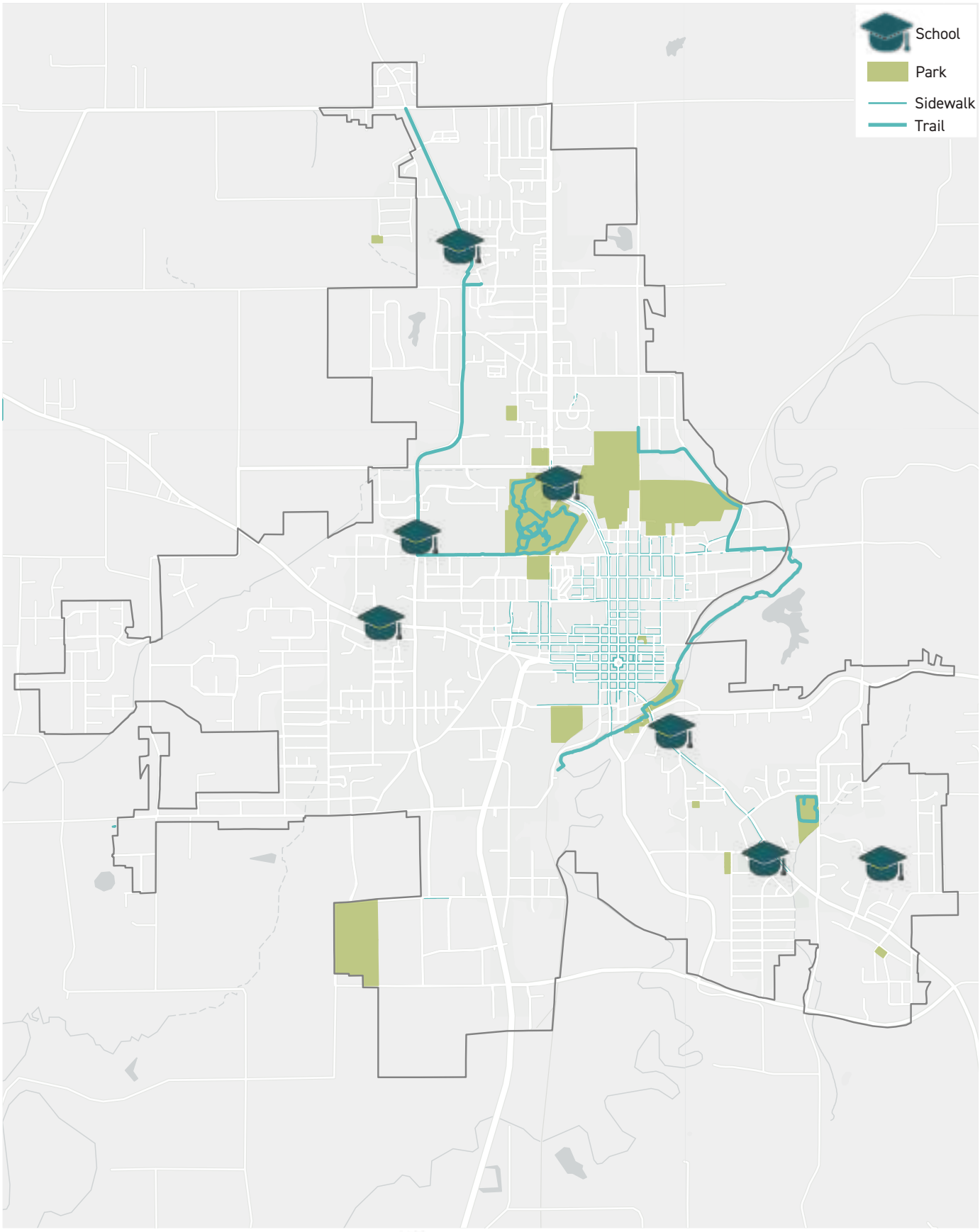
Name	Address
Jasper High School	1600 St. Charles St. Jasper, IN 47546
Jasper Middle School	3600 Portersville Rd, Jasper, IN 47546
Ireland Elementary	4940 W. South St. Jasper, IN 47546
Jasper Elementary	3799 N. Portersville Rd. Jasper, IN 47546
Holy Trinity Catholic School	990 Church Ave. Jasper, IN 47546
Holy Trinity Catholic School Central Campus	1385 W. 6th St. Jasper, IN 47546
Jasper Christian Academy	231 Hillside Dr. Jasper, IN 47546
Vincennes University Jasper	850 College Ave, Jasper, IN 47546
Jasper Cosmetology and Spa Institute	2110 N. Newton St. Jasper, IN 47546

Parks & Recreation

Access to Jasper Park is important to Jasper residents. Many of the centrally located parks are easily accessible from the downtown sidewalk network and the multi-use trail. Internal walking paths at the Jasper Parklands, Habig Center, and Bohnert Park provide additional recreational walking opportunities. However, many of Jasper's parks remain disconnected from the network including the Jasper Youth Sports Complex, a major local attraction. **Table A3-4** detailed the parks identified in Jasper. **Map A3-3** identifies the location of schools and parks in the community.

Table A3-4 Jasper Parks

Name	Address	Restroom Access
Beaver Lake	IN 164 & N 325 E	Yes
Buehler Park	600 S Meridian Rd.	Yes
Camp Carnes	2501 Howard Dr.	
Centennial Park	Hwy 231 & Schuetter Rd.	
Church Avenue Park	780 Church St.	
Dog Park	500 E Sixteenth St.	
Gutzweiler Park	1569 E St. James Ave,	
Hochgesang Park	1411 Bartley St.	Yes
Jasper Youth Sports Complex	1930 E Jasper Dubois Rd.	Yes
Jaycee Park	240 Brucke Strasse	
John Bohnert Park	150 Third Ave.	Yes
Lions Club Riverview Park	301 E Ninth St.	
Northwest Suburban Park	540 Genevieve Ave.	
Riverwalk/Dave Buehler Plaza	2200 Sunset Dr.	
Robert E. Parker Park	1451 W Maple St.	
Seng Park	1700 W State Road 56	
State Police Park	1718 Mill St.	
The Parklands	800 W Fifteenth St.	Yes
William Schroeder Soccer Complex	405 Second St.	Yes



MAP A3-3. SCHOOLS & PARKS

Retail, Grocers, Institutions, and Attractions

The quality and density of the urban core and presence of local businesses are a unique and vital resource in Jasper. Many households near downtown are within easy walking distance of shops, grocers, institutions, and attractions. **Table A3-5** identifies major retailers, grocers, institutions, and attractions in Jasper. **Map A3-4** displays their relative location in the community.

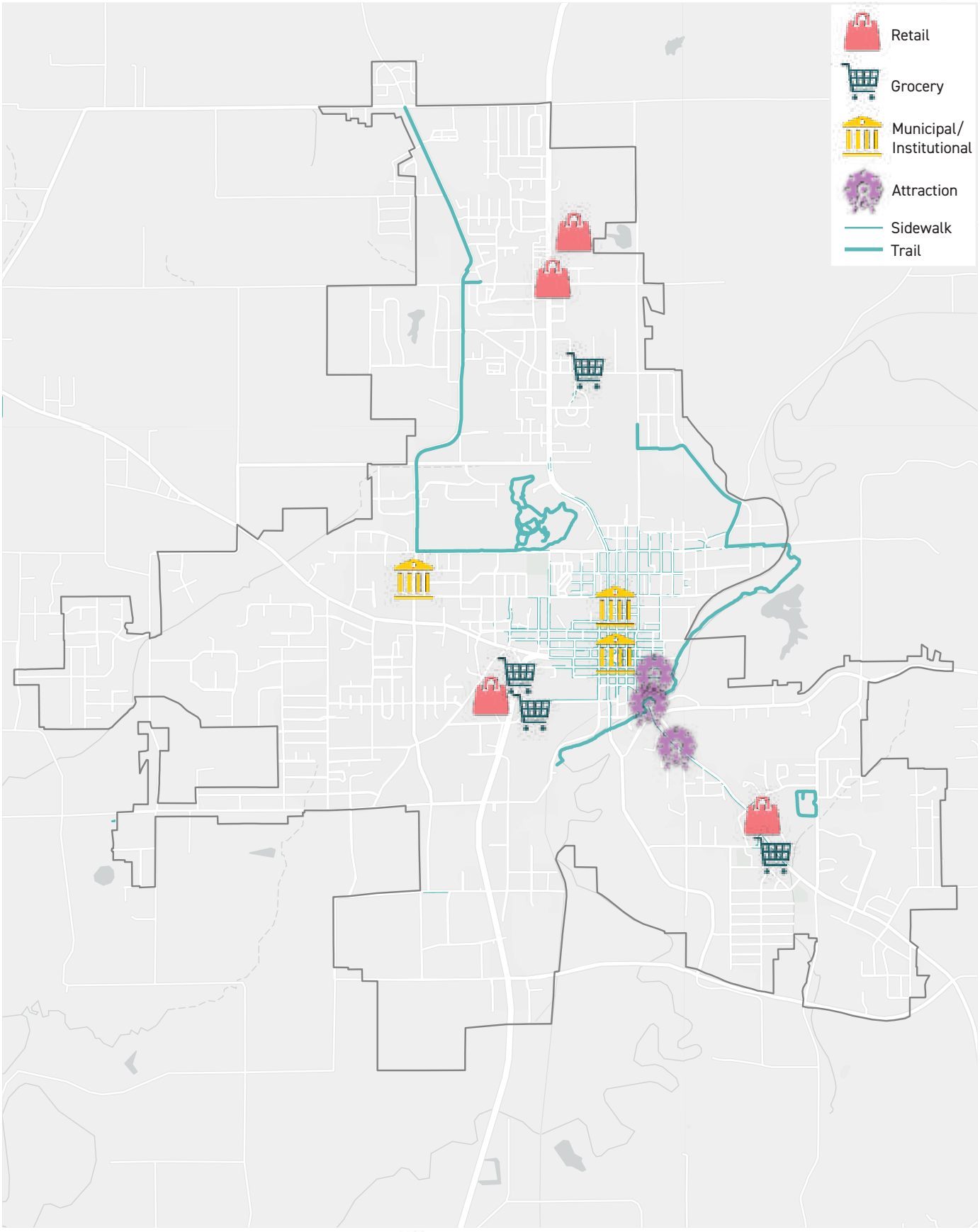
When residents choose to walk and bike rather than drive to these destinations, it reduces parking demand and decreases car congestion within commercial districts. Of note, the Walmart shopping center located in the norther portion of Jasper remains disconnected from any existing or planned bicycle or pedestrian infrastructure.

Encouraging walking and biking to local destinations is gaining attention as an economic development strategy, for several reasons:

- Stores can attract additional walking customers without adding parking. Adding bicycle parking is less costly and requires less space than adding car parking.
- People who walk and bike to stores tend to make more frequent trips and spend up to 40 percent more than automobile users.
- Encouraging walking and biking to stores and restaurants is another way to promote buying local, as people tend to make shorter trips when walking and biking.

Table A3-5. Jasper Retail, Grocers, Institutions, and Attractions

Type	Name	Address
Municipal Institution	Arnold F. Habig Community Center	1301 St Charles St, Jasper, IN 47546
	Parks and Recreation Department Office	1301 St Charles St, Jasper, IN 47546
	Jasper City Hall	610 Main St, Jasper, IN 47546
	Jasper Public Library	1116 Main St, Jasper, IN 47546
Grocer	Ruler Foods	155 E 30th St, Jasper, IN 47546
	IGA	750 W 2nd St, Jasper, IN 47546
	Holiday Foods	847 3rd Ave, Jasper, IN 47546
	Grounded Organic & Natural Foods and Supplement	435 S US-231, Jasper, IN 47546
Retail	Jasper Manor	847 3rd Ave, Jasper, IN 47546
	Traderbaker Mall	787 3rd Ave, Jasper, IN 47546
	Southgate Shopping Center	305 US-231, Jasper, IN 47546
	Germantown Center	3605 N Newton St, Jasper, IN 47546
	Walmart	3970 N Newton St, Jasper, IN 47546
Attractions	Jasper City Mill	164 3rd Ave #100, Jasper, IN 47546
	The Schnitzelbank	393 3rd Ave, Jasper, IN 47546
	Schaeffer Barn	401-499 E 4th St, Jasper, IN 47546



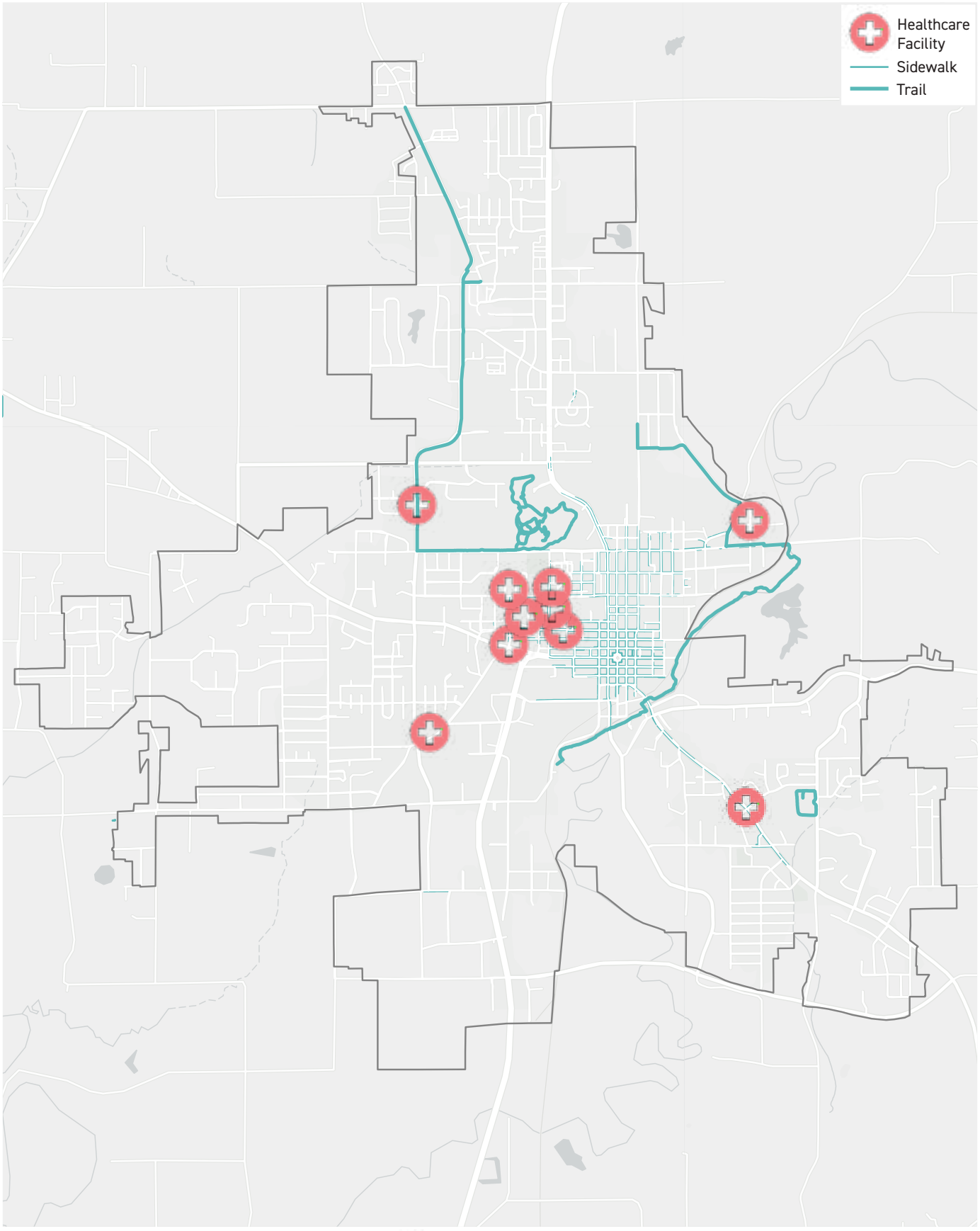
MAP A3-4. Jasper Retail, Grocers, Institutions, and Attractions

Healthcare Facilities

For some residents, walking and biking is not a matter of choice, but necessity. The 2018 ACS estimated that 1.6% of Jasper households had no access to vehicles. These households depend on walking and biking infrastructure in order to reach necessities, like food, jobs, schools, and healthcare, not to mention recreation. **Table A3-6** identifies the healthcare facilities in Jasper and **Map A3-4** displays their relative location in the community.

Table A3-6. Medical Facilities and Hospitals

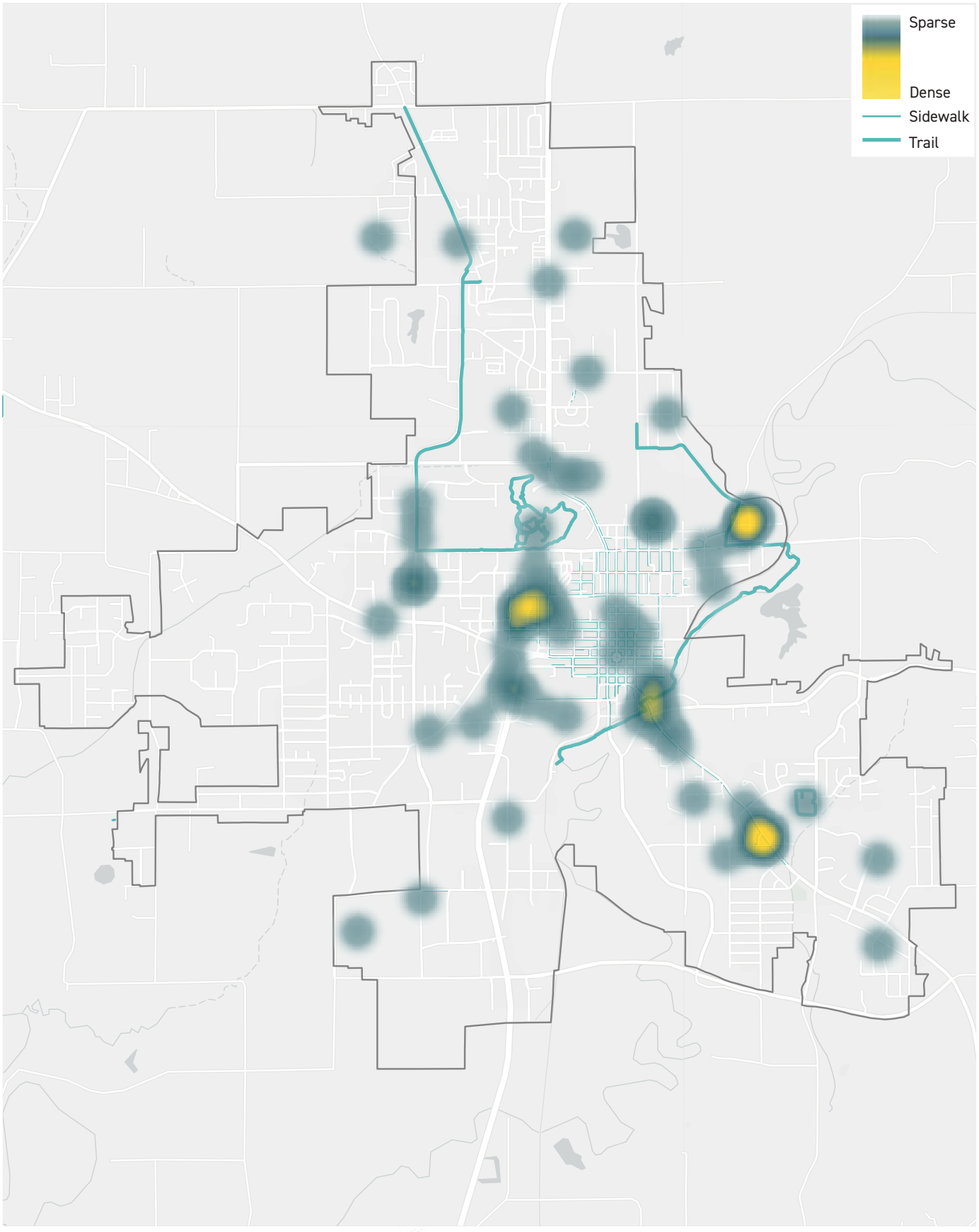
Name	Address
Memorial Hospital	800 W 9th St, Jasper, IN 47546
ZipMed Urgent Care	600 W 13th St, Jasper, IN 47546
St. Thomas Medical Center	610 Main St, Jasper, IN 47546
Cathedral Health Care Center	520 W 9th St, Jasper, IN 47546
Jasper OBGYN	613 Dorbett St, Jasper, IN 47546
Memorial Health St. Charles	1950 St Charles St, Jasper, IN 47546
Southern Indiana Sinus Center	251 S Truman Rd #1, Jasper, IN 47546
Memorial Counseling Center	721 W 13th St Suite 121, Jasper, IN 47546
Care ATC	1620 Cherry St suite a, Jasper, IN 47546
Memorial Health Family Medicine	966 Bartley St, Jasper, IN 47546
Kimball International Health Center	1620 Cherry St Suite A, Jasper, IN 47546



MAP A3-5. HEALTHCARE FACILITIES

Concentration of Trip Generators

Map A3-6 depicts the density of all major trip destinations identified in Jasper. Many "hotspots" (indicated by yellow) are concentrated near the downtown core and are served by the existing sidewalks and multi-use trail. However, there are ears to Jasper's north including the Walmart shopping center and Jasper Elementary and Middle School campuses that are not integrated into the broader network. Most of the suburban residential neighborhoods have low stress internal roads that are ideal for walking and biking. Those residents must cross busy, high speed streets to reach these destination hotspots. With few safe crossings available, residents remain isolated in their neighborhoods and without walking or biking access to most goods and services.



MAP A3-6 MAJOR TRIP GENERATORS

Bicycle Level of Traffic Stress (BLTS)

In Jasper, there are no designated on-road bike facilities. While slower traffic speeds within neighborhoods are comfortable for most cyclists, traveling between neighborhoods, across town, or to Downtown is not as comfortable or safe.

Smaller towns and rural communities generally have different users of their roads than urban areas. It is important to recognize these differences and plan accordingly. In most small towns and rural areas, multi-modal facilities for bicycles and pedestrians are minimal. For this reason, it is imperative that any proposed facility attempts to accommodate the most tepid user.

When designing bicycle and pedestrian facilities, we considered who would feel comfortable using that facility. This can range from those who feel comfortable cycling on a busy thoroughfare, contending with several lanes of traffic going at least 35 mph, to those who would only feel safe on a buffered, physically separated bicycle facility like a trail or cycle track. Because there are no existing on-street bicycle facilities in Jasper, we designed this proposed network assuming the average user would be uncomfortable riding on a road with many motor vehicles and potential conflict points. We designed this network to try to accommodate the most inexperienced user whenever possible. In doing so, we aimed to design a network and that will accommodate all users of any comfort and experience level.

A Bicycle Level of Traffic Stress (BLTS) analysis was conducted to determine the level of stress experienced by bicyclists on any given roadway. This analysis involves reviewing road attributes, such as posted speed limit, traffic volumes, and number of travel lanes. It does not incorporate road surface condition or topography. Volumes on one-way roads were multiplied by a factor of 1.5. This adjusts for the relative accounts for the "effective" ADT on such roads. All roads with adjacent existing trail facilities were scored as "0", the lowest BLTS, because they are off-street multi-modal facilities.

Due to limitations in the roadway data, the following assumptions were made to complete the BLTS analysis:

- All residential roads were assumed to have a post speed limit of 25 mph
- Unless otherwise specified, residential roads were assumed to have two through lanes (one in each direction)
- Unless otherwise specified, residential roads were assumed to have an average annual daily traffic (AADT) of 500
- All roads were assumed to have a centerline

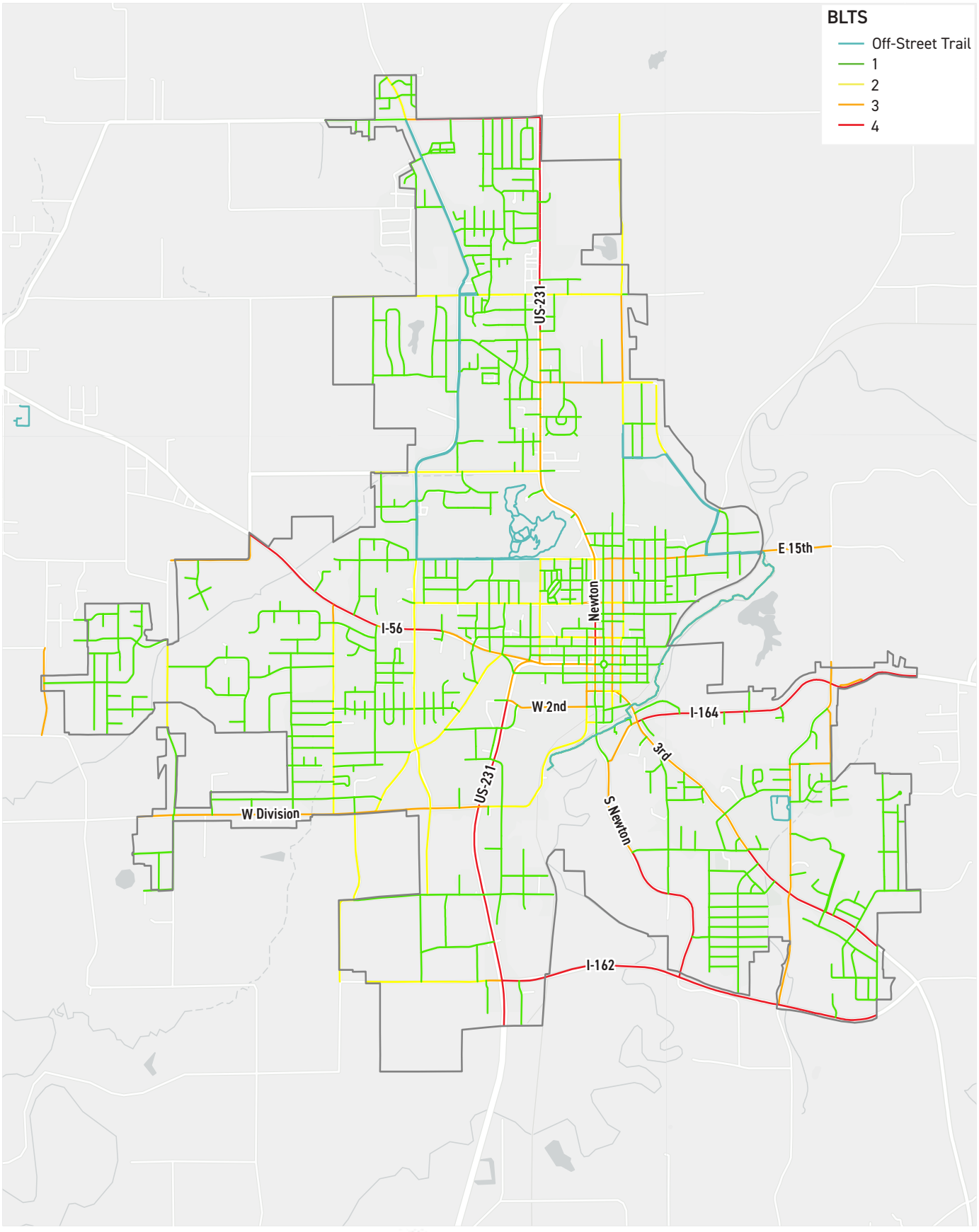
Table A3-7 details the BLTS methodology and scoring criteria. This methodology is widely used throughout the country as the measure of traffic stress for cyclists.

The BLTS analyses informs the proposed bike and trail network and recommendations within this Plan. Because there are no existing on-street bike or trail facilities, the analysis mostly reflects the road conditions and revealed the following findings:

- All roads with adjacent off-street trails have the lowest stress bicycle facilities (0) as users do not have to contend with vehicle traffic.
- Most residential streets are also low stress because the lower traffic volumes and speeds create a more comfortable environment.
- Major arterials and collectors whose function is to move most vehicle traffic within and through Jasper have higher levels of stress scores (3 or 4). The major high-stress roads identified include US-231/Newton St, I-56/6th St, I-162/W 100 St, 3rd Ave, I-164, W Division St, W 2nd St, and E 15th St.

Table A3-7. Bike Level of Traffic Stress Criteria for Mixed Traffic Road Segments

Number of Lanes	Effective ADT	Posted Speed						
		<= 20 mph	25 mph	30 mph	35 mph	40 mph	45 mph	50+ mph
1 through lane per direction, including one-ways	0-750	1	1	2	2	3	3	3
	751-1500	2	2	2	3	3	3	4
	1501-3000	2	3	3	3	4	4	4
	3000+	3	3	3	3	4	4	4
2 through lanes per direction	0-8000	3	3	3	3	4	4	4
	8001+	3	3	4	4	4	4	4
3+ through lanes per direction	Any ADT	3	3	4	4	4	4	4

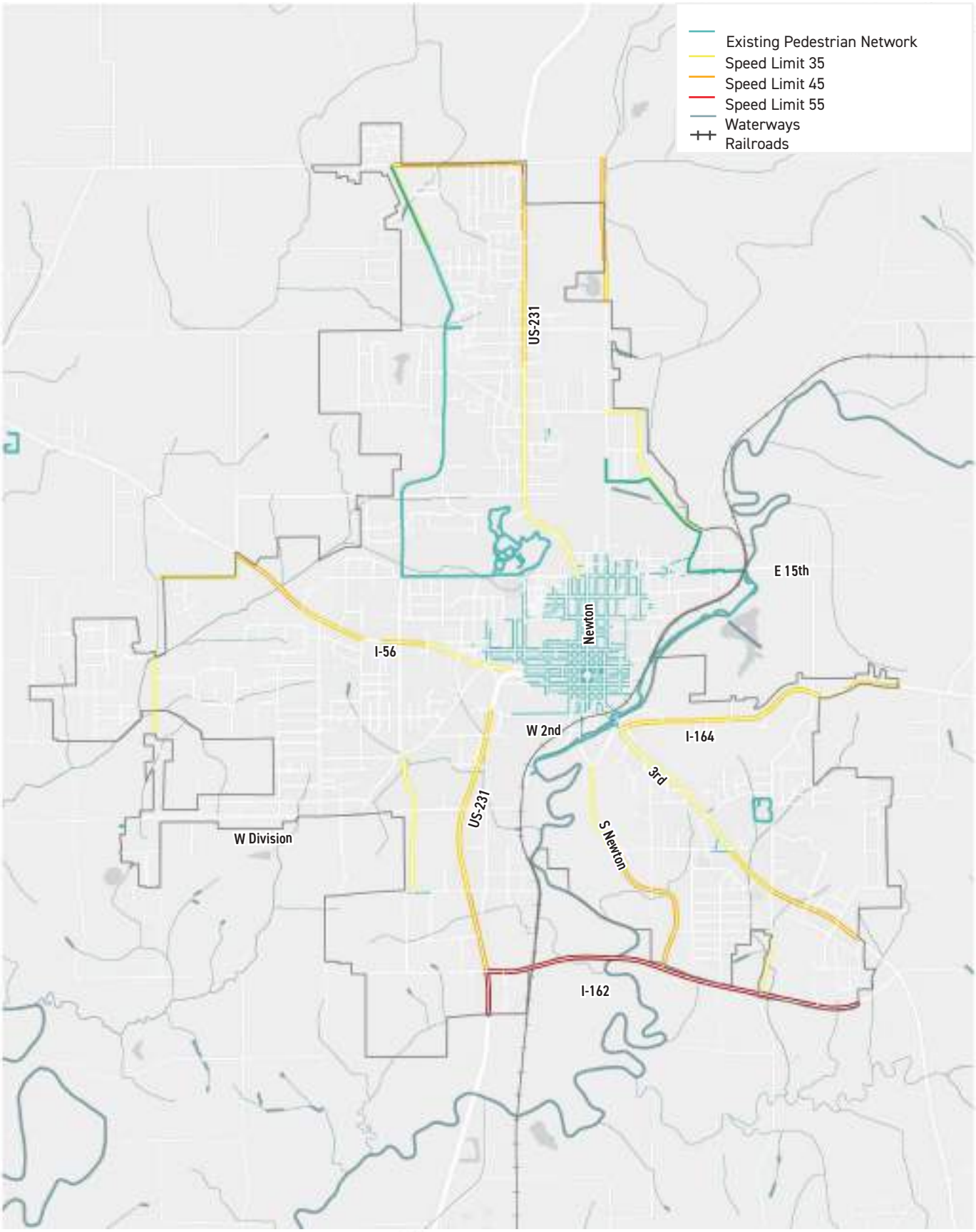


MAP A3-7 BLTS NETWORK

Physical Barriers

The street connectivity in Jasper, regardless of development pattern, is interrupted by large arterials and railroads that form barriers, as they have few safe crossings. Likewise, the Patoka River a forms a barrier, as there are few official crossings. These barriers create subsections of the city where pedestrians and cyclist are limited to safe and comfortable travel. Connectivity is strongest near the downtown core. The areas with the greatest barriers and network fracturing appear in the south of Jasper, particularly east of the Patoka River. This area also happens to be the location of several local attraction including the Schnitzelbank and Vincennes University satellite campus. Additional physical barriers to walking and biking include steep slopes, frequent driveways, and active railroad tracks.

In these areas where there are fewer pedestrian and bicycle connections, it becomes even more important to ensure that the connections are safe and welcoming to all users. **Map A3-8** illustrates the location of physical mobility barriers in Jasper.



MAP A3-8 MOBILITY BARRIERS

Pedestrian and Pedalcycle Safety

Pedalcycle and pedestrian safety is the key to promoting biking and walking within the existing and future infrastructure network. Due to high fatality rates of pedestrian and pedalcycle crashes, the safety of those using multi-modal forms of transportation must be a priority in planning a healthy and safe transportation network.

No pedestrian or pedalcycle crashes were reported in Jasper from 2015 to 2019.

Roadway Analysis

Overview

The City of Jasper is comprised of a vast network of existing roadways which connect residents to school, work, services, and recreation. This network also provides vital links to Dubois County, other communities, and destinations beyond. These roadways are composed of:

- Interstates
- US Highways
- State Highways
- County Roads
- Municipal Roads/Streets

It should be noted that private roads are not included in the Jasper network.

The FAST Act

The Fixing America's Surface Transportation (FAST) Act was signed into Law on December 2, 2015. This Act serves as funding for transportation projects and programs in the United States. The FAST Act provides long-term funding for surface transportation. Prior to the FAST Act, MAP 21 served as the funding and authorization bill which governed the transportation spending in the United States.

In general, for the purposes of 23 USC, the Federal-aid system is the National Highway System, which includes the Interstate System21. For more than 100 years, the government has been providing the states with highways funding. Most funds are apportioned to the states by formula. The implementation of those funds is left primarily to state departments of transportation. In addition to the funding provided by the government, the states are required to provide matching funds.

Until the 1950s, each federal dollar had to be matched by an identical amount of state and local money. The federal share is now 80% for non-Interstate System road projects and 90% for Interstate System projects. Third, generally, federal money can be spent only on designated federal-aid highways, which make up roughly a quarter of U.S. public roads.

The National Highway System

The National Highway System (NHS) consists of roadways important to the nation's economy, defense, and mobility. All principal arterial routes that are not currently on the NHS before October 1, 2012, will automatically be added to the NHS provided the principal arterials connect to the NHS in a one-time addition. There will be no restrictions on maximum NHS mileage. The National Highway System includes the following subsystems of roadways (note that a specific highway route may be on more than one subsystem):

1. Interstate: The Eisenhower Interstate System of highways retains its separate identity within the NHS.
2. Other Principal Arterials: Highways in rural and urban areas that provide access between an arterial and a major port, airport, public transportation facility, or other inter-modal transportation facility.
3. Strategic Highway Network (STRAHNET): A highway network important to the United States' strategic defense policy, providing defense access, continuity, and emergency capabilities for defense purposes.
4. Major Strategic Highway Network Connectors: Highways that provide access between major military installations and highways that are part of the Strategic Highway Network.
5. Inter-modal Connectors: These highways provide access between major inter-modal facilities and the other four subsystems making up the National Highway System.

For the City of Jasper, NHS Routes consist of US 231, SR 162, SR 164, and SR 56.

Functional Classification

The Federal Highway Administration (FHWA) recommends grouping the roadway network into a hierarchical functional classification system based on the characteristics of the roadway, as well as the service the roadway is intended to provide. As a first step, roadways are typically identified by whether the road is urban or rural. Then, the roadways are further classified in the following categories:

- Interstate – This is the highest classification of Arterials and were designed and constructed with ability and long-distance travel in mind. Roadways in this functional classification category are officially designated as Interstates by the Secretary of Transportation, and all routes that comprise the Dwight D. Eisenhower National System of Interstate and Defense Highways belong to the Interstate functional classification category and are considered Principal Arterials.
- Freeway/Expressway - The roads in this classification have directional travel lanes and are usually separated by some type of physical barrier, and their access and egress points are limited to on- and off-ramp locations or a very limited number of at-grade intersections. Like Interstates, these roadways are designed and constructed to maximize their mobility function, and abutting land uses are not directly served by them.
- Principal Arterial – The roads in this classification serve major centers of metropolitan areas, provide a high degree of mobility and can also provide mobility through rural areas. Unlike their access-controlled counterparts, abutting land uses can be served directly.
- Minor Arterial - The roads in this classification provide service for trips of moderate length, serve geographic areas that are smaller than their higher Arterial counterparts and offer connectivity to the higher Arterial system.
- Major Collector - Collectors serve a critical role in the roadway network by gathering traffic from Local Roads and funneling them to the Arterial network.
- Minor Collector and Local Road - The roads in this classification account for the largest percentage of all roadways in terms of mileage. They are not intended for use in long distance travel, except at the origin or destination end of the trip, due to their provision of direct access to abutting land.

These roadway functional classifications are reviewed periodically by both INDOT and local representatives.

Figure A4-1 shows the relationship between land access and mobility for the different categories. **Map A4-1** illustrates the Jasper roadway network by Functional Classification, according to INDOT.

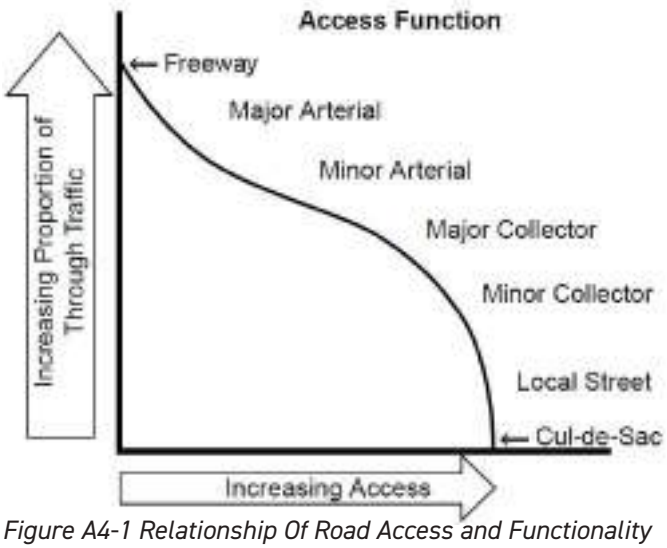
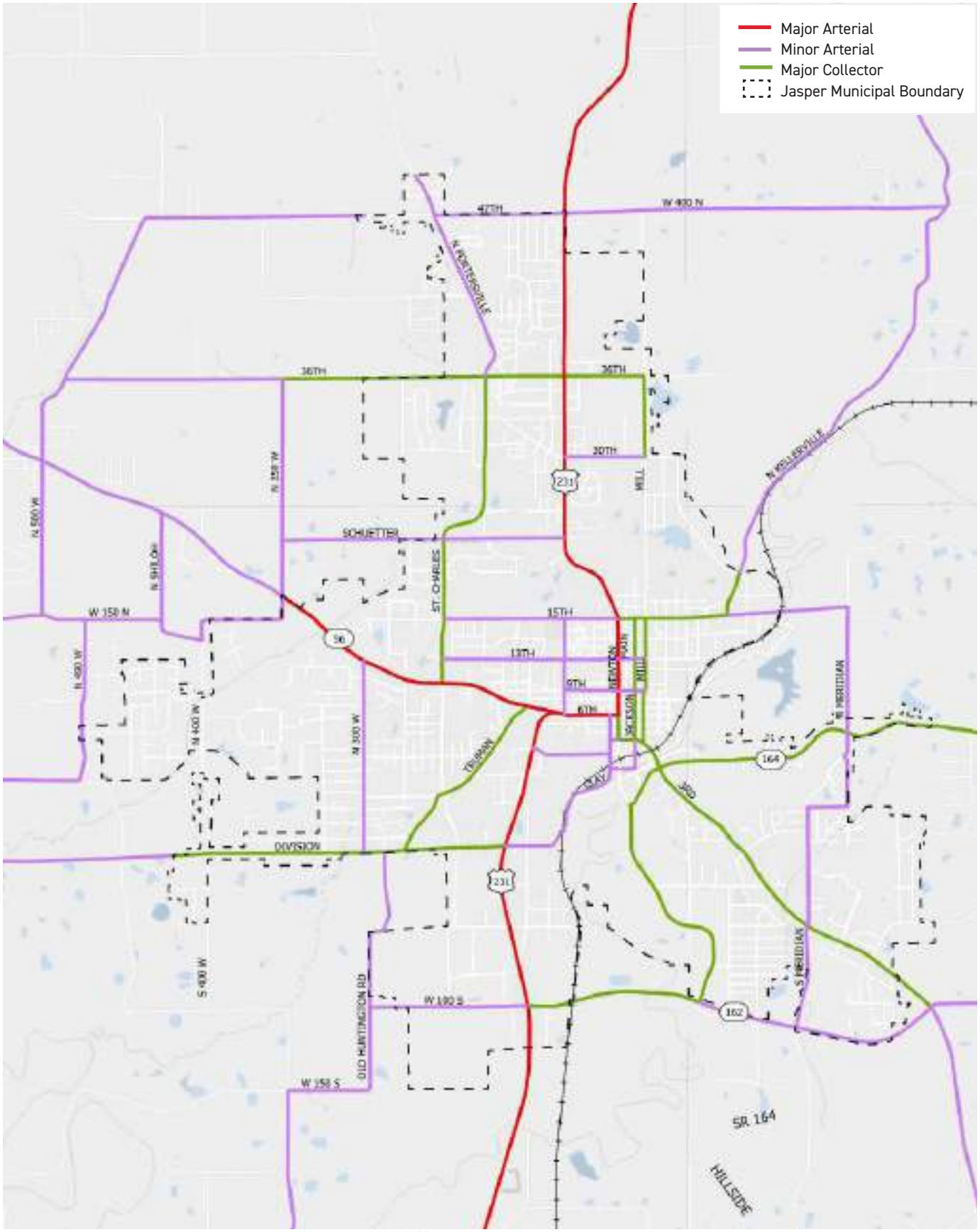


Figure A4-1 Relationship Of Road Access and Functionality

Major arterials like US 231 are intended to offer the highest degree of mobility and very limited access to land uses, promoting long distance travel with minimum disruption to traffic. Recommended access points per mile on a major arterial is 8 access points (driveways, controlled and uncontrolled intersections) per mile. Calculation of US 231 revealed that the corridor has ten times the recommended number of access points, averaging approximately 80 points per mile. This many access points on a major arterial disrupts traffic flow and increases the risk of crashes.

On the other end of the spectrum, local streets support short-distance, low-speed traffic representing the lowest degree of mobility, but highest degree of access to land uses.



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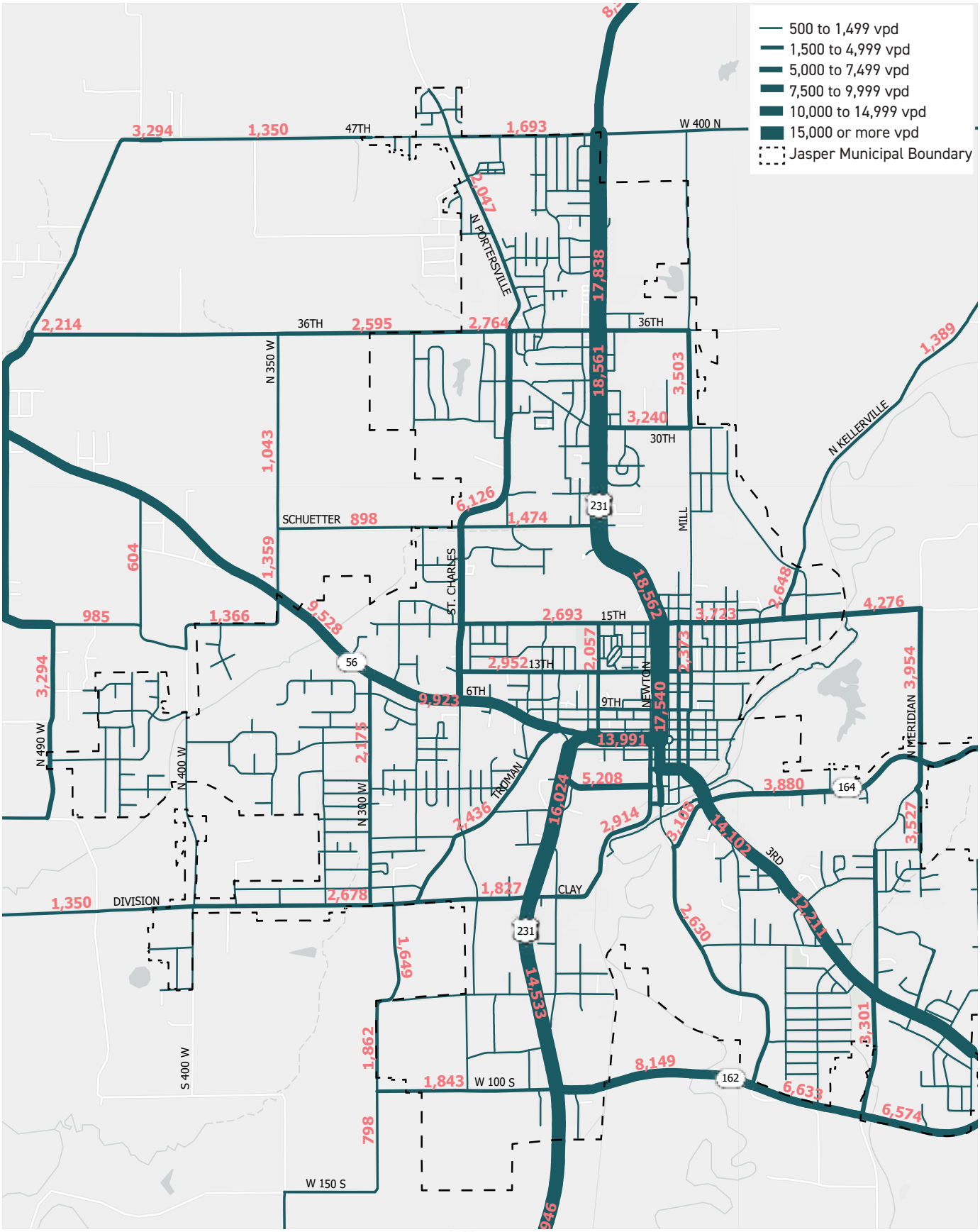
MAP A4-1 FUNCTIONAL CLASSIFICATION

Vehicular Traffic

The traffic volume on the transportation system varies based on the functional classification of the roadway. For example, US 231 moves a large amount of traffic compared to collectors or local streets. The Average Daily Traffic (ADT) in Jasper is continually collected by INDOT as well as periodic counts by the County and city municipalities. **Map A4-2** represents the available recent ADT counts for many arterials and collectors in the Jasper.

The heaviest traveled roadway in Jasper is US 231 with an ADT ranging from 13,991 – 18,561 vehicles. Jasper has a relatively high number of manufacturing facilities located on or near US 231 who attract workers from nearby communities and use the federal interstate highway system as a means to distribute their goods. As a result, corridors like SR 56, SR 164 that provide access from these facilities to US 23, I-69 to the east, and I-64 to the south and south west are the most highly trafficked.

High ADT of more than 5,000 vehicles per day on St. Charles Street and CR N. 350 W indicates that local drivers are seeking alternative north-south connections within the city to avoid US 231. Similarly, high traffic counts on 15th Street west of downtown and N Meridian offer an alternative route for southbound vehicles attempting to avoid congestion in Downtown Jasper.



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MAP A4-2. ADT

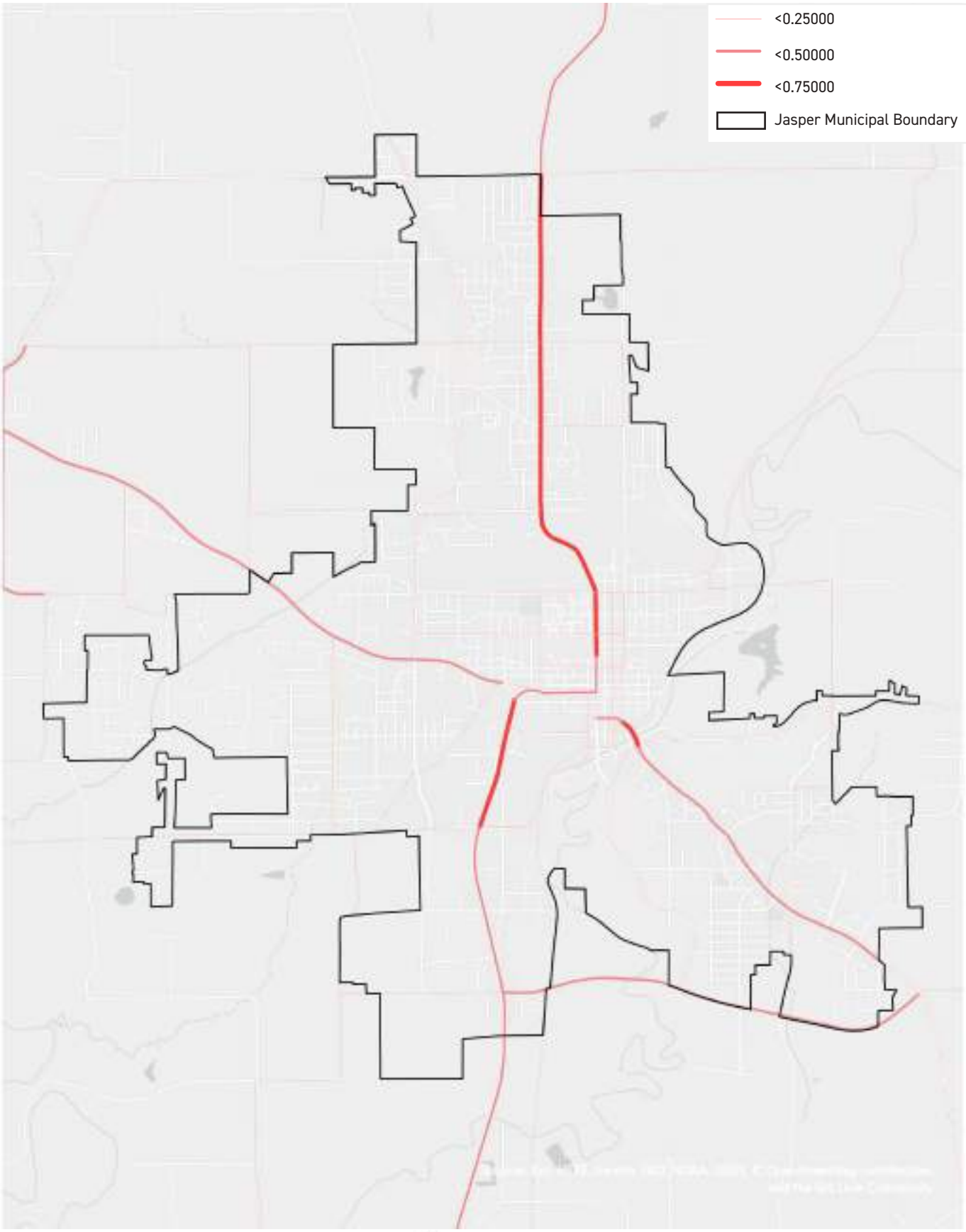
Roadway Capacity

The capacity of roadways is a critical element in the flow of people and goods throughout the transportation network. Figure shows Major Collectors and above by their capacity use. Capacity use was determined through the use of traffic counts, INDOT recommendations, on-site analysis, and consultation with local officials.

Street segments within the City of Jasper were evaluated to identify locations where volumes approach capacity and improvements may be needed to alleviate congestion. The basis of this planning-level assessment was each roadway segment's volume-to-capacity ratio, which is calculated using the following formula:

Volume / Capacity = Daily Traffic / Road Capacity

As seen in **Map A4-3**, the 2020 volume to capacity analysis reveals the majority of streets function well below capacity. Only US 231 and a small segment of W. 3rd Street at the Patoka River Crossing are experiences volumes in excess of 70% of capacity. The majority of Jasper's major roads are functioning below capacity.



MAP A4-3. ROADWAY CAPACITY

Transportation System Safety

Analyzing existing traffic crash patterns is the first step towards understanding the underlying factors of safety issues. Crash data provided by INDOT from the years 2015 to 2019 were used for analysis to provide up-to-date assessments of the safety conditions within the boundaries of Jasper. From the data, the following was revealed:

- 3,301 crashes occurred on the roadway network located within the City of Jasper between 2015 and 2019
- The number of annual crashes in Jasper is trending downward
- Crashes resulting in injury (343) accounted for 10% of the overall crashes while fatal crashes (3) accounted for less than 1%
- No pedestrian and pedalcycle related crashes were reported during the 2015 to 2019 reporting period

The City of Jasper averages 660 crashes annually. In the previous five years, 2016 reported the highest number of crashes at 697 while 2019 reported the fewest crashes with 630. Overall, the frequency of crashes in Jasper is trending downward. **Figure A4-2** show the total annual number of crashes for the City of Jasper from 2015 to 2019.

Map A4-4 displays a map of crash density in the City to show where crashes are frequently occurring. Many of the crashes occurring in the Jasper are located the along the major corridors of US 231, SR 164, and SR 56. Crash "hot spots" can be seen on the map. During data collection, an unusual number of crashes were reported at the intersection of 2nd Ave and Newton near Downtown Jasper. After further investigation and consultation with the Jasper Police Department, it was determine that this was the default location for incomplete crash data reporting.

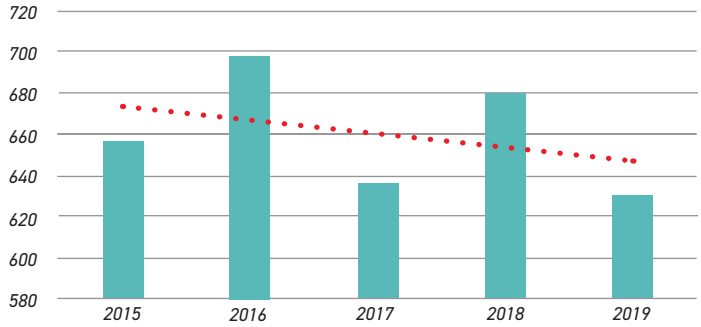
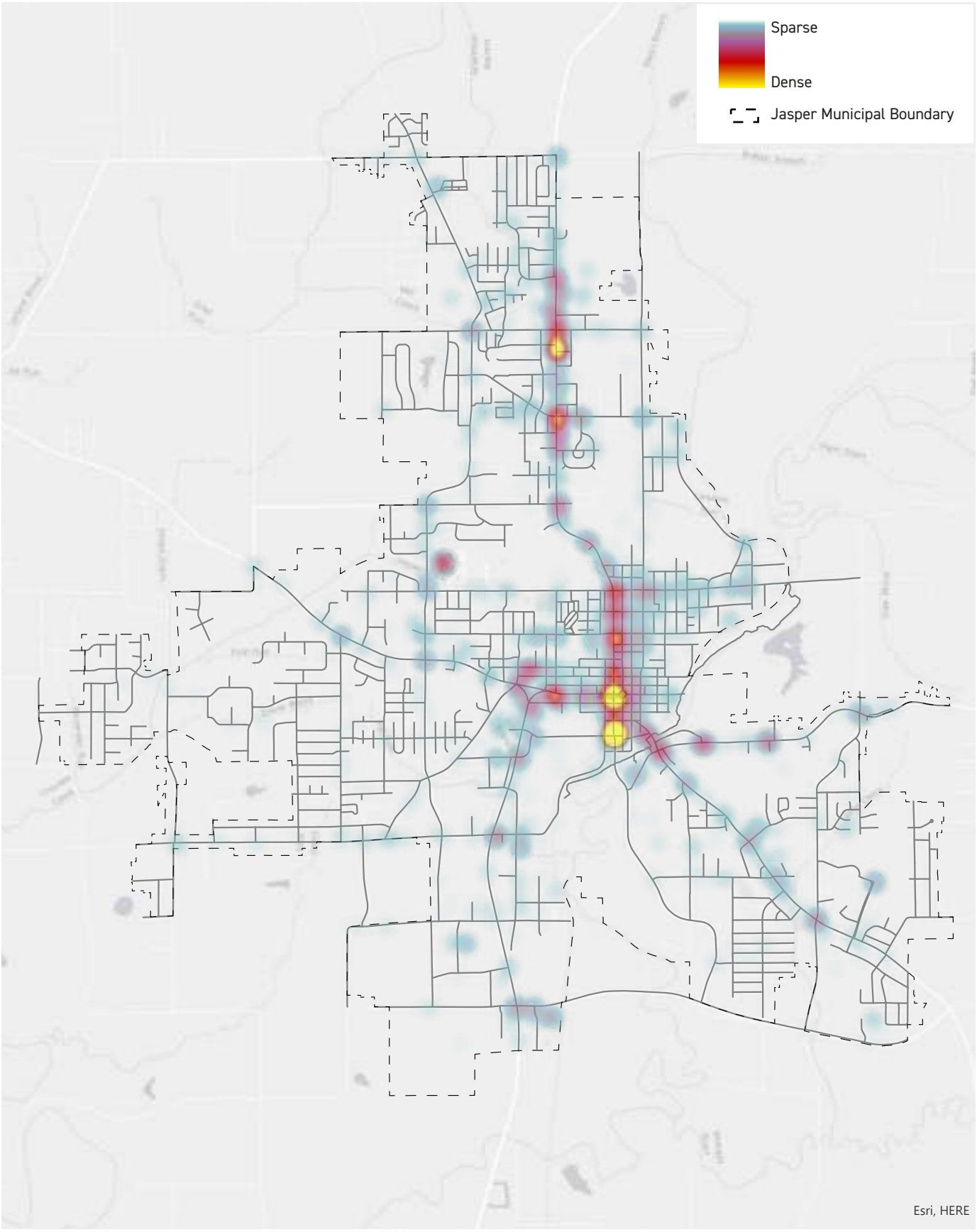


Figure A4-2. Total Annual Crashes Reported (2015-2019)



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MAP A4-4. CRASH FREQUENCY

Intersection Safety

Intersection safety in Jasper was evaluated by comparing crash rates across all intersections with roadways classified as a collector and above.

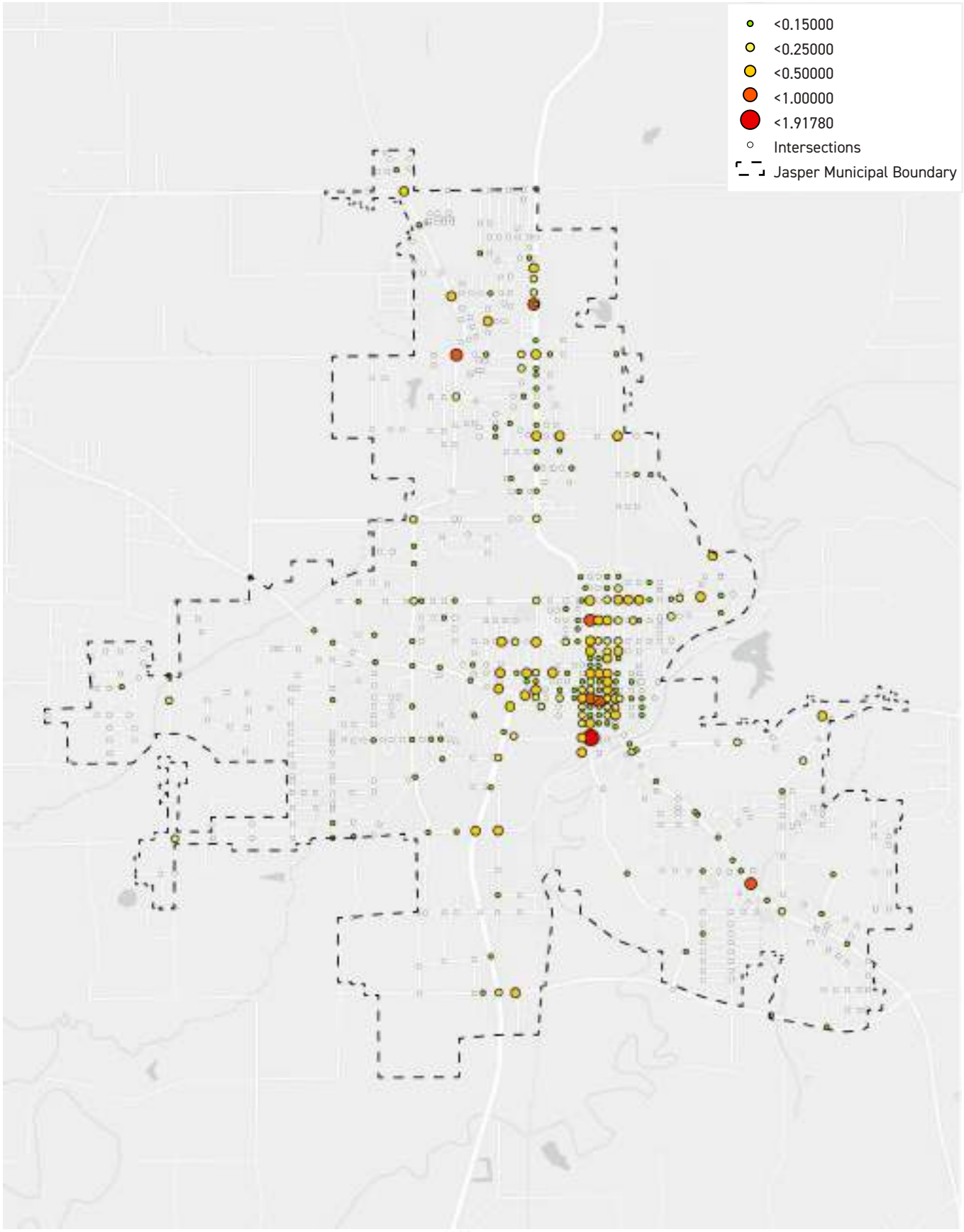
Comparing crashes rates as opposed to total crashes is appropriate because crash rates account for risk and exposure by normalizing traffic volumes. With this approach, the highest volume intersections may not have the highest crash rates. Using crash data from 2013-2019, the intersection crash rate formula was applied as summarized below:

$$\frac{\text{Total crashes at intersection x 100,000,000}}{\text{TEV(total entering vehicles) x 5(years) x 365(days)}}$$

Map A4-5 illustrates the results of the intersection crash rate analysis. The intersections with the highest crash rates are located in central Jasper (**Table A4-1**).

Table A4-1. Highest Crash Rate Intersections

Intersection	Total Crashes	TEV	Crash Rate
W. 2nd and Newton Street	320	15506	1.1
14th Street and Newton (US 231)	70	41124	0.9
Baden Strasse and SR 56 (US 231)	210	6000	0.9
Courthouse Square and Main Street	70	5114	0.8
6th Street and Newton (US 231)	440	39974	0.6



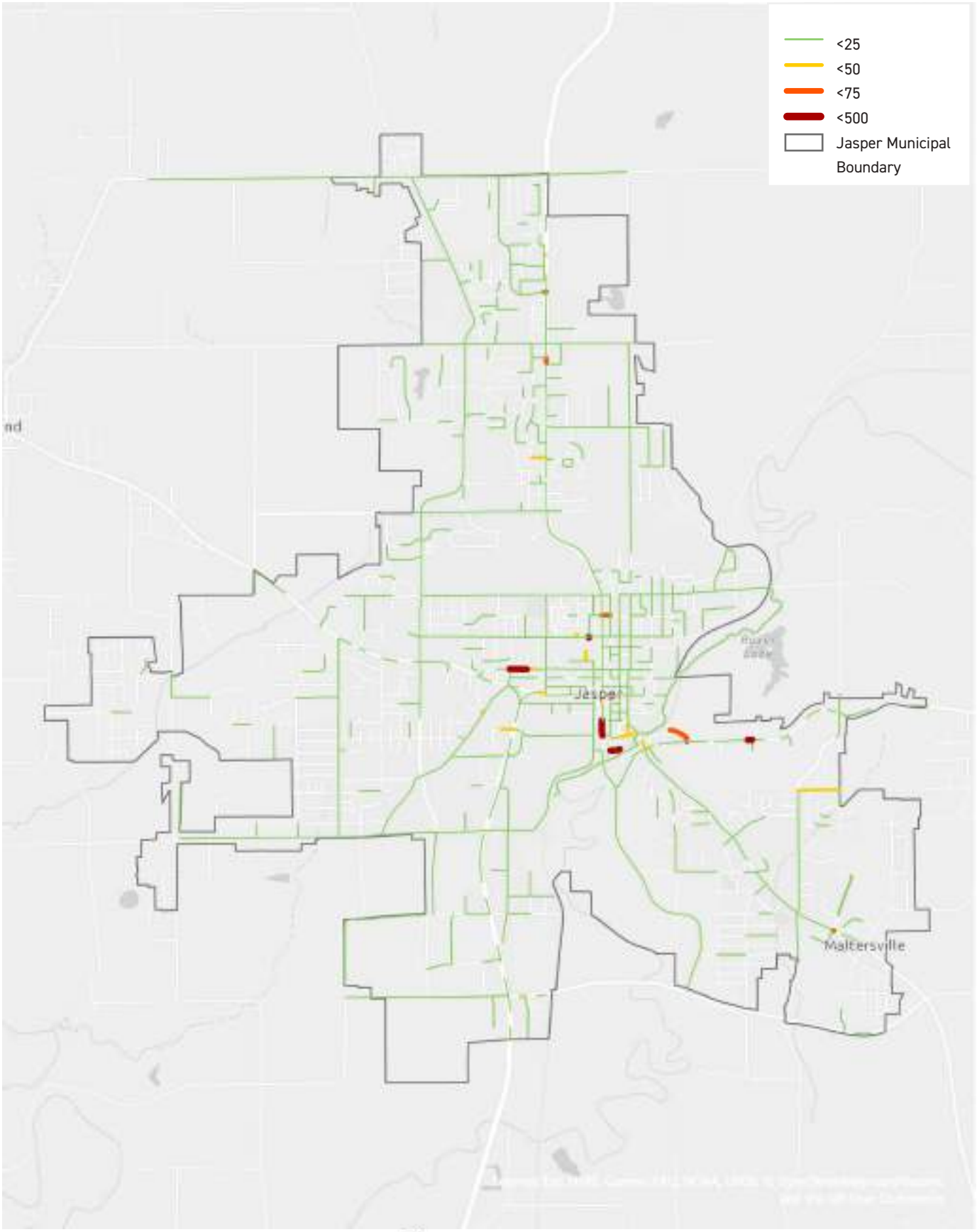
MAP A4-5. INTERSECTIONS CRASH FREQUENCY

Corridor Safety

Corridor safety in Jasper was evaluated by comparing crash rates across all roadway segments with roadways classified as a collector and above. Segments were normalized by ADT to determine which corridors were experience the highest number of crashes relative to their traffic. **Map A4-6** displays the location of high frequency crash corridors. **Table A4-2** list the top 5 crash corridors by name and location.

Table A4-2. Highest Crash Rate Road Segments

Roadway	Start Point	End Point
Newton	2nd Street	4th Street
2nd Street	Main Street	Jackson Street
W. 8th Street	Truman Road	MacArthur Street
2nd Avenue	Schnell Lane	Vonderheide Road
W. 13th Street	Kundeck Street	Newton (US 231)



MAP A4-6. CORRIDORS CRASH FREQUENCY

Crash Severity

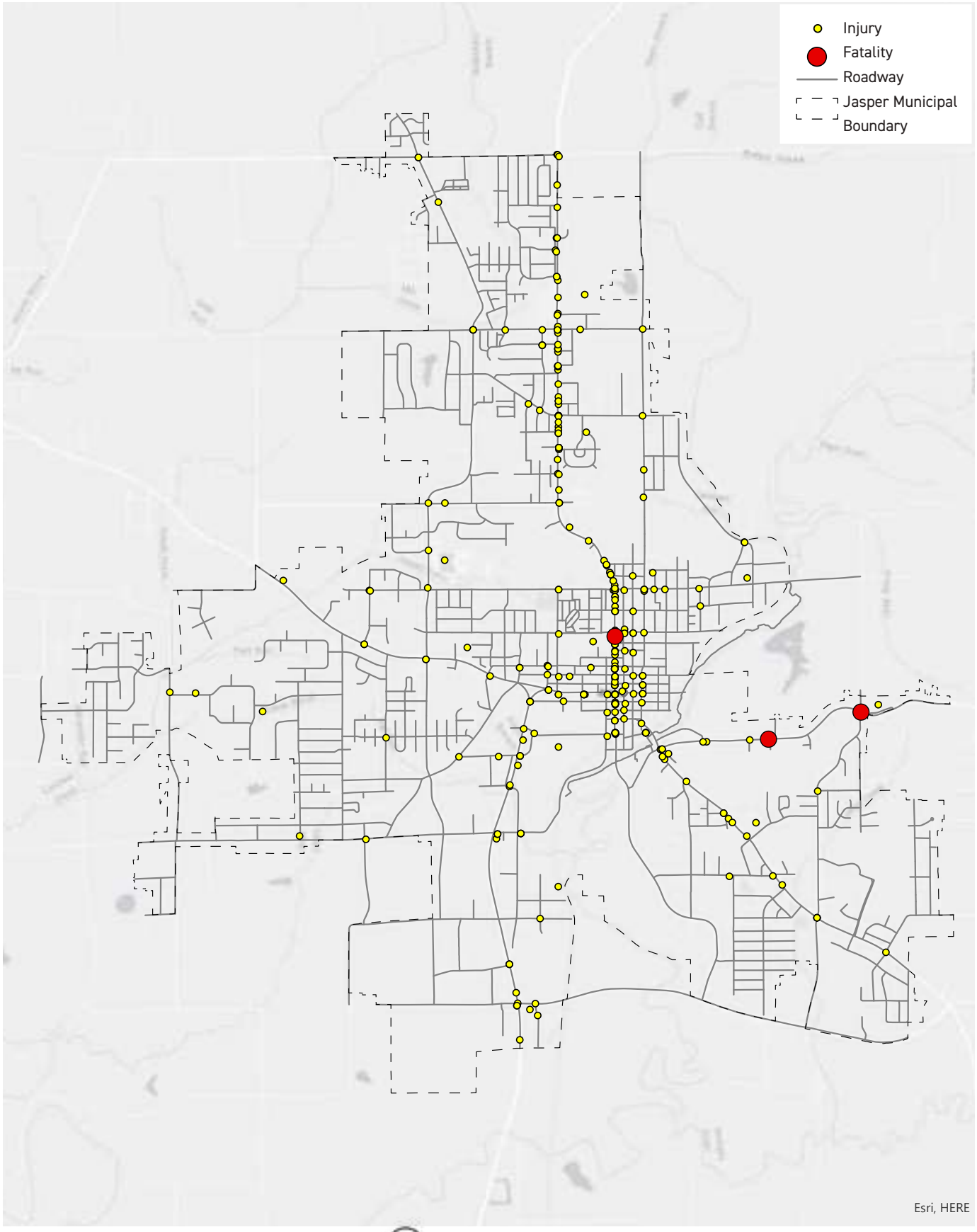
Crash severity types are defined as follows:

- Fatal – crash resulted in death of one or more persons
- Disabling Injury – crash resulted in non-fatal injury of one or more persons that prevents walking, driving, or continuing activities the person was capable of prior to the crash
- Minor Injury – crash resulted in non-fatal and non-disabling injury of one or more persons who did not require help to leave the scene
- Property Damage Only (PDO) – crash resulted in material damage only with no persons injured

Table A4-3 displays the crashes by year and severity within the City of Jasper and **Map A4-7** shows the locations of fatal and injury crashes. Many of the crashes occurring in Jasper are concentrated in Downtown or are located along US 231. There are high number of crash clusters along the major routes through the region including US 231 between Schuetter Road and 36 Street and near the intersection of US 231 and 15th Street. A significant number of crashes resulting in serious injury or death have been reported at the intersection of SR 164 and N. Meridian Road.

Table A4-3. Crash Severity by Year

Year	Fatal	Injury	PDO	Total
2015	1	106	549	656
2016	0	96	601	697
2017	2	87	548	637
2018	0	79	601	680
2019	0	73	558	631
TOTAL	3	441	2, 857	3,301



MAP A4-7 CRASHES RESULTING IN INJURY OR FATALITY

Collision Types

Collision types provide insight into the scenarios and factors for crashes occurring in the City of Jasper. **Table A4-4** displays the various collision types by year. Backing and Rear End crashes were the most common collision type that occurred in Jasper with 773 and 759 crashes respectively, making up nearly half of total crashes between 2015 and 2019.

Right Angle and Other were the third and fourth most common collision types with 501 crashes (15%) and 337 crashes (10%) respectively. **Figure A4-3** displays the five most common collision types as a percentage of the overall number of crashes.

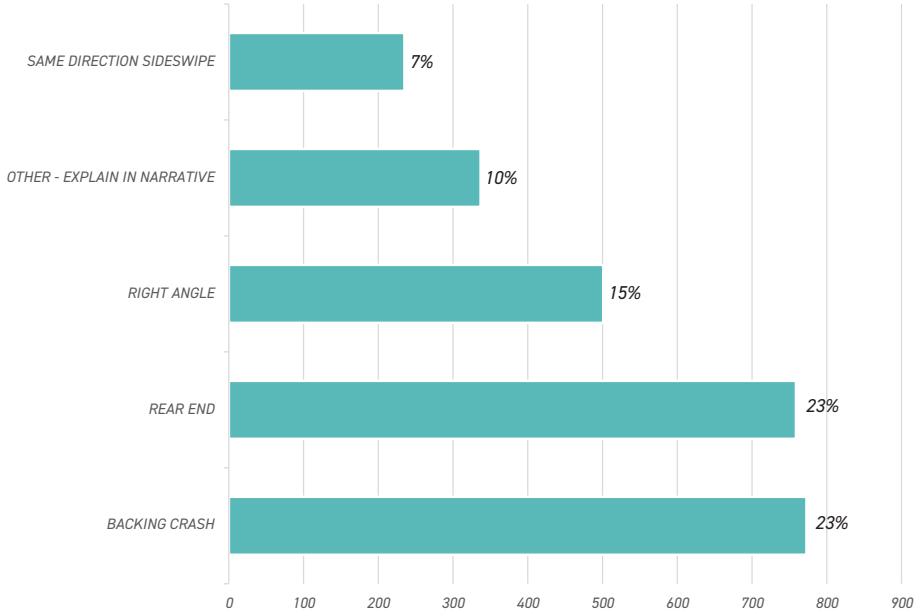


Figure A4-3 Most Common Collisions by Type (2015-2019)

Table A4-4. Collisions by Type (2015-2019)

	2015	2016	2017	2018	2019	Total
BACKING CRASH	146	162	156	150	159	**773**
REAR END	146	165	152	141	155	**759**
RIGHT ANGLE	100	114	103	96	88	**501**
OTHER - EXPLAIN IN NARRATIVE	57	81	54	92	53	**337**
SAME DIRECTION SIDESWIPE	42	40	53	52	48	**235**
RAN OFF ROAD	43	53	54	41	43	**234**
COLLISION WITH DEER	35	25	--	32	21	**113**
LEFT TURN	24	15	20	26	13	**98**
OPPOSITE DIRECTION SIDESWIPE	15	9	15	12	14	**65**
HEAD ON BETWEEN TWO MOTOR VEHICLES	15	7	9	11	9	**51**
RIGHT TURN	9	6	11	8	7	**41**
COLLISION WITH OBJECT IN ROAD	6	5	5	6	4	**26**
LEFT/RIGHT TURN	6	6	2	7	4	**25**
NON-COLLISION	7	3	--	1	6	**17**
COLLISION WITH ANIMAL OTHER	4	3	--	3	4	**14**
REAR TO REAR	--	1	1	--	--	**2**
GRAND TOTAL	**656**	**697**	**637**	**680**	**631**	**3301**

Time of Day and Day of Week Factors

Over the five-year analysis period, the number of crashes were highest during the PM peak period (4:00 p.m. to 6:00 p.m.), with a lower peak during the PM peak period (12:00 p.m. to 2:00 p.m.). The highest number of crashes occurred between 5:00 p.m. and 6:00 p.m. with an average of 68 annual crashes. **Figure A4-4** presents the crash trends within the City of Jasper by time of day.

On average, during the five-year analysis period between 2015 and 2019, crashes peaked on Friday with an average of 122 annual crashes. Crashes remain relatively constant on other work days, ranging from 96 to 106 annual crashes for each day. Saturdays and Sundays have a markedly lower average number of crashes at 80 and 47 crashes annually. As shown in **Figure A4-5** below, mid-week crashes were significantly above average in 2014 compared to the other analysis years, and Thursday crashes were very high in that year.

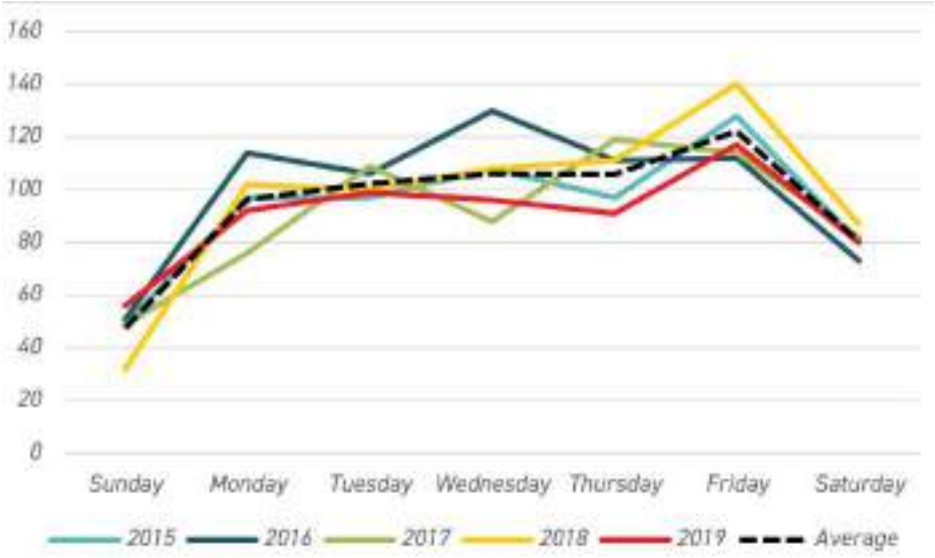


Figure A4-4. Crashes By Day of Week Reported (2015-2019)

Figure A4-5. Crashes By Time of Day Reported (2015-2019)

Accessibility

The Americans with Disabilities Act (ADA), enacted on July 26, 1990, is a civil rights law prohibiting discrimination against individuals on the basis of disability. According to Title II of the Act, municipalities are required to have a plan to make accommodations for everyone. If a public agency employs more than 50 people, a formal transition plan is required in addition to a self-evaluation. A self-evaluation is a detail of existing barriers to city communications, programs and services, streets and intersections, and buildings and outdoor areas. The self-evaluation information is ultimately used to create the agency's methods and schedule on these barrier removals.

Implications to the Transportation System

To ensure program accessibility for people with disability in the community, the City of Jasper developed an ADA Transition Plan, which is to be considered good practice. The Jasper ADA Transition Plan was adopted in 2012 and the community continues to implement its recommendation throughout the City.

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Appendix B

FUTURE ANALYSIS

CITY OF JASPER INDIANA

Table of Contents

Maps, Tables, and Figures

Future Conditions Analysis

Introduction

The future conditions analysis was split into two main sections: a Vehicle Network analysis, and Multimodal Network analysis. The following sections describe the regional and local considerations going into both networks that make up a cohesive transportation network, then presents the underlying strategy and analysis that ultimately informs the recommendations.

Unfortunately, a transit analysis was not able to be included in this plan at this time. During this process, though, members of the community reached out to express concern and support for such amenities and facilities. As called for in Impact Jasper Comprehensive Plan, a transit feasibility study should be considered by the city in the future.

Vehicle Network

Considerations

Mid-States Corridor

The Mid-States corridor is a regionally significant planned corridor that is currently undergoing a Tier 1 Environmental Study. The purpose of the corridor has been identified to provide an improved transportation link between the US 231/ SR 66 and I-69 which:

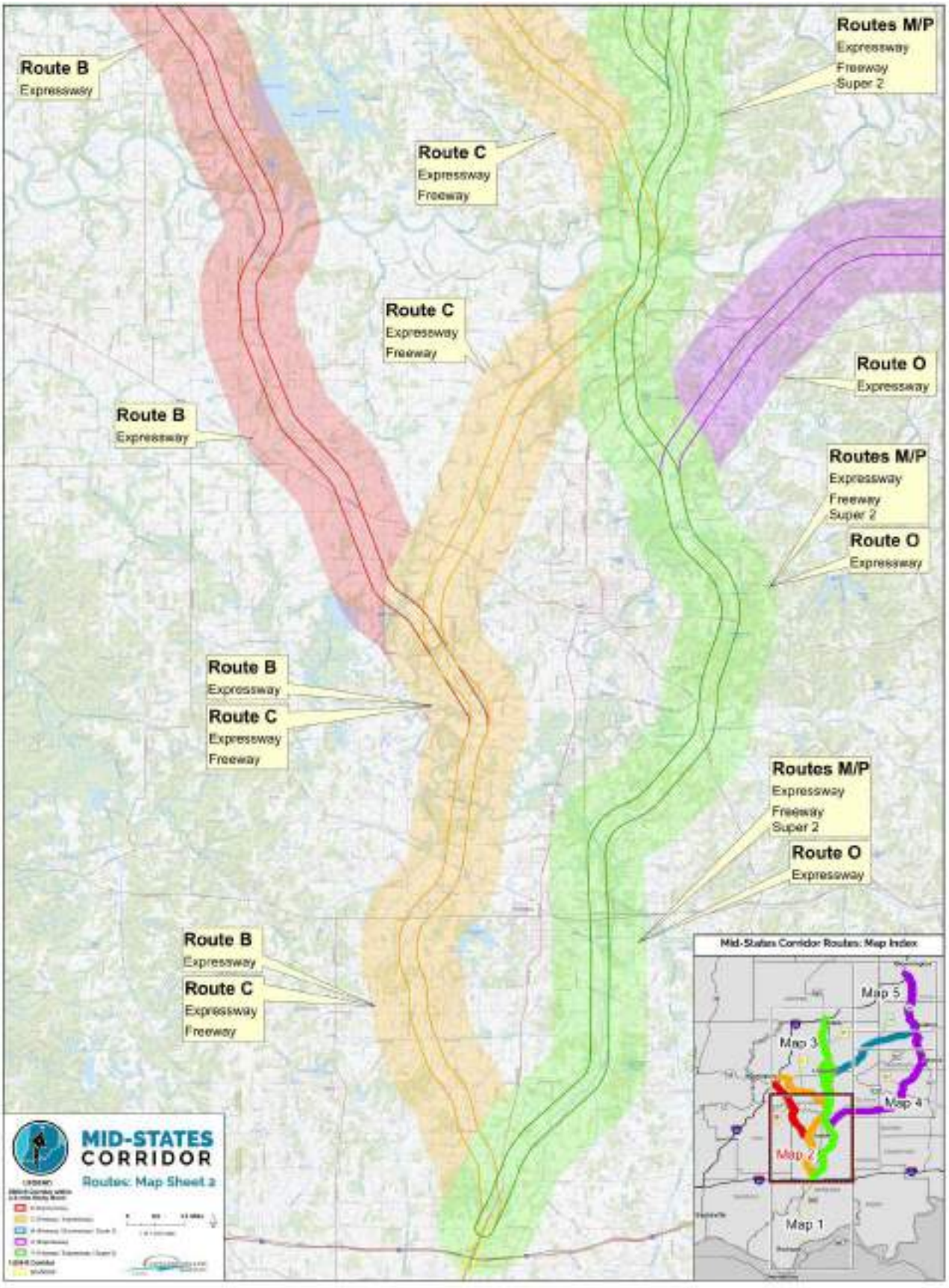
1. Improves business and personal regional connectivity in Dubois County and Southern Indiana;
2. Improves regional traffic safety in Southern Indiana;
3. Supports economic development in Southern Indiana; and
4. Improves highway connections to existing major multimodal locations from Southern Indiana.

The study area is generally defined as the 12 counties within the area bounded by I-69 on the west and north, SR 37 on the east and north, and the Ohio River on the south. This Tier 1 Environmental Study examines an improved highway connection beginning at SR 66 near the William H Natcher Bridge crossing the Ohio River at Rockport, continue generally through the Huntingburg and Jasper area, and extend north to connect to Interstate 69.

This environmental study is currently underway, with the Draft Environmental Impact Study (DEIS) with preferred routes anticipated to be published in Summer 2021. It is expected that this corridor, if built, would have an impact on Jasper, but those impacts are yet to be defined. Alternatives vary from limited access grade-separated highways to a porous at-grade intersections, and from alignments on the east side of Jasper to alignments on the west side of the City, as shown in **Map B2-1.**

If the DEIS determines that the preferred alignment is on the east side of the City, it is likely that improvements will be needed to bolster movements to and from the corridor and US 231, such as improving the eastern portions of W CR 400 N, 36th Street, 15th Street, Mill Street, N Kellerville Road, SR 164, and 3rd Avenue. However, if the alignment is along the west side of the city, roads such as the west ends of W CR 400 N, 36th Street, SR 56, W Division Road may require improvements instead.

For purposes of this plan, it was determined that the scenario with the most impact on Jasper's existing transportation network would be a No Build scenario, meaning Mid-States would not be built. It would be expected that if built, the Mid-States Corridor would siphon traffic from US 231, reducing overall vehicular traffic load on that route, with particular reduction in the number of trucks passing through downtown. Therefore, generally speaking, if Mid-States Corridor were to not be built, the existing transportation network would need to accommodate all future growth.



MAP B1-1. MID-STATES CORRIDOR

INDOT Projects

During the planning process, it was discovered that INDOT has several planned improvements within the city as shown in **Map B1-2:**

1 & 2. While funding is not yet secured, they are pursuing a roundabout solution at the intersections of SR 56 with N CR 350 W and SR 56 with St. Charles Street. If the grant pursuit is successful, the funding would apply to fiscal year 2026.

3. On US 231 on the south portion of the city, INDOT is planning to construct mainline left turn lanes at 12th Avenue to reduce delayed experience at this intersection.

4. INDOT plans to construct a southbound acceleration lane south of SR 162 to improve capacity through the signal. With this configuration, slower moving vehicles that take longer to accelerate can be passed by vehicles before the lanes constrict to a two-lane road. A similar northbound treatment leaving Huntingburg towards Jasper would also be constructed.

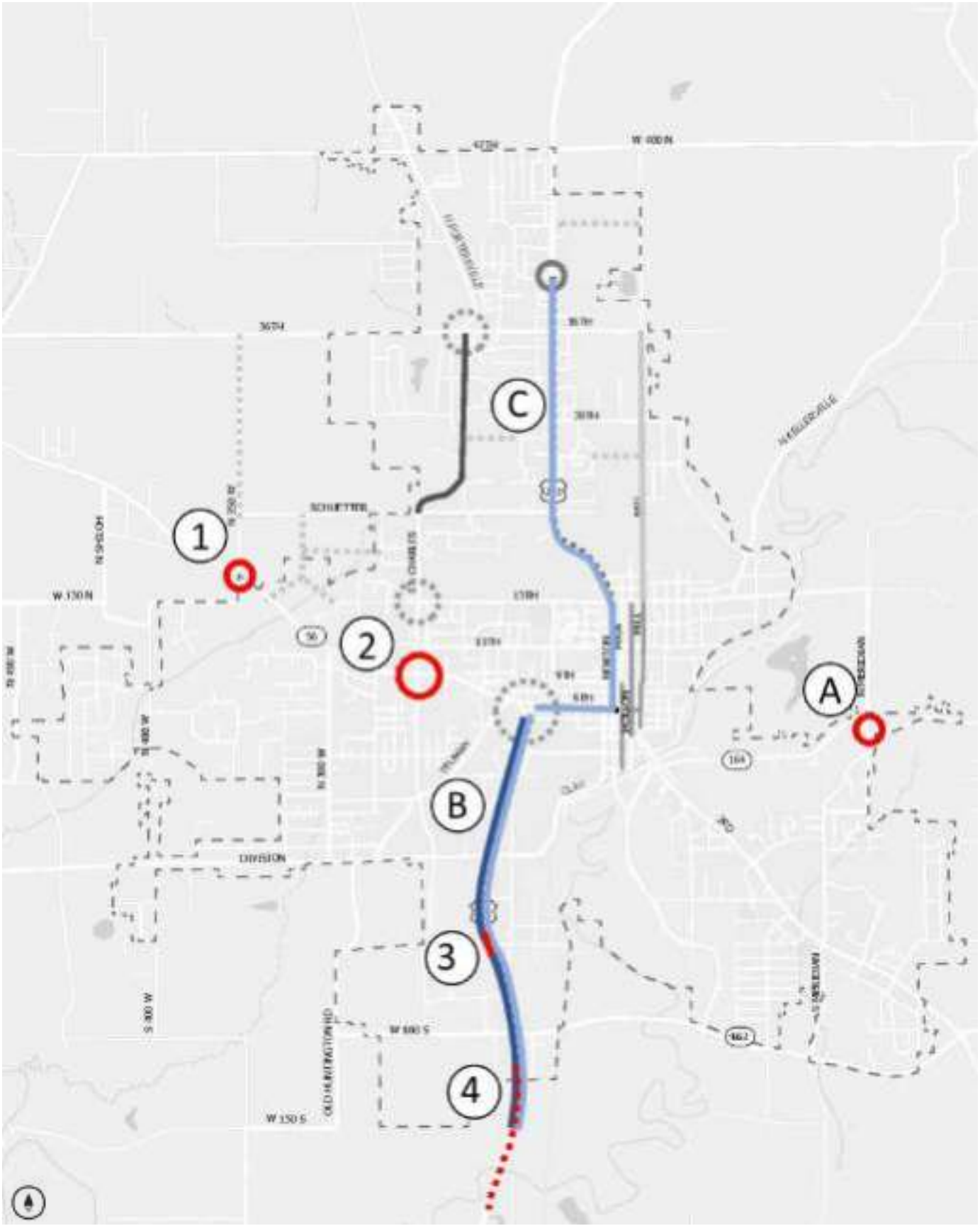
In addition to the planned improvements, it is recommended that Jasper encourage INDOT to explore additional improvements on state routes within the City. Three in particular that have been identified include the following:

A. A high number of crashes, including a fatal crash, occurred over the past several years at the intersection of SR 164 and N Meridian Road. This intersection is currently under all-way stop control with overhead red flashing beacons for reinforced messaging. However, there are multiple lanes on approaches, and it is a very wide intersection for stop control. A traffic signal or roundabout solution may be appropriate at this intersection. This intersection has the potential to be highly affected by the Mid-States Corridor alignment, once a preferred route is selected.

B. While a portion of this segment of US 231 already has a two-way left turn lane, based on the number of access points and daily traffic volumes on US 231, it could be beneficial to extend this three lane section south to the city limits.

C. As recognized in the Existing Conditions analysis, there are at least 10 times as many access points per mile along US 231, a major arterial, as is recommended in INDOT's Access Management guidelines. An Access Management study, identifying where and how entrances could be consolidated, should be conducted. Reducing access points reduces the number of conflict points along the highway, thereby improving both traffic flow as well as decreasing the potential for crashes.

It is recommended that the City continue to work closely with INDOT on implementing identified infrastructure improvements within the city. For instance, while INDOT owns and maintains US 231, the City is in charge of land use decisions on the development of parcels that access that highway. Access Management and complete streets policies would need to be implemented as a concerted effort or partnership between the City and state to maintain the effectiveness of US 231 as the main thoroughfare through the city.



MAP B1-2. PLANNED & RECOMMENDED INDOT PROJECTS

Downtown Vision

Consideration for bicyclists and pedestrians are vital for a successful downtown. Implementation of a Complete Streets vision typically results in a transportation network that is comfortable to be used by all ages and abilities.

Studies have shown that high walkability tends to lead to economic growth. This plan recommends that one-way streets be converted to two-way vehicle traffic in most places in Jasper's Downtown. This would include all locations except for Main Street from 9th to 15th, Mill Street from 3rd to 4th, and Mill Street from 9th to 15th. One reason for economic growth is that storefront exposure is lost if drivers are only seeing the path from one direction. Seeing their surroundings environment from a different direction, or as a slower non-motorized traveler, greatly enhances storefront visibility.

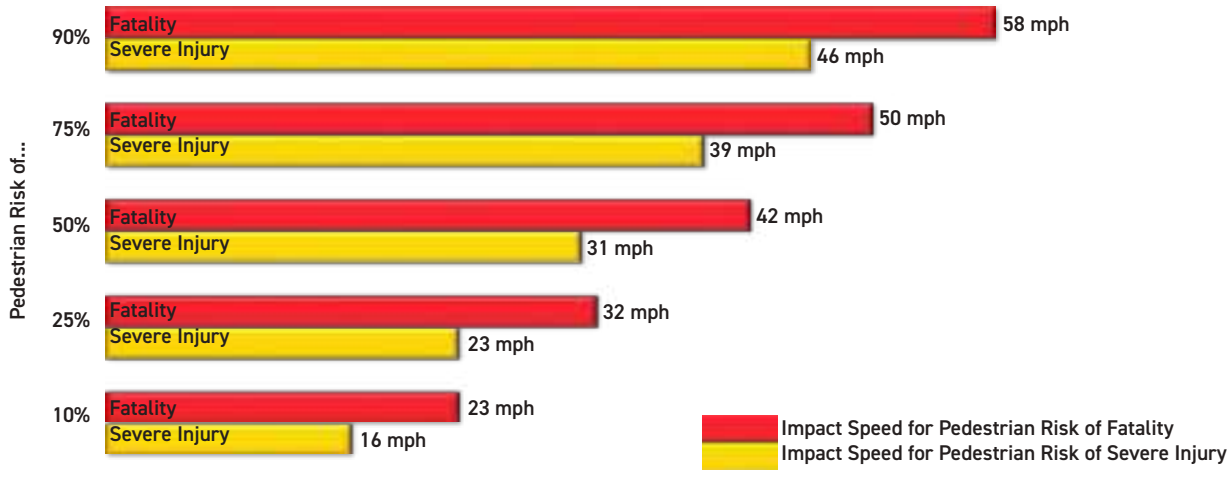
Streets with two-way traffic tend to have slower vehicle speeds. This is only a minor inconvenience for vehicle drivers, but for the more vulnerable street users such as pedestrians and bicyclists, that lower speed results is significantly fewer crashes, and could mean the difference between a crash that results in minor injuries versus one that is fatal, as is shown in the chart below.

Concern was raised at the public meeting regarding on-street parking and the suggestion for two-way traffic. It is recommended that the 2015 Downtown Parking Study be revisited as planning and preliminary design move forward towards complete street implementation.

There is a significant desire within the city to better connect Downtown with the Patoka River. Due to various grade changes and land use, previously identified routes continue to be the preferred option. The 2013 Downtown + Riverfront Master Plan and 2019 Impact Jasper Comprehensive Plan both reference a desire to unify the areas through a consistent and vibrant streetscape. An INDOT route, 3rd Avenue, is a barrier to free flowing pedestrian movements. If Main Street were to remain the connection between the Courthouse and riverfront as planned, additional infrastructure calling attention to pedestrian crossings should be implemented, such as high visibility crosswalk markings, pedestrian refuge islands along 3rd Avenue, and Rectangular Rapid Flashing Beacons, to assist non-motorized traffic across the street. A Pedestrian Hybrid Beacon would be difficult to implement as this intersection is located between two traffic signals, but its viability should be explored with INDOT. Considering the local grid network, a restriction in allowable turning movements, reducing movements to and from Main Street for vehicles to right-in/right-out only while constructing a landscaped median island can also be considered.

Previous efforts identified a potential bridge connecting the north and south banks of the Patoka River near Main Street. Being so close to the existing pedestrian near the 3rd Avenue bridge, this bridge is likely redundant over such a close distance. In addition, nearby development on the north bank has recently occurred that may impact previous vision of opportunities for interaction with the water.

An alternative solution was identified for the north bank riverwalk. The inspiration for the alternative is to still keep a focal point at the south end of Main Street near the river, such as a pavilion or sculpture, to draw people south from the downtown core. At that point, people may enjoy the river at a



Citation: Tefft, B.C. (2011). Impact Speed and a Pedestrian's Risk of Severe Injury or Death (Technical Report). Washington, D.C.: AAA Foundation for Traffic Safety.v

treetop deck or overlook before a street-level riverwalk trail extends east connecting the focal point with the Dave Buehler Plaza. A Boardwalk, River Interaction Trail, or floodable stairs can provide more interaction along the river. **Figure B1-1** depicts the Riverwalk concept.

It is also recommended to extend and enhance the sidewalk along 3rd Avenue. Access is currently provided to the riverfront from 3rd Avenue on the west side of the road but is lacking on the east side. The development of the new Thyen-Clark Cultural Center is also on the east side. To access the river from the new cultural center, a pedestrian can walk west to the traffic signal and pedestrian accommodations at Jackson Street. Alternatively, it is recommended to improve the sidewalk on the east side and extend it to the parking lot and 3rd Avenue underpass. This would reduce the amount of pedestrian exposure and conflict between travel modes.

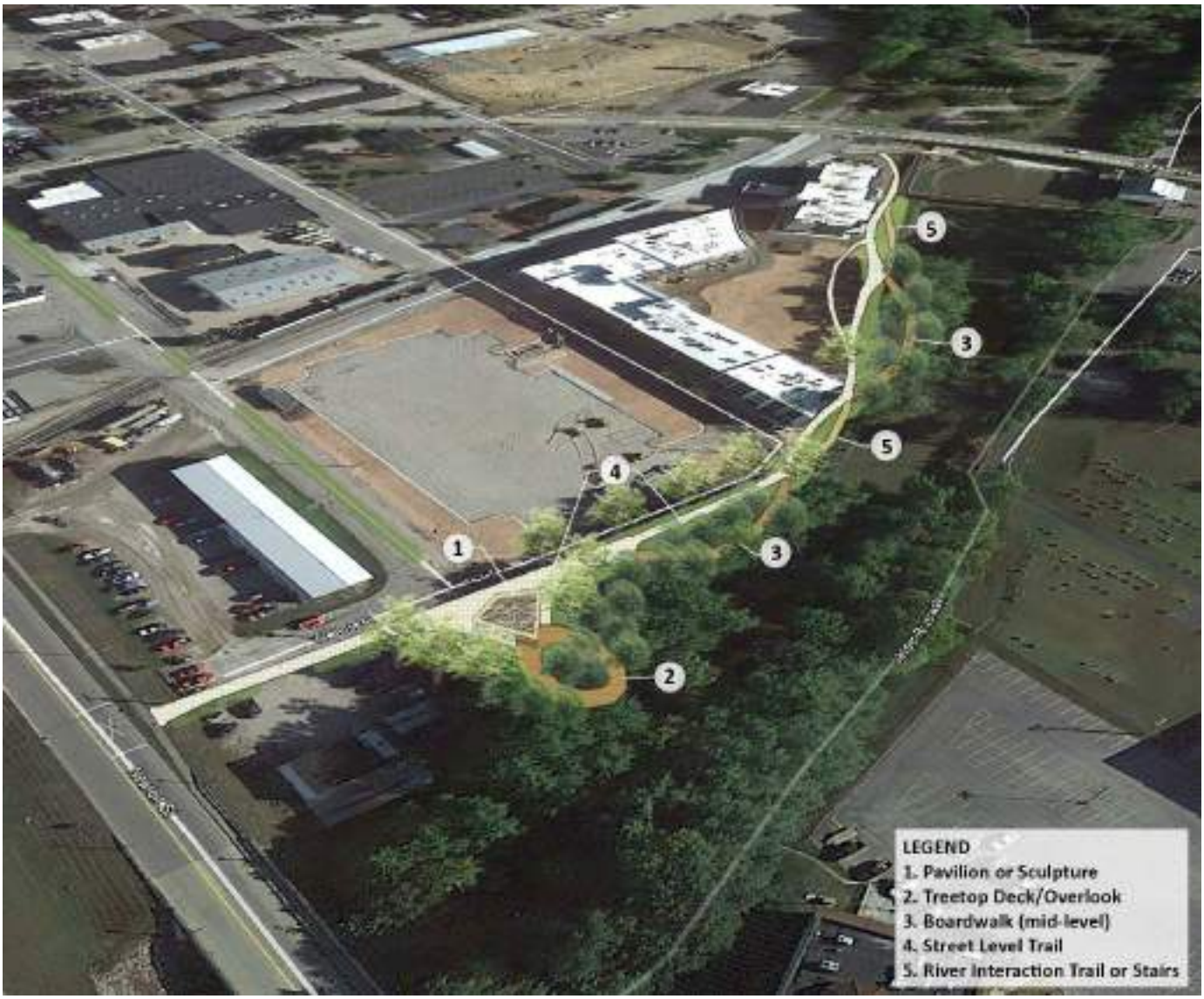


Figure B1-1. Riverwalk Concept

Analysis

The Mid-States Travel Demand Model was used to assist in the forecasting of future regional volumes. As identified above, the worst-case for roadway capacity in the region was determined to be the scenario where no Mid-States corridor was constructed. In this event, all traffic would remain on US 231, including trucks, if no other bypass type route were to exist. Therefore, the Mid-States No Build scenario was used for the future condition. This was also the appropriate alternative to select at this time since no preferred alternative has been identified as of yet by the Mid-States project.

Known desirable improvements, such as the connection of 15th Street, improvement of Mill Street, and a higher classification north-south corridor on the west side of the city, were added to the travel demand model to assess how these improvements may affect traffic flow and volume. Before these improvements, the model was reflecting varied annual growth rates throughout the city ranging from 0% to 3%. The highest growth in the city was along St. Charles Street south of 6th Street. When the improved north-south connections were added to the network, they helped relieve pressure of additional traffic on St. Charles Street north of 6th Street and US 231/6th Street east and north of SR 56 in particular, while adding growth on US 231 south of SR 56, on SR 164, and 15th Street west of US 231.

Growth rates were applied to existing turning movement counts taken at key intersections in the City. The study intersections are shown in **Figure B1-2.** In addition, rerouting of traffic volumes was completed to reflect the conversion of one-way to two-way traffic flow in the downtown core. Capacity analysis was performed using Synchro 10 software, with results presented as Level of Service (LOS). A 'LOS A' means an acceptably low amount of delay is experienced per vehicle on average, whereas 'LOS F' means the intersection operates over capacity. Typically, a LOS A through LOS D is found to be acceptable. The results are summarized in **Figure 1B-3** through **Figure B1-15.**

While several of the reviewed intersections operated acceptably with existing lane configurations and traffic control, such as 30th Street and Mill Street, others saw a decline in operations, such as the intersection of 36th Street and St. Charles Street, necessitating the recommendation for improvements at that intersection.

STUDY INTERSECTIONS

1. US 231 & Baden Strasse
2. US 231 & 36th St
3. 36th St & St. Charles St
4. N Mill St & 30th St / Cathy Lane
5. SR 56 & N 350 W
6. 15th St & St. Charles St
7. US 231 & 9th St
8. Newton St & 6th St
9. 6th St & Mill St
10. Newton St & 3rd St
11. Jackson St & 3rd St
12. 3rd Ave & 2nd Ave
13. US 231 & SR 162

Figure B1-2. Intersection-level Analysis Study Area

US 231 & BADEN STRASSE

Existing Conditions
- Signalized

Treatment
- Eliminate access from Mannheim Rd to Baden Strasse

Overall Intersection Level of Service (LOS)			
Existing		Forecasted	
AM	PM	AM	PM
B	B	B	B

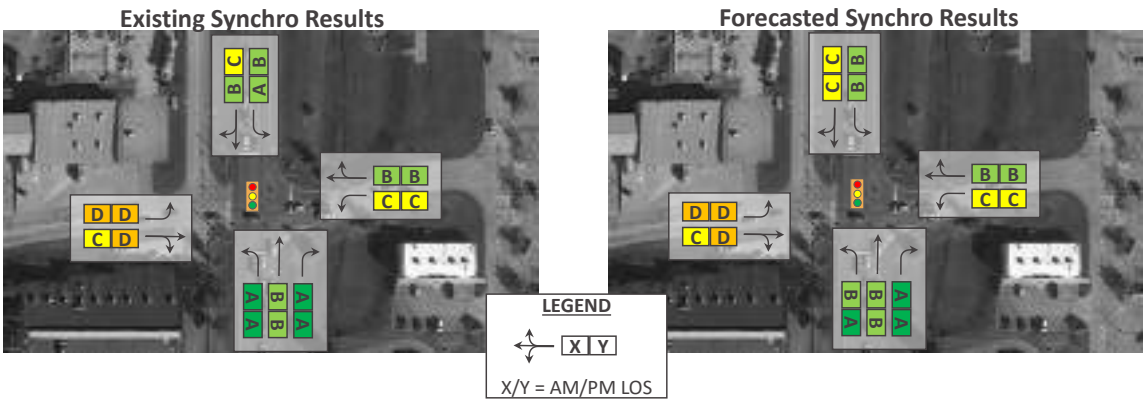


Figure B1-3. Intersection Analysis - US 231 & Baden Strasse

US 231 & 36TH ST

Existing Conditions
- Signalized
- No known existing problems

Treatment
- No treatment required

Overall Intersection Level of Service (LOS)			
Existing		Forecasted	
AM	PM	AM	PM
C	C	C	C

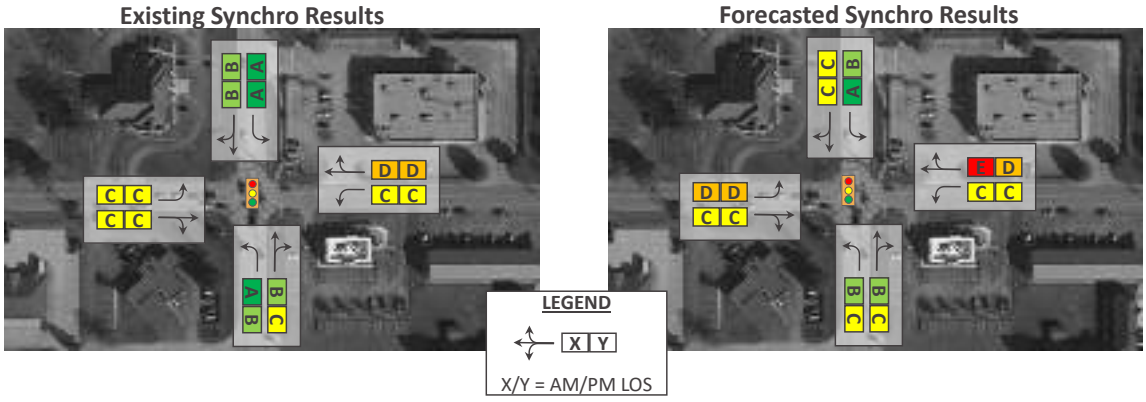


Figure B1-4. Intersection Analysis - US 231 & 36th Street

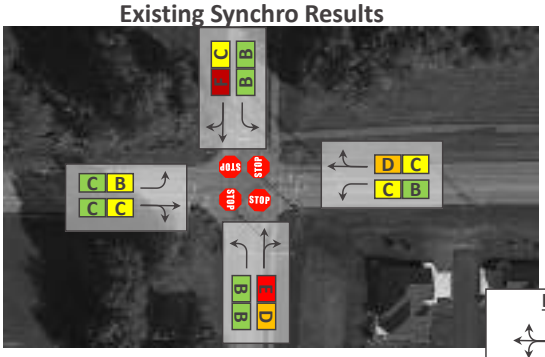
36TH ST AND ST. CHARLES ST

Existing Conditions
- All-way stop-control

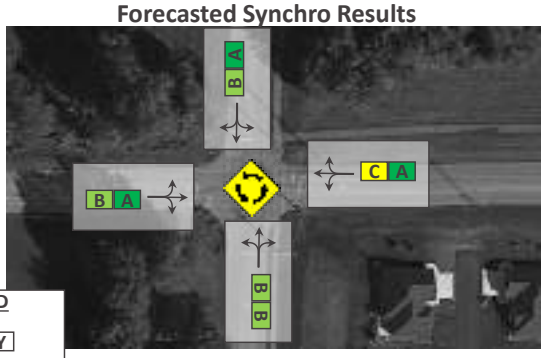
Treatment
- Single lane approach roundabout

Overall Intersection Level of Service (LOS)			
Existing		Forecasted	
AM	PM	AM	PM
E	C	B	A

Existing Synchro Results



Forecasted Synchro Results



LEGEND

X Y

X/Y = AM/PM LOS

Figure B1-5. Intersection Analysis - 36th Street & St. Charles Street

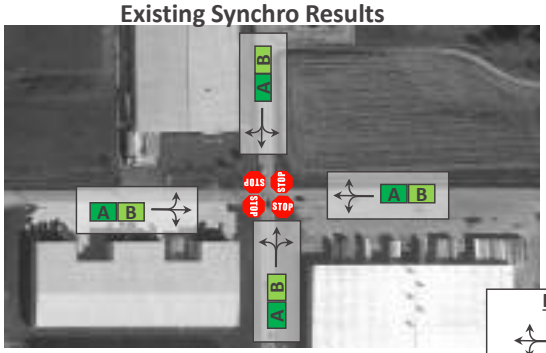
N MILL ST & 30TH ST / CATHY LN

Existing Conditions
- Signalized
- Are turn bays required?

Treatment
- No treatment required

Overall Intersection Level of Service (LOS)			
Existing		Forecasted	
AM	PM	AM	PM
A	B	A	B

Existing Synchro Results



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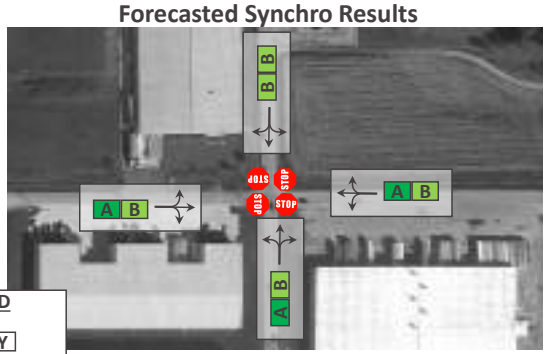


LEGEND

X Y

X/Y = AM/PM LOS

Figure B1-6. Intersection Analysis - Mill Street & 30th Street

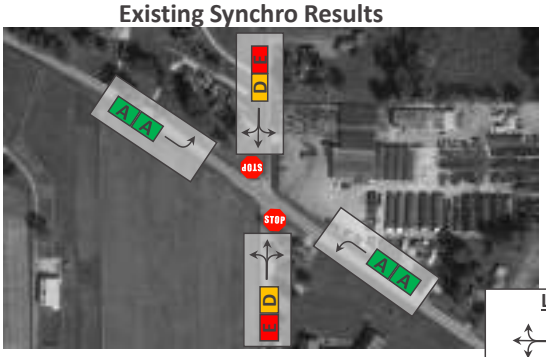
SR 56 & 350 W

Existing Conditions
- Side-street stop-controlled
- Sight distance limitations

Treatment
- Traffic signal (shown) or roundabout operates feasibly
  - Implement EB & WB left turn lanes if signal option

Overall Intersection Level of Service (LOS)			
Existing		Forecasted	
AM	PM	AM	PM
N/A	N/A	C	B

Existing Synchro Results



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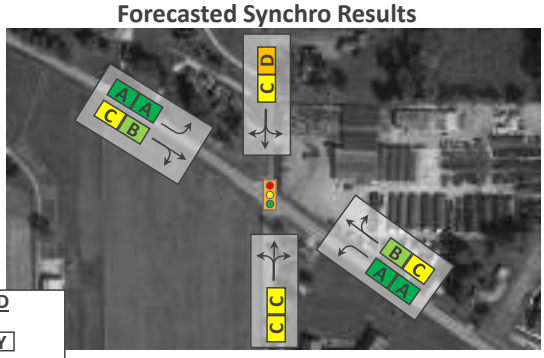


LEGEND

X Y

X/Y = AM/PM LOS

Figure B1-7. Intersection Analysis - SR 56 & N CR 350 W

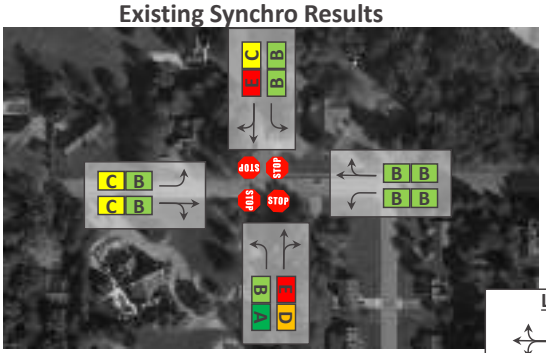
15TH ST & ST. CHARLES

Existing Conditions
- Stop-Controlled

Treatment
- Single lane approach roundabout

Overall Intersection Level of Service (LOS)			
Existing		Forecasted	
AM	PM	AM	PM
D	C	A	A

Existing Synchro Results



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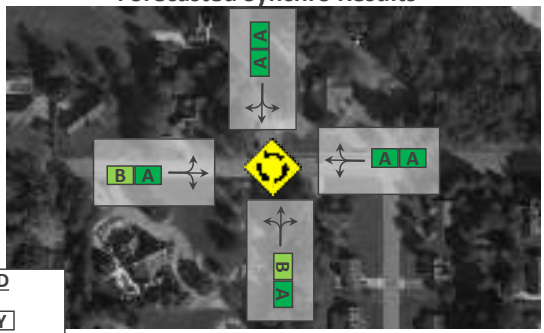


LEGEND

X Y

X/Y = AM/PM LOS

Figure B1-8. Intersection Analysis - 15th Street & St. Charles Street

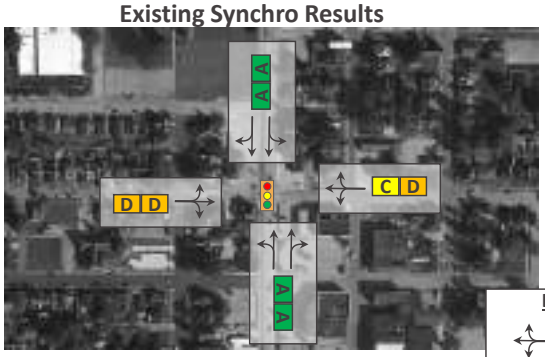
US 231 & 9TH ST

Existing Conditions
- Signalized

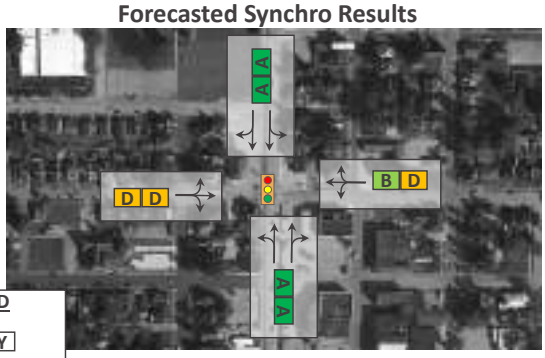
Treatment
- No treatment required

Overall Intersection Level of Service (LOS)			
Existing		Forecasted	
AM	PM	AM	PM
A	A	A	A

Existing Synchro Results



Forecasted Synchro Results



LEGEND

X Y

X/Y = AM/PM LOS

Figure B1-9. Intersection Analysis - US 231 & 9th Street

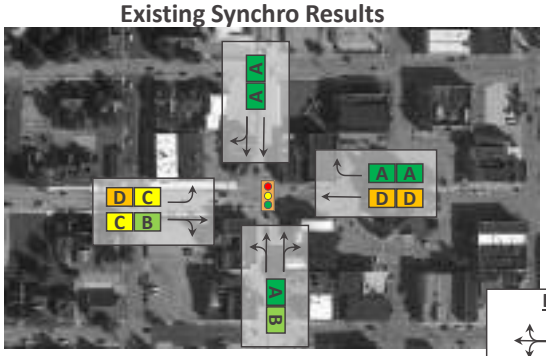
NEWTON ST & 6TH ST

Existing Conditions
- Signalized

Treatment
- Eliminate WB approach, create T-intersection to create a downtown "Festival Street" for pedestrians or cyclists

Overall Intersection Level of Service (LOS)			
Existing		Forecasted	
AM	PM	AM	PM
B	B	B	B

Existing Synchro Results



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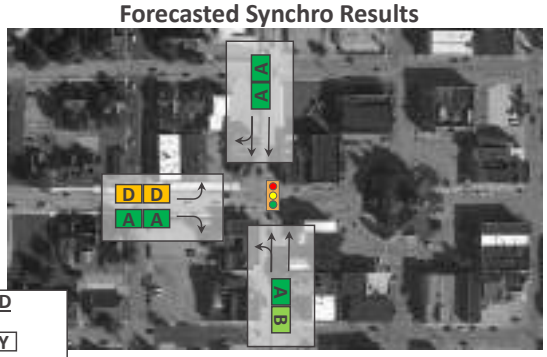


LEGEND

X Y

X/Y = AM/PM LOS

Figure B1-10. Intersection Analysis - Newton Stret & 6th Street

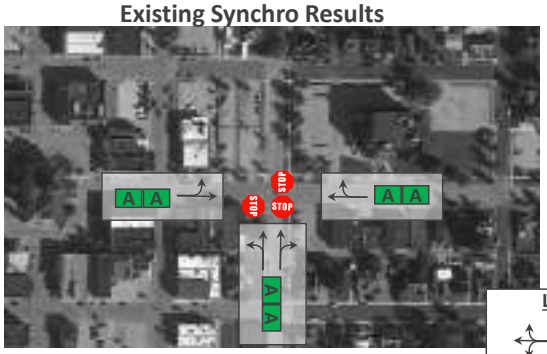
6TH ST & MILL ST

Existing Conditions
- Stop-controlled intersection
- Mill St is NB one-way roadway

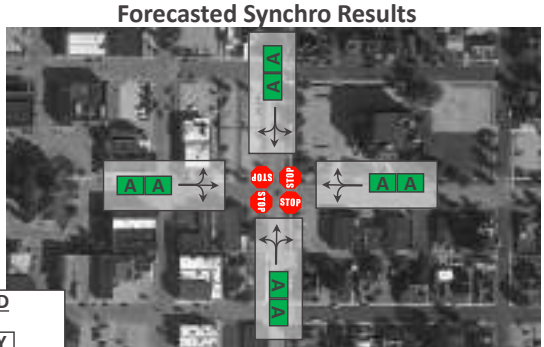
Treatment
- Mill St is a two-way roadway

Overall Intersection Level of Service (LOS)			
Existing		Forecasted	
AM	PM	AM	PM
A	A	A	A

Existing Synchro Results



Forecasted Synchro Results



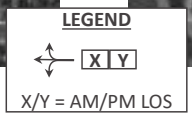


Figure B1-11. Intersection Analysis - 6th Street & Mill Street

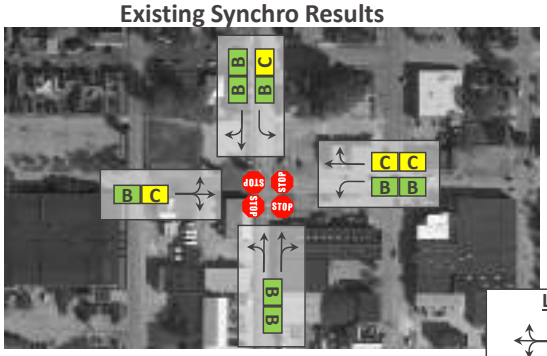
NEWTON ST & 3RD AVE

Existing Conditions
- Stop-controlled

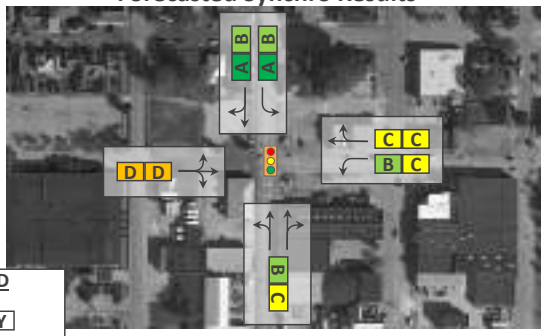
Treatment
- Signalized intersection

Overall Intersection Level of Service (LOS)			
Existing		Forecasted	
AM	PM	AM	PM
B	C	C	C

Existing Synchro Results



Forecasted Synchro Results



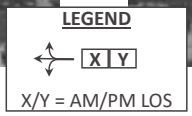


Figure B1-12. Intersection Analysis - Newton Street & 3rd Avenue

JACKSON ST & 3RD AVE

Existing Conditions
- Signalized intersection
- Southbound approach is one-way

Treatment
- Convert north leg to a two-way roadway

Overall Intersection Level of Service (LOS)			
Existing		Forecasted	
AM	PM	AM	PM
B	B	B	C

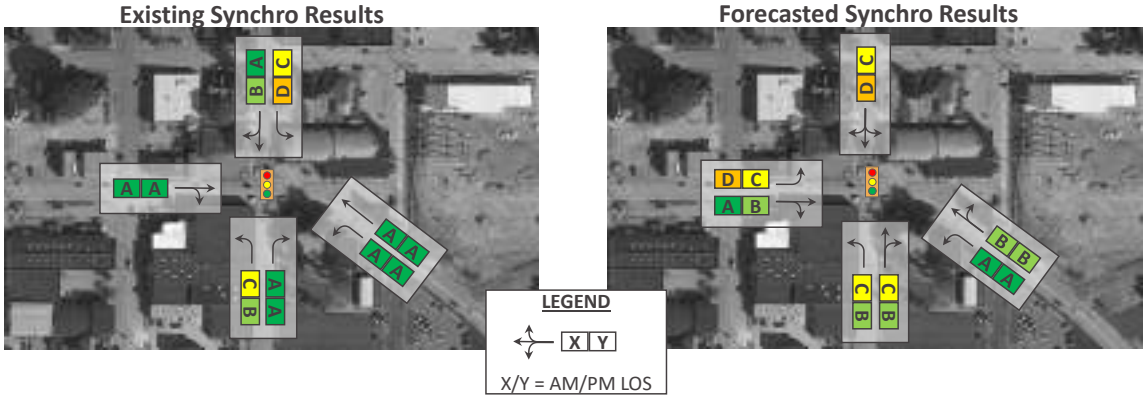


Figure B1-13. Intersection Analysis - Jackson Street & 3rd Avenue

3RD AVE & 2ND AVE

Existing Conditions
- Signalized intersection

Treatment
- Consideration of pedestrian timings

Overall Intersection Level of Service (LOS)			
Existing		Forecasted	
AM	PM	AM	PM
B	B	B	B

Figure B1-14. Intersection Analysis - 3rd Avenue & 2nd Avenue

US 231 & SR 162

Existing Conditions
- Signalized intersection

Treatment
- No treatment required

Overall Intersection Level of Service (LOS)			
Existing		Forecasted	
AM	PM	AM	PM
C	C	C	C

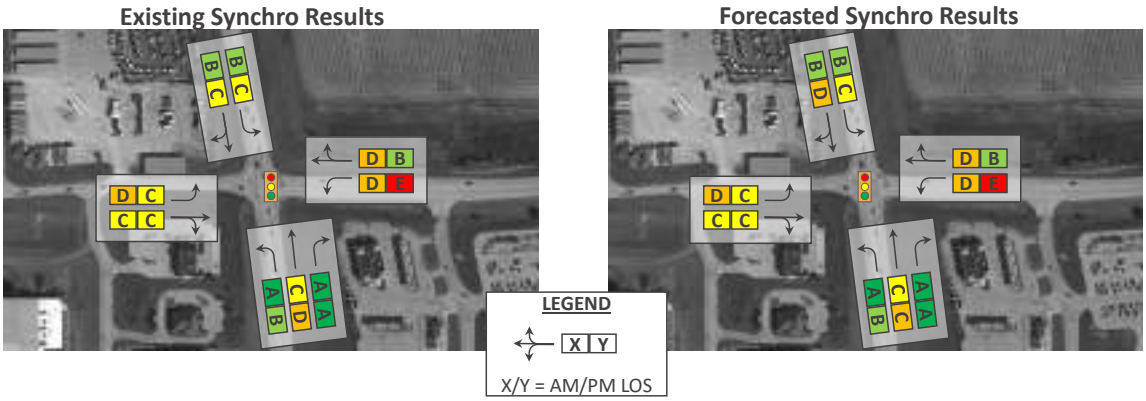


Figure B1-15. Intersection Analysis - US 231 & SR 162

Results

The future conditions capacity and existing safety analyses led to the recommendations presented in the main document of this plan. These include both infrastructure improvements as well as policy improvements, such as adopting policy to promote interparcel access and enforce access management along US 231. The infrastructure improvements include corridor improvements, such as Mill Street and 15th Street, intersection improvements like a roundabout at 36th Street and St. Charles, but also complete street improvements around the downtown area, such as connections to the Patoka River and one-way to two-way conversions.

The resulting congestion relief along US 231 is reflective of a more well-connected grid network of roadways. If the number of direct access points onto major arterials are reduced, circulation must still be maintained, be it through interparcel access or frontage/backage roadways.

Multimodal Network

Considerations

The overarching considerations when planning Jasper's multimodal network is to create a bicycle culture that accommodates all ages and abilities. The goal is to become a Bike Friendly City. In order to do this, infrastructure, programming, and policies all must align to serve the community.

Based on the demographic analysis, over half of the city's population are either children or over 60 years old. These segments of the population, as well as the fact there are so many families with children, create a need for off-street facilities. The focus of the plan was to make the bicycle and pedestrian network as low stress as possible, focusing on off-street facilities and promoting on-street only when necessary due to right-of-way constraints.

The demographic analysis also identified where underprivileged populations may be in the city, to ensure that the multimodal network makes a concerted effort to serve these areas.

Also considered were the barriers that divide the city identified in the existing conditions analysis. US 231, SR 56, and other INDOT routes crossing the city provide residents with great vehicular access to the region, but these roadways tend to be quite difficult to cross as a pedestrian or bicyclist.

Strategy & Analysis

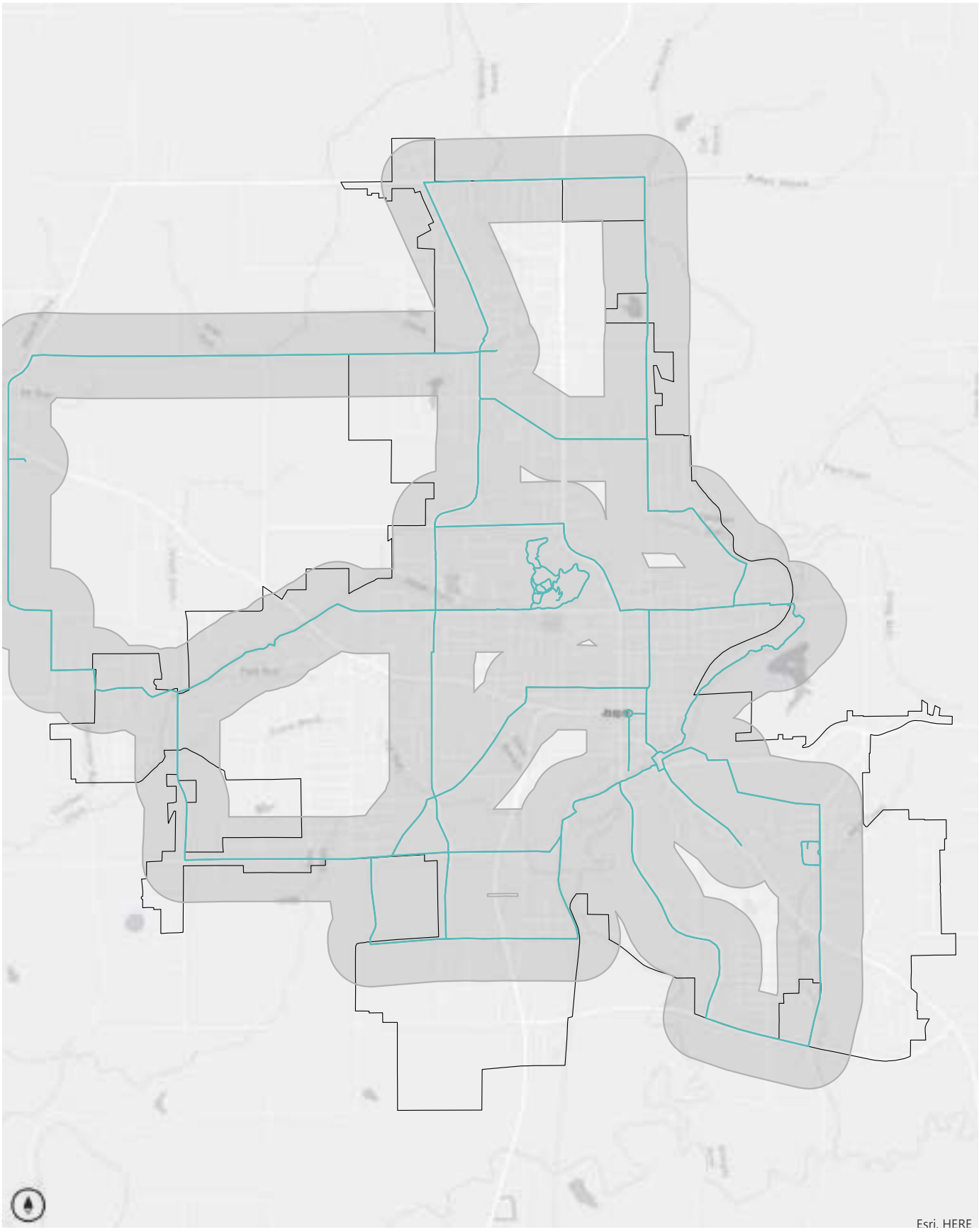
The City has made great strides in beginning to connect the city with a low stress network. The proposed network makes minor adjustments to the previous plan and expands the network to more areas of the city, building on the city's prior efforts. Neighborhoods were connected to attractions such as schools and downtown. In terms of coverage, it is good practice to create a plan so that each citizen is within a 1/4-mile of a bicycle facility such as a bike boulevard or bicycle lane, 1/2- to 1-mile of a good facility such as a buffered bicycle lane, and between 1-3 miles of a great facility such as a physically separate facility such as a protected bike lane or trail.

An analysis of the proposed network using the most stringent buffers noted above shows that existing 1/4-mile coverage of the trail network is accessible by about 25% of the city, whereas the planned trail network expands that coverage to 75% of the city. The 1/4-mile coverage of the trail network is shown in **Map B1-3**. The areas that are not serve by trails are within neighborhoods, which can be served by low-stress facilities such as bike boulevards.

Crossing these barriers can be quite stressful. Intersections where the pedestrian and bicycle network cross higher functional classification roadways (major collectors or higher), such as US 231, SR 56, and SR 164, should receive particular engineering review and treatment to protect vulnerable users when a path moves to the design phase. These treatments are site-specific, and can include signalization, warning beacons, pavement markings, pedestrian refuge islands, among others.

Results

The future conditions capacity and existing safety analyses led to the recommendations presented in the main document of this plan. The recommendations follow the 5 E's of bicycle planning: Engineering, Education, Encouragement, Evaluation, and 'Equity, Diversity and Inclusion'. This plan strives to build a foundation on which to create a thriving bike culture in the city.



0 0.5 1 2 Mi

MAP B1-3. 1/4-MI BUFFER COVERAGE

6200 Vogel Road
Evansville, Indiana 47715

www.lochgroup.com

Appendix C

SPECIAL PROJECTS

CITY OF JASPER INDIANA

Table of Contents

Maps, Tables, and Figures

Special Projects

Introduction

At the outset of the project, the City identified three particular projects of interest be investigated in more detail than other aspects of the plan. The three projects include:

1. North County Road (CR) 400 W – investigate flooding and drainage concerns on North County Road 400 W between Shiloh Road and Brescher Road

2. 15th Street – prepare concept-level plans and planning-level cost estimates for extending 15th Street from it's current western terminus to State Route 56

3. Mill Street – prepare concept-level plans and planning-level cost estimates for improvements between 15th Street and 36th Street

A preliminary review of environmental concerns were included in the investigation of the sites, as Locations 1 and 2 are both significantly affected by Crooked Creek, a contributing waterway feeding the Patoka River that runs through the City of Jasper. A map of the special projects is shown in **Figure C3-1**. The details for these three special projects are presented in this section.

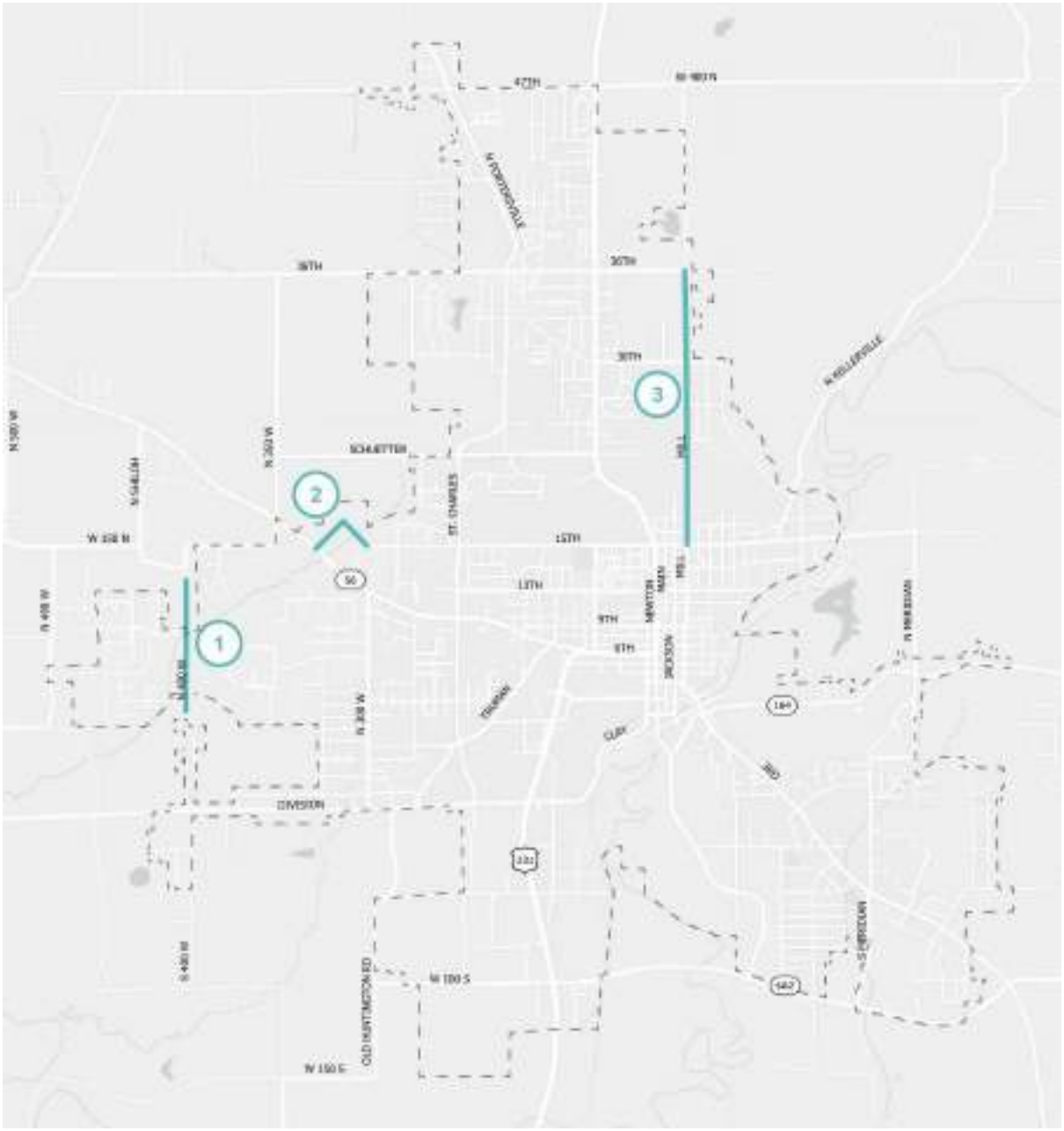


Figure C1-1. Special Projects Location Map

N CR 400 W Flooding

Existing Conditions

The City of Jasper is situated along the Patoka River with adjoining creeks (Crooked Creek, Dick Creek, and Jahn Creek). **Figure C1-2** depicts the location of this special project. These waterways are the root cause of many flooding issues. One roadway, N Co. Rd. 400 W, between W C. Rd. 150 W and Division Rd, frequently floods. This area is in a FEMA Zone AE Floodway due to its proximity to Crooked Creek which contributes to Patoka River. As most residential properties were constructed out of the floodway, the flooding primarily impacts the serviceability of the roadway. An existing bridge that crosses crooked Creek was built in 2015 and is one portion of the roadway that does not flood.

The floodway is primarily a result of a backwater influence from the Patoka River. The base flood elevation of Crooked Creek is approximately 1 foot higher than the base flood elevation of the Patoka River. Therefore, anytime the Patoka River exceeds its base flood elevation of more than 1 FT, N Co. Rd. 400 W is inundated.

Environmental Considerations

A partial red-flag survey was performed for this site to identify potential environmental issues a project may incur if it moves forward. Potential Section 106 resources were not included in the review. Findings of future considerations are as follows:

Infrastructure
- Shiloh Cemetery is adjacent to the project area.
- Two pipeline segments, associated with Huntingburg Municipal Gas Utility, cross the project area.

Water Resources
- One IDEM 303d listed stream, associated with Crooked Creek, is located within the project area. The stream is listed as impaired for ***e. coli*** and nutrients.
- Five stream segments are located within the project area.
- As the project lies within the Jasper UAB, post construction Storm Water Quality Best Management Practices (BMPs) may need to be considered.

Mining/Mineral Resources
- One petroleum well is located adjacent to the project area.

Hazardous Materials Concerns
- One underground storage tank site is located within the project area.

These findings are supported graphically in **Figures C1-3 to C1-7**. Permits that will most likely be needed for a project in this area are: USACE Section 404, IDEM Water Quality Certification, IDNR Construction in a Floodway, and IDEM Rule 5. Mitigation may be required if impacts to stream and/or wetland is greater than 300 linear feet and/or 0.1 acre and/or floodway trees are removed.

Figure C1-2. Special Projects Location 1

Figure C1-3. N 400 W Infrastructure Considerations

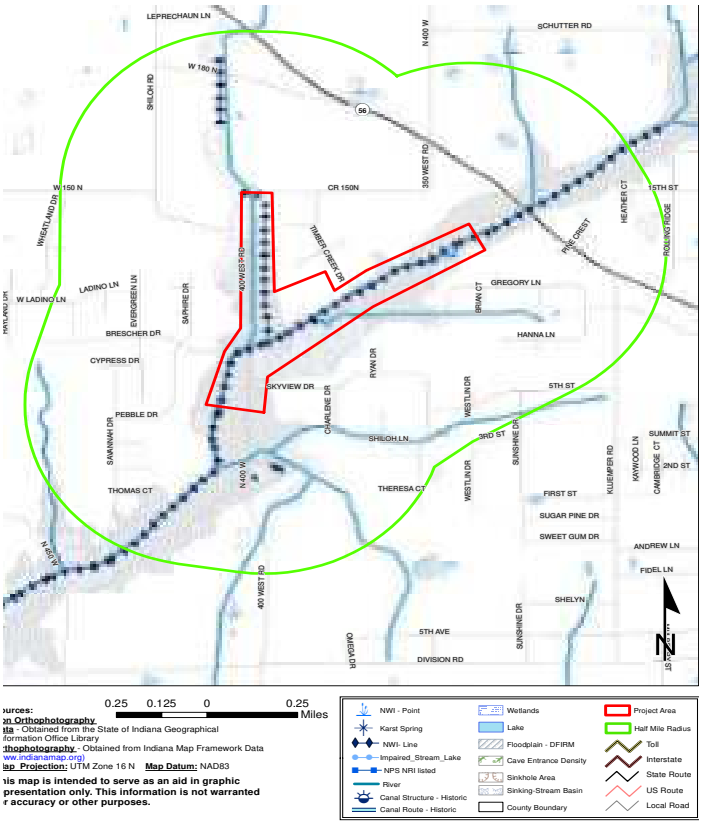


Figure C1-4. N 400 W Water Resources Considerations

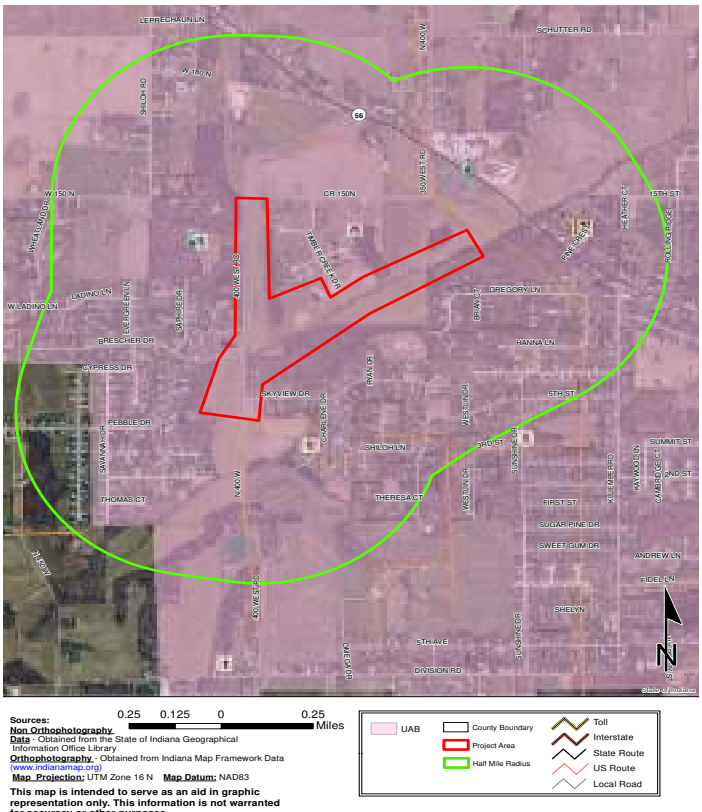


Figure C1-5. N 400 W Urbanized Area Boundary

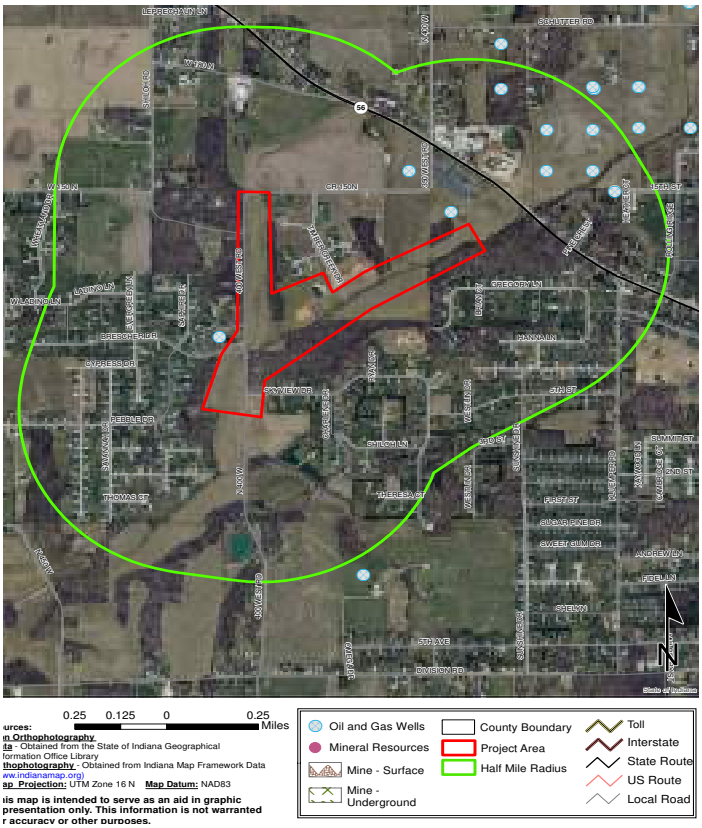


Figure C1-6. N 400 W Mining & Mineral Resources

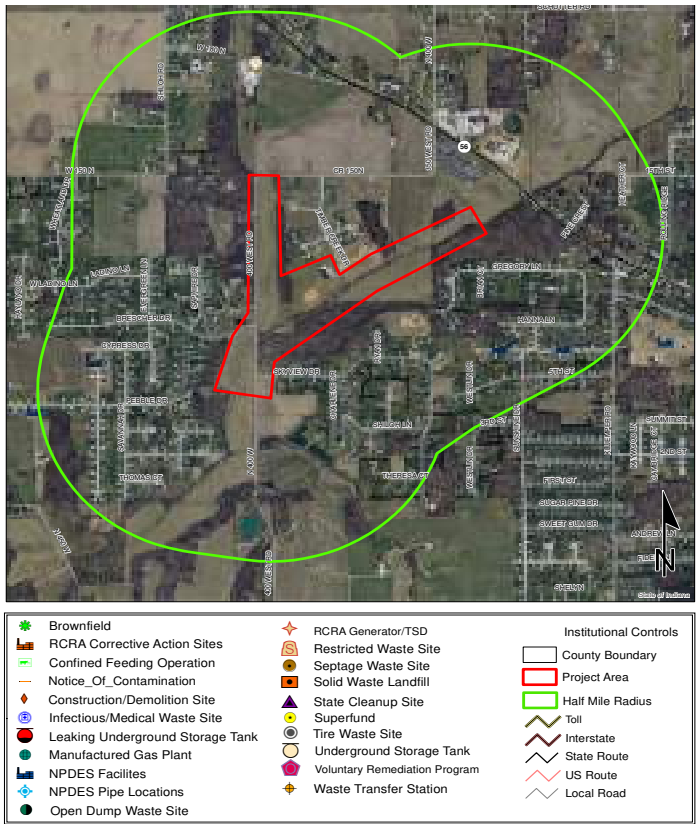


Figure C1-7. N 400 W Hazardous Materials Concerns

Alternatives

Four alternatives, as listed below, were evaluated as solutions to the roadway flooding.

1. Alternative 1 - Larger Conveyances

Roadside ditches, as shown in **Figure C1-8**, currently exist on both sides of N CR 400 W. As the area is under a direct influence of the Patoka River, it is not feasible to convey enough water to eliminate flooding. Widening the roadside ditches could help to allow additional conveyances during localized rain events. However, larger ditches are not anticipated to resolve the main flooding issue. In addition, any conveyed water will likely shift flooding issues downstream.

2. Alternative 2 - Detention

Due to the influence of the Patoka River, detention along N Co. Rd. 400 W would only be feasible to assist in localized flooding events. The drainage area for Crooked Creek is 1.2 mi^2, while the drainage area for the Patoka River is 465.4 mi^2 (see **Figure C1-9**). Attempting to store enough volume to eliminate flooding issue at hand is not feasible or economical.

3. Alternative 3 – Close Roadway

Due to re-occurring flooding issues, the roadway could be closed during high water seasons, causing connecting streets to be detoured. Two neighborhoods have outlets to N CR 400 W that would need detoured. **Figure C1-10** shows the detour route required. This alternative would not assist the three residential driveways located along N CR 400 W and within floodway limits. This alternative is the current temporary solution; however, it is not recommended long term.

4. Alternative 4 - Raise Roadway

Historically, the City has not raised the roadway due to the proximity of quality farmland. Raising the roadway would require partial property acquisition of the farmlands to properly grade the new roadway. To effectively eliminate flooding by raising the roadway, approximately 4,950 linear feet of roadway would need raised (**See Figure C1-11**). It is possible that the existing bridge crossing Crooked Creek would also need to be raised and/or widened to prevent the floodway from being affected. In addition, the volume of fill required to raise the roadway would need to be balanced with cut elsewhere in the floodway area. If the fill is not balanced with cut, existing flooding issues on nearby properties would worsen.

Recommendation

The recommended long term solution to alleviate flooding is Alternative 4. Although this is a costly alternative, it will provide a safe route for the growing residential area. A detailed hydraulic study is recommended to help further refine the alternatives.

Regardless of whether the City proceeds with Alternative 4, it is recommended that that any future development be required to provide sufficient detention to eliminate the runoff impact from the developed site. This oversight of development is one step the City can take to help control the flooding by not allowing flooding to increase due to an increase in non-permeable surfaces.

Figure A1-8. View of Roadside Ditches

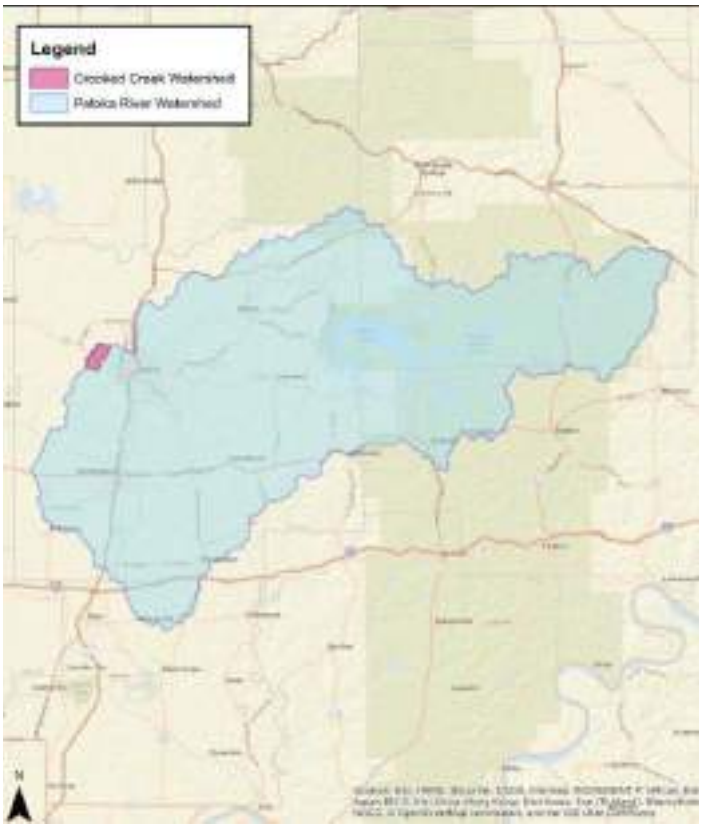


Figure C1-9. Patoka River/Crooked Creek Watershed Comparison

Figure C1-10. Detour Routes during Road Closure in Rain Events

Figure C1-11. Extents of Roadway in Floodway

15th Street Extension

Existing Condition

15th Street is a 25-mph roadway that generally extends from Rolling Ridge Road in the west to N Meridian Road in the east. Figure A3-12 depicts the location of this special project. The changes in functional classification along 15th Street are as follows:

- West of St. Charles Street: minor collector
- St. Charles Street to US 231: major collector
- US 231 to N Kellerville Road: minor arterial
- N Kellerville Road to Meridian Road: major collector

It is the longest continuous east-west route through the city and connects residents with major destinations such as Jasper High School and the Parklands, while also serving industrial uses on the east side of the city. Those wishing to reach these destinations currently use SR 56.

15th Street experiences a grade change west of US 231. This, combined with a land use change from commercial to residential, creates a condition where trucks are limited with a "Weight Limit 10 Tons" sign. A multi-use path parallels 15th Street from the Parklands west to the multi-use path along St. Charles Street, creating a low-stress off-road network for pedestrians and bicyclists. 15th Street continues west and terminates approximately 160 feet west of Heather Court.

Currently, the parcels west of Crooked Creek are limited to access points only along SR 56. A connection across Crooked Creek aligning with 15th Street would allow more circulation and dispersion of traffic to city streets rather than INDOT roads intended for regional traffic, and result in less reliance on SR 56 to accommodate local trips.

Environmental Considerations

A partial red-flag survey was performed for this site to identify potential environmental issues a project may incur if it moves forward. Potential Section 106 resources were not included in the review. Findings of future considerations are as follows:

Infrastructure

- Shiloh Methodist Church is within the project area.
- Uebelhor Park, a possible Section 4(f) resource is within the project area.
- Two pipeline segments, associated with Huntingburg Municipal Gas Utility, cross the project area.

Water Resources

- One IDEM 303d listed stream, associated with Crooked Creek and an unnamed tributary, is located within the project area. The stream is listed as impaired for *e. coli* and nutrients.
- Three stream segments are within the project area.
- Four wetlands are located within the project area.
- One lake is located within the project area.
- The project area is located within five floodplain polygons.
- As the project lies within the Jasper UAB, post construction Storm Water Quality Best Management Practices (BMPs) may need to be considered.

Mining/Mineral Resources

- Five petroleum wells are located within or adjacent to the project area.

These findings are supported graphically in **Figures C1-13** to **C1-17**. Permits that will most likely be needed for a project in this area are: USACE Section 404, IDEM Water Quality Certification, IDNR Construction in a Floodway, and IDEM Rule 5. Mitigation may be required if impacts to stream and/or wetland is greater than 300 linear feet and/or 0.1 acre and/or floodway trees are removed.

Figure C1-12. Special Projects Location 2

Figure C1-13. 15th Street Infrastructure Considerations

Figure C1-14. 15th Street Water Resources Considerations

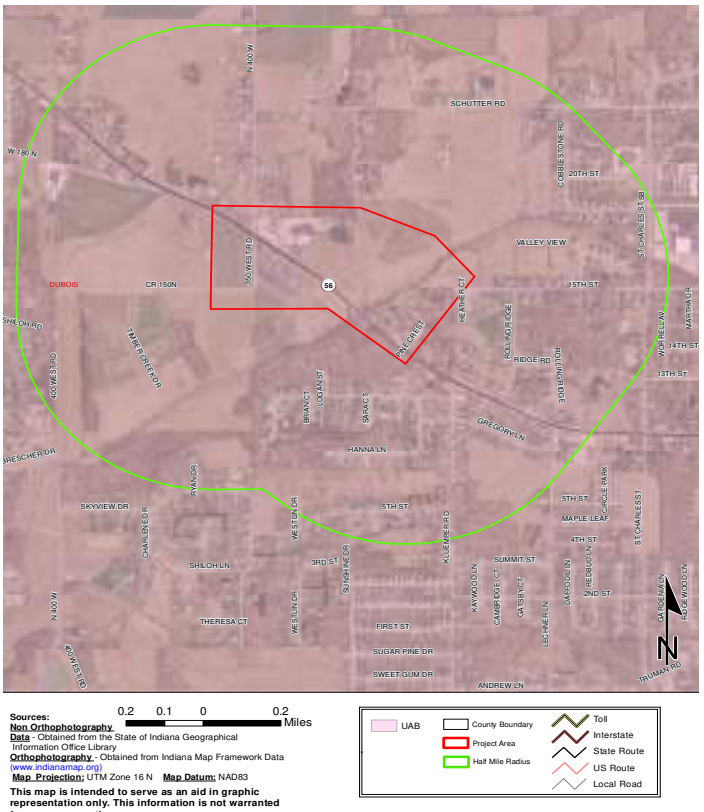


Figure C1-15. 15th Street Urbanized Area Boundary

Figure C1-16. 15th Street Mining & Mineral Resources

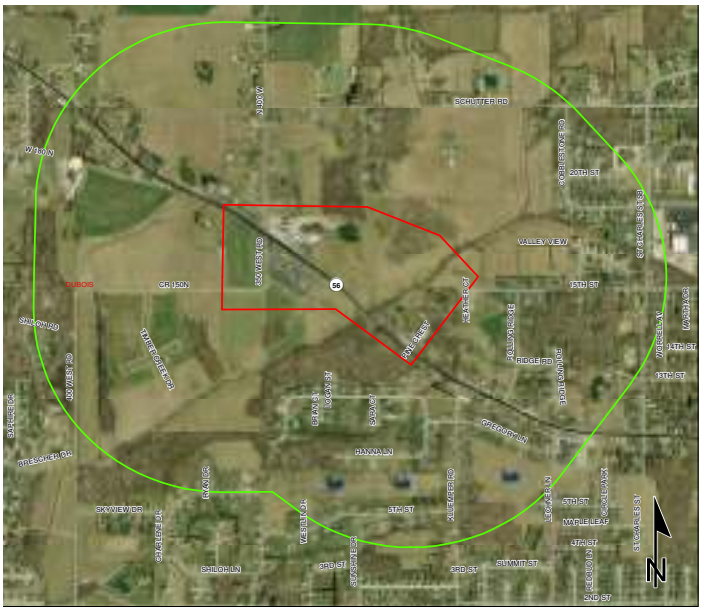


Figure C1-17. 15th Street Hazardous Materials Concerns

Traffic Considerations

Future traffic volumes were projected for a new connection. Assuming SR 56 is an east-west road, it is anticipated that the heaviest turning movements at the intersection would be an eastbound left turn from SR 56 onto the new connection in the morning commuter peak and a southbound right turn movement in the afternoon commuter peak. Westbound right turn and southbound left turn movements would likely only be used by traffic generated by the parcels nearest the new connection.

Analysis of the future volumes resulted in a recommendation for a separate eastbound left turn bay on SR 56, and separate left and right turn lanes on the southbound approach of the new connection approaching SR 56. Side-street stop control only would be needed.

With 15th Street being a continuous connection between SR 56, through the city, to Meridian Road, it may be an attractive route for cut-through truck traffic. It is recommended to curb this attraction by limiting truck loads, similar to the signage on 15th Street west of US 231, and also using geometry. Instead of a straight connection, it is recommended that a new north-south connection be made extending between SR 56 and eventually to Schuetter Road. The 15th Street extension should cross Crooked Creek as perpendicularly as possible and intersect with this north-south road at a right-angle outside of the floodplain.

In addition to vehicle traffic, the new connection should also accommodate pedestrians and bicyclists, preferably in an off-road multi-use path. This would provide a crucial opportunity to safely accommodate these vulnerable users across SR 56.

Concept

This project explored the potential to extend 15th Street to SR 56 at the existing entrance to the senior living development. The concept was created noting the traffic and environmental issues identified above. A roundabout is introduced at the intersection of 15th Street extended with the new north-south connector. However, this a recommendation, not a requirement, and a side-street stop control intersection would also operate well at this location.

The concept also shows a multi-use path ending shy of SR 56. Alternatives for the path's route past this point were identified in the bicycle and pedestrian plan, and final routing will need to be explored and decided upon by the City, as will the crossing of pedestrians and bicyclists across SR 56. This crossing could occur at the new connection's intersection, or the path could continue along the north side of SR 56 to N 350 W, where INDOT is planning a roundabout. Safe crossings can include grade-separation, such as a tunnel, or a Pedestrian Hybrid Beacon that stops mainline vehicle traffic so non-motorized traffic can cross.

A single-span bridge is anticipated over Crooked Creek. The roadway in floodplain area would need to be raised as well.

A concept plan showing the 15th Street extension and new north-south connection is shown in **Figures C1-18** and **C1-19**. Full size graphics have been provided to the City separately. A preliminary planning-level cost estimate was prepared supporting the concept plans. A total estimate to complete the improvements at this time is approximately $6.83M. A summary of the costs is shown in **Table C1-1**. The cost is exclusive of any right-of-way, utility relocation costs, or in-lieu fee mitigation.

Table C1-1. 15th Street Extension Planning-level Cost Estimate

Item	Price
Pavement Subtotal	*$1,280,000*
Earthwork Subtotal	*$350,000*
Drainage Subtotal	*$390,000*
Miscellaneous Subtotal (Bridge, Curb Ramps, Sodding, Retaining Wall, etc.)	*$1,569,000*
Subtotal, Pavement+Earthwork+Drainage+Miscellaneous	**$3,589,000**
Percentage Costs (Mobilization, Construction Engineering, Contingency, Inflation (2021-2026)	*$1,149,000*
Inflation (2021-2026)	*$755,000*
Soft Costs (Preliminary Engineering, Construction Inspection)	*$1,336,000*
Total Project Cost	**$6,829,000**

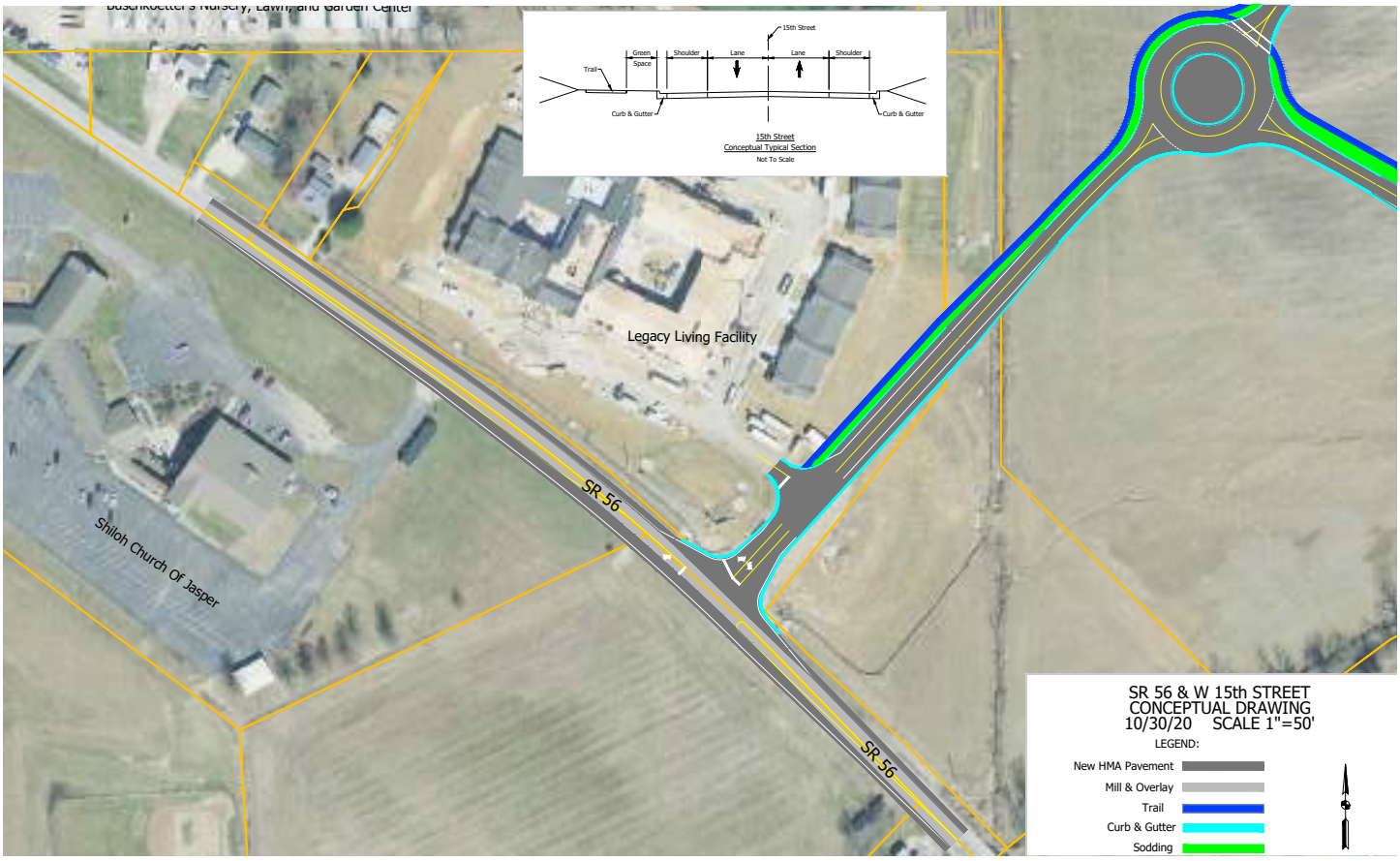


Figure C1-18. 15th Street Extension Concept - Section 1

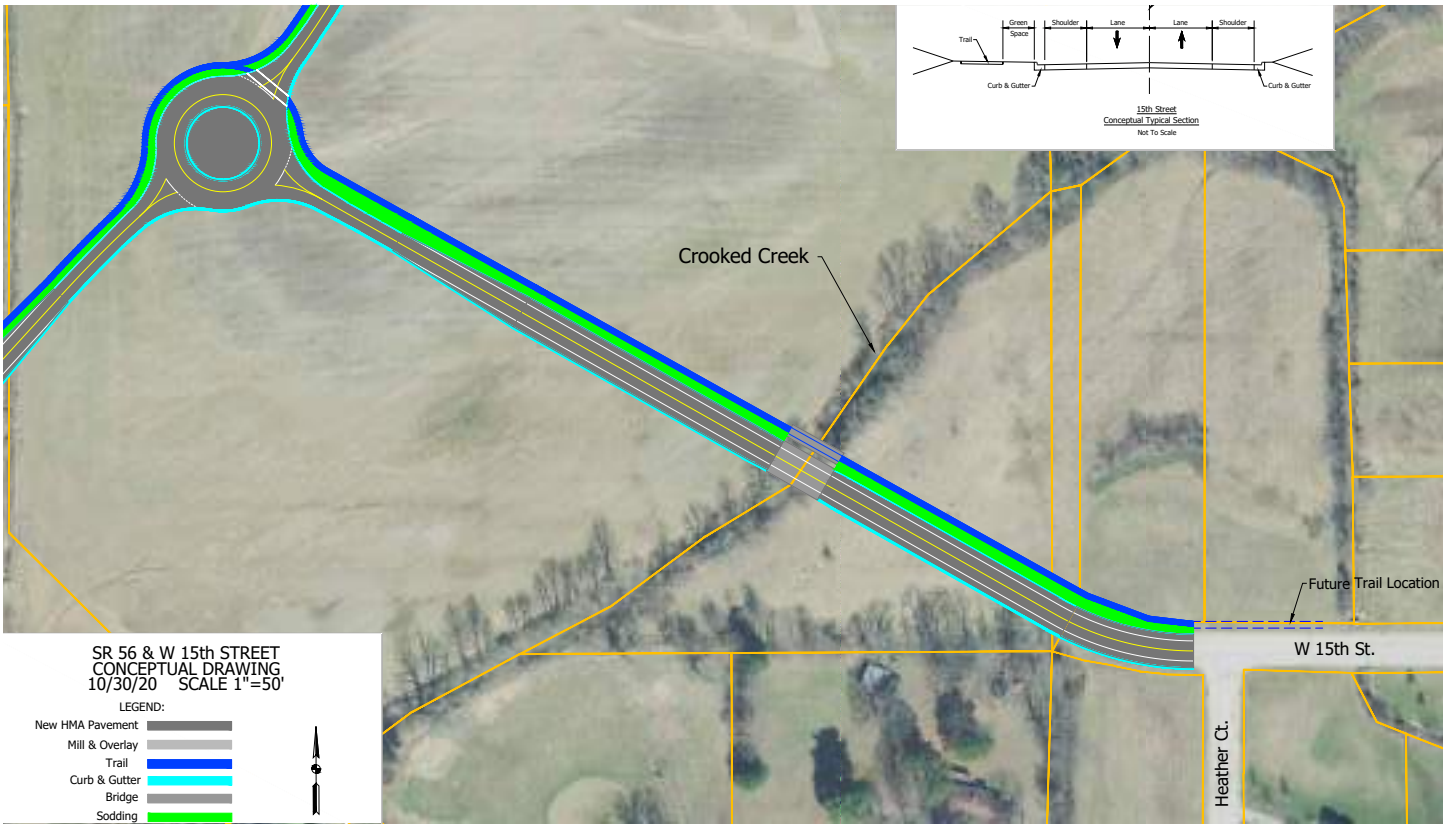


Figure C1-19. 15th Street Extension Concept - Section 2

Mill Street

Existing Condition

Mill Street between downtown Jasper and the north city limits has three distinct cross-sections between 15th Street and W CR 400 N. **Figure C1-20** depicts the location of this special project. Leaving downtown heading north from 15th Street to 17th Street, Mill Street is a major collector that has an existing 30' cross-section with two lanes of traffic (one in each direction), a shoulder/on-street parking lane on the east side, curb and gutter, and narrow sidewalks fitting within the right-of-way. The sidewalk on the east side ends just north of 16th Street. At 17th Street, the section changes to a two-lane road with very narrow shoulders (1-2') and ditches rather than curb and gutter. This section continues for approximately 1,500', until a wide shoulder appears on the east side of the road.

At 23rd Street, the shoulder reverts back to being narrow, and there is a new trail crossing across Mill Street. Overhead utility poles are quite close to the vehicle travelway. North of 23rd Street, it remains a two lane road, but a multi-use path and buffer parallels the roadway, ending at a trailhead located at the northeast corner of the golf course. This cross-section continues north to 36th Street.

From 36th Street to W CR 400 N, shoulders are widened, making the route more accommodating for trucks and vehicle traffic, though its functional classification drops to a minor collector. Traffic flow on Mill Street is free flow except for existing all-way stop conditions at the intersections at 30th Street and 36th Street.

Environmental Considerations

A partial red-flag survey was performed for this site to identify potential environmental issues a project may incur if it moves forward. Potential Section 106 resources were not included in the review. Findings of future considerations are as follows:

Infrastructure
- Jasper Municipal Golf Course, a possible Section 4(f) resource is adjacent to the project area.
- One pipeline segment, associated with Huntingburg Municipal Gas Utility, crosses the project area.
- One planned trail segment, associated with the Jasper Multi Use Pathway, crosses the project area.

Water Resources
- One stream segment, associated with Calumet Run, is located within the project area.
- Four wetlands are located within the project area.
- Three lakes are located within the project area.
- The project area is located within a floodplain polygon.
- As the project lies within the Jasper UAB, post construction Storm Water Quality Best Management Practices (BMPs) may need to be considered.

Mining/Mineral Resources
- Two petroleum wells are located within or adjacent to the project area.

Hazardous Materials Concerns
- One underground storage tank site is located within the project area.

These findings are supported graphically in **Figures C3-21** to **C3-25**. Permits that will most likely be needed for a project in this area are: IDEM Rule 5.

Figure C1-20. Special Projects Location 3

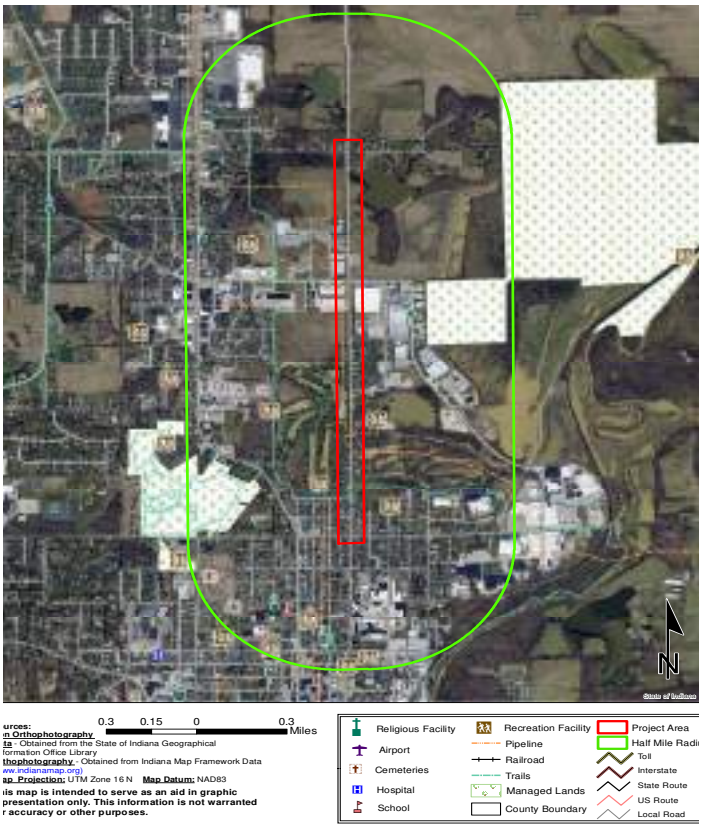


Figure C1-21. Mill Street Infrastructure Considerations

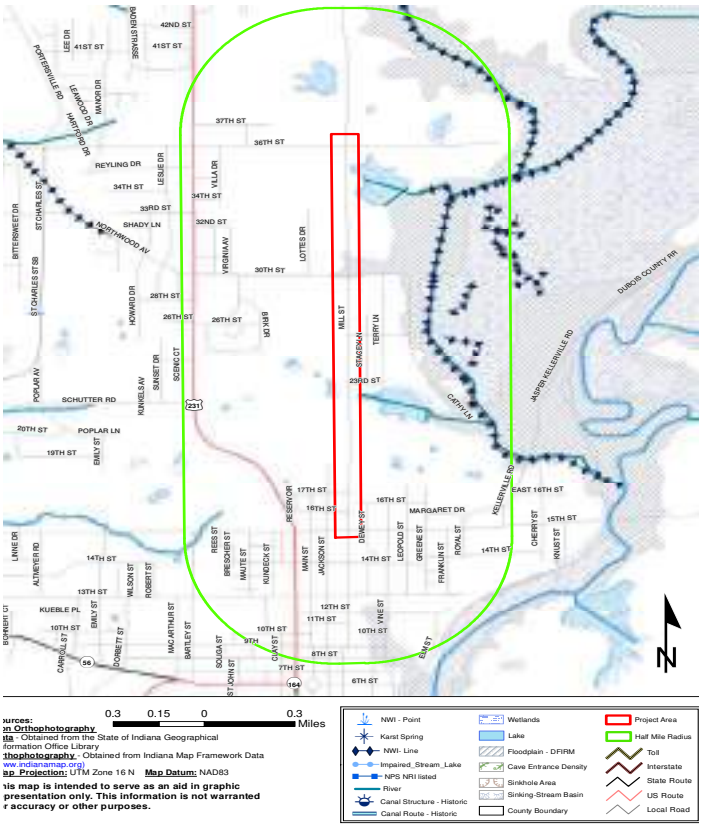


Figure C1-22. Mill Street Water Resources Considerations

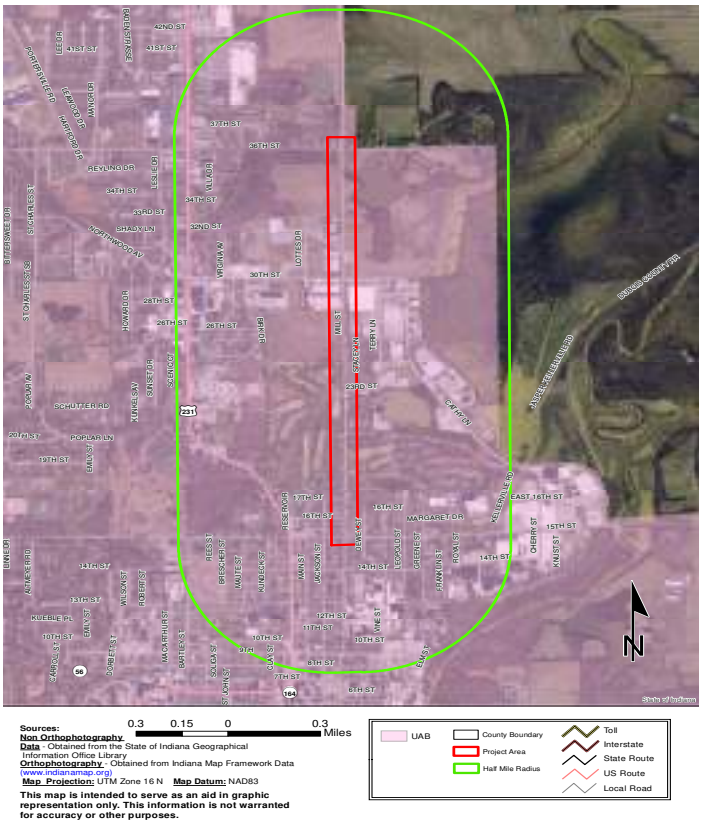


Figure C1-23. Mill Street Urbanized Area Boundary

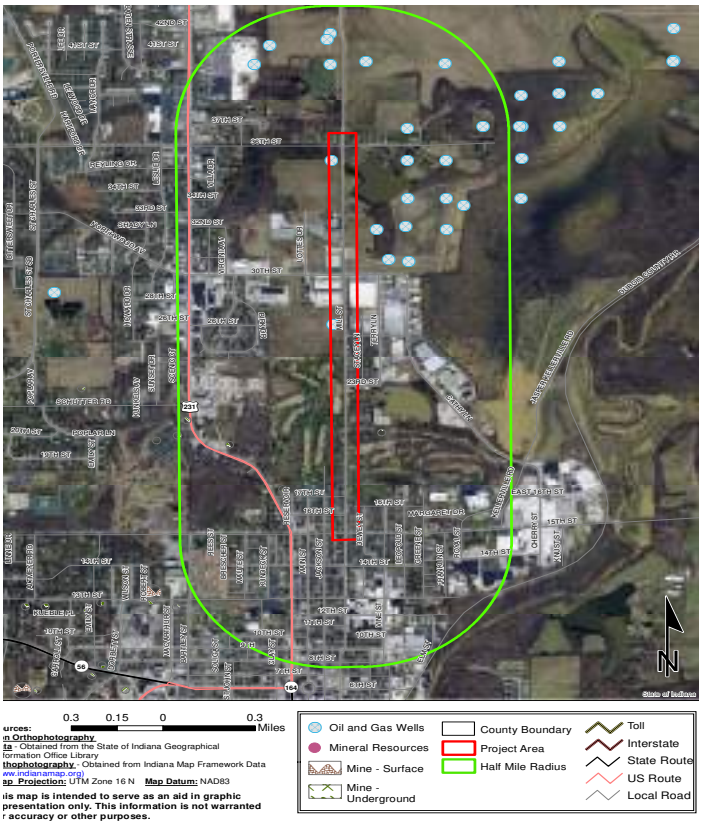


Figure C1-24. Mill Street Mining & Mineral Resources

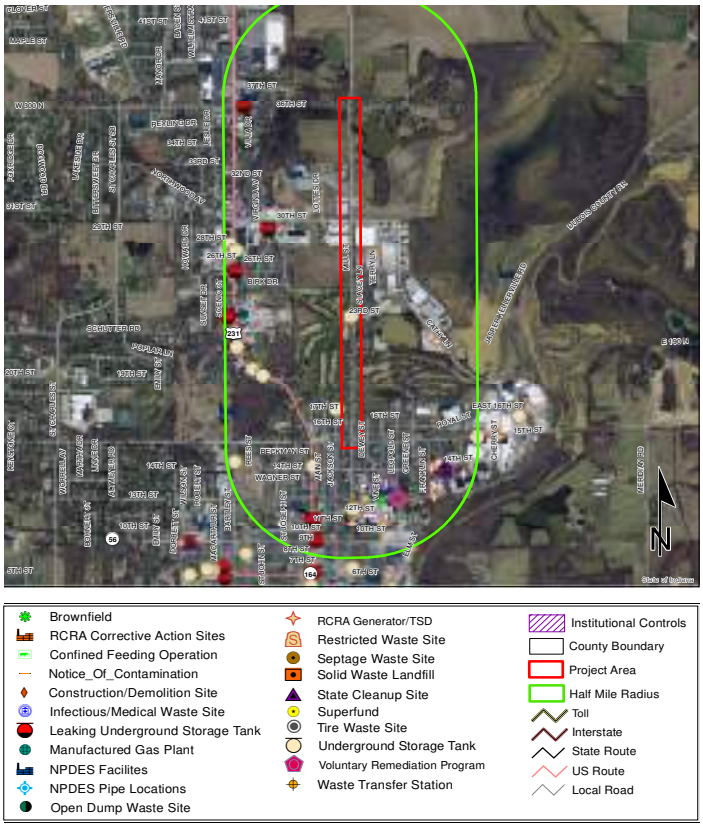


Figure C1-25. Mill Street Hazardous Materials Concerns

Concept

The corridor is anticipated to experience continued growth in vehicular traffic, both personal and heavy vehicles. This is in part due to expected growth in industrial areas along Cathy Lane, and also as residents use the corridor as an alternative to US 231. Also, the corridor has been identified as a multi-modal corridor, expanding the multi-use path to facilitate movement of pedestrians and bicyclists on the north side of the city to downtown. A concept plan showing expanded pedestrian and bicycle facilities as well as a road section more accommodating to heavy vehicles is shown in **Figures C3-26** to A3-30. Drainage improvements are assumed throughout including curb/gutter and culvert replacements and extensions as necessary. Full size graphics have been provided to the City separately. No changes to traffic control are proposed.

A preliminary planning-level cost estimate was prepared supporting the concept plans. A total estimate to complete the improvements at this time is approximately $9.4M. A summary of the costs is shown in **Table C3-2**. The cost is exclusive of any right-of-way, utility relocation costs, or in-lieu fee mitigation.

Table C1-2. Mill Street Improvements Planning-level Cost Estimate

Item	Price
Pavement Subtotal	*$1,634,000*
Earthwork Subtotal	*$314,000*
Drainage Subtotal	*$1,842,000*
Miscellaneous Subtotal (Curb Ramps, Sodding, Retaining Wall, etc.)	*$1,370,000*
Subtotal, Pavement+Earthwork+Drainage+Miscellaneous	**$5,160,000**
Percentage Costs (Mobilization, Construction Engineering, Contingency, Inflation (2021-2026)	*$1,393,000*
Inflation (2021-2026)	*$1,044,000*
Soft Costs (Preliminary Engineering, Construction Inspection)	*$1,800,000*
Total Project Cost	**$9,397,000**

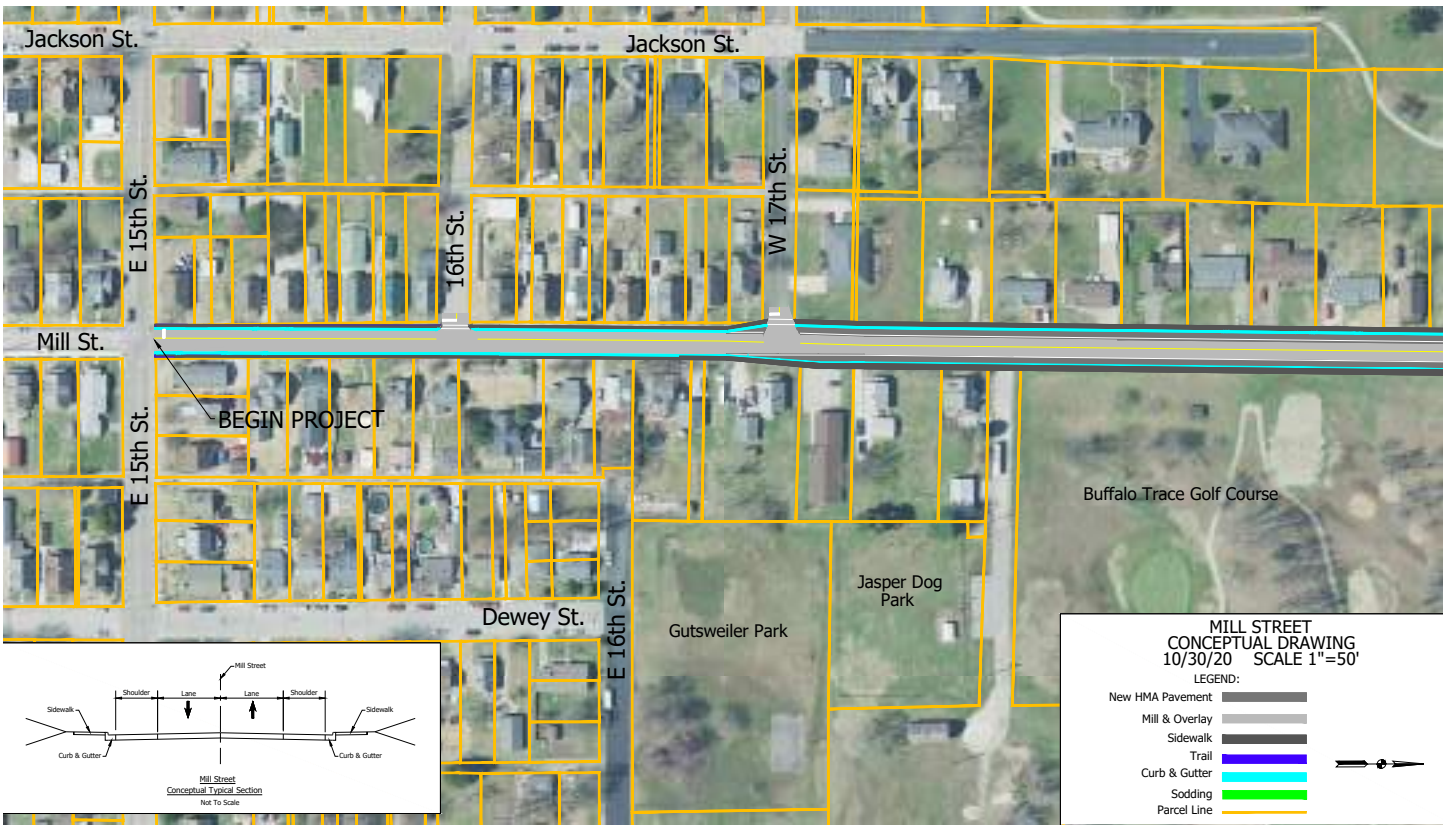


Figure C1-26. Mill Street Concept - Section 1

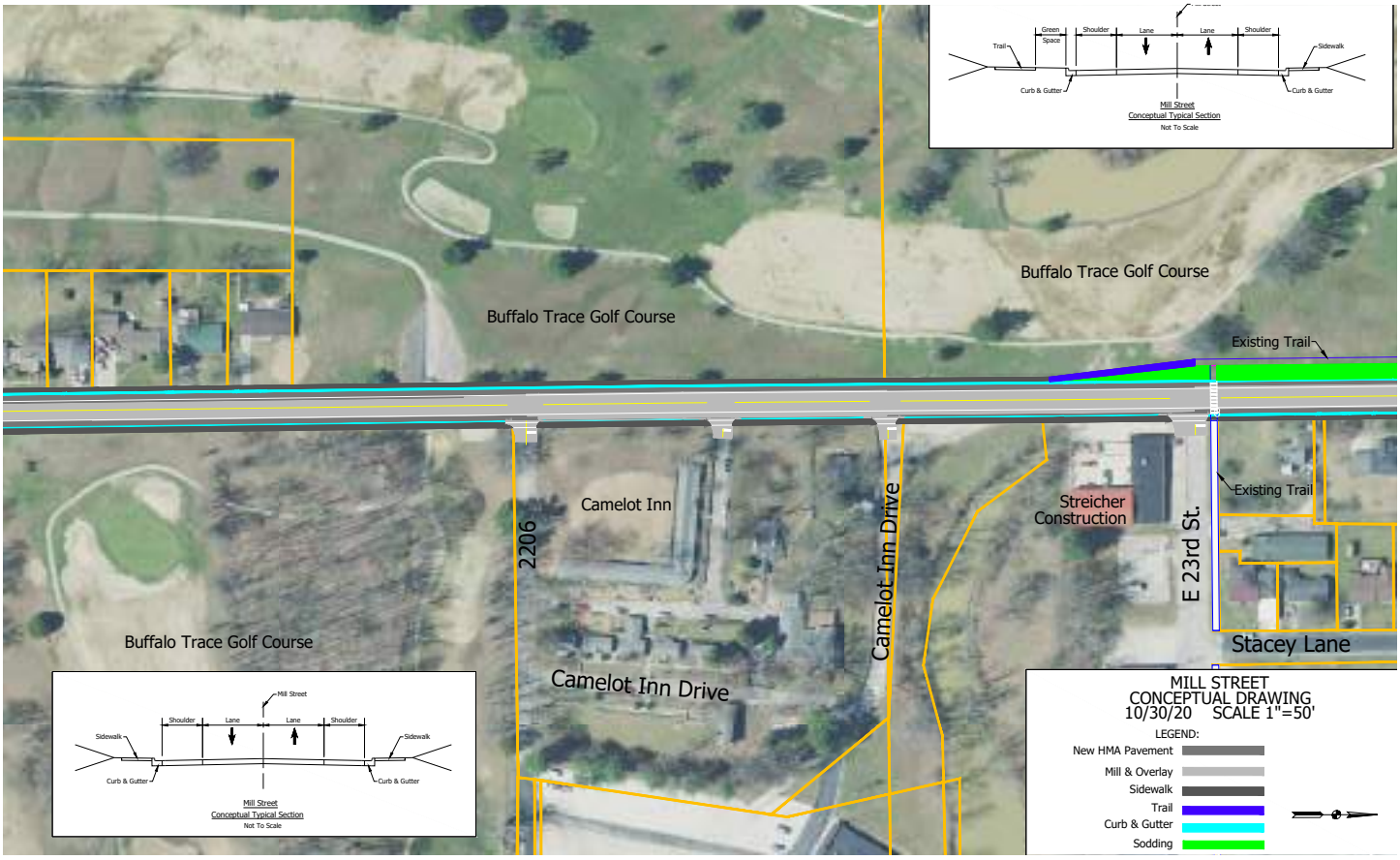


Figure C1-27. Mill Street Concept - Section 2

Figure C1-28. Mill Street Concept - Section 3

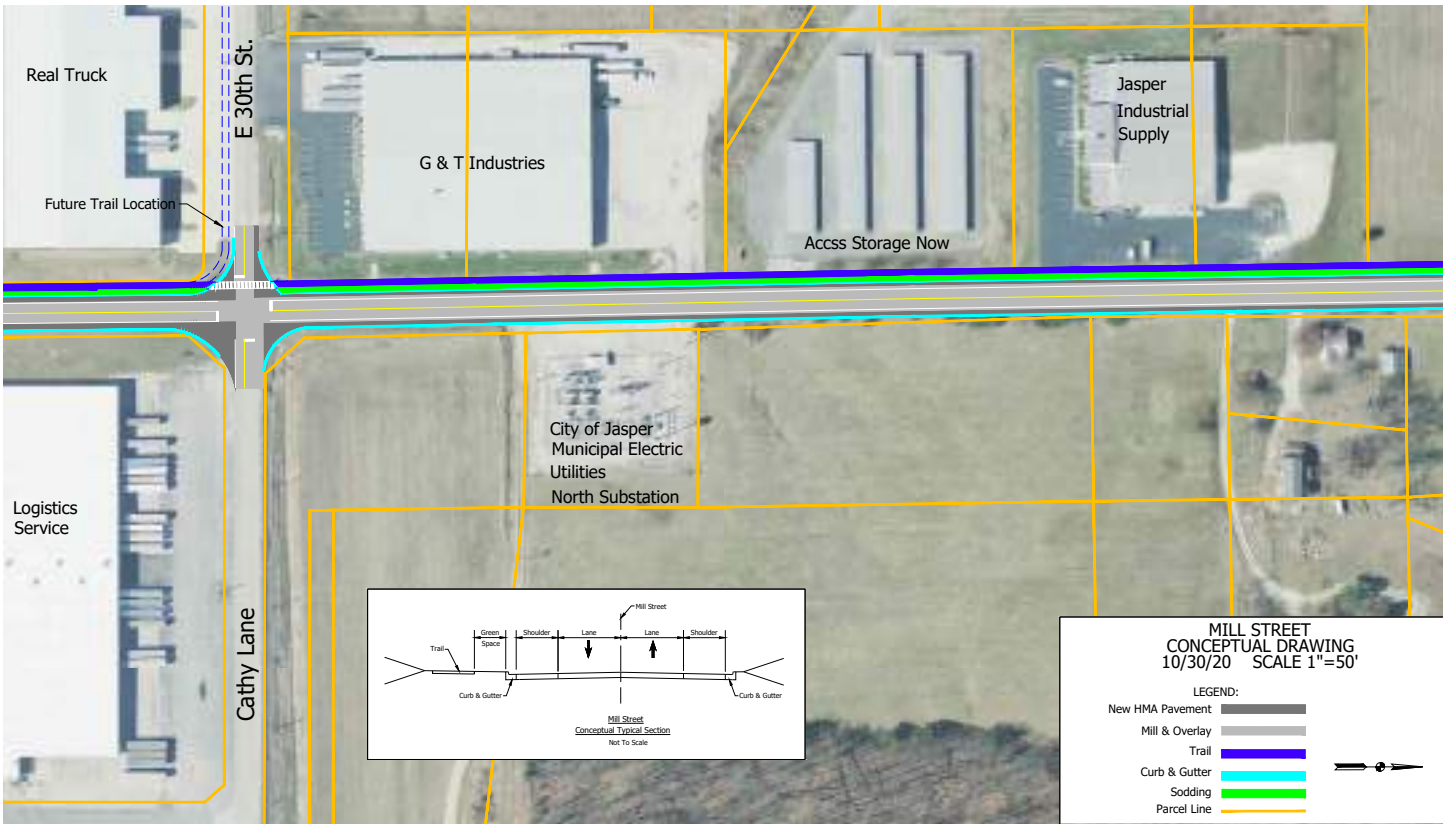


Figure C1-29. Mill Street Concept - Section 4

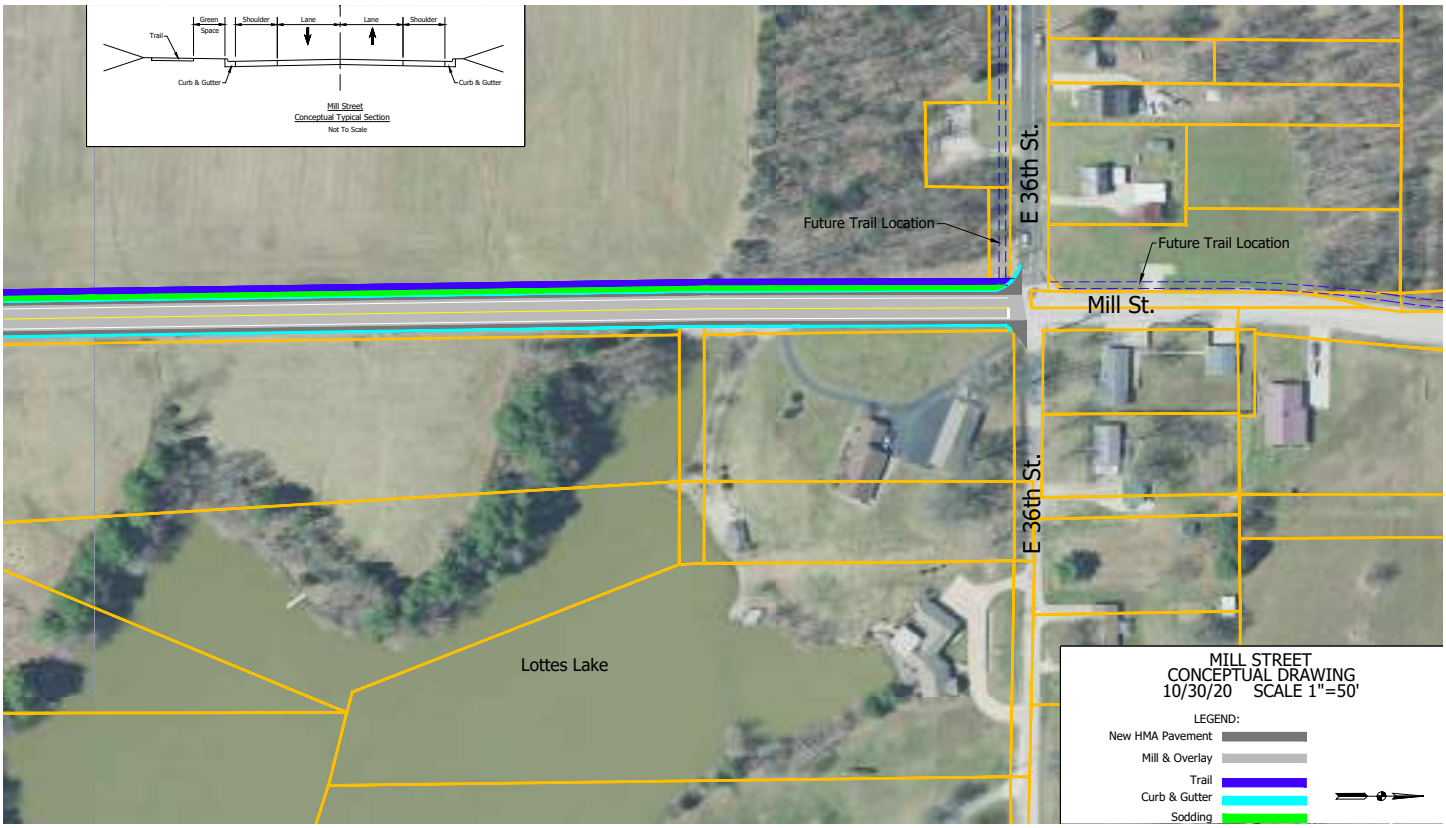


Figure C1-30. Mill Street Concept - Section 5

6200 Vogel Road
Evansville, Indiana 47715

www.lochgroup.com

Appendix D

FINANCIAL ANALYSIS

CITY OF JASPER INDIANA

Table of Contents

Maps, Tables, and Figures

Financial Plan

Introduction

This chapter will discuss revenue sources and estimate the amount of local funding that will be available for transportation projects over the next twenty years in the City of Jasper. The purpose of this analysis is to determine whether the region has adequate resources to operate and maintain the existing transportation system, while also having the resources to build future capacity into the transportation system.

Financial planning is a critical attribute of the multi-modal transportation plan and identifies the estimated revenue from existing and proposed funding sources over the plan period and compares it against estimated project costs of constructing, maintaining, and operating the existing and planned transportation system through 2040. This chapter summarizes a transparent financial analysis of potential transportation investments identified through rigorous reviews of available and anticipated federal, state, and local revenue sources and existing and estimated costs to maintain and operate the highway system in the City of Jasper.

It is critical to acknowledge that available federal, state, and other local funding sources may not be enough to implement all of the proposed infrastructure improvements identified in this plan over the 20-year plan period. Moreover, this financial plan is a long-range, system-level plan; most of the cost and revenue projections are preliminary and will need to be revisited periodically in the future.

Funding Sources

The City of Jasper's transportation financial needs during the next 20 years will depend on the limited amount of federal, state, and local funding sources described in the following:

Federal Funding

Fixing America's Surface Transportation (FAST) Act was passed in December 2015 and reauthorized in September 2020. It authorized over $305 billion for Federal highway, safety, transit, and rail programs for five years from federal fiscal year (FY) 2016 to 2020. The FAST Act will increase federal highway funding for the state of Indiana by an estimated $417 million. 75% of the increased funding ($313 million) is allocated to the Indiana Department of Transportation and 25% of the increased funding ($104 million) is allocated for the Local Public Agencies (LPA).

Major programs of the FAST Act include:

- National Highway Performance Program
- Surface Transportation Block Grant Program
- Highway Safety Improvement Program
- Railway-Highway Crossing Program
- Congestion Mitigation and Air Quality Improvement (CMAQ) Program
- Transportation Planning Program
- National Highway Freight Program

Brief descriptions of the programs under the FAST Act that can be utilized for the proposed transportation system improvements identified in this plan include the following:

National Highway Performance Program:
This program supports the condition and performance of the National Highway System (NHS) and to construct new facilities on the NHS. The NHS is the network of the most important highways, including the Interstate and US highway systems. Jasper's NHS facilities are shown in the Existing Conditions report located in the Appendix.

Surface Transportation Block Grant Program:
The long-standing Surface Transportation Program was converted into the Surface Transportation Block Grant (STBG) Program under the FAST Act. This program provides funds for the construction, rehabilitation, resurfacing, restoration, preservation, and other improvements to federal-aid highways and replacement, preservation, and other improvements to bridges on public roads. Funding for Transportation Alternatives (TA) is set aside from the overall STBG funding amount.

Highway Safety Improvement Program:
The US Department of Transportation's (USDOT) top priority is the safety throughout all of the transportation program. The FAST Act continues to fund the successful Highway Safety Improvement Program (HSIP). It requires the States to pursue, under HSIP, a data-driven, strategic, and performance focused approach to improving highway safety on all public roads.

Railway-Highway Crossing Program:
The FAST Act continues the Railway-Highway Crossing Program which provides funds for safety improvements for reducing the number of fatalities, injuries, and crashes at public railway-highway grade crossings.

National Highway Freight Program:
The National Highway Freight Program is a new program under the FAST Act which includes estimated $1.2 billion per year in funding. This program is focused on improving the efficient movement of freight on the National Highway Freight

Network (NHFN). The NHFN includes the Primary Highway Freight System (PHFS), critical rural and urban freight corridors (as designated by States, and in some cases by MPOs), and the portions of the Interstate System not included in the PHFS.

Most federal transportation grants require 10-20% match from state, local or other funding sources. **Figure D1-1** shows the State of Indiana apportionment of federal funds under the FAST Act for FY 2020. **Table D1-1** shows the major FAST Act funding programs and their apportionments for FY 17 to FY 20 for the State of Indiana.

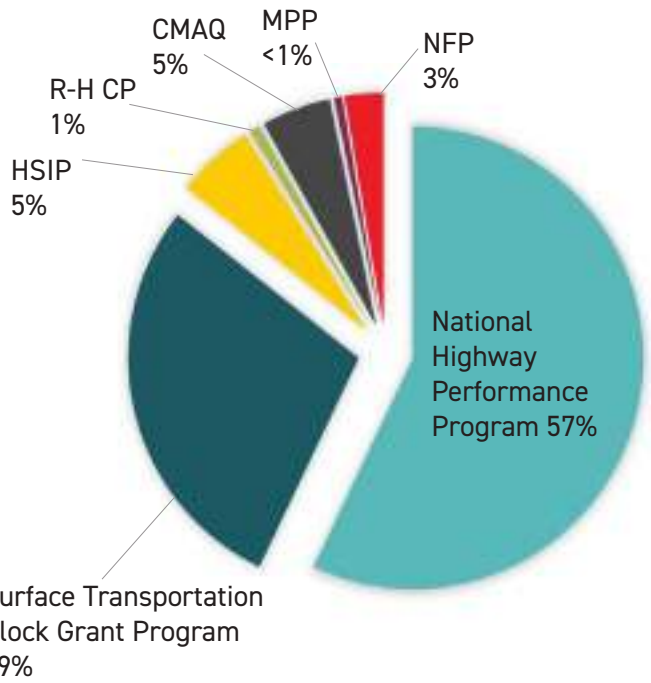


Figure D1-1. FY 20 Indiana Apportionment of Federal Funds under the FAST Act

Table D1-1. FAST Act Funding Programs and Their Apportionments for Indiana (FY 17 - FY 20)

Funding Program	FY 17	FY18	FY 19	FY 20
National Highway Performance Program	$563,220,536	$573,929,689	$585,739,987	$597,929,430
Surface Transportation Block Grant Program	$281,552,802	$287,542,523	$292,683,458	$299,101,165
HSIP	$54,177,250	$55,188,237	$56,176,926	$57,315,499
R-H-CP	$7,628,763	$7,794,606	$7,960,449	$8,126,291
CMAQ	$47,974,557	$48,886,752	$49,781,663	$50,792,752
MPP	$5,317,955	$5,429,686	$5,546,264	$5,675,363
NFP	$26,616,635	$29,036,329	$32,665,871	$36,295,412
Apportioned Total	**$986,488,498**	**$1,007,807,822**	**$1,030,554,618**	**$1,055,235,912**

State and Local Funding

State highway funds are typically developed through gasoline and diesel taxes, vehicle registration fees (including title and license fees), sales tax, and bonding. In April 2017, the State of Indiana General Assembly passed Act 1002, which introduced the following taxes and fees for funding the state's roadway infrastructure projects:

- Increase of gas tax by 10 cents per gallon to 28 cents per gallon beginning July 1, 2017.
- Raising vehicle registration fees by $15 beginning January 1, 2018.
- $150 per year fee for electric cars.
- $50 per year fee for hybrid vehicles.

Indiana cities, towns, and counties would receive financial benefit of an additional $342 million annually for local roads by 2024 through these additional funding sources.

There are various transportation funding opportunities available to local governments. However, not all the local revenue sources can be used for serving as a match to federal funds for transportation improvement projects. In the State of Indiana, two major funds are utilized for maintaining local transportation facilities, paying employee wages, and maintaining equipment. These funds are:

Motor Vehicle Highway Account:

Motor Vehicle Highway Account is the account of the general fund where collections from vehicle registration fees, license fees, driver license fees, gasoline taxes, certificate of title fees, auto transfer fees, weight taxes or excise taxes and all other similar taxes, duties, or excises of all kinds on motor vehicles, trailers, motor vehicle fuel, or motor vehicle owners or operators are credited. This fund can be used for the purchase of materials, equipment, and labor for the maintenance and construction of County transportation facilities.

Local Road and Street Fund:

Local Road and Street Fund Account gets 45% of the money deposited in the Highway, Road, and Street fund. Funds from this account are distributed among the units of local governments each month. These funds can be used for various transportation system improvement projects including right-of-way acquisition, preliminary engineering, construction, and reconstruction activities. This fund can also be used for bond repayment.

These funds are received monthly by the Local Public Agencies (LPA) from the Auditor of the State's office. The distribution of these funds depends on formulae that consider road mileage, population, and the number of vehicle registrations.

Other state and local funding sources available for the City of Jasper include:

Cumulative Bridge Fund:

This fund helps construction and maintenance of bridges within the county's roadway jurisdiction. The maximum tax rate for this fund is 0.10 (per $100 assessed value of property). The rate imposed in Dubois County is 0.0349 as of FY 2020.

Wheel Tax and Excise Surtax:

These taxes allow local agencies (e.g. counties and municipalities) to collect tax revenue which could only be used for paying for the construction, reconstruction, repair, or maintenance of county, city, and town roads in their jurisdictions. These funds can also be used as the local match in the Local Road and Bridge Matching Grant Fund more commonly known as the Community Crossing Matching Grant Fund. In Dubois County, the vehicle excise tax for passenger vehicles, motorcycles, motor driven cycles, and trucks between 7,000-11,000 is 10% or a minimum of $8. The Dubois County wheel tax is $10 for trailers of any weight, $25 for trucks, recreational vehicles, for-hire-buses, buses not for hire, and permanent semitrailers, and $40 for tractor trailers. Church and school buses are exempt from wheel tax in Dubois County.

Tax Increment Financing (TIF):

As per the State of Indiana Code 36-7-14, Tax Increment Financing is a government finance mechanism for development and redevelopment which captures increases in taxable assessed value within a defined area and then uses property tax revenue derived from these increases to finance public improvements within the specified area. Jasper has two TIF districts, Jasper Central Area Economic Development Area (expires March 1, 2039) and the Riverfront Economic Development Area (expires March 1, 2040).

Riverboat:

Of the Wagering Tax earned from the French Lick Inland Riverboat Casino, 5.3% is distributed to Dubois County. Dubois County distributes a portion of the funds to the City of Jasper for restricted use. Since 2015, the City of Jasper has received an average annual distribution of $94,670.38 from the Riverboat fund.

In Indiana, property owners are entitled to a cap on the amount of property taxes over 1% of the gross assessed value for homestead properties, 2% for other residential and agricultural land and 3% for other real and personal property. With the implementation of these property tax caps in 2010, local governments must consider options other than property taxes for increasing local revenue.

Local Option Income Tax (LOIT):

Indiana has been using LOIT since 1973. All of Indiana's LOIT use the Indiana (state) adjusted gross income as the tax base. As such, wage and salary income is the largest portion of taxable income, so LOIT are imposed primarily on wage earners. Social Security payments are not taxed under the state income tax in Indiana. County Option Income Tax (COIT) and County Economic Development Income Tax (EDIT) are two types of LOIT to provide additional sources of revenue for local governments. Funds are allocated for communication, transportation systems, and financing economic development projects. Generally, the COIT rates are initially levied at 0.2% for resident county taxpayers and can be increased by 0.1% each year to a maximum rate of 0.6%. If additional revenues are needed, the COIT council can pass an ordinance to raise the COIT rate by 0.1% per year until reaching a maximum of 1%. The COIT tax rate for nonresident taxpayers is a quarter of the tax rate imposed on resident taxpayers. LSA (2010) states the COIT rate can be frozen, decreased, or with an ordinance passed by the COIT council, the maximum rate may exceed 1%.

Bonds:

Local government units can also consider general obligation bonds and cumulative capital improvement funds for funding transportation improvement projects.

City of Jasper Local Funding Conditions and Expenses

In addition to the capacity improvement projects programmed in the county's Capacity Improvement Program (CIP), the operation and maintenance of the existing transportation system is important to preserve the past investments and maximizes the safety, efficiency, and reliability of the existing system. The operational costs included snow and ice removal, street lighting, traffic signals, drainage work, equipment purchases, administration, and other related costs. Maintenance costs included cost associated with maintaining the existing federal-aid roadway infrastructure including pavement and bridge resurfacing, replacement, right-of-way etc.

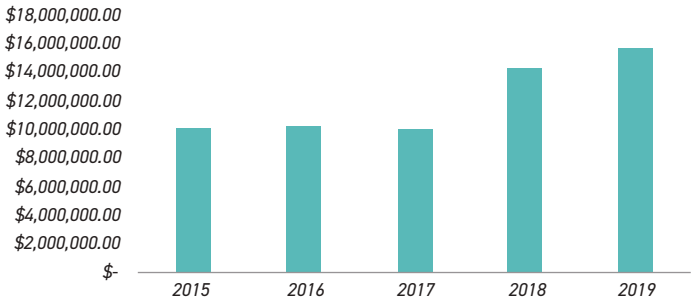


Figure D1-2. Five-Year (2015-2019) Revenue Trends from State and Local Revenue Sources for the City of Jasper

Table D1-2. Local Revenue by Sources for the City of Jasper (2015-2019)

Local Fund Revenue Sources	Year					Average
	2015	2016	2017	2018	2019	
Local Road & Street Fund	$8,593,508.07	$8,798,096.36	$8,594,189.77	$12,243,095.39	$12,712,332.60	$10,188,244.44
Motor Vehicle Highway Account	$1,534,144.18	$1,536,534.88	$1,450,640.04	$2,191,292.74	$2,721,578.25	$1,886,838.18
Total	$10,127,652.25	$10,336,647.24	$10,046,846.81	$14,436,406.13	$15,435,929.85	$12,076,696.46

Source: City of Jasper

Table D1-2 shows the City of Jasper's revenue sources from state and local funds for the most recent five years (2015 – 2019). Motor Vehicle Highway Account fund was the major source of revenue with approximately 82% of total revenue from the state and local sources. **Figure D1-2** shows the most recent five years (2015-2019) revenues from the state and local sources for the City of Jasper.

Annual costs for transportation system preservation and maintenance including labor and administrative costs for the most recent five years (2015 to 2019) for the City of Jasper are shown in **Table D1-3**. **Figure D1-3** shows the most recent five year (2015-2019) expenditure trends from the state and local revenue sources.

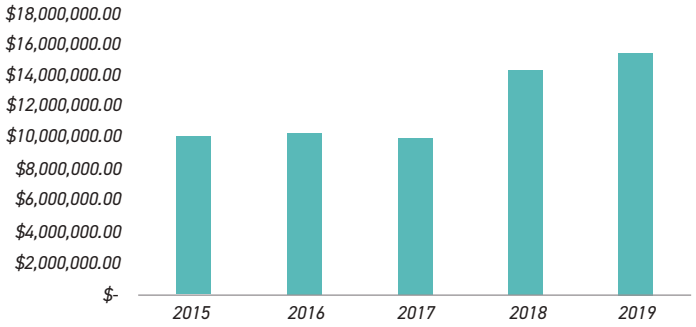


Figure D1-3. Five-Year (2015-2019) Expenditure Trends from State and Local Revenue Sources for the City of Jasper

Table D1-3. Local Expenditures by Sources for the City of Jasper (2015-2019)

Local Fund Revenue Sources	Year					Average
	2015	2016	2017	2018	2019	
Local Road & Street Fund	$8,616,555.47	$8,810,318.30	$8,582,375.22	$12,198,699.14	$12,751,618.43	$10,191,913.31
Motor Vehicle Highway Account	$1,534,145.00	$1,536,520.00	$1,450,605.00	$2,177,250.00	$2,735,440.00	$1,886,838.18
Total	$10,152,715.47	$10,348,854.30	$10,034,997.22	$14,377,967.14	$15,489,077.43	$12,080,722.31

Source: City of Jasper

Based on total revenues from various state and local funds and operations & maintenance costs, the excess and/or shortage of revenue for the most recent nine years (2011 to 2019) is shown in **Table D1-4** and **Figure D1-4**. Based on this calculation, the annual accumulation of the City of Jasper's excess revenue is $8,612.98 per year.

Table D1-4. Excess (Shortage) Revenues per Year (2011-2019)

Year	Revenue	Expenditures	Excess (Shortage)
2011	$6,767,871.53	$6,767,896.92	($25.39)
2012	$6,094,484.50	$6,094,499.62	$15.12
2013	$5,850,118.55	$5,841,802.19	$8,316.36
2014	$8,364,110.46	$8,336,500.76	$27,609.70
2015	$10,127,652.25	$10,152,715.47	($25,063.22)
2016	$10,336,647.24	$10,348,854.30	($12,207.06)
2017	$10,046,846.81	$10,034,997.22	$11,849.59
2018	$14,436,406.13	$14,377,967.14	$98,439.99
2019	$15,759,555.85	$15,489,077.43	$58,438.99
AVERAGE	$9,003,017.18	$8,994,404.20	$8,612.98

Source: City of Jasper

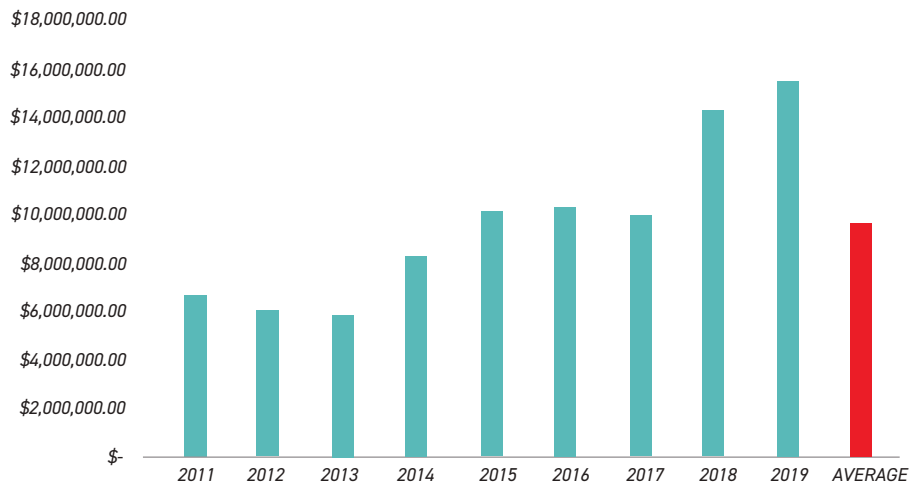


Figure D1-4. Excess (Shortage) Revenues per Year (2011-2019)

Roadway Funding Estimate

Since federal, state, or local sources do not guarantee the same level funding every year, estimating revenue for the 20-year plan period can be complex and difficult to predict. Federal regulations require a financial plan to determine "all cost and revenue projections shall be based on the data reflecting the existing situation and historical trends." However, unlike a Metropolitan Planning Organization (MPO), the City of Jasper does not have a guaranteed source of Surface Transportation Block Grant Program (STBG) funding from INDOT. Other federal revenue (NHPP, HSIP, & NHFP) are grant based and can vary substantially every year.

Moreover, while state and local agencies are assured federal assistance for the next several years, the highway trust fund revenue crisis remains a concern. The federal motor fuel tax of $0.184/gallon has not been increased to keep up with inflation since 1993. Reductions of VMT nationally and increases in fuel efficient vehicles have resulted in a gradual decrease of motor fuel tax revenue. This has made it increasingly difficult to raise adequate funds to maintain the national transportation infrastructure. Various alternatives have been proposed to replace the motor fuel tax (mileage-based user fee), or supplement MFT with other revenue sources such as local sales taxes, public-private partnerships, and federal discretionary grants. While these alternatives are being tested, it is unknown if and when these additional/alternate revenue sources will be implemented.

Indiana recently raised it gasoline tax by 10 cents per gallon to 28 cents per gallon beginning July 1, 2017. This is the first gas tax increase since 2003. Going forward, Indiana's fuel tax rates will be adjusted based on a formula that considers both inflation and the rate of the growth in Indiana's total personal income. Revenues from the gasoline excise tax will be directed to the state, but a quarter will be remitted to local governments. The legislation also includes a 10-cent increase to the diesel tax and a variety of vehicle registration fees to further fund highway improvement.

The funding for the Jasper Multi-modal Transportation Plan can be estimated based on the following assumptions:

- The City of Jasper is expected to continue to receive additional funds from the recently increased gasoline tax.
- The City of Jasper will continue to be eligible to submit grant applications for federal programs including Highway Safety Improvement Program and National Highway Performance Program.
- The City of Jasper can collect additional revenue through Wheel Tax and Excise Surtax. Indiana Local Technical Assistance Program estimated that maximum revenue from these taxes for Dubois County would be approximately $3 million per year.
- Public Private Partnerships (PPP) - The private sector, such as developers and business associations, often supports transportation projects through impact fees, right-of-way donations, and cost sharing. Developing public-private partnership will help financing the transportation projects identified in the long-range transportation plan.

Assuming the revenue and expenditure will remain consistent over the plan period, the total amount available for capital improvements over the next 20 years is anticipated to be $223,926.65. This was calculated assuming a 1.9% annual inflation rate (average rate of inflation in the United States over the past 10 years). If those funds were ONLY used to match federal grants at 20%, they could be leveraged to secure approximate $1,119,635 in capital improvements by 2040.

6200 Vogel Road
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Appendix E

COMMUNITY ENGAGEMENT

CITY OF JASPER INDIANA

Table of Contents

Maps, Tables, and Figures

Community Engagement

Introduction

Public participation is an important component of any planning process. A planning process should both communicate information about the process to the general public and enable residents to provide input and meaningful feedback. Effective public participation builds trust and buy-in from area residents, resulting in a better plan and a plan that is more likely to be embraced by the region.

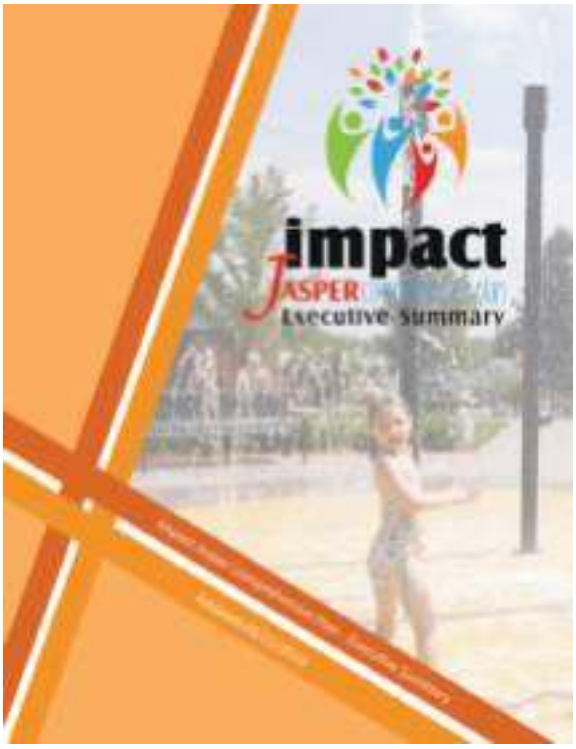
Some of the most effective methods of public participation involve in-person, face-to-face encounters. In previous years, Jasper has be able utilize open houses and community events to receive vital feedback from the public on local priorities and necessary improvements. During the course of the Multimodal Transportation Plan, a global outbreak of the COVID-19 virus made large in-person gatherings unfeasible. Various stages of social restrictions were in place throughout project period, ranging from total lockdown, crowd size limits, and mandatory mask requirements. As a result, the project team used all reasonably available means to engage the public virtually.

To effectively engage the public remotely, the project team used a variety of outreach methods to maximize the number and type of opportunities for residents to become involved in the process. The public was provided the opportunity to provide feedback on the plan recommendation and influence the project prioritization process through building on previous engagement efforts, hosting virtual open houses, and providing an online survey.

Previous Engagement

Owing to the very robust public engagement process for the Impact Jasper Comprehensive Plan that had just been completed at the outset of this project and with support of the project core committee, significant engagement activities were not included in the planning effort for the Multimodal Transportation Plan.

Rather, relevant background data, including public response from Impact Jasper and other studies, served as a baseline for planning and network design. Furthermore, since Impact Jasper's findings already identified transportation priorities, this planning effort was intended to focus more intently on the feasibility of various infrastructure, policy, and programs to improve mobility throughout the community.



Community Open House

A virtual community open house was hosted November 10, 2020 to gather feedback and answer questions from the public regarding the mobility improvements proposed for the City. The community was presented with two opportunities to participate in the on-line event to encourage participation. Identical presentations were hosted at 11:00 AM and 6:00 PM and a recording of the presentation was made availale on the City's website via a file link. Approximately 75 members of the public registered to attend the meeting and provided feedback and an additional 218 accessed the recording.

Participants at the open houses expressed their support and concern regarding particular projects. Much of the concern was focused on the removal of on-street parking as a result of one-way to two-way traffic conversion. Questions were posed to the project team about the feasiblity of new mobility solutions, like electric scooters, and new design solutions like roundabouts. The community requested insight into the project prioritization process and how these proposals could best be coordinated with IDOT.

As a result of the public meeting, the Mill Street one-way to two-way conversion project was modified to reflect the need to preserve on-street parking through a portion of the corridor.

Community Survey

A community survey took place November 10 through November 30, 2020. The community survey is an important tool that assists the planning team and city staff determine if there is public support for the various recommendations, any controversial projects that should be reexamined, and provides alignment between staff and the public's opinion on how the City should prioritize their projects.

The survey was available through a link on the City's website and via social media, as well as promoted during the two virtual public open houses held on November 10th. The survey was created to capture the sentiment of residents toward various proposed projects and their priority levels of each project. The survey included 11 multiple choice, ranking, and open ended questions regarding the following projects. Almost 200 respondents completed the survey by the closing date. The survey revealed that the public generally supports the roadway and multimodal projects that were presented in the survey. Except for a select few cases, the public prioritizations align with the city staff's rankings as well.

Table E1-1. Recommended Projects by Name and Type

Project ID	Project Name	Project Type
1	15th & St. Charles (Convert to roundabout)	Intersection Improvement
2	36th & St. Charles (Convert to roundabout)	Intersection Improvement
3	The "Y" Study (Specific study for improving operations at US 231/SR 56 intersections)	Intersection Improvement
4	US 231 & Baden-Strasse/Walmart (Adjustments to frontage road on west side)	Intersection Improvement
5	N 350 W from Schuetter to 36th (Upgrade to carry increased future traffic)	Corridor Improvement
6	St. Charles from Schuetter to 36th (Convert to boulevard, reduce speeding)	Corridor Improvement
7	W 6th from Newton to Courthouse Sq. (Festival Street)	Corridor Improvement
8	Main Street from 1st to 9th (Create Complete Street)	Corridor Improvement
9	E 6th from Courthouse Sq. to Mill St (Create Complete Street)	Corridor Improvement
10	Mill St from 15th to 36th (Widen to accommodate more trucks, multimodal path)	Corridor Improvement
11	Jackson St from 3rd to 15th	One-Way Conversion
12	Mill St from 3rd to 15th	One-Way Conversion
13	15th St Extension to SR 56	New Roadway
14	North-South Connector from 15th St Extension to Schuetter	New Roadway
15	20th St Extension to Item #18	New Roadway
16	Extend 28th St to St. Charles (Extend dead-end streets)	New Roadway
17	East-West Connector from US 231 to Mill St North of Home Depot	New Roadway
18	Extend 26th St to Mill St	New Roadway
A	Multimodal Segments "A"	Multi-Use Trail
B	Multimodal Segments "B"	Multi-Use Trail
C	Multimodal Segments "C"	Multi-Use Trail
D	Multimodal Segments "D"	Multi-Use Trail
E	Multimodal Segments "E"	Multi-Use Trail

Vehicular Improvements Rankings

The survey respondents were asked to rank each project based on their personal priority of which projects they find important to the region. Priority rankings ranged from high priority to low priority. Results from the survey indicate that respondents are largely in agreement on the priorities of each project. Notably, no projects received overwhelming indications that they are high priority. The highest ranking priority project is the 36th & St. Charles project with 41% of survey respondents listing the project as high priority. The lowest ranking priority project is the St. Charles from Schuetter to 36th project with 58% of survey respondents listing the project as low priority.

Given that three priority options were provided, there are variances between the different weights of high, medium, and low priority projects based on the number of survey respondents and where they placed their priorities for each project. For comparison, a weighted average for each project was determined which provides a more complete view of the priority level of each project. See **Figure E1-1** for details.

High Priority Projects

- 36th & St. Charles (41%)
- Mill St from 15th to 36th (39%)
- The "Y" Study (39%)

Low Priority Projects

- St. Charles from Schuetter to 36th (58%)
- 20th St Extension to Item #18 (57%)
- W 6th from Newton to Courthouse Sq. (Festival Street) (54%)

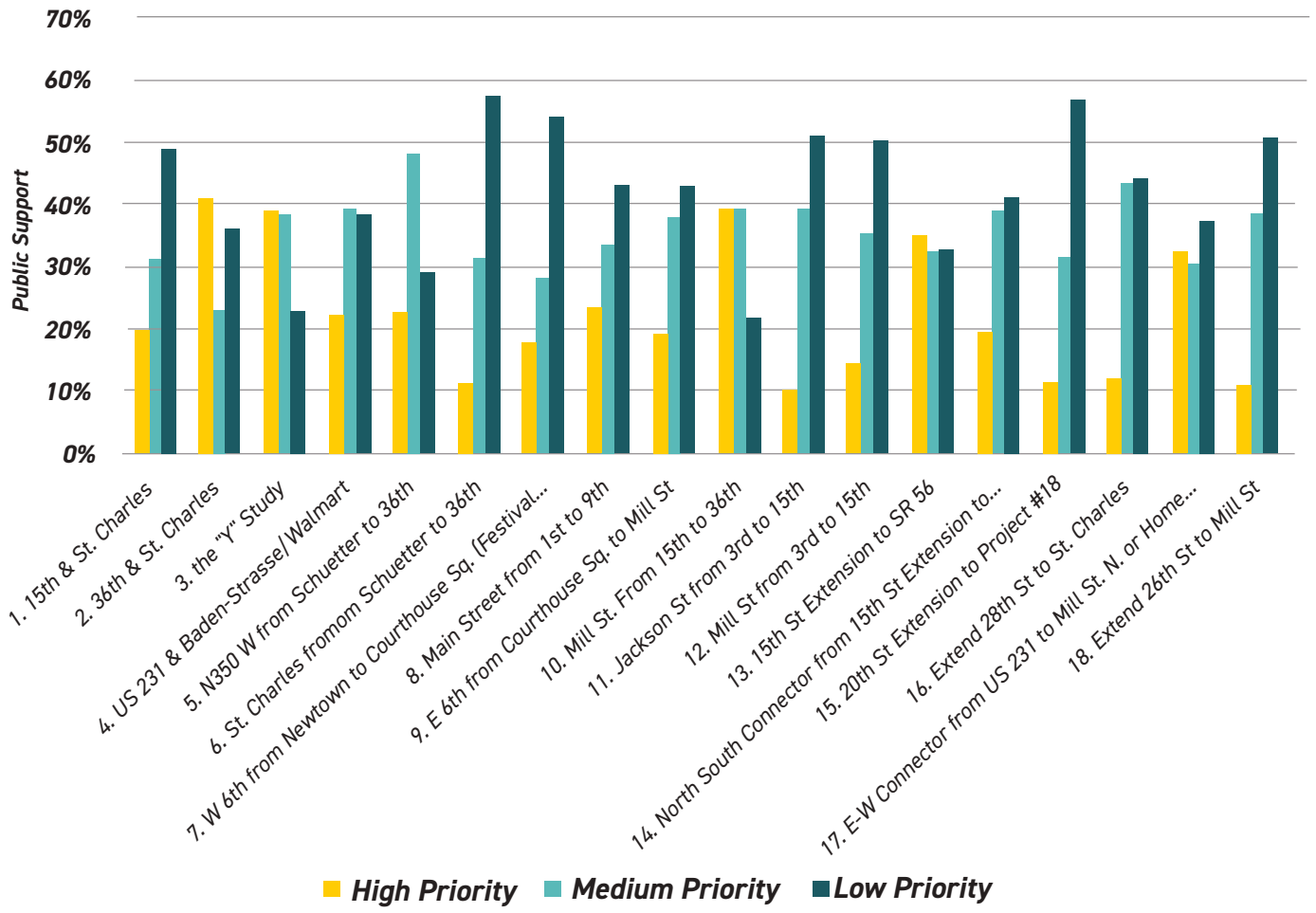


Figure E1-1. Roadway Improvement Priority Ranking by Percent

Based on the weighted averages, the highest ranking priority project is the Mill St from 15th to 36th project with a weighted average of 2.17. As shown in **Figure E1-2,** all three of the previously stated high priority projects are still the top three highest priority projects. However, their order has shifted to account for the "medium" and "low" priority responses. The lowest ranking priority project is still the St. Charles from Schuetter to 36th project with a weighted average of 1.54. It should be noted that the W 6th from Newton to Courthouse Sq. (Festival Street) project which was previously considered one of the top three low-priority projects is no longer among the top three when the weighted average is considered.

High Priority Projects

- Mill St from 15th to 36th (2.17)
- The "Y" Study (2.16)
- 36th & St. Charles (2.05)

Low Priority Projects

- St. Charles from Schuetter to 36th (1.54)
- 20th St Extension to Item #18 project (1.55)
- Jackson St from 3rd to 15th (1.59)

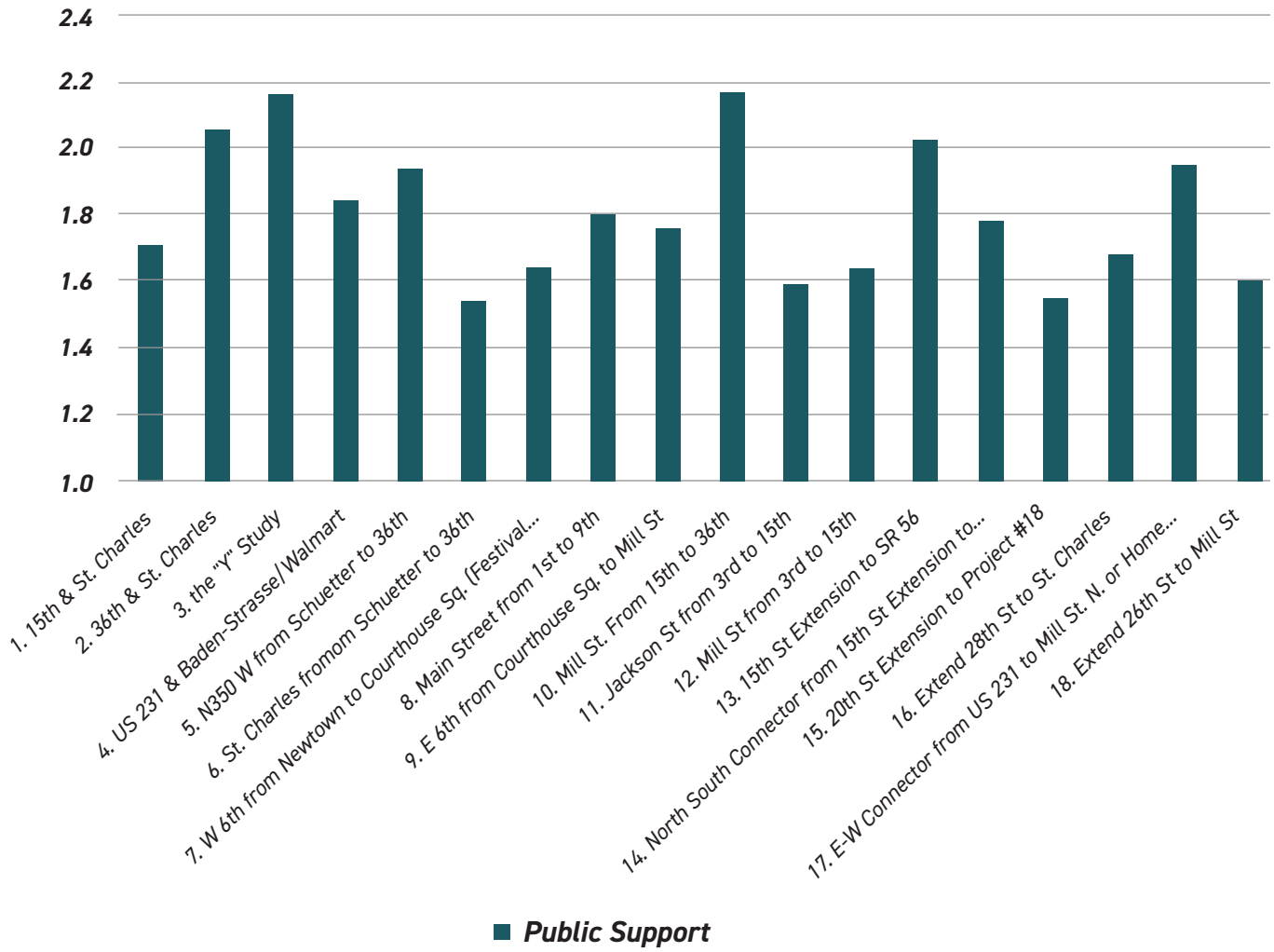


Figure E1-2. Roadway Improvement Priority Ranking by Weighted Average

Results from the public engagement process from survey respondents were compared to the estimated project cost to provide a comparison of the priority for each project with its estimated cost as shown in **Figure E1-3.** Again, the higher the score, the higher the priority is for the project and the lower the score, the lower the priority of the project. One of the highest priority projects based on the survey results is the "Y" Study. This project has the lowest estimated cost between $0 - $250K. Another high priority project, Mill St from 15th to 36th, is one of the highest estimated cost projects at $5M or above. The last high priority project, 36th & St. Charles, falls in the middle with an estimated cost between $1M - $3M.

City High Priority Projects

- 36th & St. Charles
- US 231 & Baden Strasse
- W 6th St from Newton to Courthouse Sq.
- Main St from 1st to 9th
- E 6th St from Courthouse Sq. to Mill St
- 15th St Extension
- Home Depot Access Rd

City Low Priority Projects

- City Low Priority Projects
- 15th & St. Charles
- The "Y" Study
- St. Charles from Schuetter to 36th
- Mill St from 3rd to 15th
- 26th St Extension

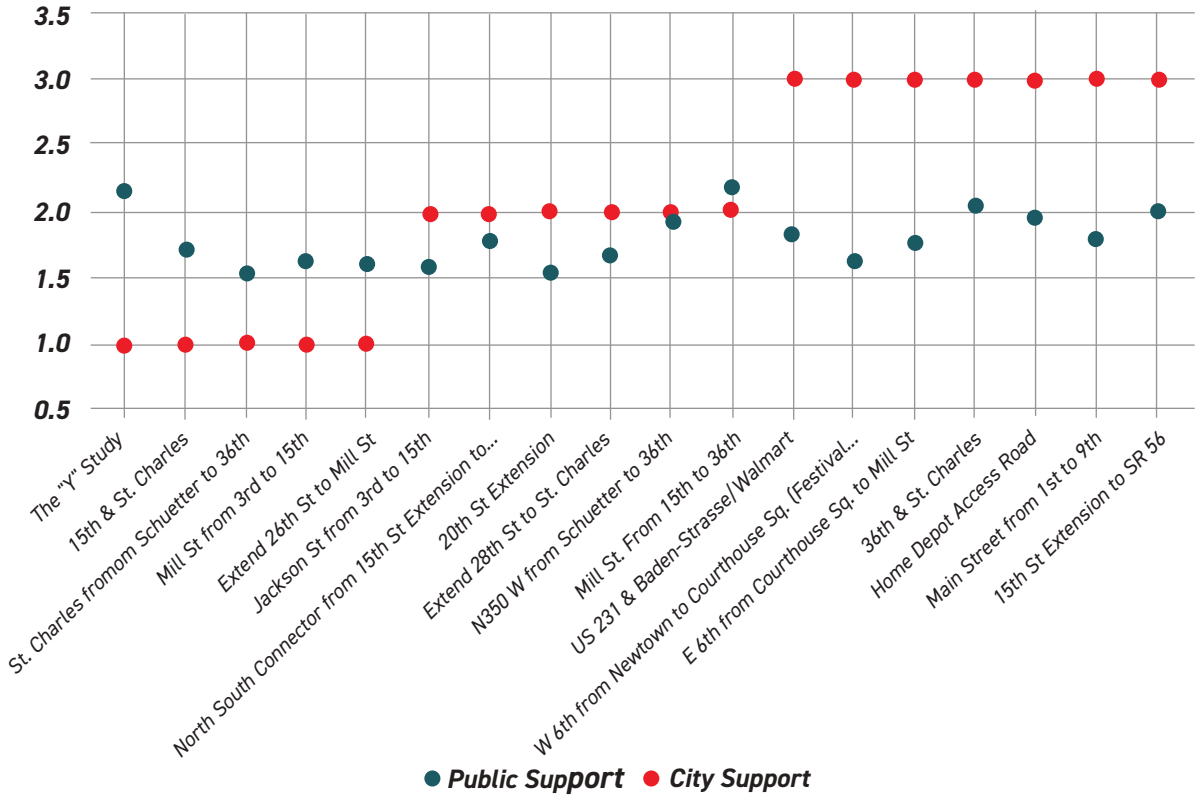


Figure E1-3. Comparison of Public and City Project Support

To offer a comparison, the public and City priority projects were averaged based on their priority ranking can be seen in **Figure D1-4**. When averaged, the highest ranking projects are the 36th & St. Charles, 15th St Expansion, and the Home Depot Access Rd. The lowest ranking projects are St. Charles from Schuetter to 36th, 26th Street Extension, and Mill Street from 3rd to 15th.

The most notable write-in comments demonstrating strong public interest were regarding one-way to two-way conversions, with concerns about how that would impact parking. The consultant team will review the comments in association with the improvements, and revise if necessary.

Averaged High Priority Projects

- 36th & St. Charles (1.95)
- 15th St Extension
- Home Depot Access Rd

Averaged Low Priority Projects

- St. Charles from Schuetter to 36th
- 26th St Extension
- Mill St from 3rd to 15th

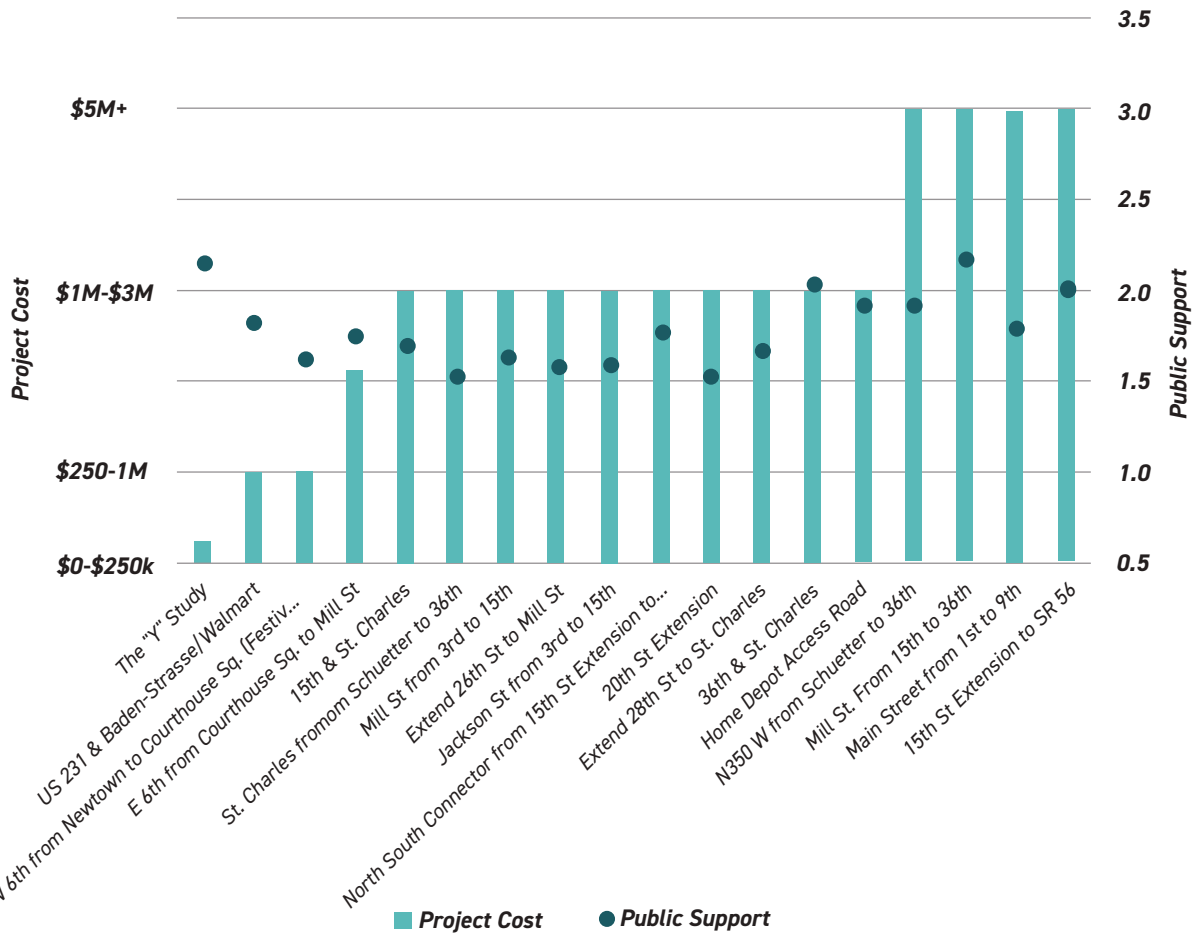
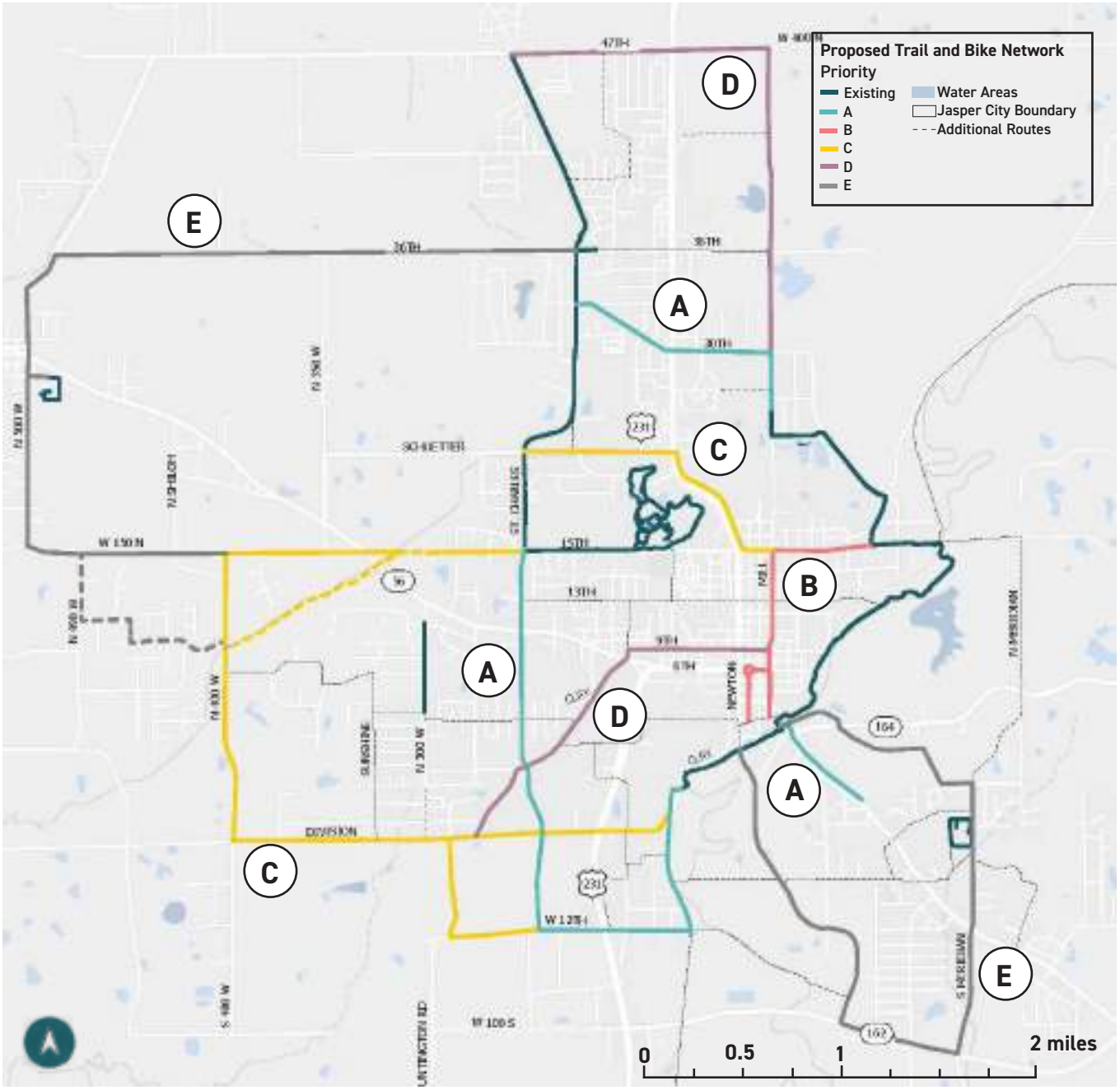


Figure E1-4. Comparison of Average Project Support and Project Cost

Multimodal Improvement Rankings

Survey respondents were also asked to prioritize several phases of multimodal projects. Multimodal improvements were grouped into five phases labeled A-E as seen in **Map E1-1**. The respondents were provided a suggested priority for segments in Phase A to be the highest, in order down to segments in Phase E being the least prioritized routes. Respondents generally agreed with this ranking, except for segments included in Phase E, which included improvements that extend out to more regional destinations, such as Ireland. Respondents thought this should be comparable priority to Phase C, and higher priority than Phase D. Results are shown in **Figure E1-5**.



MAP E1-1. Multimodal Improvement Projects

Similar to the recommended roadway improvements, a weighted average was determined for each of the multimodal projects (see **Figure E1-6**). Even when considering the weighted average, the highest ranking priority segment is "A". The lowest ranking segment is "D".

After reviewing public comment and feedback, the city staff increased the priority level of "Segment E" to Phase 3 and demoted "Segment C" and "Segment D" to Phases 4 and 5 respectively.

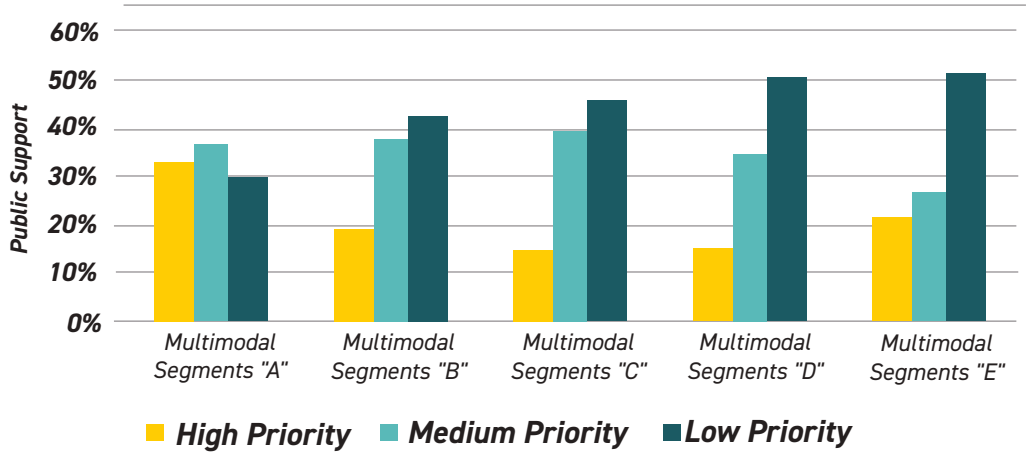


Figure E1-5. Multimodal Improvement Priority Ranking by Percent

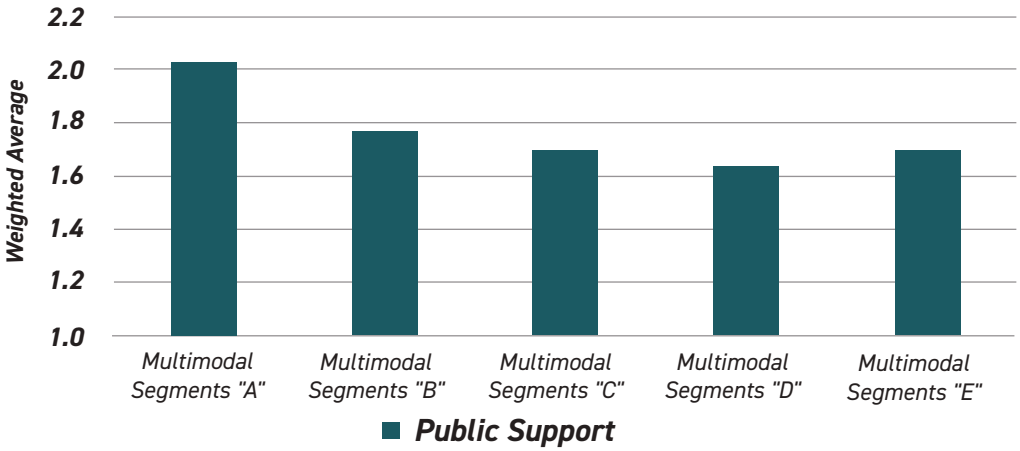


Figure E1-6. Multimodal Improvement Priority Ranking by Weighted Average

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Jackson St.

Jackson St.

Buffalo Trace Golf Course

E 15th St.

16th St.

W 17th St.

Mill St.

BEGIN PROJECT

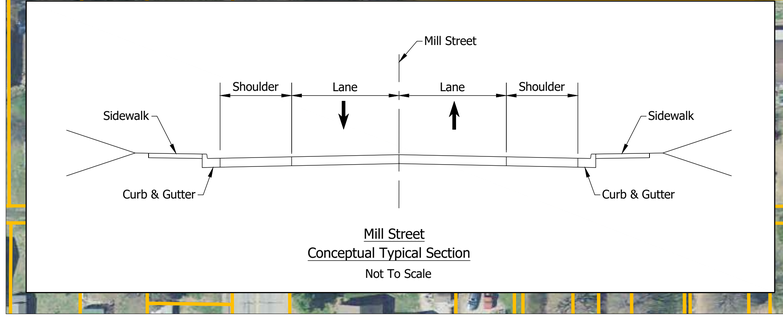
Dewey St.

E 16th St.

Gutsweiler Park

Jasper Dog Park

Buffalo Trace Golf Course

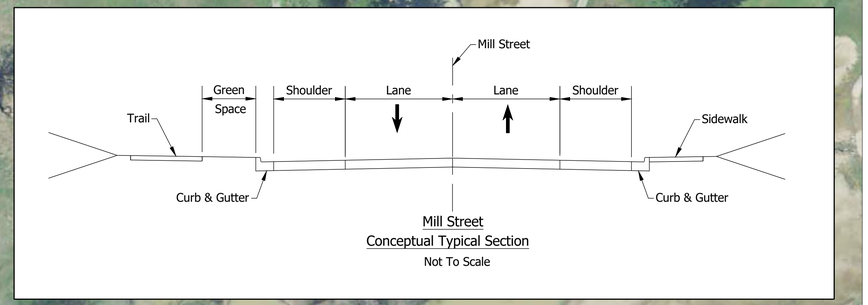


Mill Street
Conceptual Typical Section
Not To Scale

MILL STREET
CONCEPTUAL DRAWING
10/30/20 SCALE 1"=50'

LEGEND:

- New HMA Pavement
- Mill & Overlay
- Sidewalk
- Trail
- Curb & Gutter
- Sodding
- Parcel Line



Mill Street
Conceptual Typical Section
Not To Scale

Buffalo Trace Golf Course

Buffalo Trace Golf Course

Existing Trail

Existing Trail

Camelot Inn

2206

Camelot Inn Drive

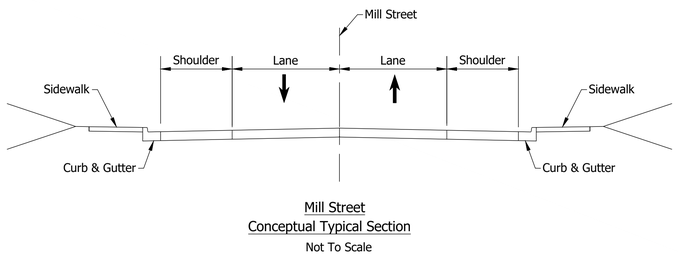
Camelot Inn Drive

Streicher Construction

E 23rd St.

Stacey Lane

Buffalo Trace Golf Course



Mill Street
Conceptual Typical Section
Not To Scale

MILL STREET
CONCEPTUAL DRAWING
10/30/20 SCALE 1"=50'

LEGEND:

- New HMA Pavement
- Mill & Overlay
- Sidewalk
- Trail
- Curb & Gutter
- Sodding
- Parcel Line

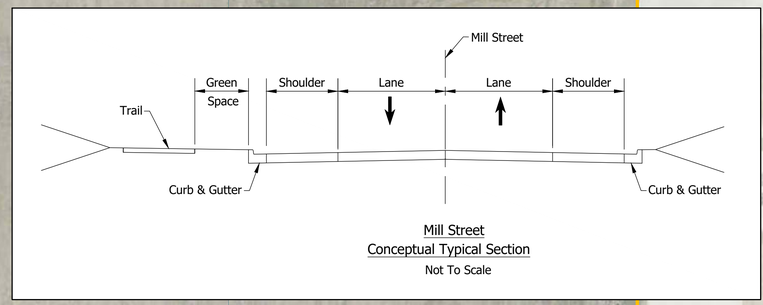
Buffalo Trace Golf Course

Existing Parking

Existing Trailhead

Existing Trail

Meyer Distributing



Mill Street
Conceptual Typical Section
Not To Scale

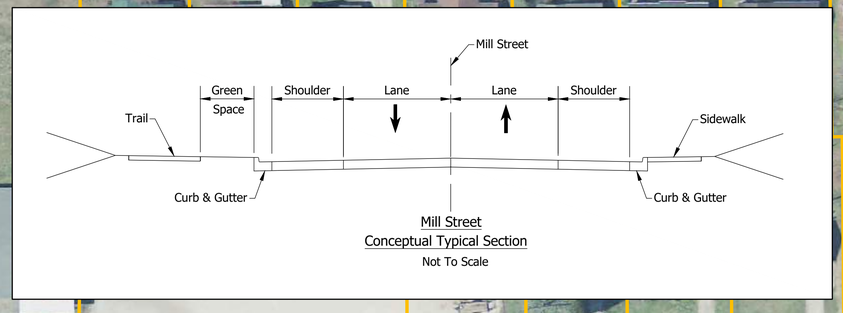
Stacey Lane

E 25th St.

Meyer Logistics

Logistics Service

Stork Service Center



Mill Street
Conceptual Typical Section
Not To Scale

MILL STREET
CONCEPTUAL DRAWING
10/30/20 SCALE 1"=50'

LEGEND:

- New HMA Pavement
- Mill & Overlay
- Sidewalk
- Trail
- Curb & Gutter
- Sodding
- Parcel Line

Real Truck

E 30th St.

Future Trail Location

G & T Industries

Accss Storage Now

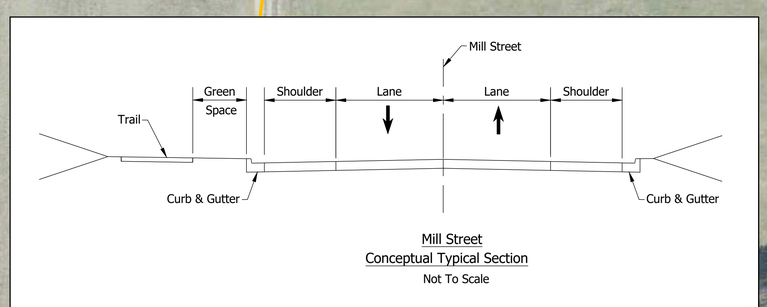
Accss Storage Now

Jasper
Industrial
Supply

Logistics
Service

Cathy Lane

City of Jasper
Municipal Electric
Utilities
North Substation

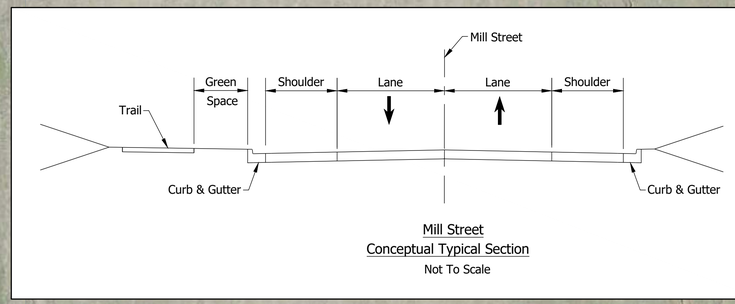


Mill Street
Conceptual Typical Section
Not To Scale

MILL STREET
CONCEPTUAL DRAWING
10/30/20 SCALE 1"=50'

LEGEND:

- New HMA Pavement
- Mill & Overlay
- Trail
- Curb & Gutter
- Sodding
- Parcel Line



Mill Street
Conceptual Typical Section
Not To Scale

Future Trail Location

E 36th St.

Future Trail Location

Mill St.

E 36th St.

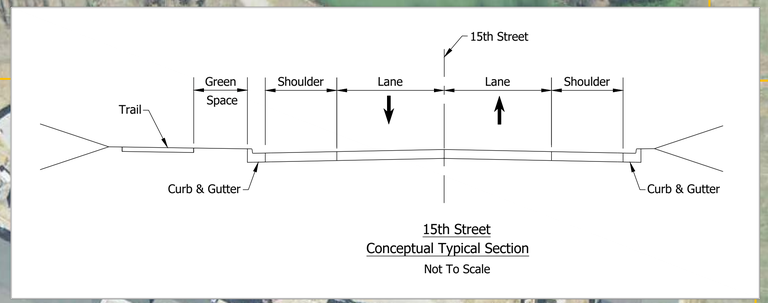
Lottes Lake

MILL STREET
CONCEPTUAL DRAWING
10/30/20 SCALE 1"=50'

LEGEND:

- New HMA Pavement
- Mill & Overlay
- Trail
- Curb & Gutter
- Sodding
- Parcel Line

Buschkoetter's Nursery, Lawn, and Garden Center



15th Street
Conceptual Typical Section
Not To Scale

Legacy Living Facility

Shiloh Church Of Jasper

SR 56

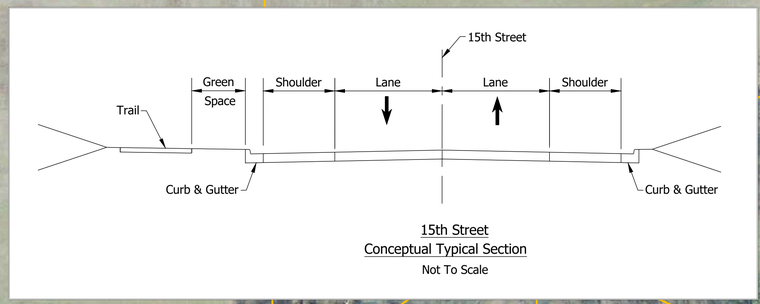
SR 56

SR 56 & W 15th STREET
CONCEPTUAL DRAWING
10/30/20 SCALE 1"=50'

LEGEND:

- New HMA Pavement
- Mill & Overlay
- Trail
- Curb & Gutter
- Sodding
- Parcel Line

Future Trail Location



15th Street
Conceptual Typical Section
Not To Scale

Crooked Creek

Future Trail Location

W 15th St.

Heather Ct.

SR 56 & W 15th STREET
CONCEPTUAL DRAWING
10/30/20 SCALE 1"=50'

LEGEND:

- New HMA Pavement
- Mill & Overlay
- Trail
- Curb & Gutter
- Bridge
- Sodding
- Parcel Line