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THE 2018 ADRIAN AREA NON-MOTORIZED TRANSPORTATION PLAN

FOR THE KIWANIS TRAIL AND SURROUNDING AREAS

THE KIWANIS CLUB OF ADRIAN, MICHIGAN

IN PARTNERSHIP WITH

THE CITY OF ADRIAN, ADRIAN TOWNSHIP, AND RAISIN TOWNSHIP

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AUTHORIZED BY

THE KIWANIS TRAIL DEVELOPMENT AUTHORITY

ADOPTED

[INSERT ADOPTION DATE UPON ADOPTION]

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FOR THE KIWANIS TRAIL AND SURROUNDING AREAS

ACKNOWLEDGMENTS

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REPORT CONTENTS

MAPS

INTRODUCTION

TO THE 2018 ADRIAN AREA NON-MOTORIZED TRANSPORTATION PLANNING REPORT

A CASE FOR NON-MOTORIZED TRANSPORTATION

For many decades, "mobility" was the overarching goal of the transportation industry. With the dawn of the automobile, Americans began enjoying an unprecedented level of mobility. The car opened up opportunities for economic expansion, personal recreation, and access to resources that were previously unavailable. Consider going grocery shopping without a personal vehicle. Or imagine what it was like to visit Yellowstone before the car. And imagine all of the job opportunities within a 50 mile radius that would have been unavailable to most people before the automobile. It is obvious that the automobile has transformed our society in many positive ways.

At the same time, the rise of the automobile in our society has contributed to the decline of mobility at the pedestrian scale. Vehicular dominance has resulted in spread-out developments, far-flung

subdivisions isolated from community assets, and stretched out commercial corridors. It has also culminated in the preferential planning of car-centric roadways that prioritize efficient movement of vehicles with little regard for other modes of transportation. Faster, wider roads, stretching for greater distances, intersecting cities and towns, became the standard. Walking to school, your friend's house, your community center, your community park, your grocery store, or your favorite shop has become increasingly difficult, if not impossible. With many community assets spread out or too dangerous to get to on foot, Americans have lost personal mobility within their communities. The prioritzation of vehicular mobility has resulted in communities that are no longer "walkable."

IMPACT OF UNWALKABLE COMMUNITIES

A community that is unwalkable can be dangerous, unwelcoming, unfriendly and both physically and socially disconnected. In an unwalkable community there are limited opportunities for community members to interact on a day-to-day basis. People don't feel safe allowing their children to play outside because of the threat of vehicular traffic. The costs associated with owning and operating a vehicle are forced upon residents because they have no other option. In an unwalkable community, essential services such as grocery stores, schools and medical services are either too far away to walk to or would be too dangerous to attempt to navigate to through the roadways and parking lots that prioritize vehicular travel. Jobs that were once within walking distance but have moved to the outskirts of the cities are no longer available to lower income community members who rely upon walking or public transit to get to work. Community health has deteriorated through the elimination of the regular physical activity that was once routine in the american life, resulting in chronic diseases from obesity and the deterioration in cardivascular health. The impact of an unwalkable community is profound.

IMPACT OF WALKABLE COMMUNITIES

In a walkable community pedestrians are given priority in neighborhood, work, school and shopping areas. People of all ages and abilities are given access to their community's gathering places, amenities, and resources. Walkable communities lead to more social interaction, physical fitness, and diminished social disorder such as crime. Traffic calming measures reduce vehicle speeds. Parents feel more comfortable about their children being outside in their neighborhoods with the reduced threat of motor vehicles. Children spend more time outside with other children so they are more active, physically fit and healthy. This leads to communities and neighborhoods that are safer, healthier and friendlier.

A walkable community also provides non-motorized access to education and employment. Economically, socially or physically disadvantaged students/workers who don't have access to or can't afford a vehicle now have a means to not only improve themselves, but through being a contributing member of the workforce, help to improve the economy of the community as whole. Walkable communities are more livable communities and lead to whole, happy, healthy lives for the people who live in them.

NON-MOTORIZED, ACTIVE, HUMAN-POWERED?

The terms non-motorized transportation system and active transportation system as well as other terms such as human powered transportation system can be used interchangeably. However the use of negatives like the "non" in non-motorized can sometimes give a perception that the non-motorized system is fighting against the motorized or vehicular system, when in fact, if designed properly, the non-motorized and motorized systems can work together to create a unified and all-inclusive transportation system. The use of the term "active" is thought to take away this adversarial connotation and re-orient the terminology to emphasize physical activity, which is an important issue throughout the United States. More and more industry experts and agencies are using the term "active transportation" side-by-side with "non-motorized", and some entities, such as the National Parks and Recreation Association, have dropped "non-motorized" completely in favor of "active transportation".

WHAT MAKES UP A NON-MOTORIZED TRANSPORTATION SYSTEM (NMTS)?

A Non-Motorized Transportation System (NMTS) is made up of a network of infrastructure such as sidewalks, pathways, and bicycle lanes that connect people to places, businesses, and resources throughout the community. The NMTS works in concert with the roadway infrastructure and spans the gaps where the road network does not exist. While NMTS infrastructure may look different from community to community, there are a few basic types of infrastructure that are common to most non-motorized transportation systems.

SIDEWALK

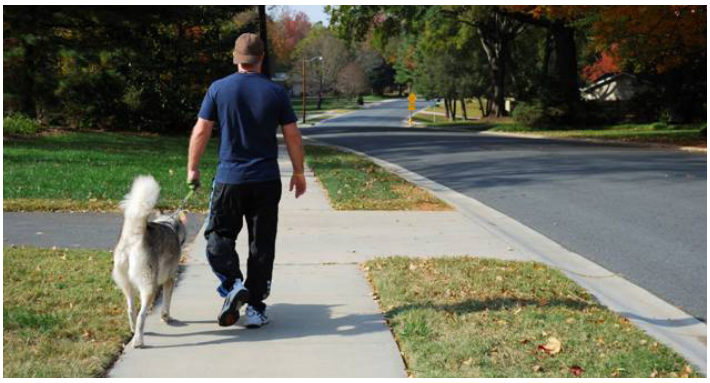


Photo 1: Sidewalk

A sidewalk is the portion of public right of way between the street and the adjacent properties that is paved or improved and intended for use by pedestrians (although many other types of users usually use them, too). Sidewalks have these common characteristics:

- A paved area 5 to 6 feet wide. (ADA standard is 5 feet).
- Typically concrete, though other materials may be used, such as brick or asphalt.
- Often built by developers as part of their projects, though sometimes they are built by the city or municipality. It is common to have gaps between sections of sidewalks as a result of development occurring in a non-linear progression.
- Ordinances often place the burden of maintenance and replacement on the adjacent property owners.
- Ordinances often prohibit use of the sidewalk by anyone but pedestrians.

BICYCLE LANE

Photo 2: Bike lane along a roadway

A bicycle lane is a designated lane of traffic within the roadway that is specifically limited to bicycle use. It is considered the preferred facility for bicycles for two primary reasons: 1) mixing fast bicyclists and slow pedestrians can result in dangerous collisions or conflicts of use, 2) bicycles are more visible to vehicles at intersections when the bicyclists ride in the road as opposed to on a pathway that is adjacent to the road. Bicycle lanes have these common characteristics:

- 5' minimum width when curb is present (AASHTO).
- 4' minimum width with no curb (AASHTO).
- Greater than 5' is preferred depending on the context of the roadway.
- Designated with markings, arrows, and signage (AASHTO).
- Green lane coloring may be used (AASHTO).

SHARED USE PATH

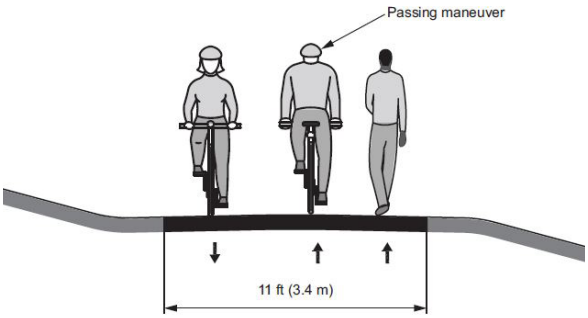


Photo 3: Cross-section of a shared-use path

A shared use path is a multi-use facility for non-motorized traffic that extends the non-motorized transportation system beyond the road right of way. All types of non-motorized users, including bicyclists, rollerbladers, skateboarders, walkers, runners, and push scooters, are encouraged to share the same path. Shared use paths are commonly referred to as "trails," and are often given names with the word "Trail" in them, but they are not technically trails. Trails are typically natural, "unimproved," or unpaved pathways. Shared use paths are always paved, have specific design criteria, and don't always extend through natural environments. Shared use paths have these common characteristics:

- Generally, the minimum recommended width (AASHTO) is 10' for two way traffic. Up to 14' wide is common.
- The minimum recommended width (AASHTO) for two way traffic with bicyclist passing in the center is 11'.
- Smaller widths to as little as 8' are allowed (AASHTO), though only in low traffic volume scenarios with limited maintenance vehicle loading.
- May split the path to segregate uses (AASHTO) using a minimum of 5' for the pedestrian portion and 10' for the

bicycle portion. These segregated lanes can be adjacent to each other or physically separated.
- Typically asphalt, though concrete or other materials may be used.
- Inclusion of a shared use path is complementary to bicycle lanes or other types of bicycle facilities in the road right of way and should not be considered a replacement for those facilities

SIDE PATH

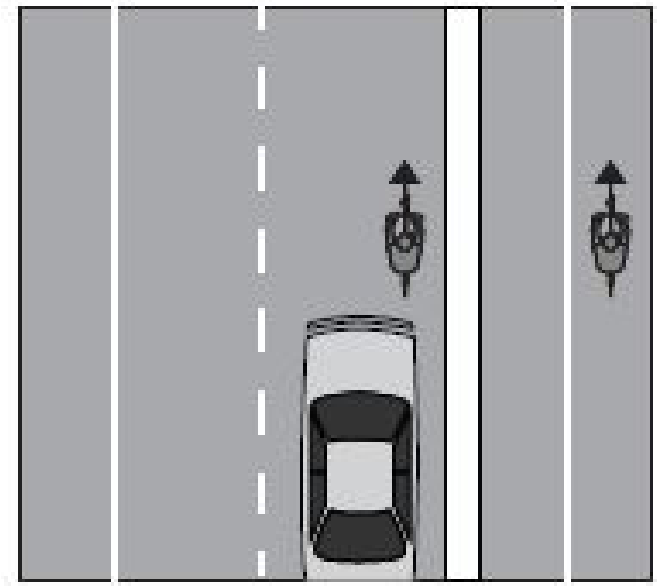


Photo 4: Example of side path running parallel to a roadway

A side path is like a sidewalk, but it is intended for more than pedestrians. It is found parallel to the roadway in the public right of way, but it behaves more like a shared use path. Bicyclists, rollerbladers, and other types of people are allowed to use the side path alongside pedestrians. In order to accommodate the varied uses, side paths are wider than sidewalks. Often a side path is simply a shared use path that has a portion of the path routed alongside a road. Side paths have these common characteristics:

- A two-way side path uses the same design criteria (AASHTO) as a shared use path (see Shared Use Path).
- A two way side path is typically only on one side of the road.
- A one-way side path may be smaller than the typical shared use path. Design criteria is based on the context of the site.
- One-way side paths must be placed on both sides of the road to accommodate proper traffic patterns. Signage must be present to identify one-way usage (AASHTO).
- Typically made of asphalt, though concrete or other materials may be used.
- Inclusion of a side path is complementary to bicycle lanes or other types of bicycle facilities in the road right of way and should not be considered a replacement for those facilities.

PAVED SHOULDERS

Photo 5: Paved shoulder along roadway

The "paved shoulder" is the portion of paved roadway outside of the white line on the right side of the road. Paved shoulders are not travel lanes and they are typically designed for temporary parking, emergency pullovers, and emergency access. They can be a variety of widths; some paved shoulders are only 6", others are greater than 8'. While paved shoulders are not intended to be used as travel lanes, they can be an excellent facility for bicyclists (and sometimes pedestrians) to utilize under certain circumstances, acting as unofficial bike lanes. For paved shoulders to be used in an NMTS, they should have these common characteristics:

- 4' minimum width when no curb is present (AASHTO).
- 5' minimum width when curb or other vertical elements (such as guard rails) are present (AASHTO).
- On roads with speeds over 50 mph, widths greater than 5' should be utilized (AASHTO).
- Provided on both sides of the road (AASHTO).
- 4' minimum shoulder maintained at bypass lanes (AASHTO).

SHARED LANES

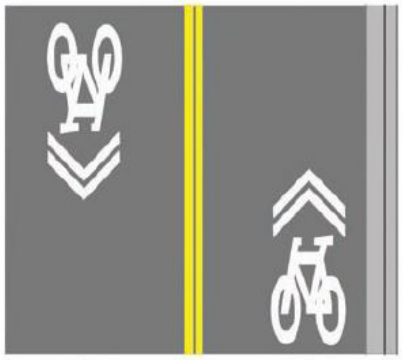


Photo 6: Example of shared lane pavement markings

A shared lane is a lane in a road that is used by both bicyclists and automobiles. What many people don't know, however, is that all roads by default are "shared," except where prohibited by regulation or statute. Bicycles are considered legal vehicles and are allowed to utilize all lanes of traffic like a car. However, some automobile drivers don't know this and they treat bicyclists as if they belong in the ditch rather than on the road. "Shared lanes" are therefore enhanced lanes that facilitate bicycle use and promote greater awareness and respect for bicycle traffic. Enhanced "shared lanes" have these common characteristics:

- Typically only implemented on low-speed roads, 35 mph or less.
- Lane markings added to the middle of the driving lane to indicate bicycle usage is permitted and expected. Can be positioned to indicate approximate expected bicycle position within the lane to facilitate safer passing practices.
- Signage signals to drivers that bicyclists may be entering the roadway and/or that they have the right to use the entire lane.
- Additional roadway facilities may be implemented to facilitate bicycle use such as: bicycle detectors at intersection signals, appropriate signal timing for bicycle speeds, storm drain modifications, and other enhancements.

WAYFINDING

Wayfinding signs are important tools in identifying routes and helping people reach their destinations. At the pedestrian and bicycle level, these signs are small and meant to be read at lower speeds. AASHTO provides guidance on wayfinding signs for bicycle facilities that can easily be incorporated into defined bicycle routes. Signs for pedestrians are often designed by the communities based on the context of the surroundings (downtown, parks, etc) and often take on a variety of forms. It is also important to consider how to use wayfinding signs to direct vehicular traffic to certain facilities, such as parks or trail heads, in order to facilitate easy access for those who may choose to drive to a certain location along the non-motorized transportation network.

Photo 7: Example of a wayfinding sign

CONTROLLED CROSSINGS

In locations where the non-motorized transportation facilities intersect with other, certain crossings, improvements should be considered to enhance safety. All crossings should be authorized by and coordinated with the proper transportation authority. Typical crossings include:

- **Railroad crossings:** A portion of bicycle lane or pathway that is designed to intersect railroad tracks at a 90 degree angle. This allows wheels to cross the tracks without getting caught between in the grooves. Crossing railroads at a sharper angle can trap the wheel in the track and cause the rider to lose control.
- **Mid-block crossings:** A crossing point positioned in the middle of a block rather than at an intersection. These crossings provide places to safely cross a road where traveling to the next intersection is impractical. They take on many forms and are designed to each specific situation.
- **Striped crossings:** A painted area that is typically accompanied by signage to indicate legal pedestrian crossings on roadways. Used as a low-cost first step in creating a safer controlled crossing. Often used by itself or in tandem with signalization.
- **Rectangular Rapid Flash Beacon (RRFB):** A crossing sign with pedestrian-activated, flashing lights mounted on the same post. Used to make mid-block crossings more visible where moderate traffic volumes are present. Requires traffic

study to determine need.

- **HAWK or PHB crossings:** An overhead, standalone traffic light, activated by pedestrians, typically in high traffic volume situations at mid-block crossings or at roundabouts. Used to temporarily stop traffic, allowing pedestrians to cross the road safely. Requires traffic study to determine need.

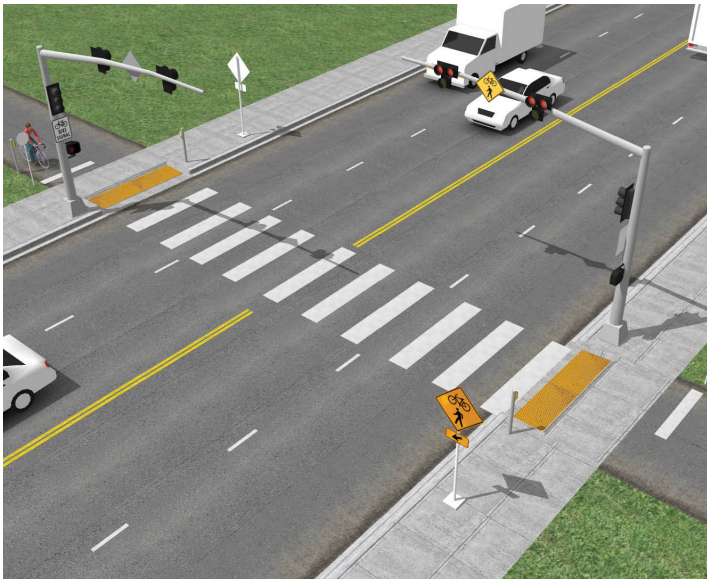


Photo 8: Mid-block crossing with HAWK signal

ROAD IMPROVEMENTS

RETROFIT

A retrofit expands the existing roadway to accommodate bike lanes or paved shoulders by adding material to the outer edges of the existing pavement. Retrofits are appropriate in situations where the road still has plenty of life left in it and can simply be modified to include bicycle facilities.

LANE CONVERSIONS

Sometimes it is possible to add bicycle facilities, such as paved shoulders or bike lanes, to existing roadways by just changing the striping on the road. It could be as simple as reducing lane widths and making room for a bike lane, or it could be more complicated like in the case of a road diet on a 4 lane road where the outer lanes are eliminated, a center turn lane is added, and the balance of roadway is used for bike lanes.

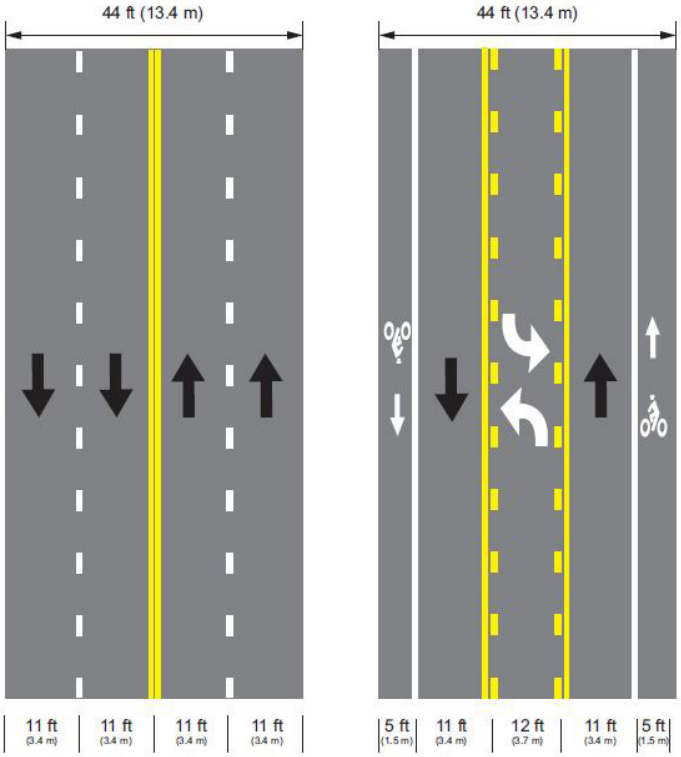


Photo 9: Example of lane conversion scenario

BICYCLE BOULEVARDS

A bicycle boulevard is a series of contiguous street segments that create a seamless bike thoroughfare through a particular portion of a community. The streetscape along a bicycle boulevard is modified to restrict vehicle use and slow traffic while at the same time increase bicycle transportation efficiency and safety.

Photo 10: Bicycle boulevard

RELATED TERMS AND DEFINITIONS

EASEMENT

An interest in land owned by another that entitles its holder to a specific limited use or enjoyment. Easements may be granted by property owners to provide space to implement non-motorized transportation facilities for public use on private property.

RIGHT-OF-WAY

A right-to-make a way over a piece of land, usually to and from another piece of land. A right-of-way is a type of easement granted or reserved over the land for purposes of utilties, transportation, or other uses of public benefit. This can be for a highway, public footpath, rail transport, canal, as well as electrical transmission lines, oil and gas pipelines. A right-of-way is reserved for the purposes of maintenance or expansion of existing services within the right-of-way. In the case of an easement, it may revert to its original owners if the facility is abandoned.

WALKABLE/WALKABILITY

A measure of how friendly an area is to walking. Factors influencing walkability include the presence or absence and quality of footpaths, sidewalks or other pedestrian rights-of-way, traffic and road conditions, land use patterns, building accessibility, and safety.

Photo 1: UNC-Chapel Hill Highway Safety Research Center, Vanasse Hangen Brustlin Inc. Westat. (October 2010). *Pedestrian Safety Strategic Plan: Recommendations for Research and Product Development.* page 52

Photo 2: *Class II.* digital image. *Silicon Valley Bicycle Coalition.* web. 10/21/2016. https://bikesiliconvalley.org/bikeway-design/

Photo 3: ASHTO. (2012). *Guide for Development of Bicycle Facilities*

Photo 4: ASHTO. (2012). *Guide for Development of Bicycle Facilities*

Photo 5: *Trail/Shared Use Path (Paved)*. digital image. iowadot.gov. web. 10/21/2016. http://www.iowadot.gov/iowabikes/bikemap/PavedShoulder.html

Photo 6: ASHTO. (2012). *Guide for Development of Bicycle Facilities*

Photo 7: Michael Farrell, COG/TPB. (DRAFT May 15, 2007). *Best Practices in Bicycle and Pedestrian Wayfinding in the Washington Region.* Page 6

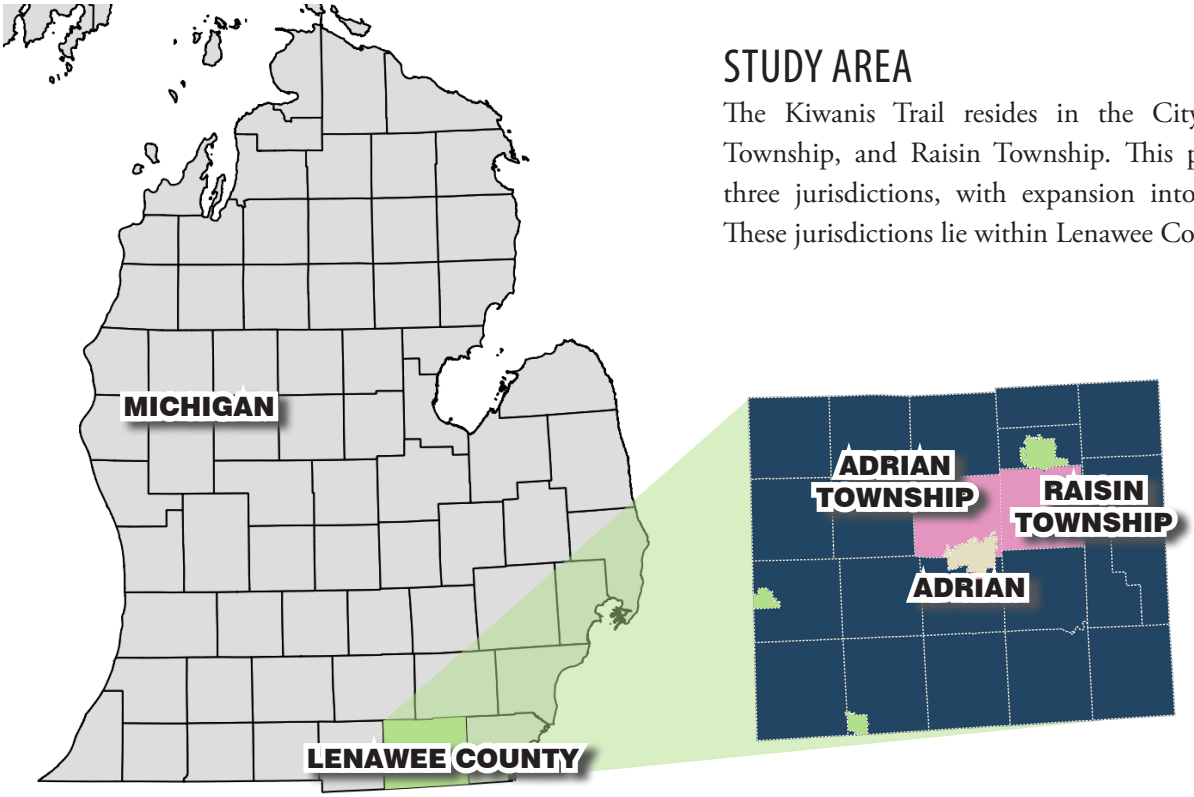
Photo 8: NACTO. (March 2014). *Urban Bikeway Design Guide, Second Edition*

Photo 9: ASHTO. (2012). *Guide for Development of Bicycle Facilities*

Photo 10: Digital Image. *tcsidewalks.blogspot.com*. web. 10/21/2016. http://tcsidewalks.blogspot.com/2012/04/last-minute-amendment-strips-traffic.html

EXISTING CONDITIONS

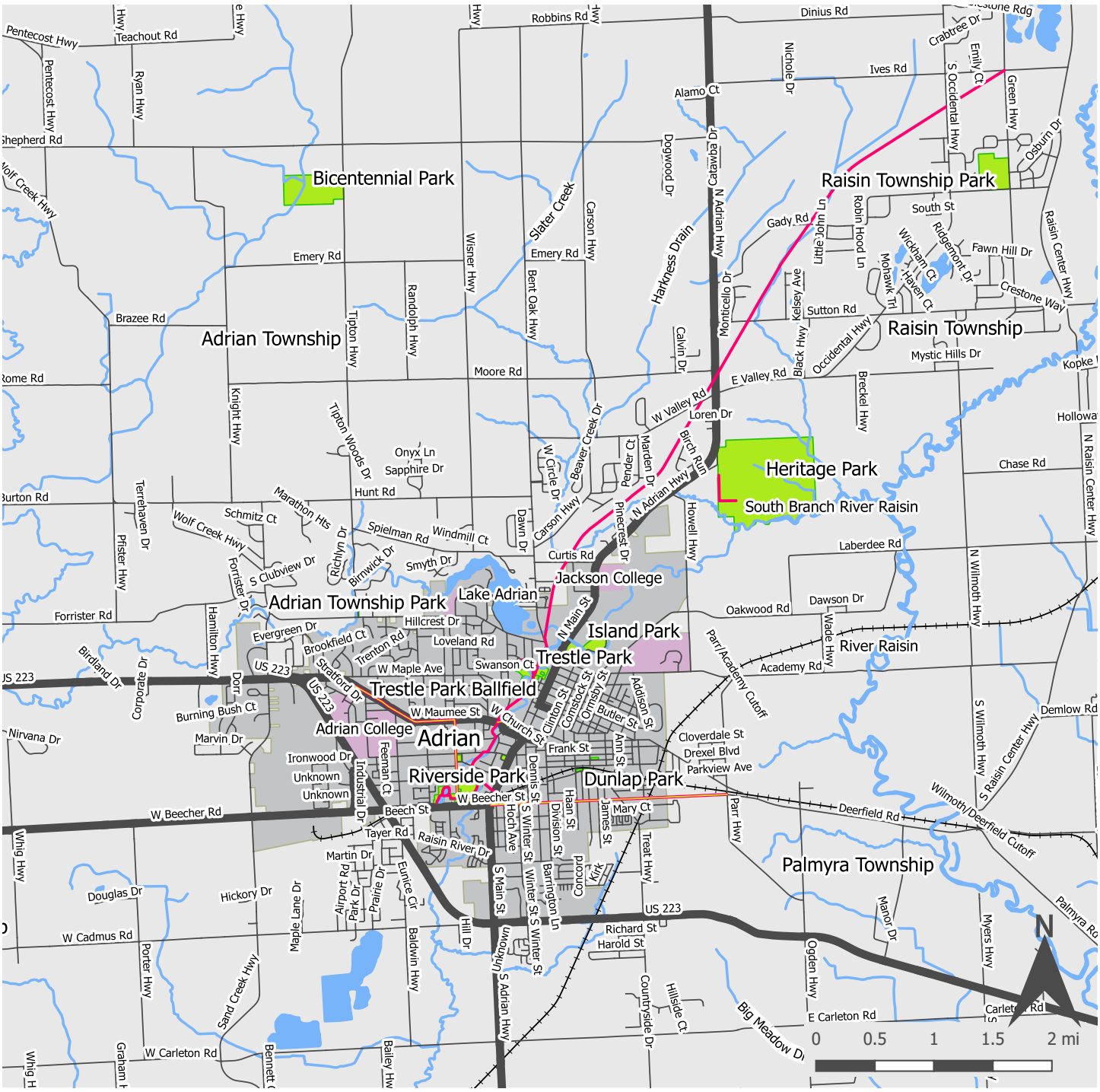
UNDERSTANDING THE CONTEXT



Above: Map of Study Area

STUDY AREA

The Kiwanis Trail resides in the City of Adrian, Adrian Township, and Raisin Township. This plan focuses on these three jurisdictions, with expansion into Madison Township. These jurisdictions lie within Lenawee County.



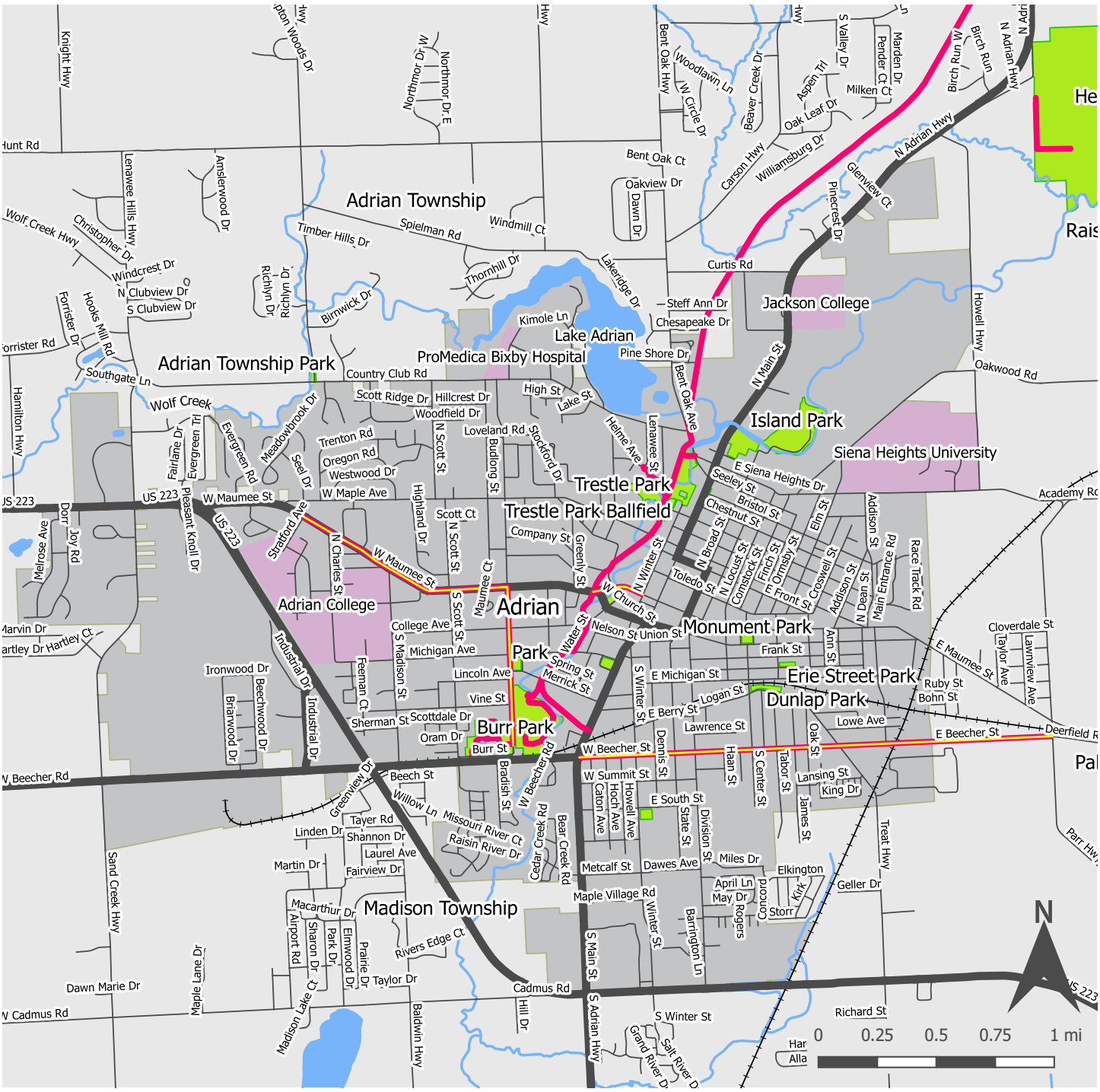
Legend

KiwanisNonMotorizedSystem

- Existing SUP
- Existing Bike Lane
- Prominent Locations
- Parks

EXISTING CONDITIONS MAP (STUDY AREA)

There are a number of schools, parks, neighborhoods, and commercial areas within the study area. This map shows the existing non-motorized transportation network overlaid on the area map. While there are gaps in the network, the non-motorized transportation system reaches many of the area's neighborhoods and community resources.



Legend

KiwanisNonMotorizedSystem

- Existing SUP
- Existing Bike Lane
- Prominent Locations
- Parks

EXISTING CONDITIONS MAP (CITY OF ADRIAN)

The existing non-motorized transportation network has proven to be an effective way to travel throughout the area. Within the City of Adrian, shared use paths and bike lanes work well to connect many of the parks and prominent locations; however there exist some areas that are lacking connectivity and several difficult intersections and crossings that could greatly benefit from improvement.

CHARACTER OF STUDY AREA

CITY OF ADRIAN

Adrian is the county seat of Lenawee County and is home to Adrian College, Siena Heights University and Jackson College. There are a broad range of year-round activities including Art-A-Licious, Blues & Brews Festival and Adrian's First Fridays.

Throughout Adrian, there are more than 17 community parks and open spaces, an award-winning school district and a historic downtown Adrian featuring 21st century dining, shopping and entertainment. Arts and cultural activities are the core of our downtown, anchored by the Croswell Opera House, the longest continually operating opera house east of the Mississippi. Another community asset is the Adrian Symphony Orchestra, one of the premier small market orchestras in the nation, which attracts the finest musicians from the world's stages to produce performances of the highest quality.

Nearby universities and training institutions constitute an extensive employment and educational resource for area businesses, including Adrian College, Siena Heights University, Jackson College and the LISD Tech Center.

The South Branch River Raisin bisects the city from south west to north east, running through the middle of the city. The river runs through the downtown, as well as through several parks. It eventually meets up with Wolf Creek at the outlet of Lake Adrian. The river has been highly urbanized throughout the city, with development pressing in around the river on both sides. The river still maintains a natural edge through much of the city, but is tightly constrained by adjacent development.

ADRIAN TOWNSHIP

Adrian Township resides directly north of the City of Adrian, and is comprised primarily of rural and agricultural development. The predominant Township land use is agricultural with gently rolling terrain, fertile soils with favorable growing conditions and good transportation access. Much of the Township has been identified by the U.S. Soil Conservation Service as Prime Farmland. Adrian Township does contain some commercial and industrial development, primarily along M-52 (Adrian Highway).

The River Raisin crosses through the southeastern corner of the township near Lake Adrian. There are also several creeks and some wetlands throughout the township. A significant portion of the township is still forested with scattered woodlot patches.

RAISIN TOWNSHIP

Raisin Township resides to the north east of the City of Adrian, directly east of Adrian Township. The City of Tecumseh resides along its northern border. Like Adrian Township, Raisin Township is primarily rural and agricultural with some commercial and industrial.

The township is bisected by the River Raisin, which runs north to south through Raisin Towship. Both sides of the township contain a mixture of all development types, with the west half characterized by a mixture of subdivisions, agriculture, and some commercial and industrial development, and the east half is characterized primarily by agriculture with limited areas of subdivisions and commercial and industrial development.

The River Raisin resides in a valley that has been left in a natural state, with forests, wetlands, and other related ecosystems existing with the river corridor. The River Raisin is the most significant natural resource in the township.

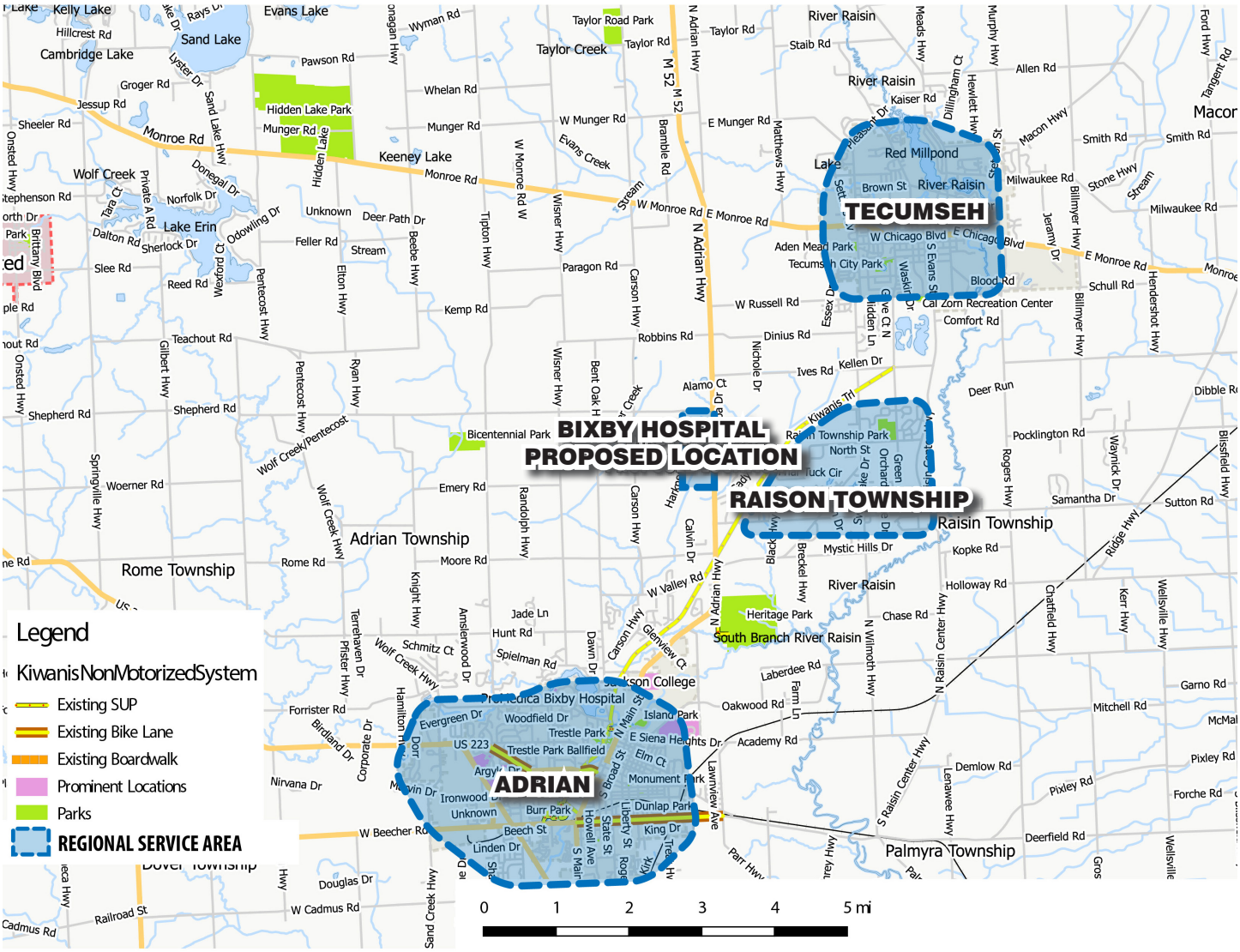
MADISON TOWNSHIP

Madison Township resides directly south of the City of Adrian and is made up of primarily agriculture, with some subdivisions and commercial and industrial development occuring adjacent to the boundaries of the City of Adrian. The Lenawee County Airport resides in the northern half of the township.

The South Branch River Raisin bisects Madison Township, from south west to north east. The river corridor maintains a relatively natural state, with agriculture and rural development putting pressure on the riparian zone throughout the river corridor. There are several other creeks that are within the township, as well as wetlands and forests.

NEIGHBORING JURISDICTIONS

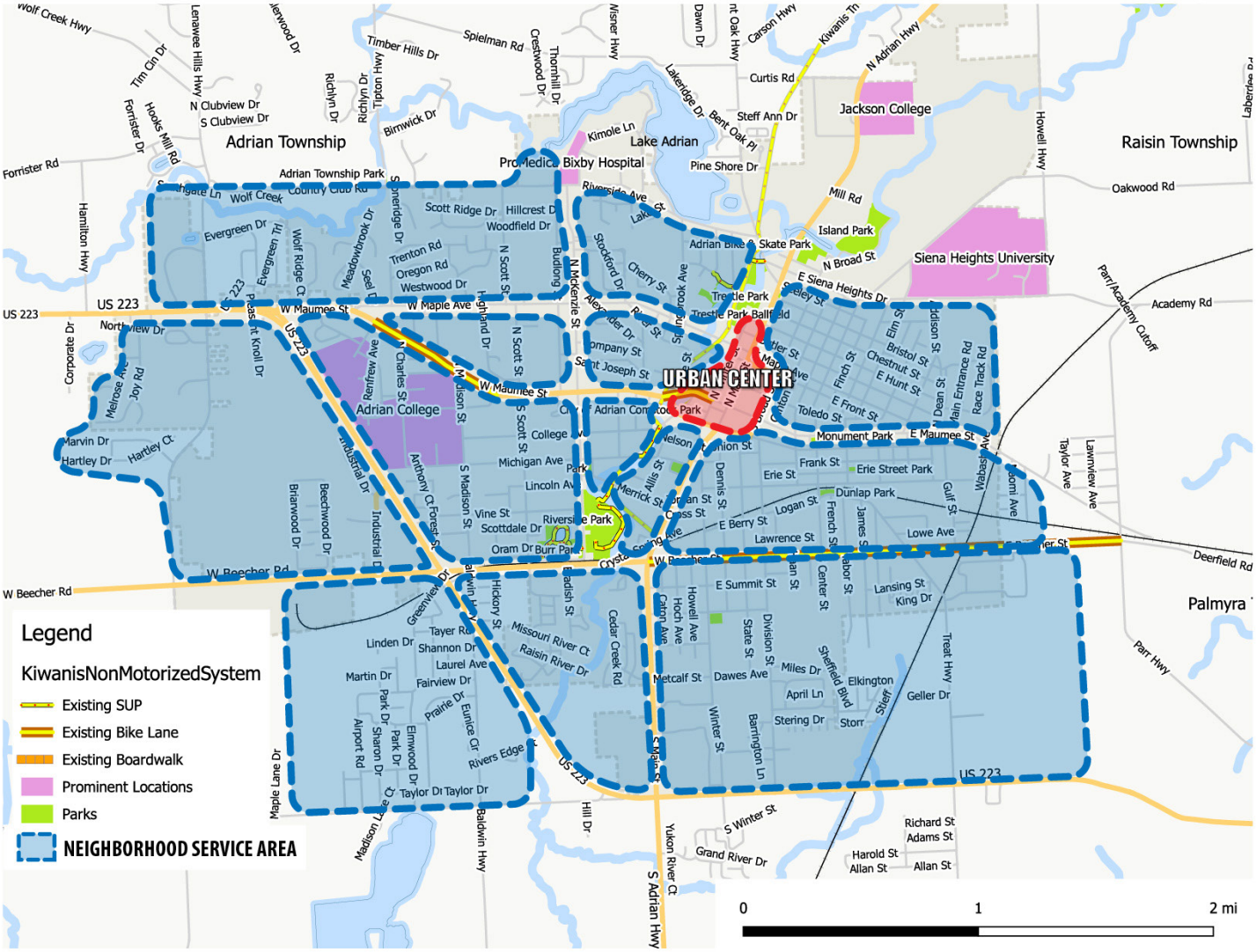
The study area is bordered by the following jurisdictions (starting on the north, proceeding counter-clockwise): The City of Tecumseh, Tecumseh Township, Franklin Township, Cambridge Township, Rome Township, Dover Township, Seneca Township, Fairfield Township, Ogden Township, Palmyra Township, Deerfield Township, and Ridgeway Township. Several villages reside within these townships, including: Onsted, Clayton, Blissfield, and Britton.



Making connections to nearby townships, cities, and villages helps strengthen the network and increase mobility across the region.

REGIONAL SERVICE AREA MAP

With jobs, parks, schools, and other community resources available across each other's borders, it is important to work together to create an interconnected, regional transportation network. This map shows how neighboring jurisdictions relate to each other geographically.



The non-motorized transportation network should connect to all of the trip generator regions.

TRIP GENERATOR MAP

Trips are generated primarily from people's homes. They start at their house, make their way around town, and return home. This map shows the various regions of the study area that act as trip generators. The neighborhoods been combined into grouped areas to show the relationship between the edges of the neighborhoods and the nearby non-motorized transportation network. This helps us see where the non-motorized transportation network needs to be routed in order to provide access to as many residents as possible.

PLANNING

PAST, PRESENT, AND FUTURE

A LOOK AT PAST PLANNING EFFORTS

The Kiwanis Trail and the surrounding area has a history of regionally and local planning efforts that have informed and driven improvements to the regional transportation network. These past plans were consulted in this planning effort.

LOCAL PLANNING REPORTS

The following local planning reports were consulted in order to inform this plan:

- MDOT University Region Transportation Plan
- Lenawee County 2015-2019 Parks and Recreation Plan
- The 2015 Connecting Lenawee Plan: A Non-Motorized Vision for Lenawee County
- League of American Bicyclists 2017 Bicycle Friendly Community Report Card
- River Raisin Management Plan 2009
- Raisin Township 2017-2021 Parks and Recreation Master Plan
- 2015 Adrian Charter Township Master Plan
- 2006 City of Adrian Comprehensive Plan

THE KIWANIS-LEAD PLANNING PROCESS

With a number of planning processes informing the Kiwanis Trail and surrounding regional non-motorized transportation network, the Kiwanis Club of Adrian, in cooperation with the City of Adrian and Adrian Township took on a focused planning effort to identify ways to improve and expand upon the existing Kiwanis Trail system.

OTHER SOURCES OF INFORMATION

Some municipalities do not have non-motorized transportation plans. Information for these areas was extracted from local knowledge, websites, references in other planning reports, and site visits.

GOALS AND OBJECTIVES FOR 2018 AND BEYOND

The following goals and objectives were used in the development of the 2018 Non-Motorized Transportation Plan. These goals look to the future and seek to improve and expand upon the non-motorized transportation system that the Adrian are currently features.

1. **Create a non-motorized transportation system, also called an "active transportation system," within the Adrian area in which traveling by walking, biking, and other non-motorized transportation options are just as or more convenient than traveling by passive transportation options, such as by car or bus.**
   a. Provide a variety of transportation options that accommodate as many modes of non-motorized transportation as possible.
   b. Provide all residents access to the non-motorized transportation system from their neighborhoods.
   c. Route the non-motorized transportation system to reach all of the area's diverse destinations.
   d. Route the non-motorized transportation system to connect to adjacent communities.
   e. Bridge gaps in the system to create a continuous network of travel route options.

2. **Provide a non-motorized transportation system that is equitable.**
   a. Distribute the non-motorized transportation system to reach as many residents as possible.
   b. Create non-motorized transportation infrastructure that is accessible and usable by people of all abilities and walks of life.
   c. Create a non-motorized transportation system that does not require motorized transportation to reach (whether by bus, car or otherwise).

3. **Provide a non-motorized transportation system that is enjoyable to use.**
   a. Prioritize routing options that are scenic or otherwise have positive aesthetic values.
   b. Design the environment surrounding the non-motorized transportation infrastructure to be aesthetically pleasing where it is otherwise not.
   c. Create a non-motorized transportation network that incorporates support facilities that accommodate recreational uses.
   d. Design the non-motorized transportation facilities to promote and facilitate social uses.
   e. Develop the non-motorized transportation system so that it is comfortable and clean.

4. **Provide a non-motorized transportation system that is integrated with other transportation options.**
   a. Provide connections to local bus routes.
   b. Provide vehicular access at strategic locations (for example: trail heads and commuter parking lots).
   c. Provide connections to future forms of public transportation as they become available.

5. **Develop a non-motorized transportation system that incorporates environmentally responsible practices into the planning, design, and construction of the system.**
   a. Adopt holistic policies that define non-motorized transportation corridors as part of complex, overlapping environmental systems which should be supported, enhanced, conserved, preserved, and/or protected through the planning, design, and construction of the non-motorized transportation network.
   b. Utilize products and materials that reduce or eliminate adverse effects to the environment, such as:
      i. Use products and materials that are responsibly harvested, managed, and manufactured.
      ii. Use products and materials with low embodied energy.
   c. Implement design, construction, and management practices that support healthy environments and

ecosystems along the non-motorized transportation route, such as:

i. Use the non-motorized transportation network, especially trail routes, to create natural habitat corridors that connect habitat fragments.
ii. Actively manage the natural environment around the non-motorized transportation network to reduce the impact and spread of invasive species.
iii. Utilize land along the non-motorized transportation network to develop habitat that supports a diversity of plant and animal species, especially critically important species such as honey bees.
iv. Plant trees and other vegetation along the non-motorized transportation system to improve the local micro-climate and air quality for users.
v. Implement Low Impact Development techniques throughout the non-motorized transportation network to appropriately manage storm water and reduce system loads on the existing storm water system.

6. **Develop a non-motorized transportation system that is safe for all users.**
   a. Adopt policies that prioritize the safety of non-motorized transportation users throughout the various interconnected transportation networks.
   b. Work with the Lenawee County Road Commission to implement pedestrian safety measures along roadways, especially at road crossings.
   c. Implement traffic calming techniques where appropriate to make the public right of way (public realm) safer and more welcoming to non-motorized users.
   d. Use up-to-date national, state, and local standards when designing and implementing the non-motorized transportation system.
   e. Address safety concerns in existing infrastructure, especially at road intersections and places where multiple modes of transportation converge.

7. **Maintain the infrastructure of the non-motorized transportation system to such standards that continually fulfill the goals and objectives of this plan and uphold the health, safety and welfare of the users of the non-motorized transportation network.**
   a. Develop regular (daily, weekly, monthly, and annual), periodic (every 2 years, 5, years, 10 years) and long-term (end-of-life) maintenance programs for the non-motorized transportation system.
   b. Utilize appropriate funding mechanisms to adequately fund the maintenance programs.
   c. Provide adequate training to maintenance staff to enable them to successfully implement the various maintenance activities required throughout the life-cycle of the non-motorized transportation system.
   d. Establish partnerships with other government agencies, non-profit organizations, private companies, or individuals to creatively manage and implement maintenance programs.

THE PLAN

SETTING THE VISION FOR 2018 AND BEYOND

PURPOSE

The purpose of the Non-Motorized Transportation Plan is to establish a long-term vision for creating a comprehensive non-motorized transportation network. The plan describes the ultimate network layout that will eventually be built, however long it takes. When all of the infrastructure outlined in this plan has been constructed, this plan will have been fulfilled.

This plan is future-oriented and focuses on new infrastructure projects that will help fill gaps and extend the non-motorized transportation network. This plan also focuses on improvements to existing features. The plan seeks to provide a planning framework to guide funding and construction efforts in order to help bring the complete system to life. Some Things to consider throughout the implementation process include inter-jurisdictional coordination, ordinances, planning processes, funding mechanisms, design criteria, and continued public engagement. These issues are all inter-related and contribute to the complex environment in which construction projects exist. The right approach will help create successful projects.

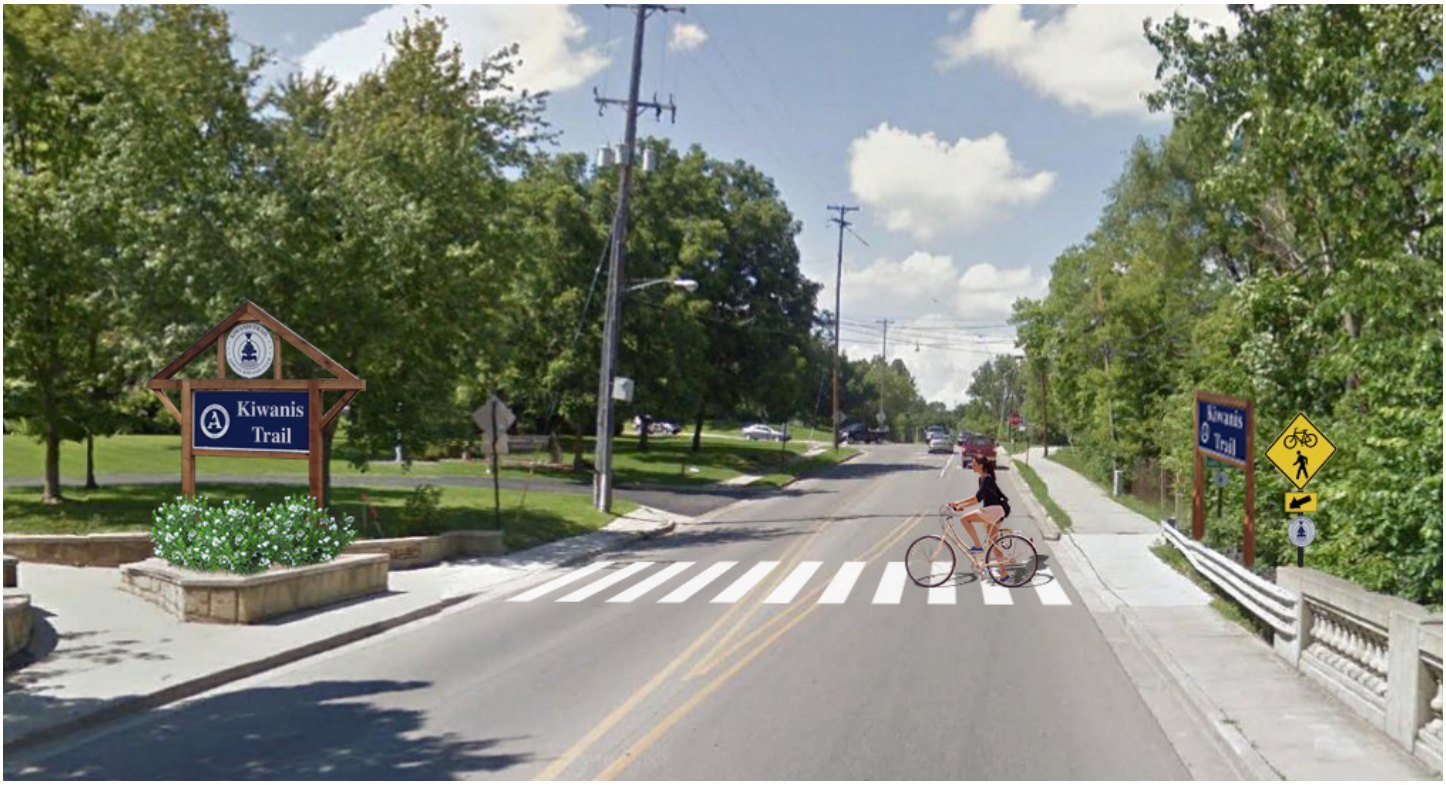
The first section of this plan focuses on improvements to the existing non-motorized transportation system with a special emphasis on the Kiwanis Trail. The existing Kiwanis Trail is a wonderful asset that has been well thought out and well designed. However there is always room for improvement. The largest deficiency of the current non-motorized trail is recognition and awareness. The Kiwanis Trail has developed a beautiful theme with their signage as seen in locations such as Bent Oak Crossing Park and Trestle Park. (As pictured in the photo below)

This theme should continue throughout the entirety of the trail system. A uniform signage system not only brings increased awareness and easier navigation for users, but also increases awareness for vehicular traffic. The more easily a driver can recognize a trail crossing, the higher their level of awareness will be which leads to increased safety for all parties.

There are several intersections in particular that could benefit from the inclusion of additional signage and safety measures. Amenities such as directional signage for trail users where the trail route may be unclear, pavement striping across roadways, and advanced warning signs for vehicular traffic particularly in more rural areas can greatly increase awareness and safety in these areas. Below is a graphic demonstrating some of these proposed amenities at the Bent Oak Avenue crossing.

it the most feasible project in the plan at that time. With this in mind, the priority plan should be considered a flexible guide that simply identifies today's considerations.

Routine and periodic maintenance projects, are also critically important to the success of the system. This plan brings attention to a few areas in need of maintenance but it is not intended to provide a comprehensive review of the existing conditions of the existing infrastructure, nor does it outline maintenance projects. These activities are assumed elements of any system's life-cycle and it shall be the responsibility of the appropriate governing body to regularly monitor the conditions of the infrastructure within their jurisdiction and execute these projects on a regular basis.



Kiwanis Trail - Bent Oak Avenue Crossing

A portion of this plan is dedicated to project priorities for the next five to ten years. These projects are based on current needs and potential feasibility. The priorities may shift over time as new funding sources and information come forward. For example, a project that was not considered a priority may end up rising to the top of the priority list because specific funding mechanisms or coordinated construction efforts make

RECOMMENDATIONS FOR ALL EXISTING BIKE LANES AND PAVED SHOULDERS

Where there are existing bike lanes and paved shoulders that do not meet AASHTO's guidelines for bicycle facilities, the trail authority, local jurisdictions, and Lenawee County should work cooperatively to upgrade the infrastructure to meet those standards, as feasible. This means maintaining a minimum 4'

width on all bike lanes and paved shoulders where there are no vertical obstructions on the side of the road (curbs, guard rails, etc.), and a minimum width of 5' where there are vertical obstructions on the side of the road. See AASHTO's guidelines for more details.

RECOMMENDATIONS FOR ALL EXISTING SIDEWALKS

Where there are existing sidewalks that are less than 5' wide, the trail authority, local jurisdictions, and Lenawee County should work cooperatively to upgrade the sidewalks to be at least 5' wide, as feasible. This ensures compliance with the Americans with Disabilities Act and provides good flow for bi-directional pedestrian traffic in low-traffic areas. It is recommended to construct sidewalks up to 8' wide in areas with higher traffic.

RECOMMENDATIONS ON NON-PUBLIC LAND

The improvements shown on this plan are not intended to indicate a forced taking of land, but rather a recommendation for optimal routing. It is understood that any land owned by private entities, utility companies, or other governmental agencies must be used with permission and by legal agreement, typically in the form of an easement.

LEGEND CLARIFICATIONS

COMBINED ELEMENTS

The following recommended, related features have been combined into a single form of infrastructure in order to maintain clarity and order on the map:

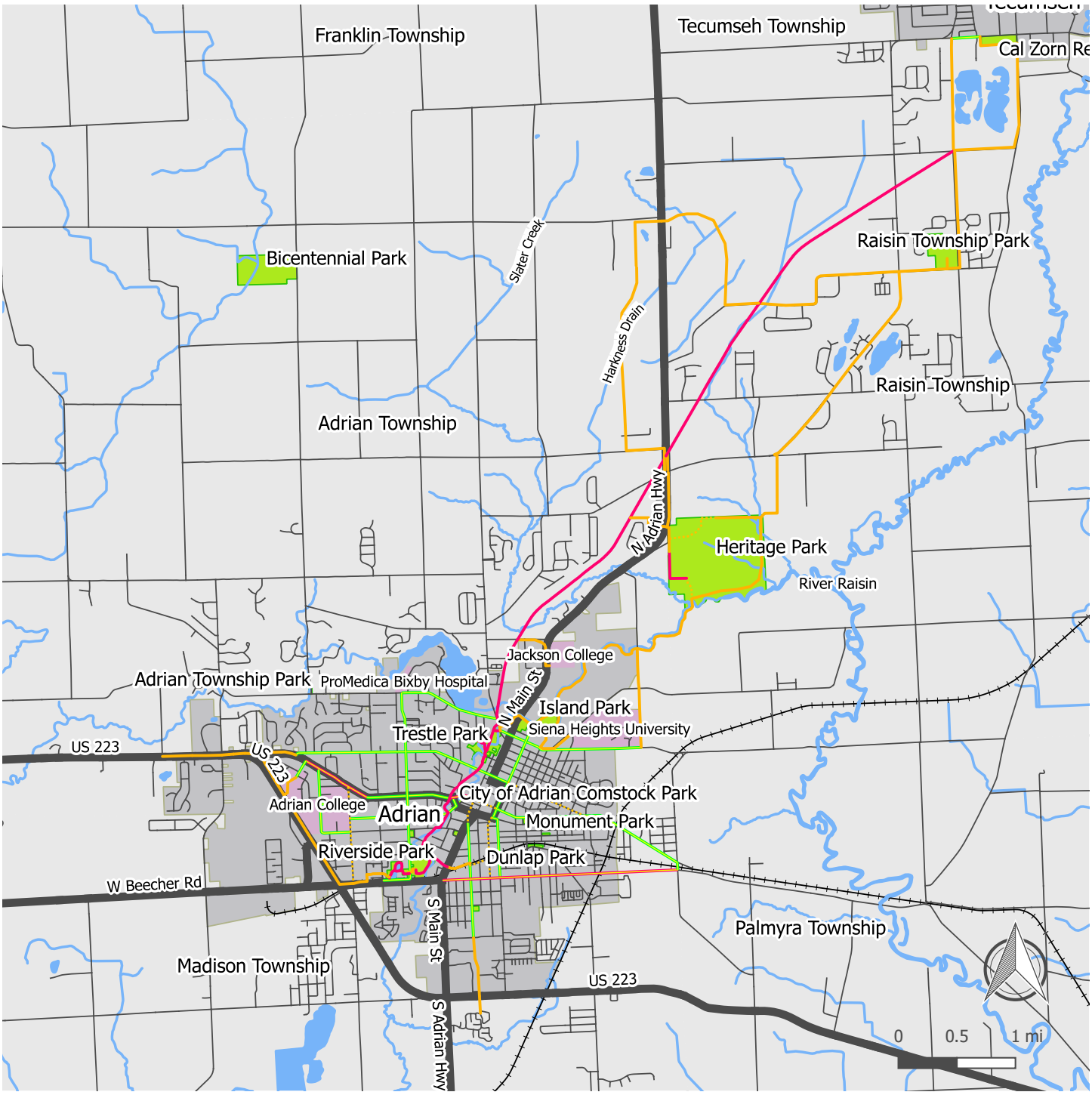
- **Bike Lanes** and **Paved Shoulders** are shown on the plan as "Proposed Bike Lanes." The two types of infrastructure share related design criteria and are similar in nature. It is the general recommendation of this plan to install bike lanes in more urban areas and paved shoulders in more rural areas. However, the plan intends to leave the implementation of bike lanes vs paved shoulders up to the local municipality and road commission on a case-by-case basis.
- **Shared Use Paths** and **Side Paths** are shown on the plan as "Proposed Shared Use Path" and "Proposed Side Path." Where shared use paths and side paths maintain a width of 8' or greater, they are essentially the same type of infrastructure and are only different in where they are installed with relation to the roadway. Side paths that are less than 8' wide are distinct in that they are typically one-way and installed on both sides of the road.

OTHER LEGEND CLARIFICATIONS

- **Wayfinding signage** is not shown on the plan because wayfinding requires a separate study and its own map. It would be overly complex to show each sign on this map in combination with all of the other infrastructure. Wayfinding is discussed in more detail in the narrative that follows.
- **Crossings** are indicated on the plan, but the type of each crossing is not indicated. Traffic studies must be conducted to determine the most appropriate crossing method for each location.

THE NON-MOTORIZED TRANSPORTATION SYSTEM

The next pages of this section show maps of the Non-Motorized Transportation System, proposed project groupings and recommendations for the improvement of existing trail crossings.



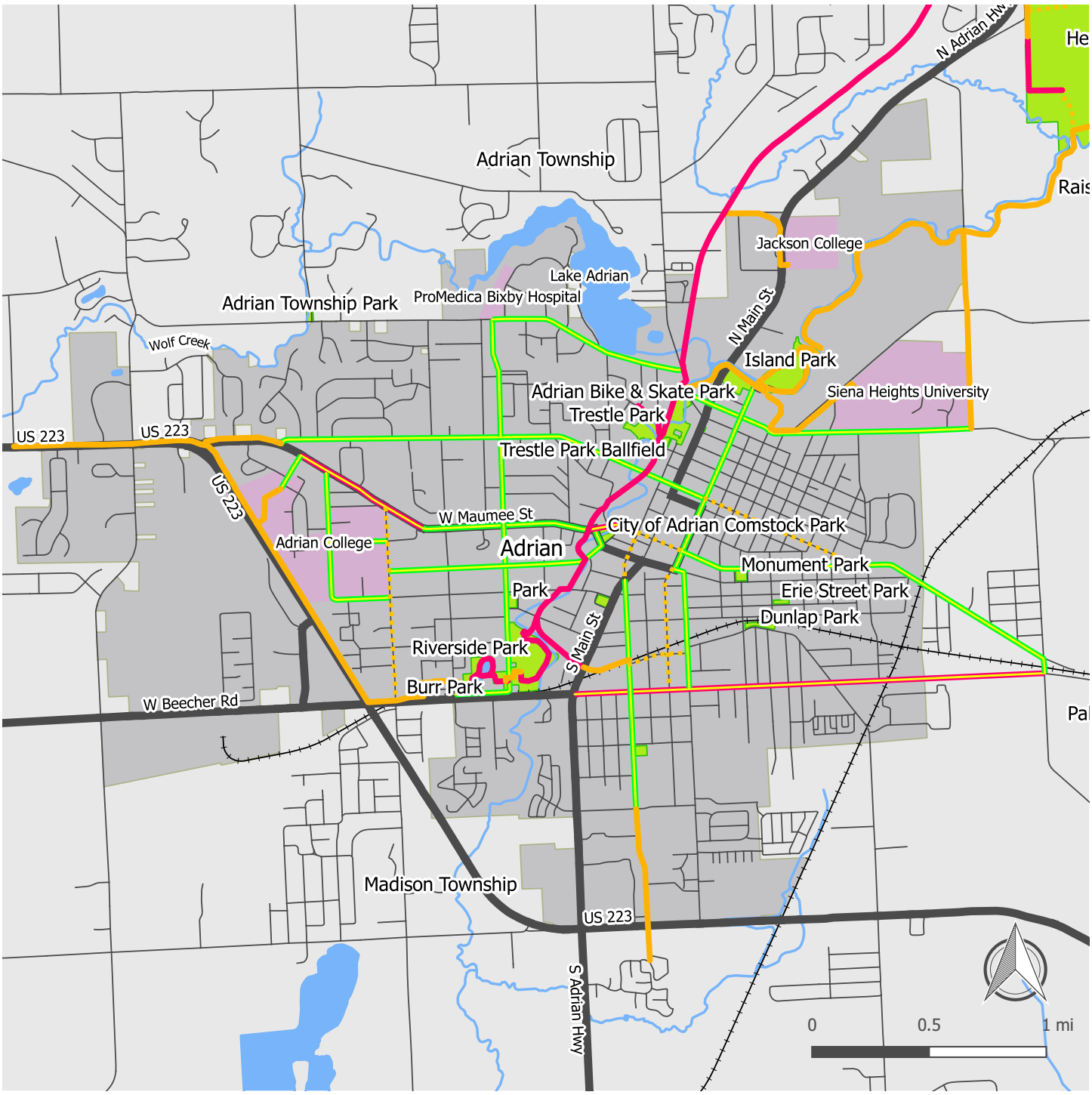
Legend

Adrian Area Non-Motorized System

- Existing SUP
- Proposed SUP
- Proposed Bike Lane
- Existing Bike Lane
- Proposed Shared Road
- Prominent Locations
- Parks

ADRIAN AREA NON-MOTORIZED TRANSPORTATION SYSTEM

The Adrian Area's non-motorized transportation system contains bike lanes, shared use paths, side paths, sidewalks, shared lanes, wayfinding signage, controlled crossings, and trail heads. The map shows a variety of line types and colors to represent infrastructure recommendations. A legend is provided to help clarify the map features.



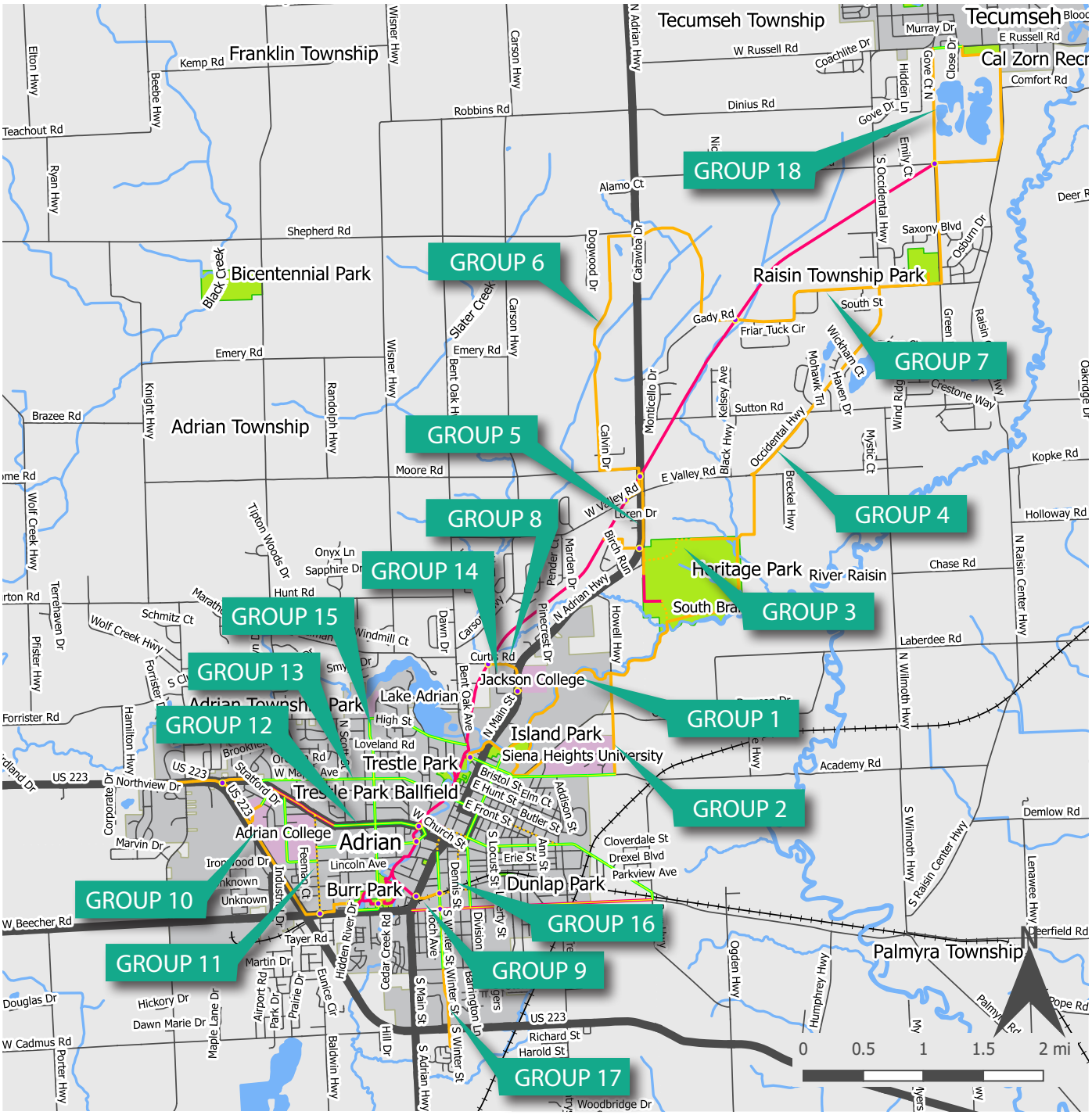
Legend

Adrian Area Non Motorized System

- Existing SUP
- Proposed SUP
- Proposed Bike Lane
- Existing Bike Lane
- Proposed Shared Road
- Prominent Locations
- Parks

CITY OF ADRIAN NON-MOTORIZED TRANSPORTATION SYSTEM

This map shows the existing and proposed non-motorized transportation facilities within the City of Adrian. The proposed facilities will work to fill the gaps within the existing system to provide unified non-motorized connectivity to all features and neighborhoods within the City.



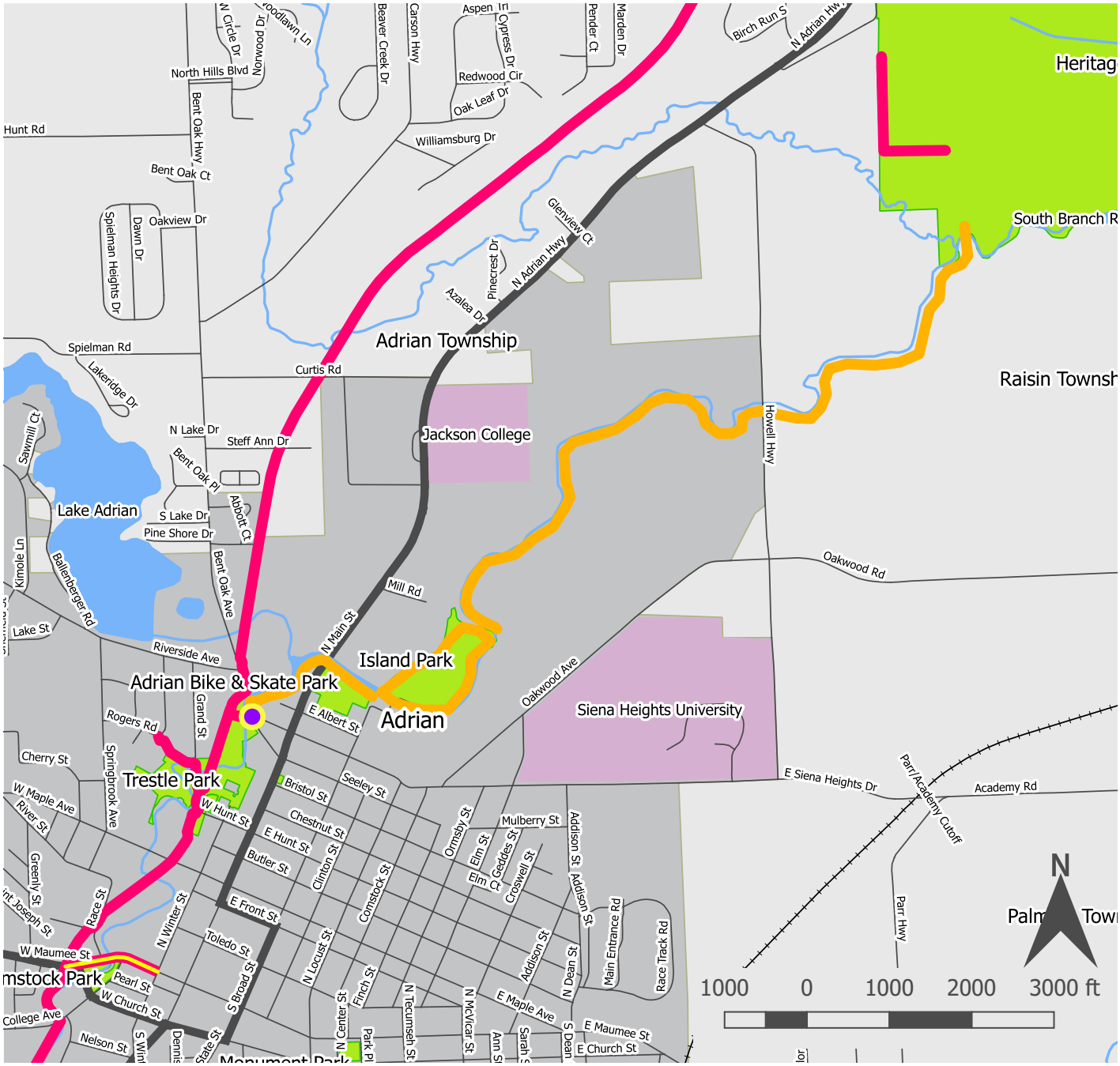
Legend

- Kiwanis Non-Motorized System
- Existing SUP
- Proposed SUP
- Proposed Bike Lane
- Existing Bike Lane
- Proposed Shared Road
- Prominent Locations
- Parks
- Improved Crossings

THE PROJECT GROUP MAP

The groups shown above represent the current, best understanding of highest demand, most feasible projects. These projects have been broken up into groups to allow for phasing of this plan's implementation. These groups were determined based on cost, jurisdiction, and the best way to close the gaps in the existing non-motorized system. Future opportunities (such as new funding sources and level of need) will dictate the order of priority of these projects.

GROUP 1



Legend

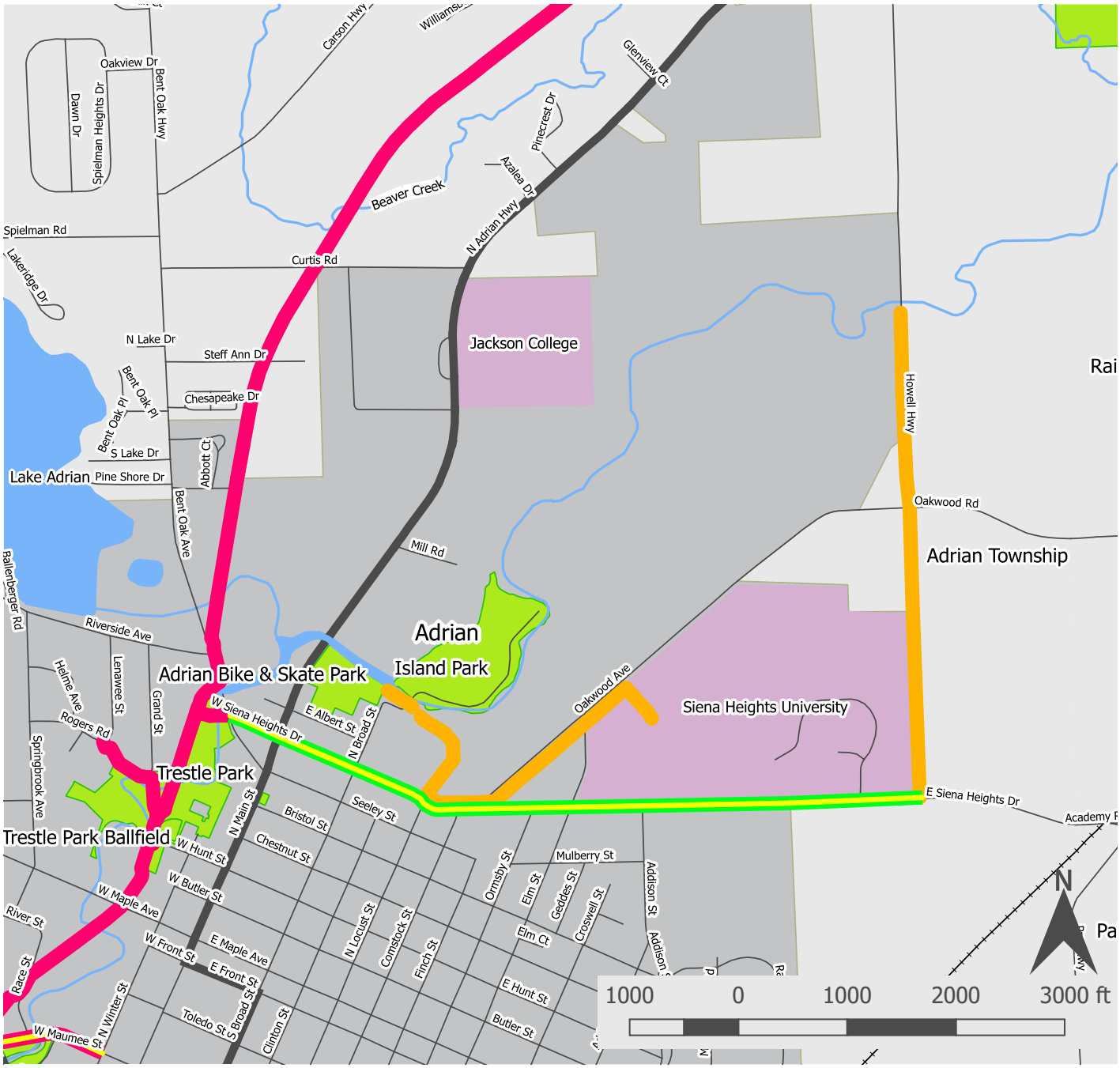
Kiwanis Non-Motorized System

- Existing SUP
- Proposed SUP
- Proposed Bike Lane
- Existing Bike Lane
- Proposed Shared Road
- Prominent Locations
- Parks
- Improved Crossings

Segment Name	Jurisdiction	Total Cost
Bent Oak to Main	City of Adrian	59280
IP North Bridge	City of Adrian	52940
Main to Broad	City of Adrian	33169.5
Island Park Trail	City of Adrian	162837
IP SW Bridge	City of Adrian	43030
South Branch Trail	City of Adrian	272919
South Branch Trail	Raisin Township	102309
South Branch Trail	Adrian Township	88315.5

Crossing Name	Features	Total Cost
Siena Heights Crossing	Signage, Trail Arch, ADA Ramps, Striping	20000

GROUP 2



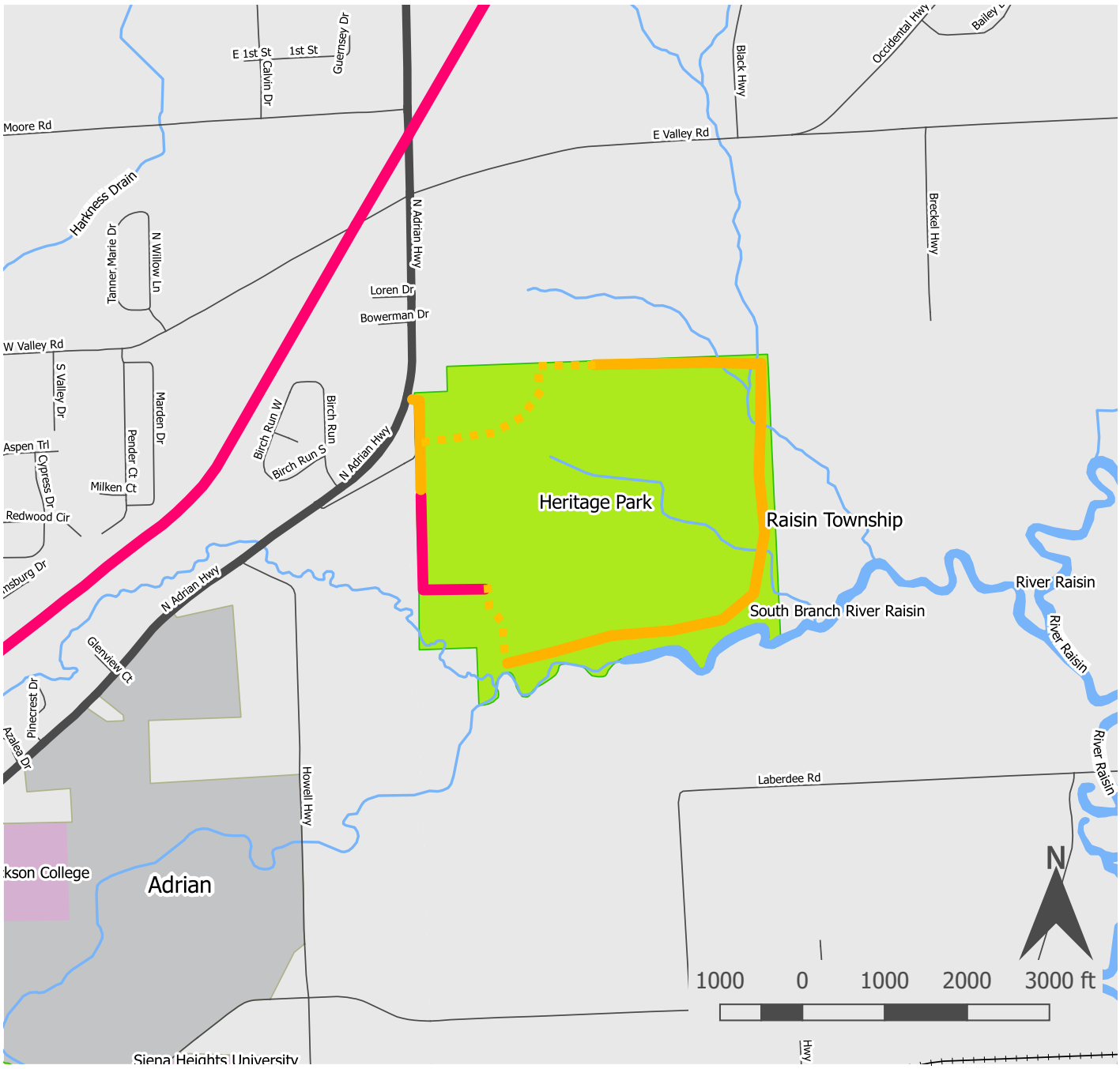
Legend

Kiwanis Non-Motorized System

- Existing SUP
- Proposed SUP
- Proposed Bike Lane
- Existing Bike Lane
- Proposed Shared Road
- Prominent Locations
- Parks
- Improved Crossings

Segment Name	Jurisdiction	Total Cost
Sienna Heights Trail	City of Adrian	12606
E Siena Heights Dr	City of Adrian	48944.1
Howell Hwy	Adrian Township	203974.5
Sienna Heights Trail	Siena Heights University	19923
IP SE Bridge	City of Adrian	34960
Sienna Heights Trail	City of Adrian	143133
E Siena Heights Dr	Adrian Township	11111.1

GROUP 3



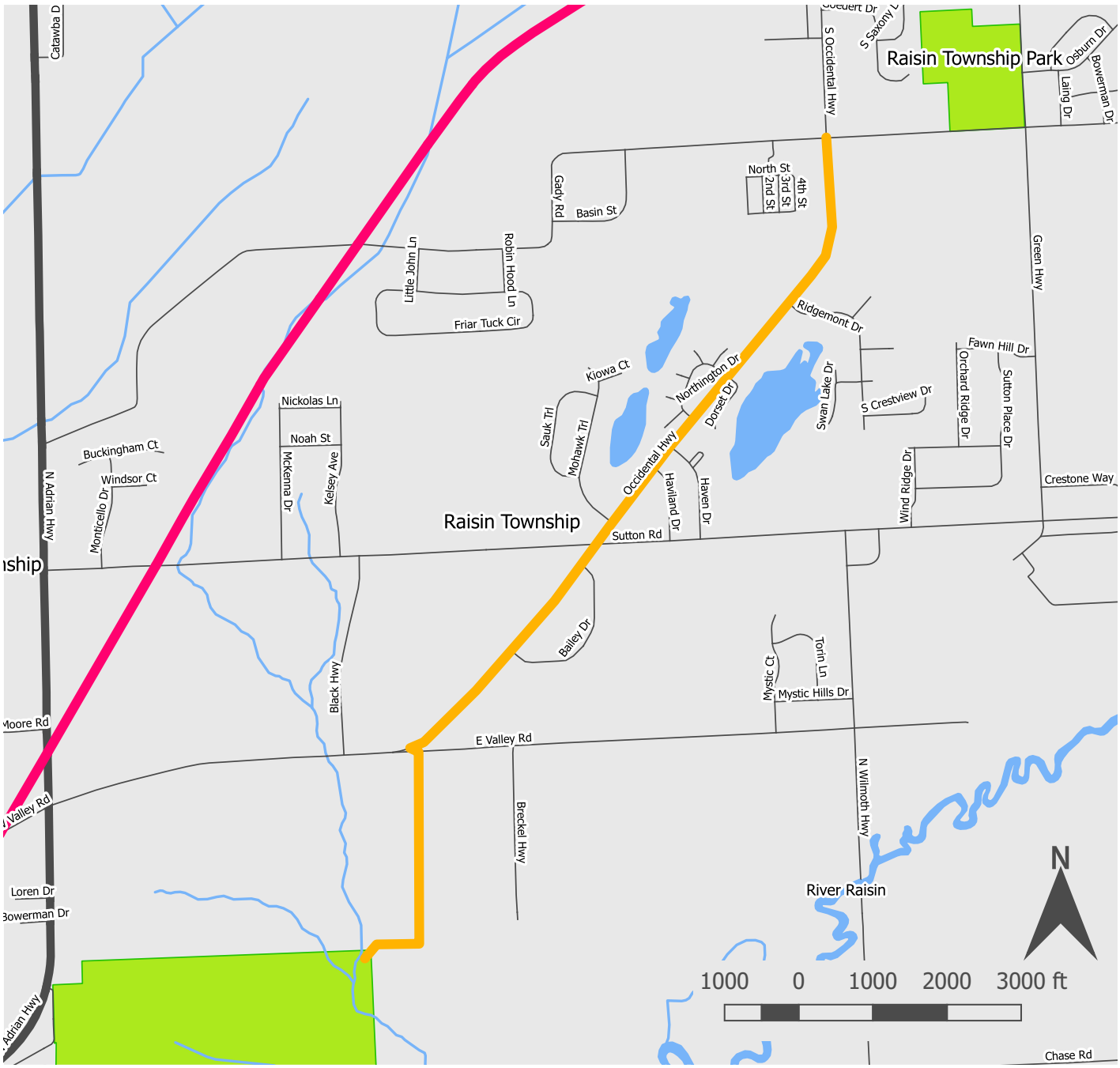
Legend

Kiwanis Non-Motorized System

- Existing SUP
- Proposed SUP
- Proposed Bike Lane
- Existing Bike Lane
- Proposed Shared Road
- Prominent Locations
- Parks
- Improved Crossings

Segment Name	Jurisdiction	Total Cost
Heritage Park S/E	Raisin Township	273409.5
Heritage Park north	Raisin Township	92629.5
Heritage Park west	Raisin Township	11907.3
Heritage park South	Raisin Township	4359.3
Heritage Entry	Raisin Township	53353.5

GROUP 4



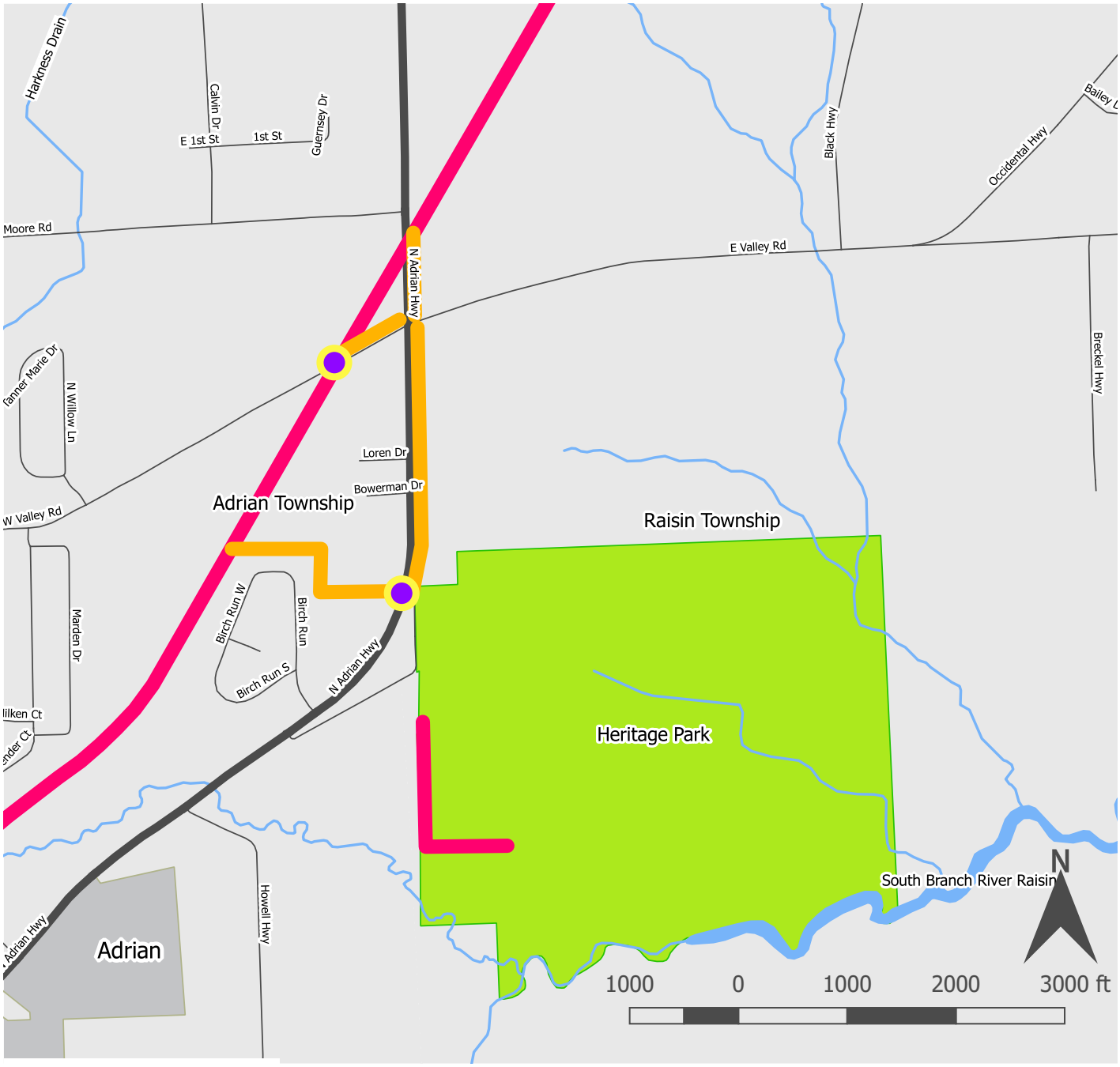
Legend

Kiwanis Non-Motorized System

- Existing SUP
- Proposed SUP
- Proposed Bike Lane
- Existing Bike Lane
- Proposed Shared Road
- Prominent Locations
- Parks
- Improved Crossings

Segment Name	Jurisdiction	Total Cost
Occidental Hwy	Raisin Township	845040

GROUP 5



Legend

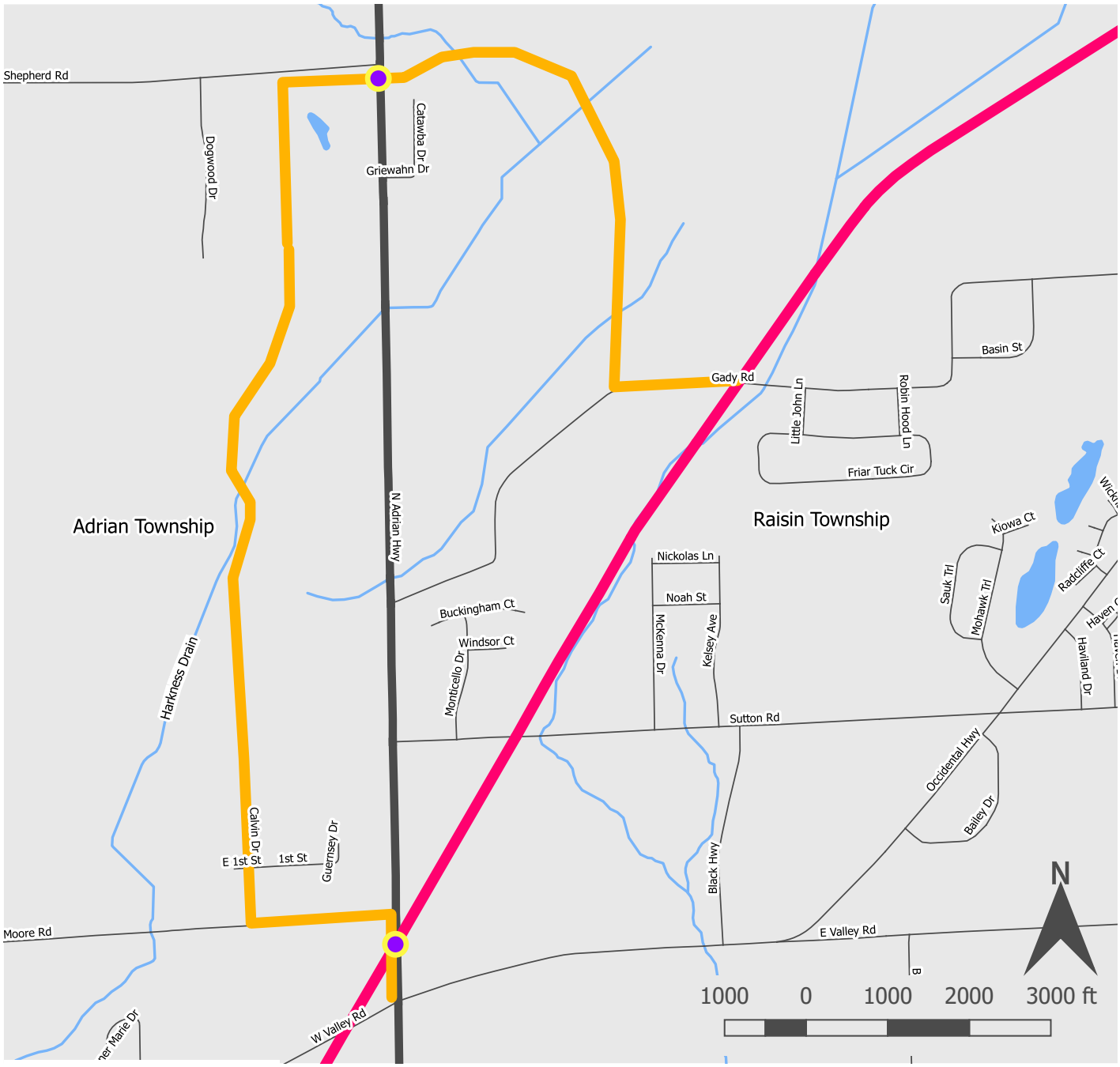
Kiwanis Non-Motorized System

- Existing SUP
- Proposed SUP
- Proposed Bike Lane
- Existing Bike Lane
- Proposed Shared Road
- Prominent Locations
- Parks
- Improved Crossings

Segment Name	Jurisdiction	Total Cost
Birch Run Spur	Adrian Township	94186.5
Moore to Heritage	Raisin Township	112914
Valley to Adrian	Adrian Township	29527.5
Adrian to Valley	Raisin Township	34741.5

Crossing Name	Features	Total Cost
Valley Rd	Trail Arch, Split Rail Fence, Signage, Striping	50000
Heritage Crossing	RRFB, Signage, Trail Arch, Striping	50000

GROUP 6



Legend

Kiwanis Non-Motorized System

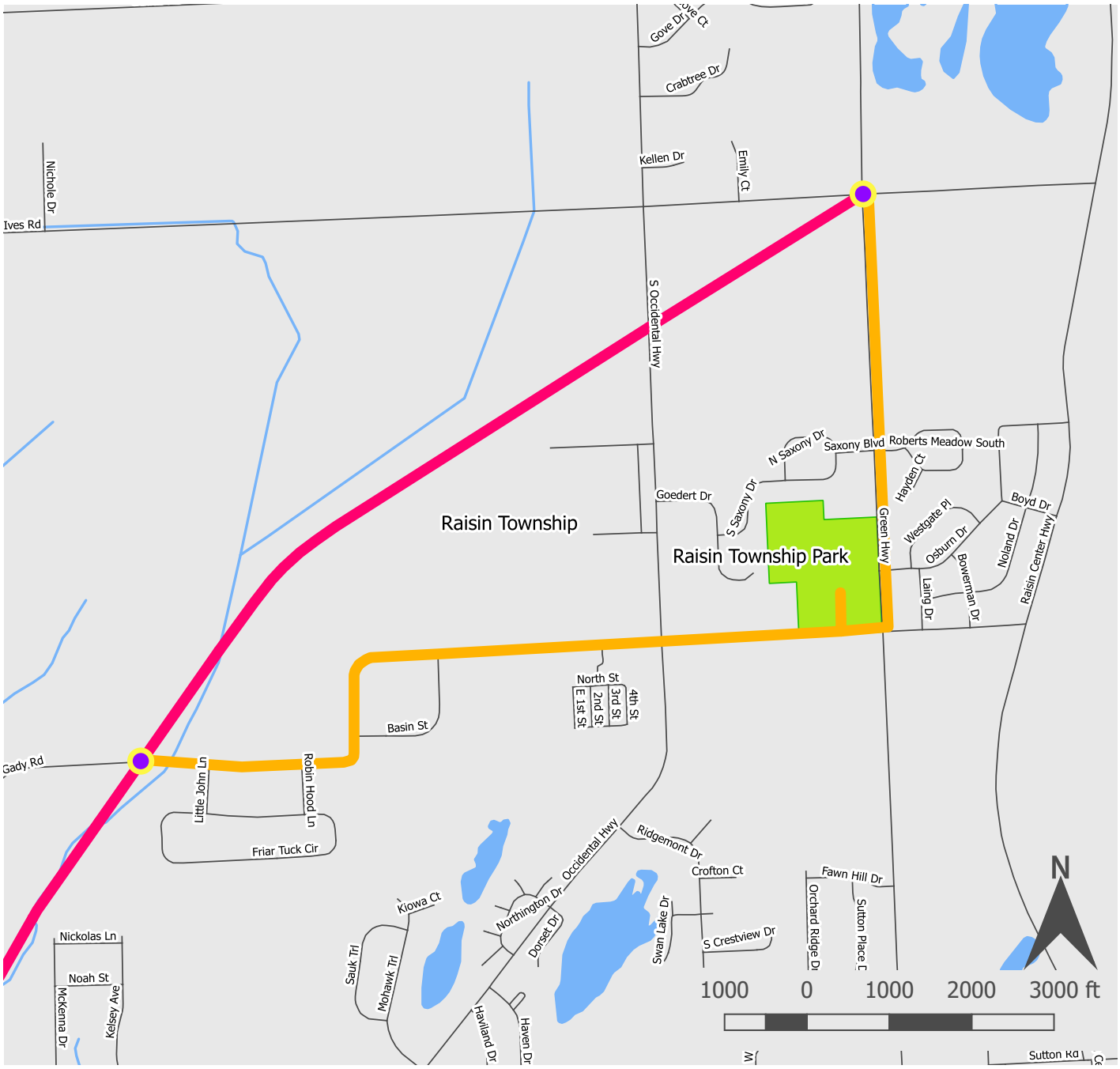
- Existing SUP
- Proposed SUP
- Proposed Bike Lane
- Existing Bike Lane
- Proposed Shared Road
- Prominent Locations
- Parks
- Improved Crossings

Segment Name	Jurisdiction	Total Cost
Hospital Connector	Adrian Township	515662.5
Hos. Alt. Gady Woods	Raisin Township	362364
Hos. Alt. Shepherd	Adrian Township	145059

	Crossing Name	Features	Total Cost
*	N Adrian HWY	Trail Arch, Split Rail Fence, Signage, Striping	50000
	Adrian and Shepherd	RRFB, Signage, Trail Arch, Striping,, Split Rail	50000

*The features listed here for the N Adrian Hwy./M-52 crossing should be considered a minimum option. Further options are described on page 46 of this report.

GROUP 7



Legend

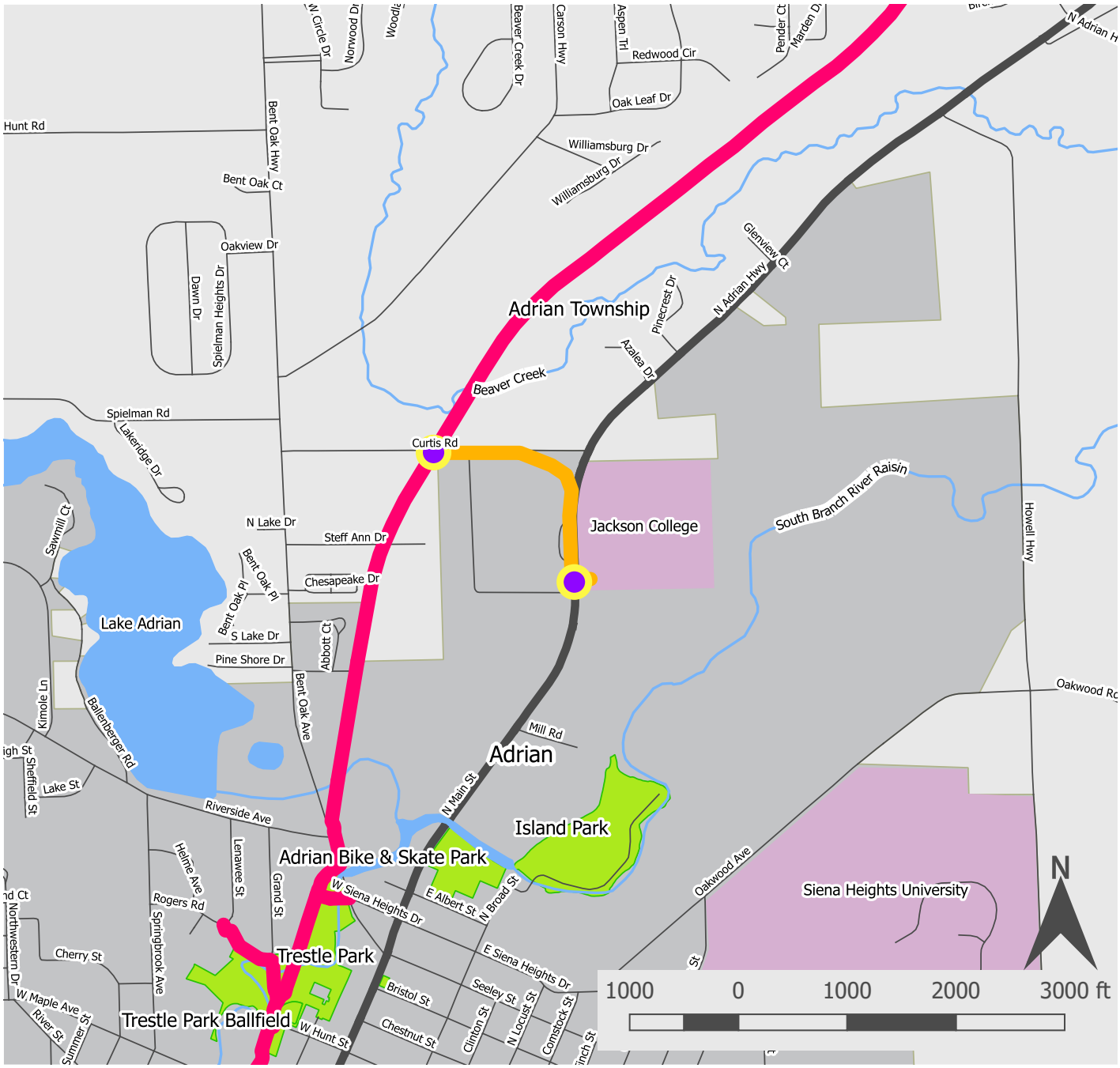
Kiwanis Non-Motorized System

- Existing SUP
- Proposed SUP
- Proposed Bike Lane
- Existing Bike Lane
- Proposed Shared Road
- Prominent Locations
- Parks
- Improved Crossings

Segment Name	Jurisdiction	Total Cost
Raisin Twp Park Spur	Raisin Township	460837.5
Raisin Twp Park Spur	Raisin Township	268441.5

Crossing Name	Features	Total Cost
Ives and Green Hwy	Trail Arch, Split Rail Fence, Signage, Striping	50000
Gady Road	Trail Arch, Split Rail Fence, Signage, Striping	50000

GROUP 8



Legend

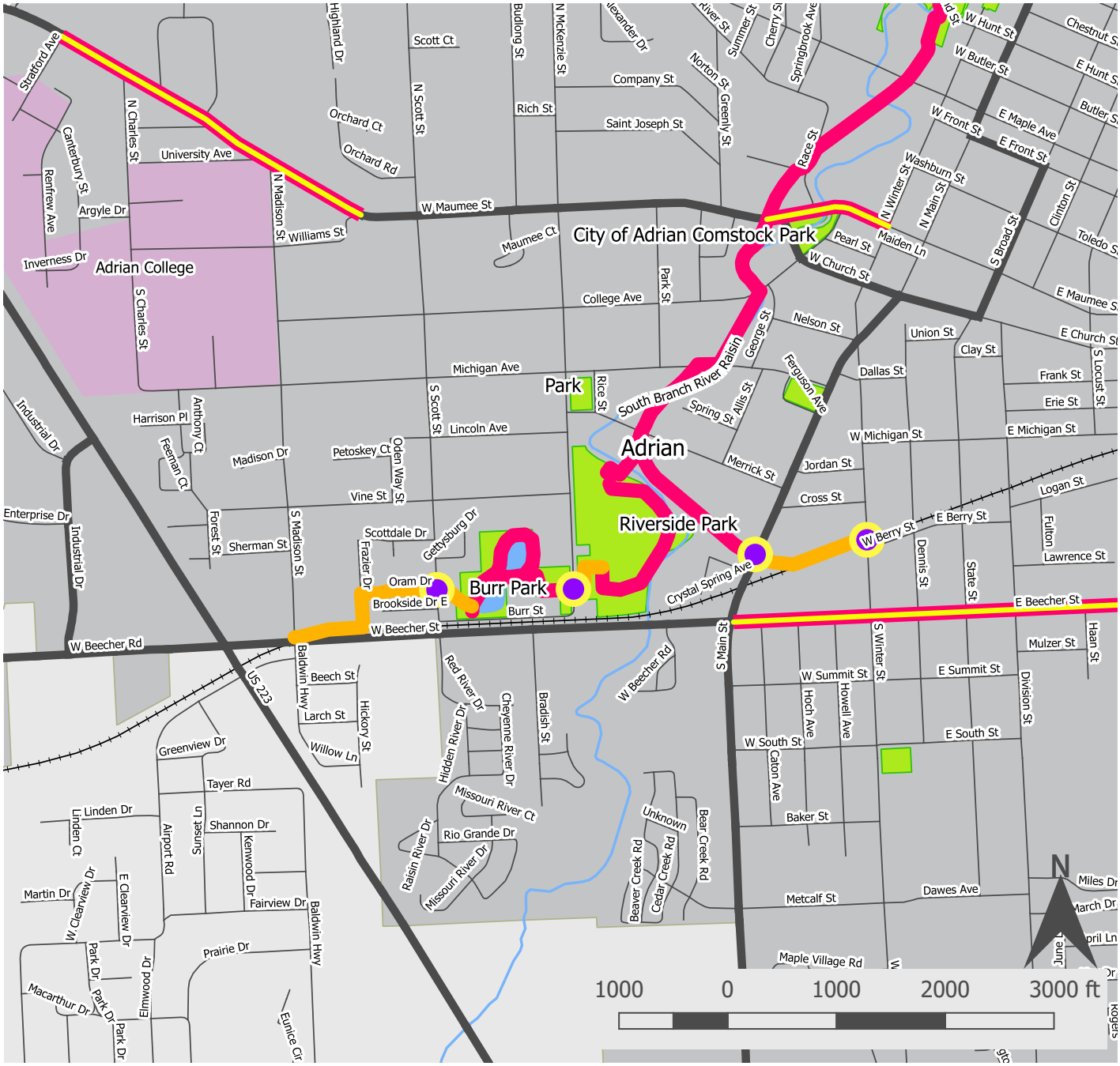
Kiwanis Non-Motorized System

- Existing SUP
- Proposed SUP
- Proposed Bike Lane
- Existing Bike Lane
- Proposed Shared Road
- Prominent Locations
- Parks
- Improved Crossings

Segment Name	Jurisdiction	Total Cost
Jackson College	City of Adrian	109848

Crossing Name	Features	Total Cost
Curtis Rd and Kiwanis Trl	Trail Arch, Split Rail Fence, Signage, Striping	50000
JC Crossing	Signage, Trail Arch, Striping	35000

GROUP 9



Legend

Kiwanis Non-Motorized System

- Existing SUP
- Proposed SUP
- Proposed Bike Lane
- Existing Bike Lane
- Proposed Shared Road
- Prominent Locations
- Parks
- Improved Crossings

Segment Name	Jurisdiction	Total Cost
Burr Park Drain	City of Adrian	16627.5
S Winter Street Trai	City of Adrian	49794
S Riverside Park	City of Adrian	25137
Oram Dr Tral	City of Adrian	75718.5

Crossing Name	Features	Total Cost
S Main St Crossing	Signage, RRFB, Striping, Trail Arch, Landscape Wall, Plantings	50000
Winter St 2	Signage, Trail Arch, Landscape Wall, Plantings	30000
McKenzie	Signage, Trail Arch, Striping	20000
Scott Street	Signage, Trail Arch, Striping	20000

GROUP 10

Legend

Kiwanis Non-Motorized System

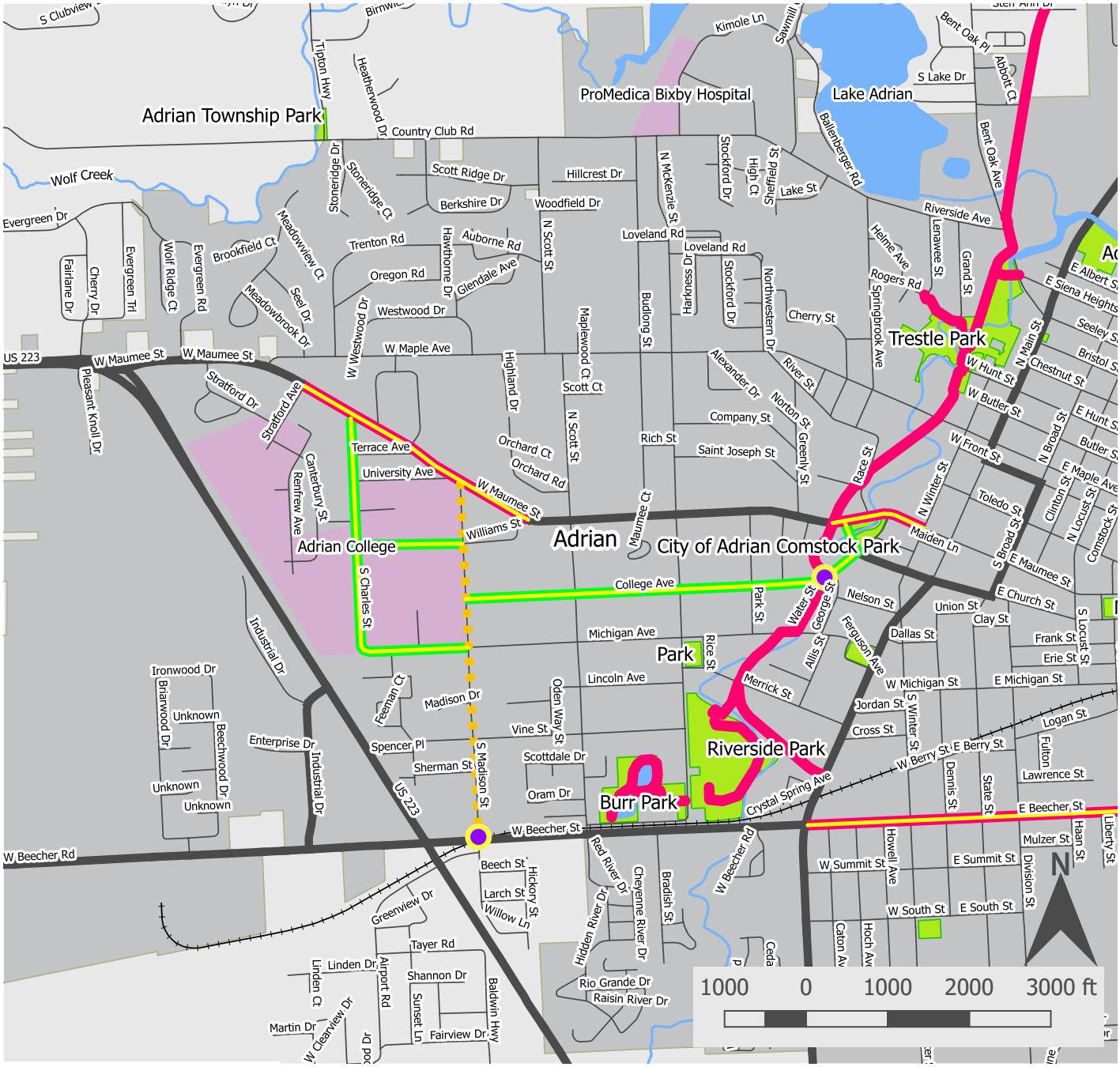
- Existing SUP
- Proposed SUP
- Proposed Bike Lane
- Existing Bike Lane
- Proposed Shared Road
- Prominent Locations
- Parks
- Improved Crossings

Segment Name	Jurisdiction	Total Cost
AC to Maumee on 223	City of Adrian	53746.5
Stratford Ave	City of Adrian	7829.4
US-223 AC to Beecher	City of Adrian	148566
Adrian College Trail	Adrian College	140157
US 223 West	City of Adrian	27552
AC Internal Trail	Adrian College	49519.5
Maumee to US 223	City of Adrian	30870
US 223 West	Adrian Township	61459.5

Segment Name	Jurisdiction	Total Cost
US 223 West	City of Adrian	61045.5
US 223 West	Adrian Township	15261
US 223 West	City of Adrian	8857.5
US 223 West	Adrian Township	23677.5
Maumee to US 223	Adrian Township	11325
Maumee to US 223	City of Adrian	19945.5
Maumee to US 223	Adrian Township	16693.5

Crossing Name	Features	Total Cost
Maumee US223	Curb Cuts, Striping, Signage, Trail Arch	

GROUP 11



Legend

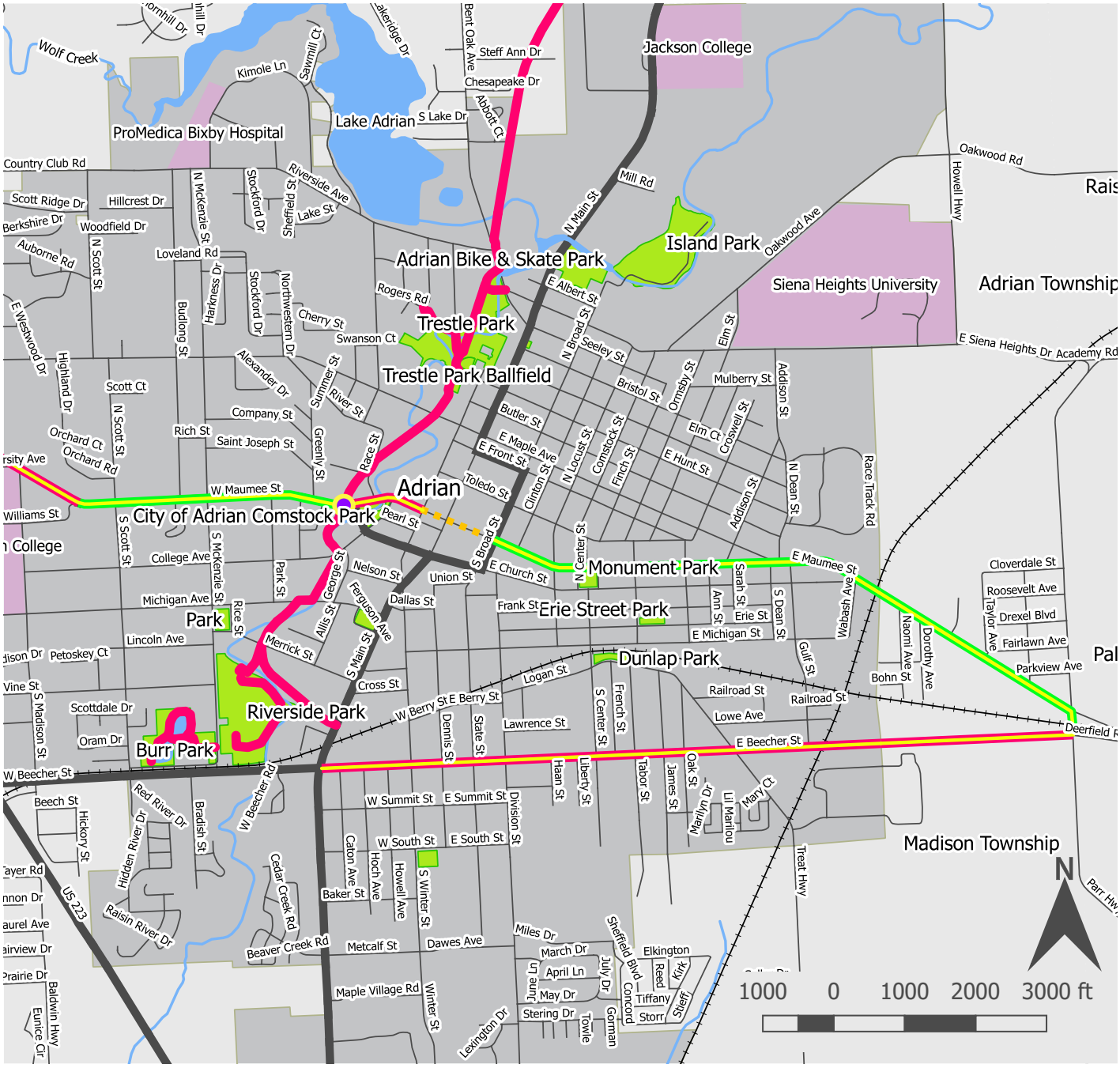
Kiwanis Non-Motorized System

- Existing SUP
- Proposed SUP
- Proposed Bike Lane
- Existing Bike Lane
- Proposed Shared Road
- Prominent Locations
- Parks
- Improved Crossings

Segment Name	Jurisdiction	Total Cost
College Ave Bike Lan	City of Adrian	48942.9
Charles	Adrian College	37787.7
Madison	City of Adrian	38881.8
Williams	Adrian College	11855.4

Crossing Name	Features	Total Cost
College Ave	Signage, Trail Arch, Striping,	20000
Madison and Beecher	Signage, Trail Arch, Striping	20000

GROUP 12



Legend

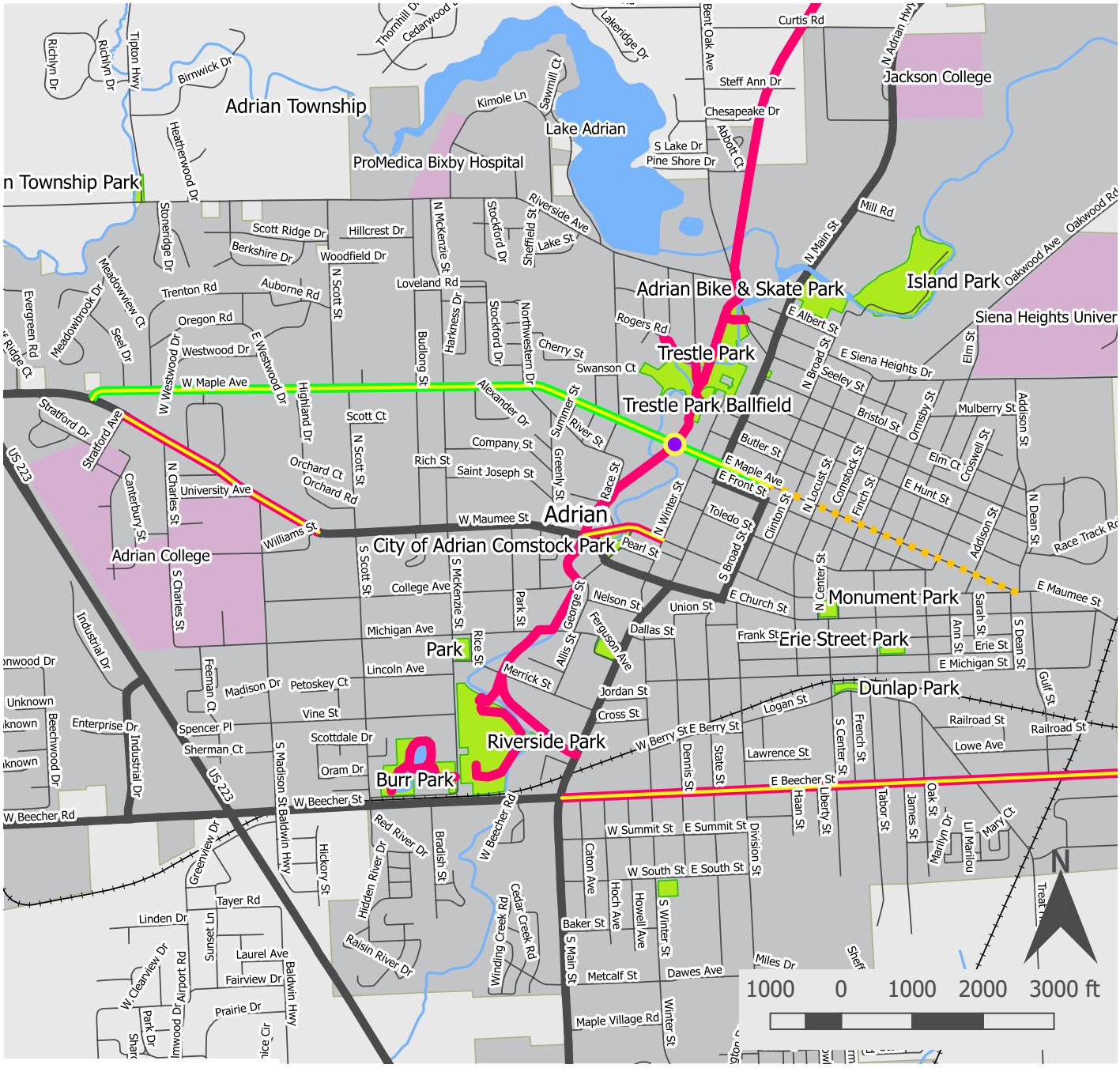
Kiwanis Non-Motorized System

- Existing SUP
- Proposed SUP
- Proposed Bike Lane
- Existing Bike Lane
- Proposed Shared Road
- Prominent Locations
- Parks
- Improved Crossings

Segment Name	Jurisdiction	Total Cost
E Maumee St Bike Lan	City of Adrian	51523.5
W Maumee St	City of Adrian	34307.1
Maurenee Downtown	City of Adrian	4732.65
E Maumee St Bike Lan	Madison Township	32113.2

Crossing Name	Features	Total Cost
Maumee	Signage, Trail Arch, Landscape Wall, Plantings	30000

GROUP 13



Legend

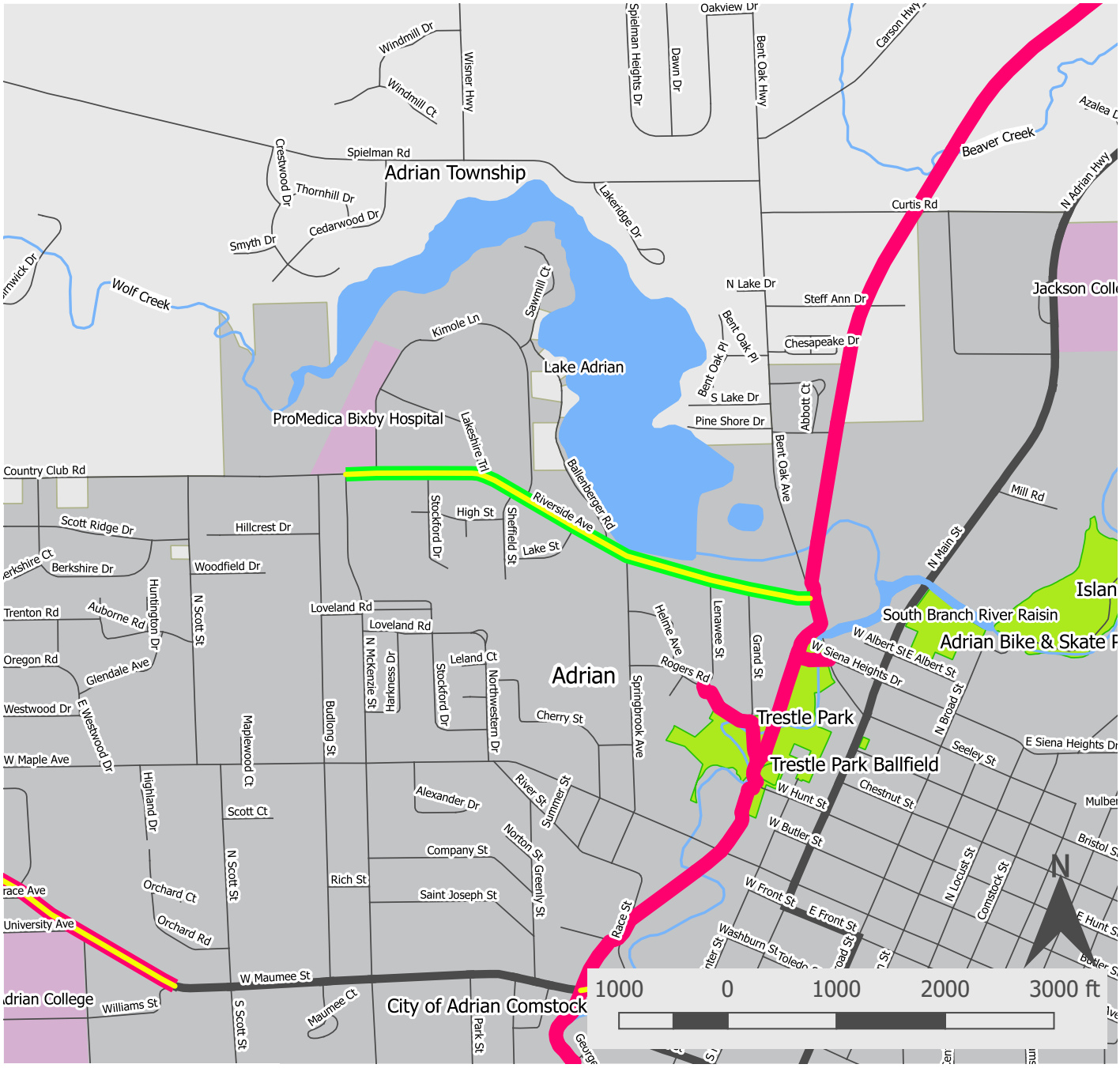
Kiwanis Non-Motorized System

- Existing SUP
- Proposed SUP
- Proposed Bike Lane
- Existing Bike Lane
- Proposed Shared Road
- Prominent Locations
- Parks
- Improved Crossings

Segment Name	Jurisdiction	Total Cost
Maple Ave Bike Lane	City of Adrian	90558.9
Maple Avenue	City of Adrian	17238.75

Crossing Name	Features	Total Cost
Maple Ave	Signage, Trail Arch, Vegetation Clearing, Landscape Wall, Plantings	30000

GROUP 14



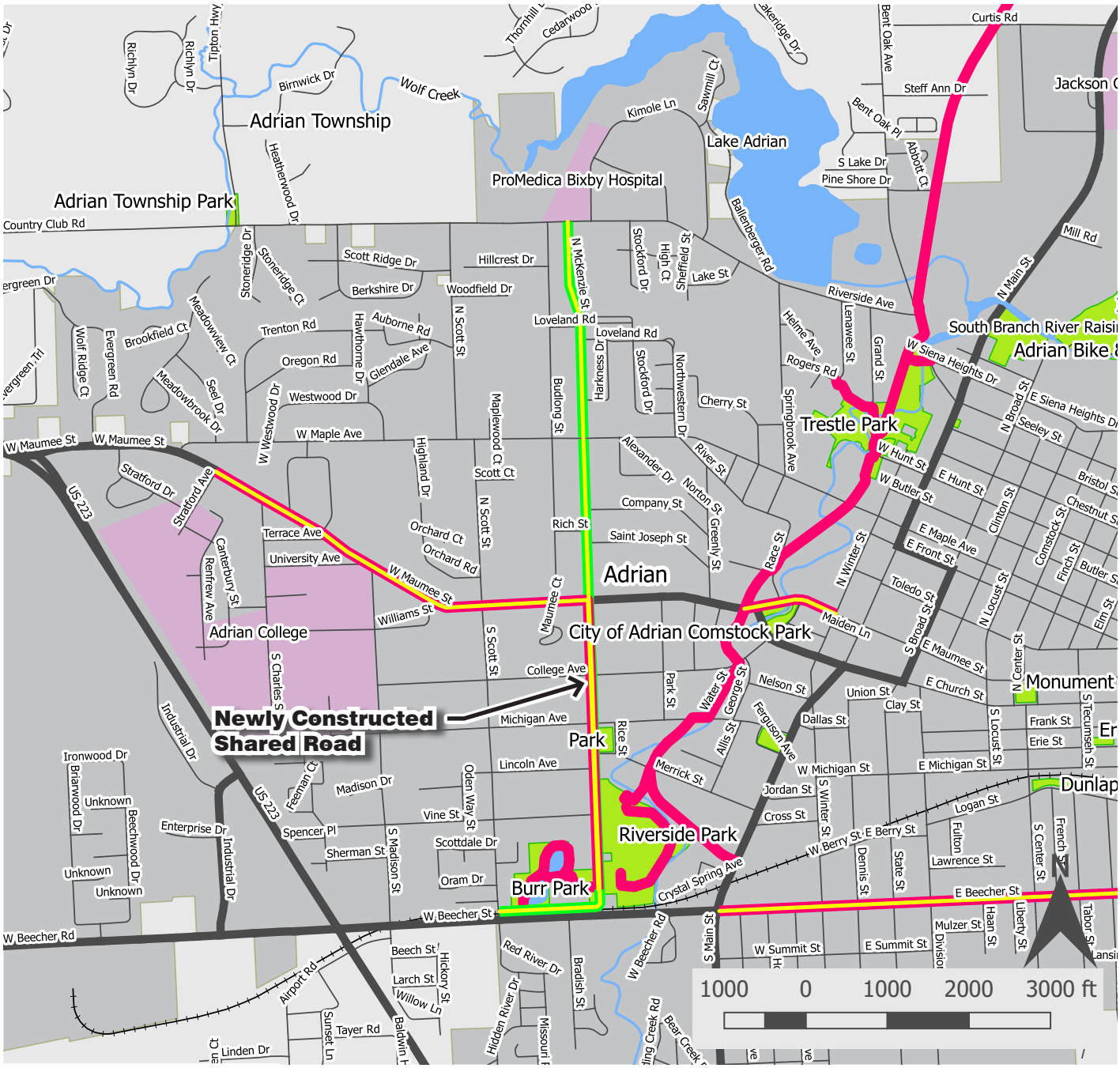
Legend

Kiwanis Non-Motorized System

- Existing SUP
- Proposed SUP
- Proposed Bike Lane
- Existing Bike Lane
- Proposed Shared Road
- Prominent Locations
- Parks
- Improved Crossings

Segment Name	Jurisdiction	Total Cost
Riverside Ave	City of Adrian	41304.9

GROUP 15



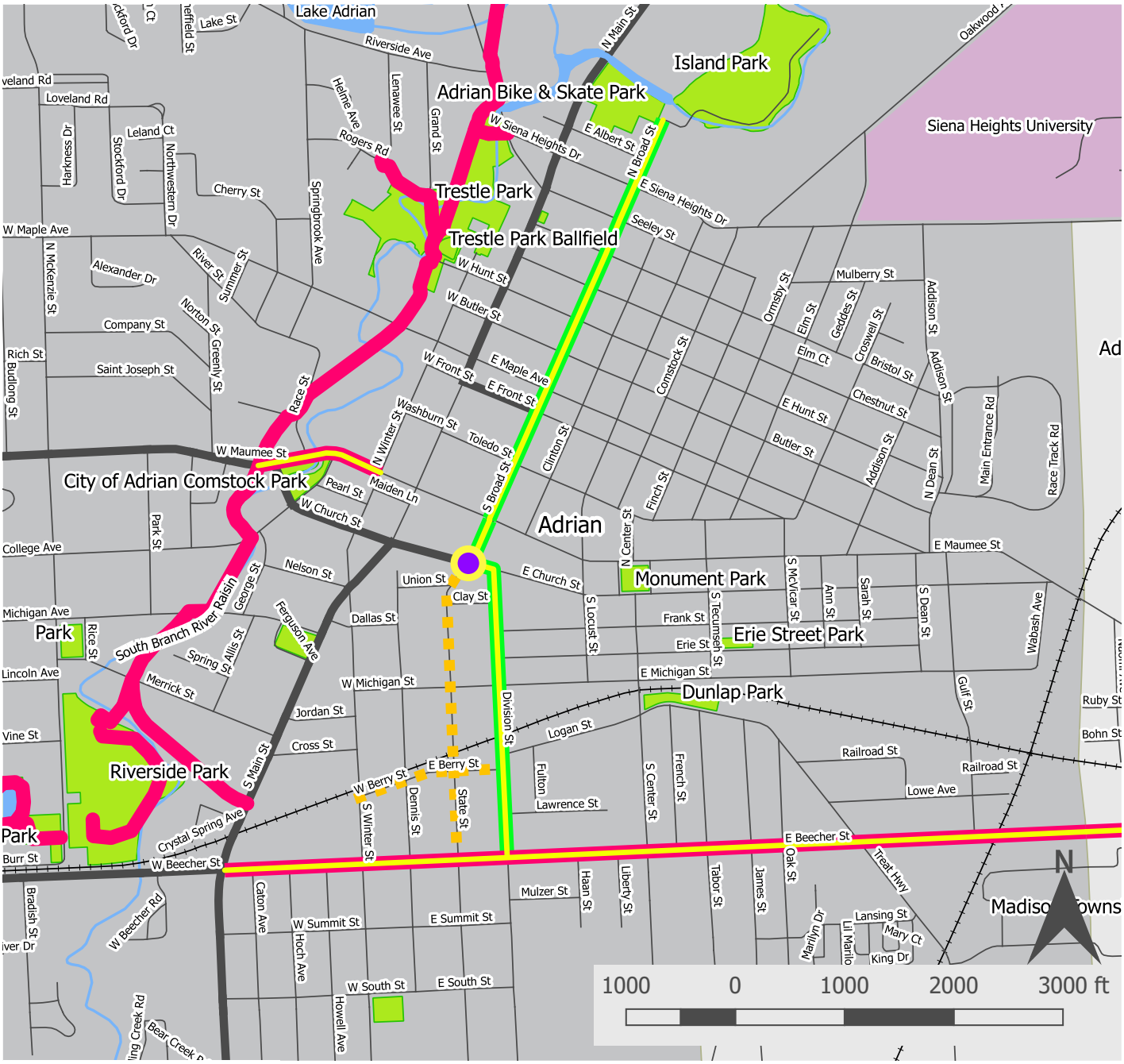
Legend

Kiwanis Non-Motorized System

- Existing SUP
- Proposed SUP
- Proposed Bike Lane
- Existing Bike Lane
- Proposed Shared Road
- Improved Crossings

Name	Jursd	Tot Cost
McKenzie St	City of Adrian	24363
McKenzie St	City of Adrian	63519

GROUP 16



Legend

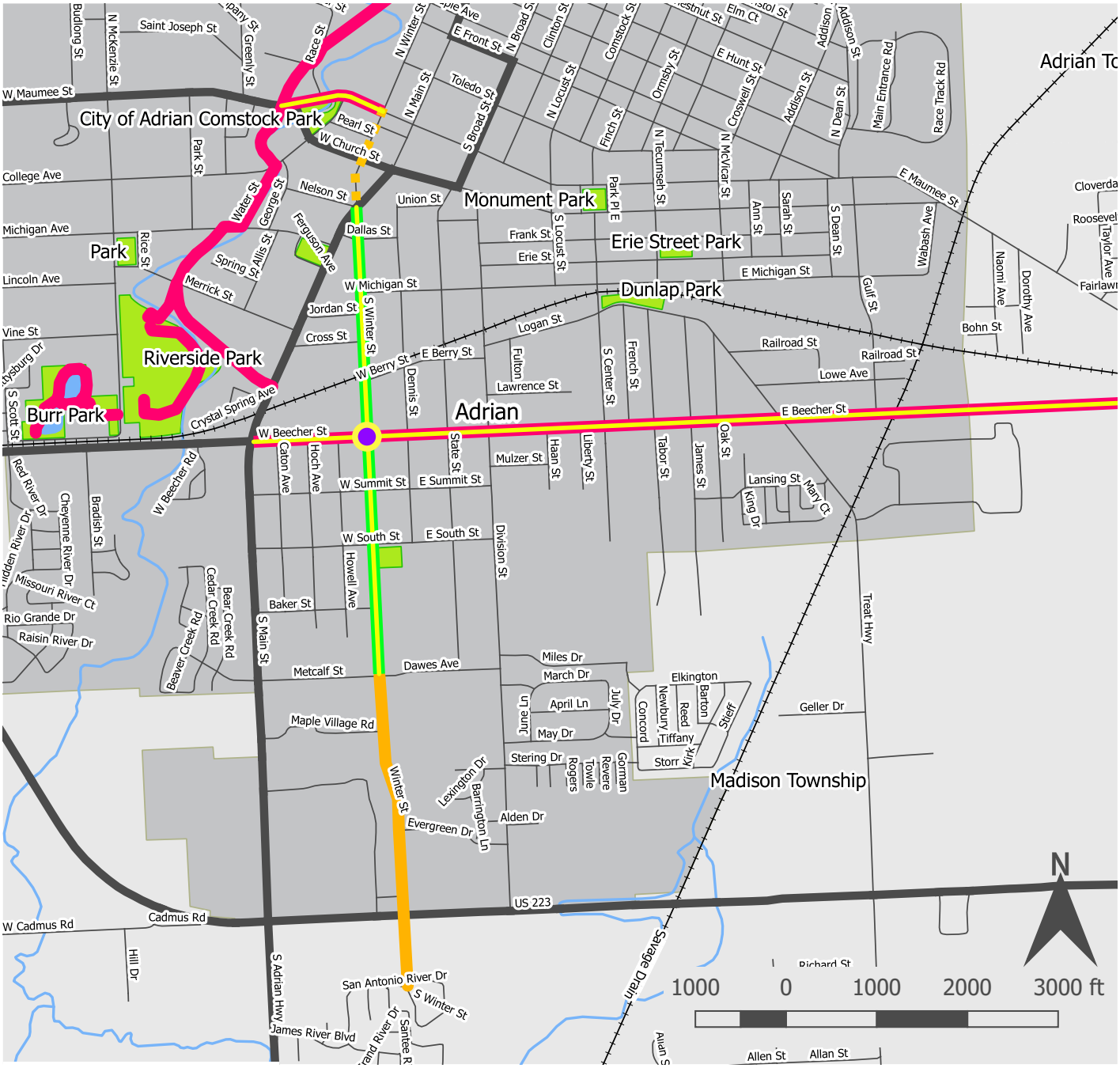
Kiwanis Non-Motorized System

- Existing SUP
- Proposed SUP
- Proposed Bike Lane
- Existing Bike Lane
- Proposed Shared Road
- Prominent Locations
- Parks
- Improved Crossings

Segment Name	Jurisdiction	Total Cost
Broad St Bike Lane	City of Adrian	36443.1
State St	City of Adrian	12561.6
Broad St	City of Adrian	4335
Berry St and State	City of Adrian	12319.2
Division St	City of Adrian	26029.2

Crossing Name	Features	Total Cost
Sate and Broad	Signage, Curb Modifictions, Road Reconstruction	100000

GROUP 17



Legend

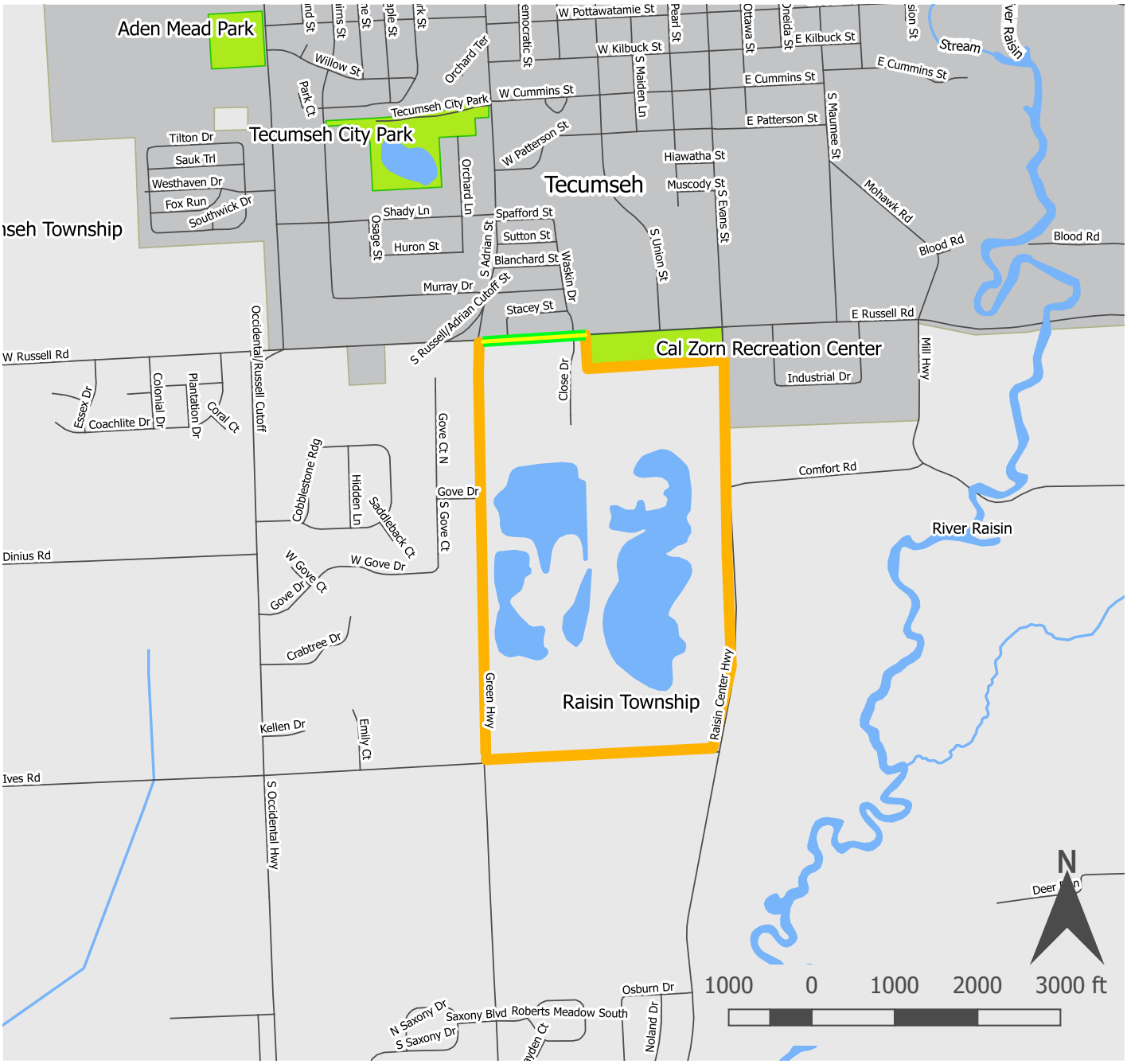
Kiwanis Non-Motorized System

- Existing SUP
- Proposed SUP
- Proposed Bike Lane
- Existing Bike Lane
- Proposed Shared Road
- Prominent Locations
- Parks
- Improved Crossings

Segment Name	Jurisdiction	Total Cost
Winter and Michigan	City of Adrian	47104.2
Winter St. Path	City of Adrian	121675.5
Winter St	City of Adrian	10053.9
Winter St. Path	Madison Township	35680.5

Crossing Name	Features	Total Cost
E Beecher St Crossing	Pedestrian Push Buttons, ADA Ramp Improvements, Crosswalk Signals	50000

GROUP 18

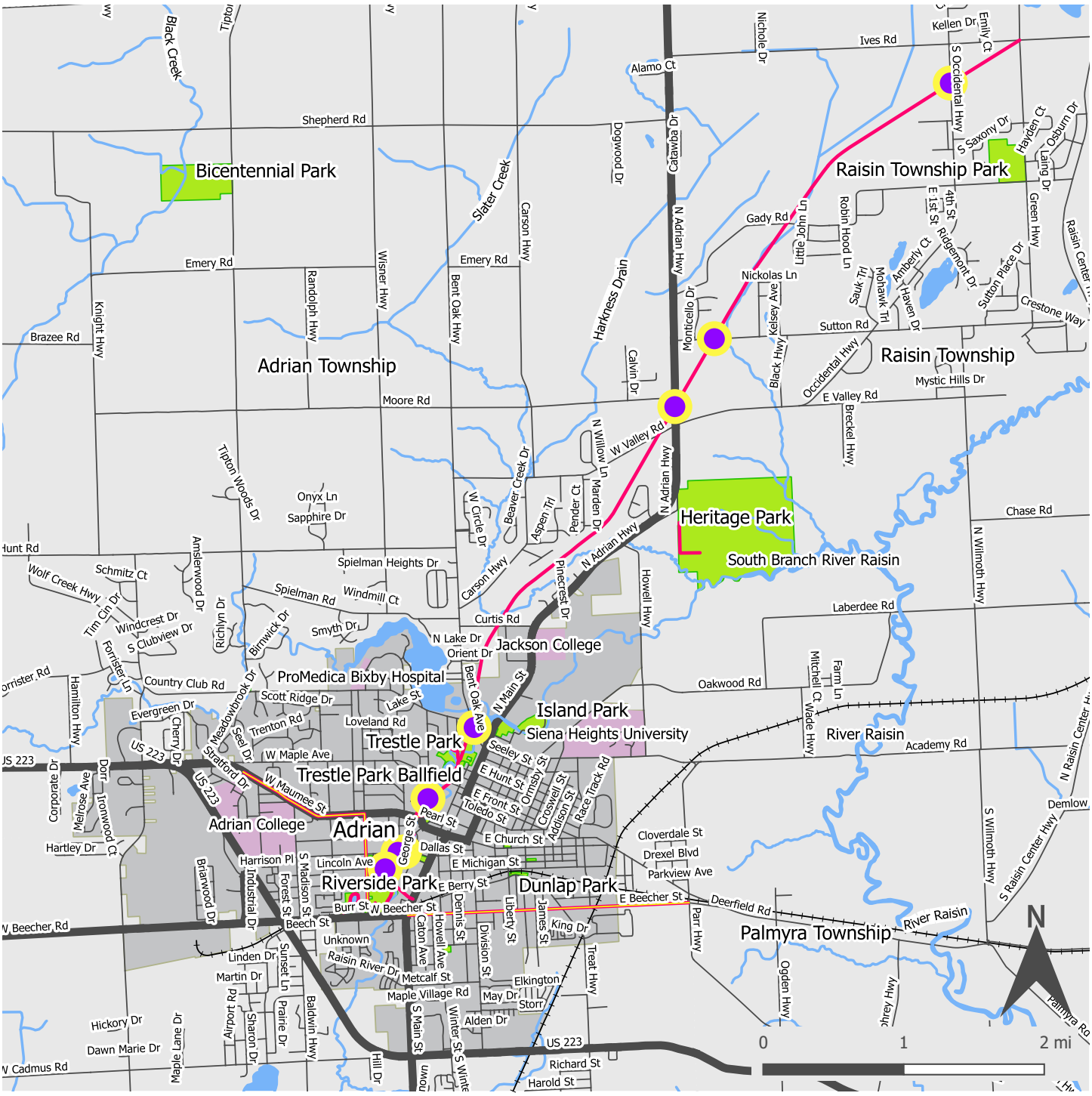


Legend

Kiwanis Non-Motorized System

- Existing SUP
- Proposed SUP
- Proposed Bike Lane
- Existing Bike Lane
- Proposed Shared Road
- Prominent Locations
- Parks
- Improved Crossings

Segment Name	Jurisdiction	Total Cost
Kiwanis Trail	Raisin Township	340683
Green Hwy	Raisin Township	226417.5
Russell Rd	City of Tecumseh	11321.7
Kiwanis Trail	Tecumseh	93822



Legend

- Improved Crossings

Kiwanis Non-Motorized System

- Existing SUP
- Prominent Locations
- Parks

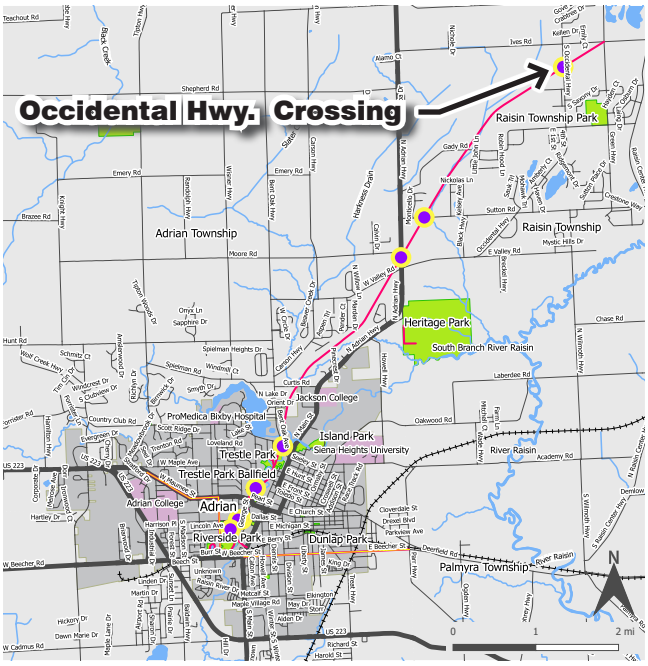
MAP OF IMPROVED CROSSINGS

Some parts of the existing trail system involve crossing points that are challenged or lacking in visibility and safety. The following sections attempt to address these areas and provide recommendations for potential solutions. The proposed improvements range from signage, pavement striping, infrastructure repair, landscaping and other amenities that will help to improve the visibility of the trail and the overall safety of trail users.

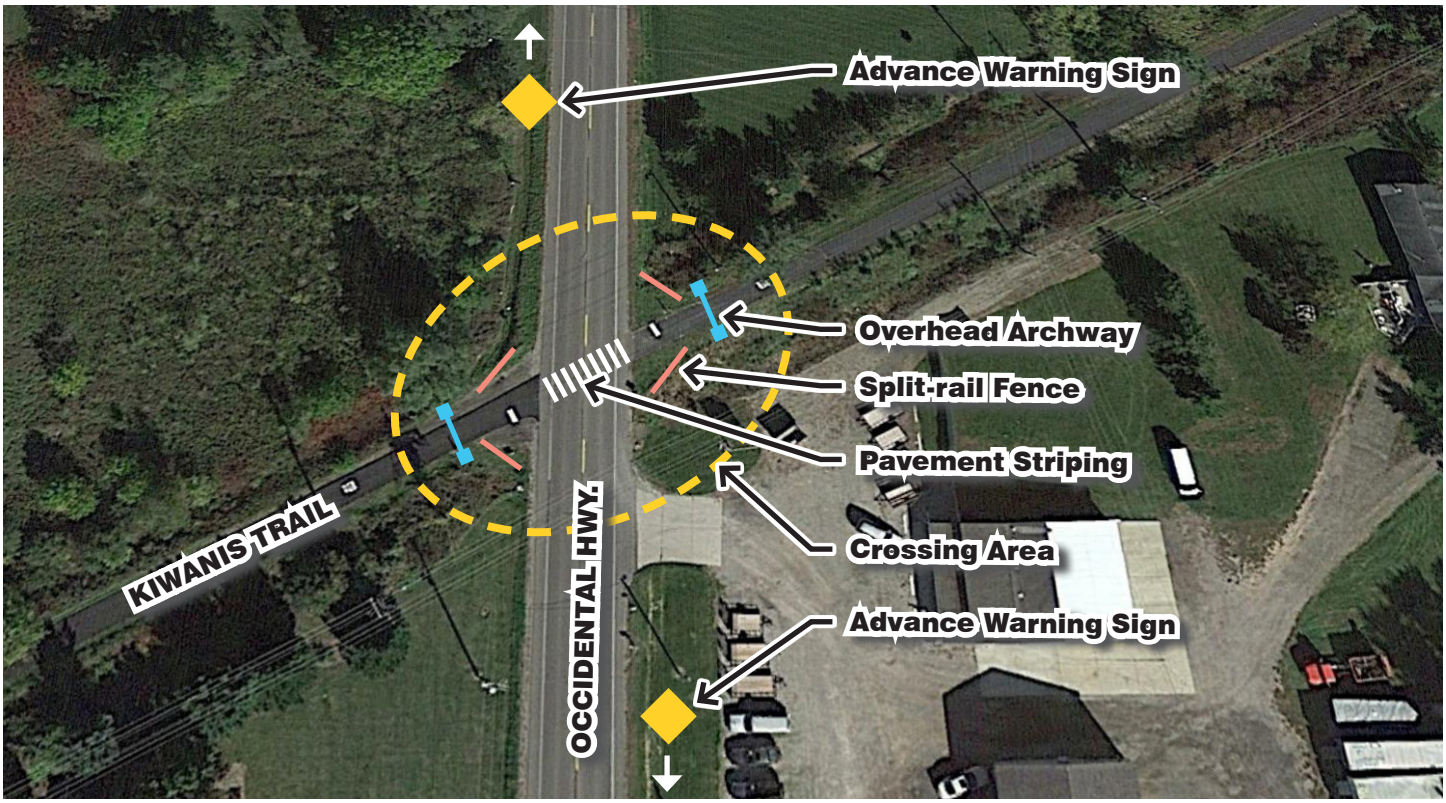
OCCIDENTAL HIGHWAY CROSSING

The Kiwanis Trail crossing at Occidental Hwy. currently has a single crossing sign for the northbound traffic on Occidental Hwy. and another for the southbound traffic at the crossing. The signage is placed within a few feet of the trail itself. Although this works well to signify the location of the trail, it does not provide an early enough warning for a vehicle traveling at posted speeds to stop if a pedestrian were to enter the roadway. Advanced warning signs that read "Trail Crossing Ahead" should be placed far enough ahead of the crossing to provide adequate warning for vehicles traveling along Occidental Hwy.

Typical Proposed Rural Crossing Improvements



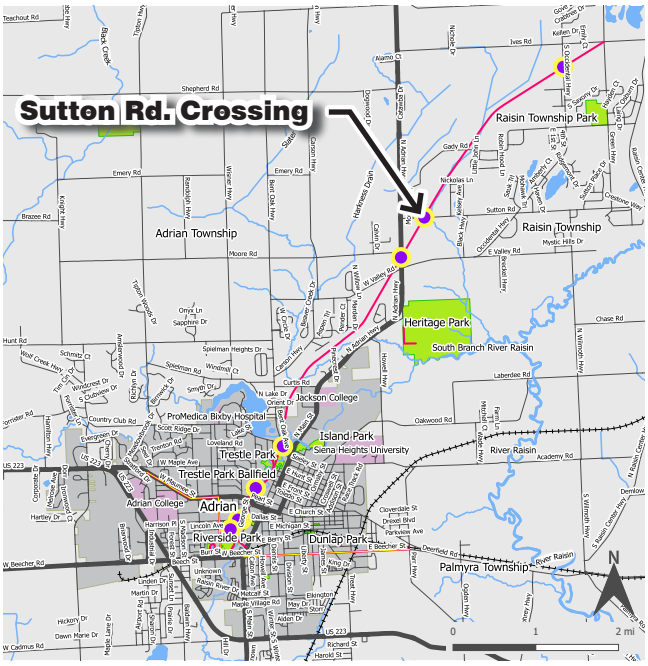
The crossing will also feature an overhead arch with a Kiwanis Trail sign clearly displayed on it, sections of split -rail fence, and pavement striping to add to the visibility of the crossing.

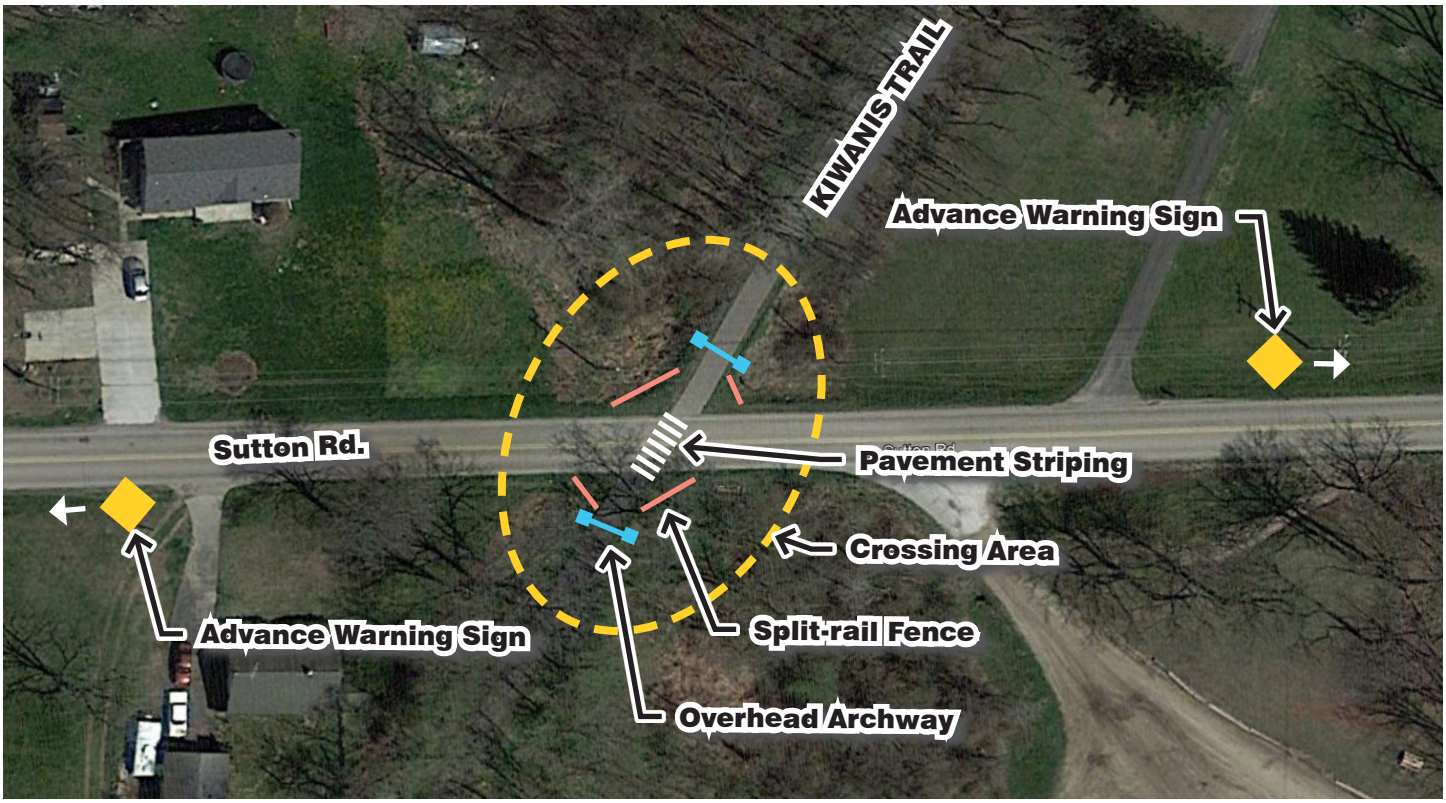


Above: Occidental Highway - Kiwanis Trail Crossing

SUTTON ROAD CROSSING

The Kiwanis Trail crossing at Sutton Rd., much like the Occidental Hwy crossing, lacks visibility. The proposed amenities at this crossing are an overhead arch with a Kiwanis Trail sign clearly displayed on it, sections of split rail fence, and pavement striping.

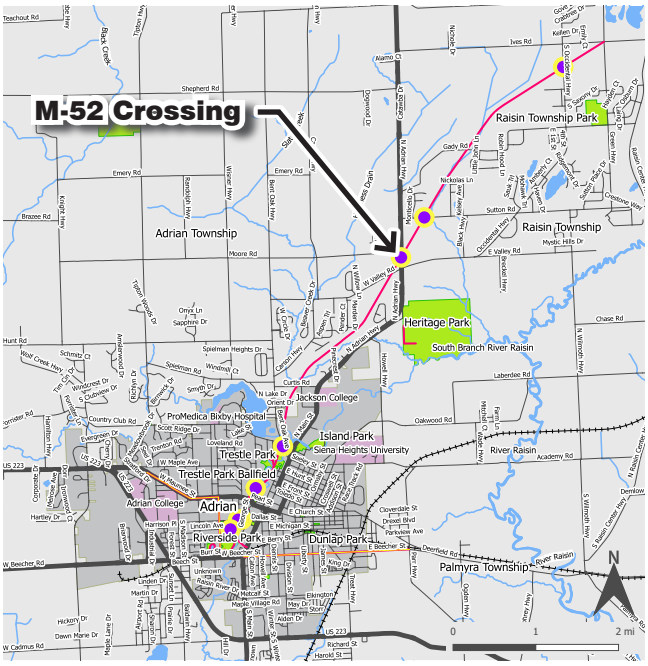




Above: Sutton Road - Kiwanis Trail Crossing

M-52/ADRIAN HIGHWAY CROSSING

The Kiwanis Trail crossing at M-52 is the crossing that is in need of the most improvement. Currently the trail crosses M-52 at a sharp angle, across high-speed traffic at a minimally marked location. These issues make crossing very difficult for trail users. Further study with MDOT coordination is recommended for this site. Some possible solutions to consider are a pedestrian overpass bridge, a HAWK signal (as described on page 6 of this report), or rerouting of the trail. An overpass bridge would provide the smoothest crossing for trail users and could also serve as an attractive gateway into the city of Adrian, however this option would be the most costly. If a HAWK signal is used, it is recommended that the crossing be realigned



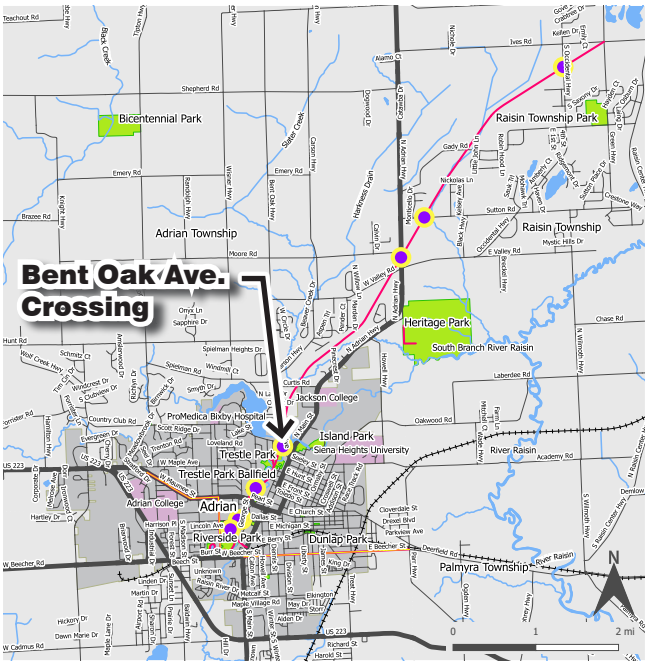
to be perpendicular to M-52 to provide a shorter, more visible crossing. Rerouting of the trail to cross at the Valley Road stop light (as shown in the image below) could also serve as a temporary solution until funding could be established for one of the other options.

Above: M-52/Adrian Highway - Kiwanis Trail Crossing

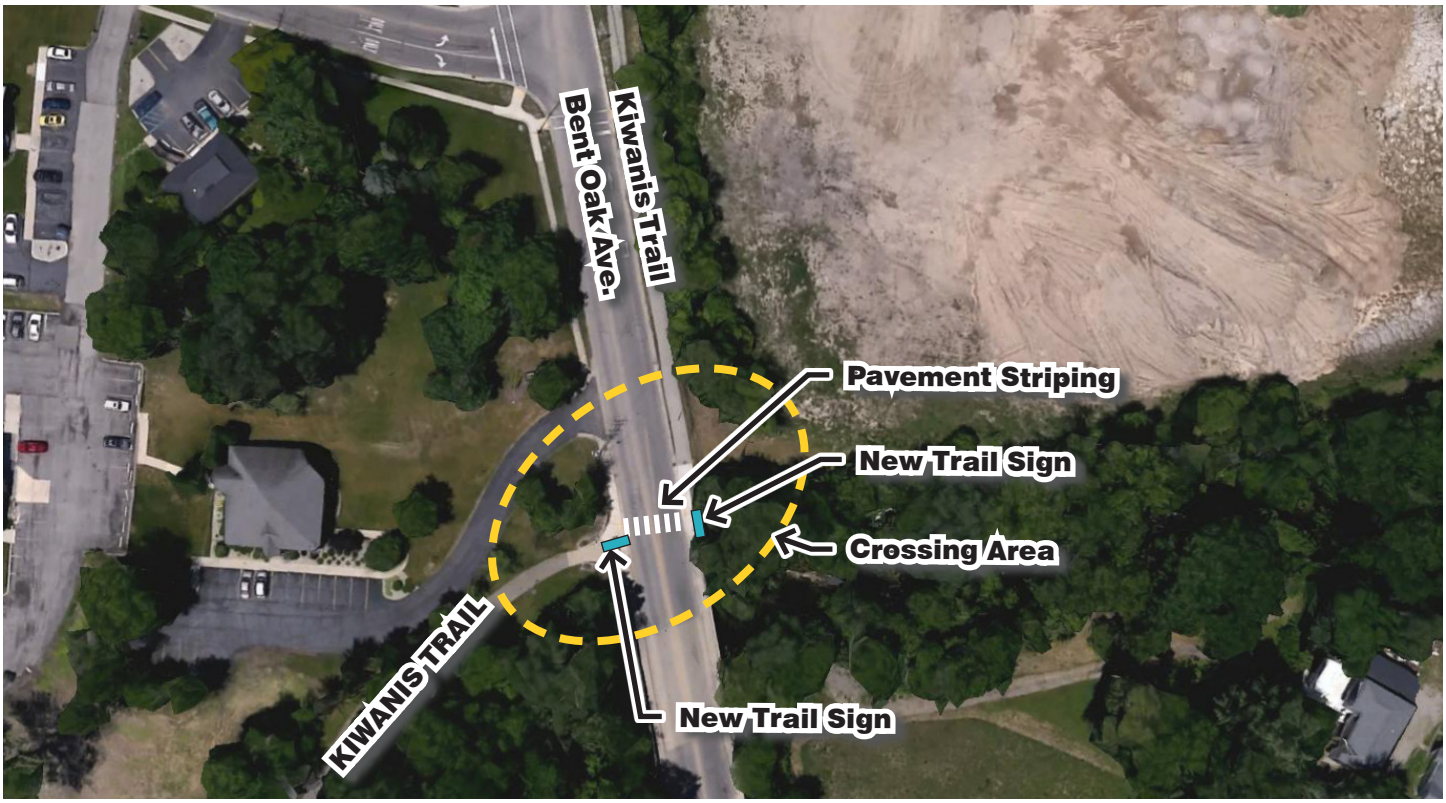
BENT OAK AVENUE CROSSING

The Kiwanis Trail crossing at Bent Oak Ave. features beautiful landscape walls on the west side of Bent Oak Ave. but lacks signage to identify this as the Kiwanis Trail. New signage should be placed in the landscape Island and additional landscape plantings should be added. When crossing to the east there is no clear indication as to which direction the trail continues in. Signage should be placed on the east side of Bent Oak Ave. and aligned parallel to the road with Kiwanis Trail and an arrow pointing to the north clearly displayed.

Proposed Improvements to Bent Oak Avenue Crossing



The proposed improvements also includes pavement striping. This will allow vehicular traffic to recognize this clearly as a pedestrian crossing and to be more alert when approaching.

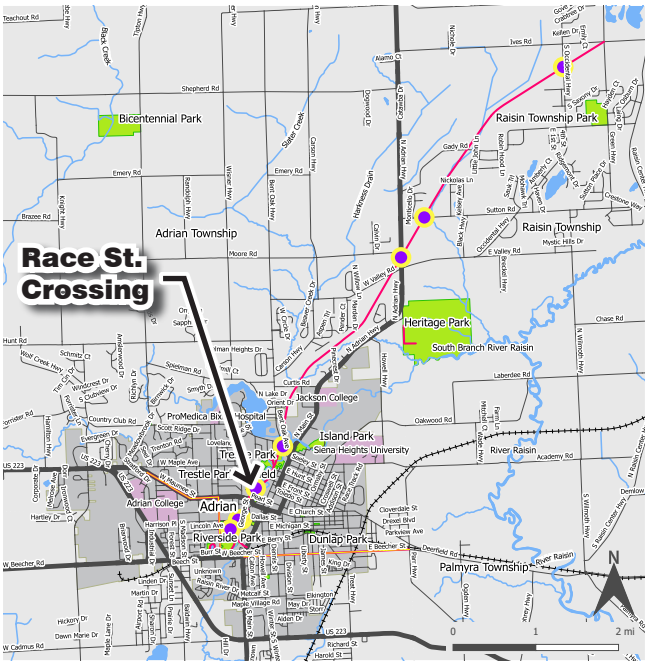


Above: Bent Oak Avenue- Kiwanis Trail Crossing

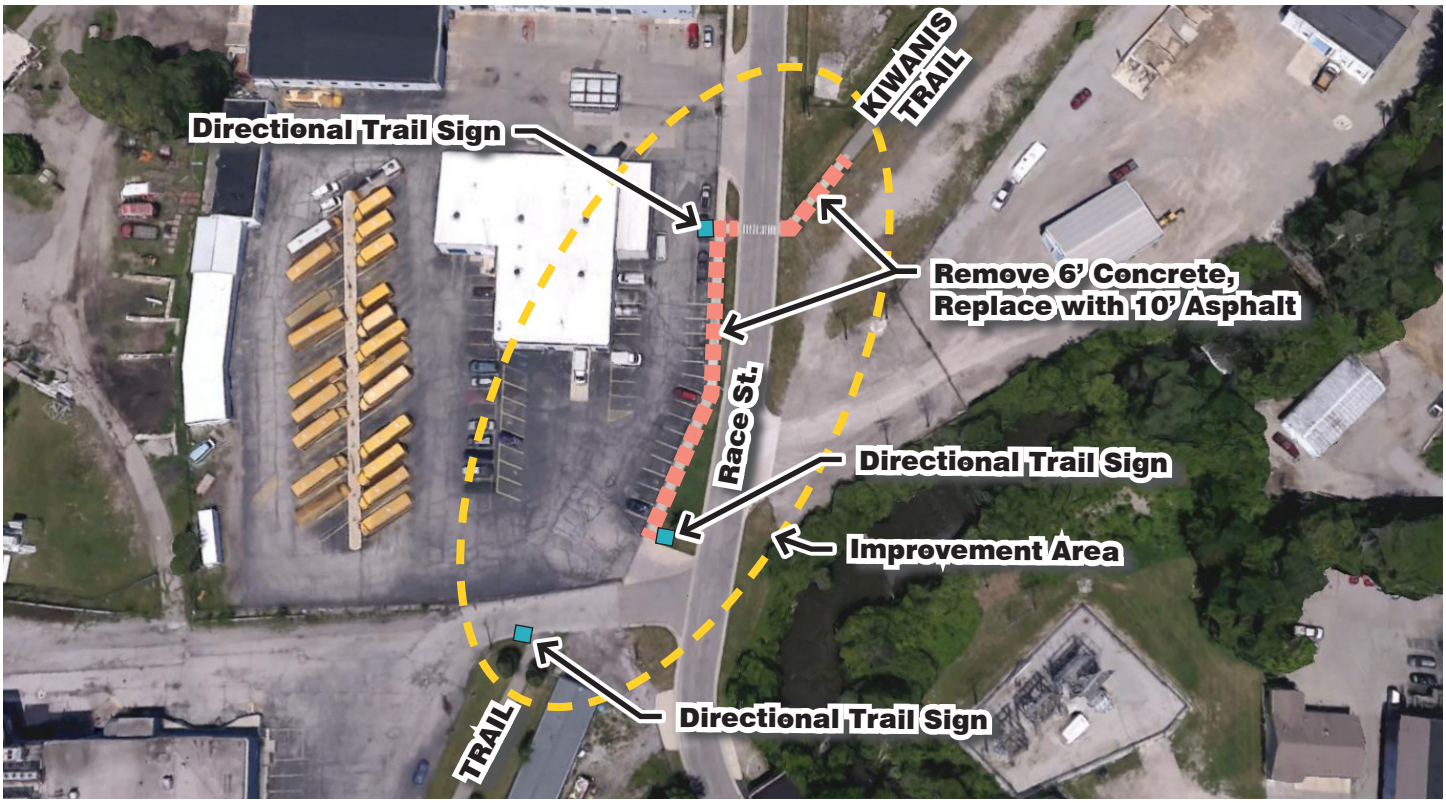
RACE STREET CROSSING

The Kiwanis Trail crossing at Race St. and the area directly south where the trail crosses the entry drive to the Adrian plaza pose some navigation challenges. On the east side of Race St. approximately 65' before the crossing the 10' wide asphalt trail becomes a 6' wide concrete path. This section of concrete should be removed and replaced with 10' wide asphalt. On the west side of Race St. the trail is also 6' wide concrete. This section should also be replaced with a 10' wide asphalt path. This will help to differentiate the trail from the concrete sidewalk which

Proposed Improvements to Adrian Plaza Entry Drive Crossing



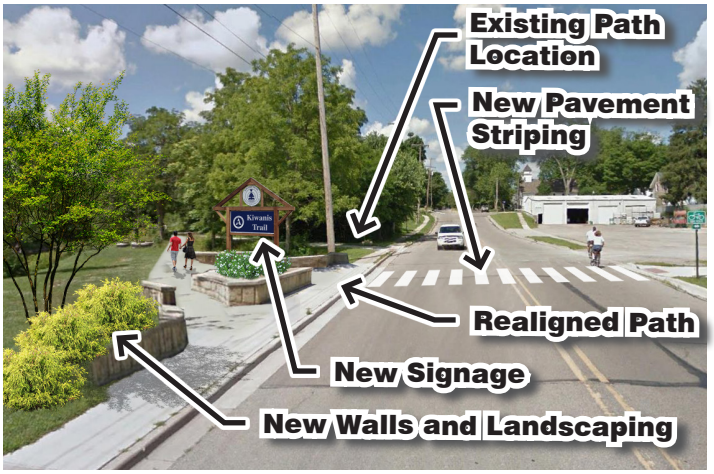
extends to the north. Directional signage should also be added on the west side of the Race St. crossing and along the route at the Adrian Plaza drive crossing where the path jogs toward the west. This will help to avoid confusion for trail users.



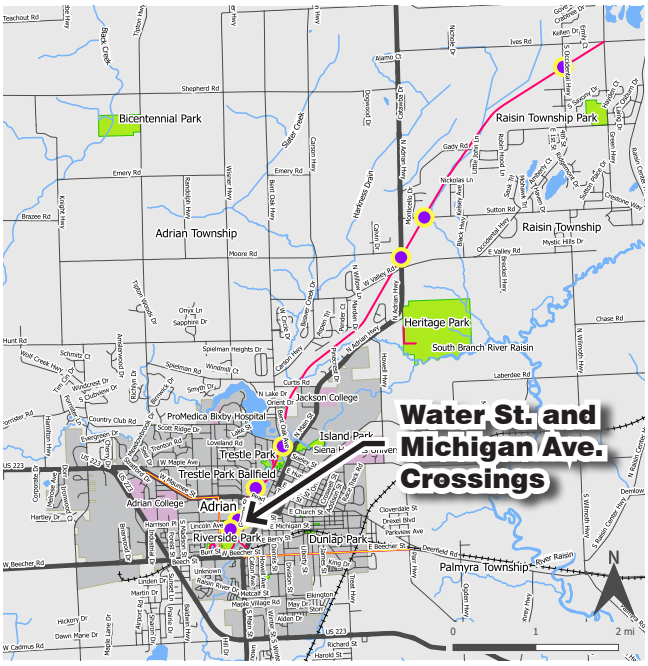
Above: Race Street Kiwanis Trail Crossing

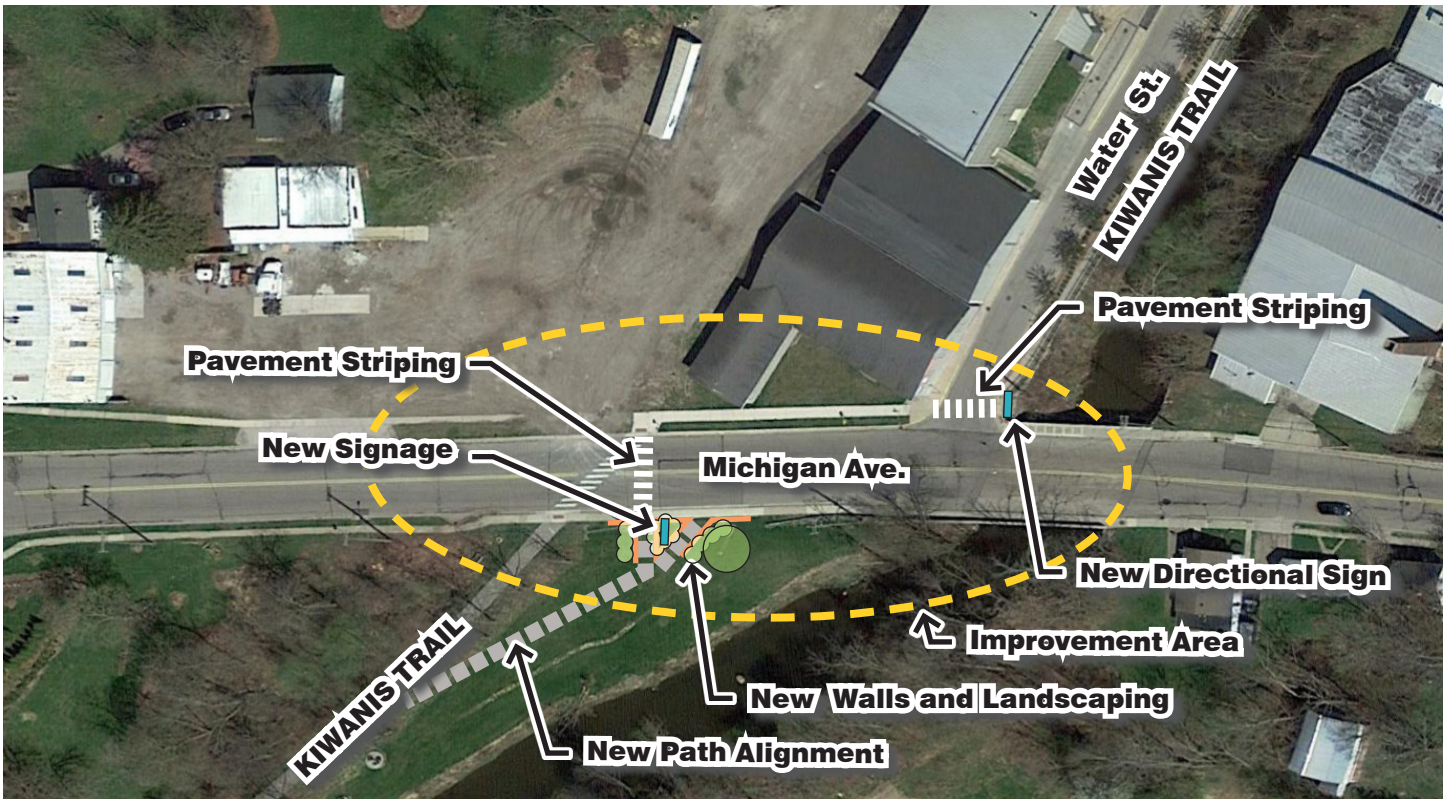
WATER STREET AND MICHIGAN AVENUE CROSSINGS

The Kiwanis Trail crossing at Water St. requires pavement striping and a directional sign on the east side of the crossing. Currently the trail crosses Michigan Avenue at a wide angle. Having an angled crossing causes difficulty for visually impaired individuals and also increases the length of the crossing which in turn increases the time that a person is in the roadway. This crossing should be realigned to provide a ninety degree crossing. New walls and landscaping should then be added to match the style of the other crossings throughout the city. Signage and new pavement striping should also be added to provide greater visual awareness and user safety.



Proposed Improvements to Michigan Avenue Crossing

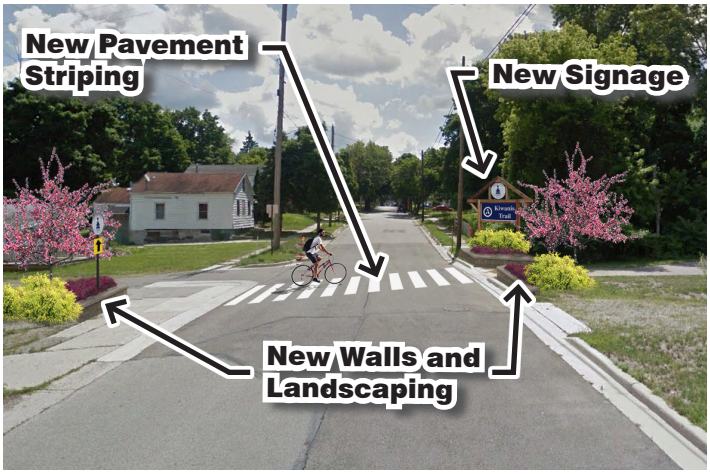




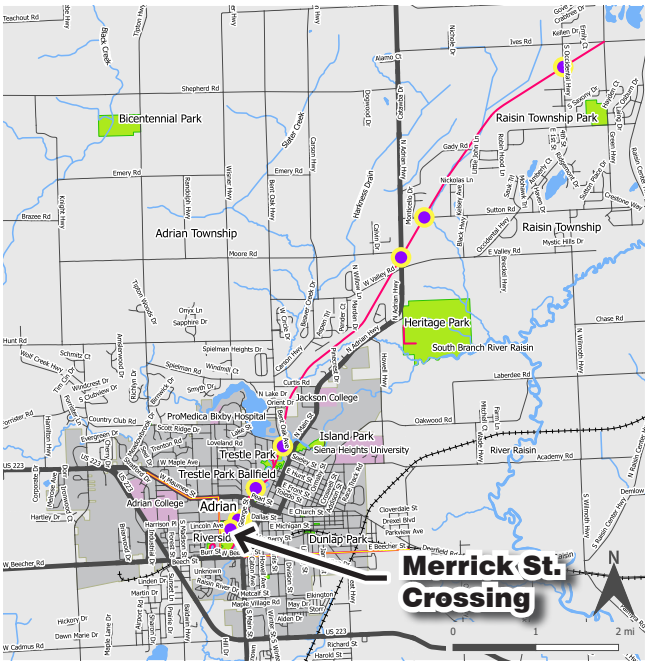
Above: Water Street and Michigan Avenue Crossings

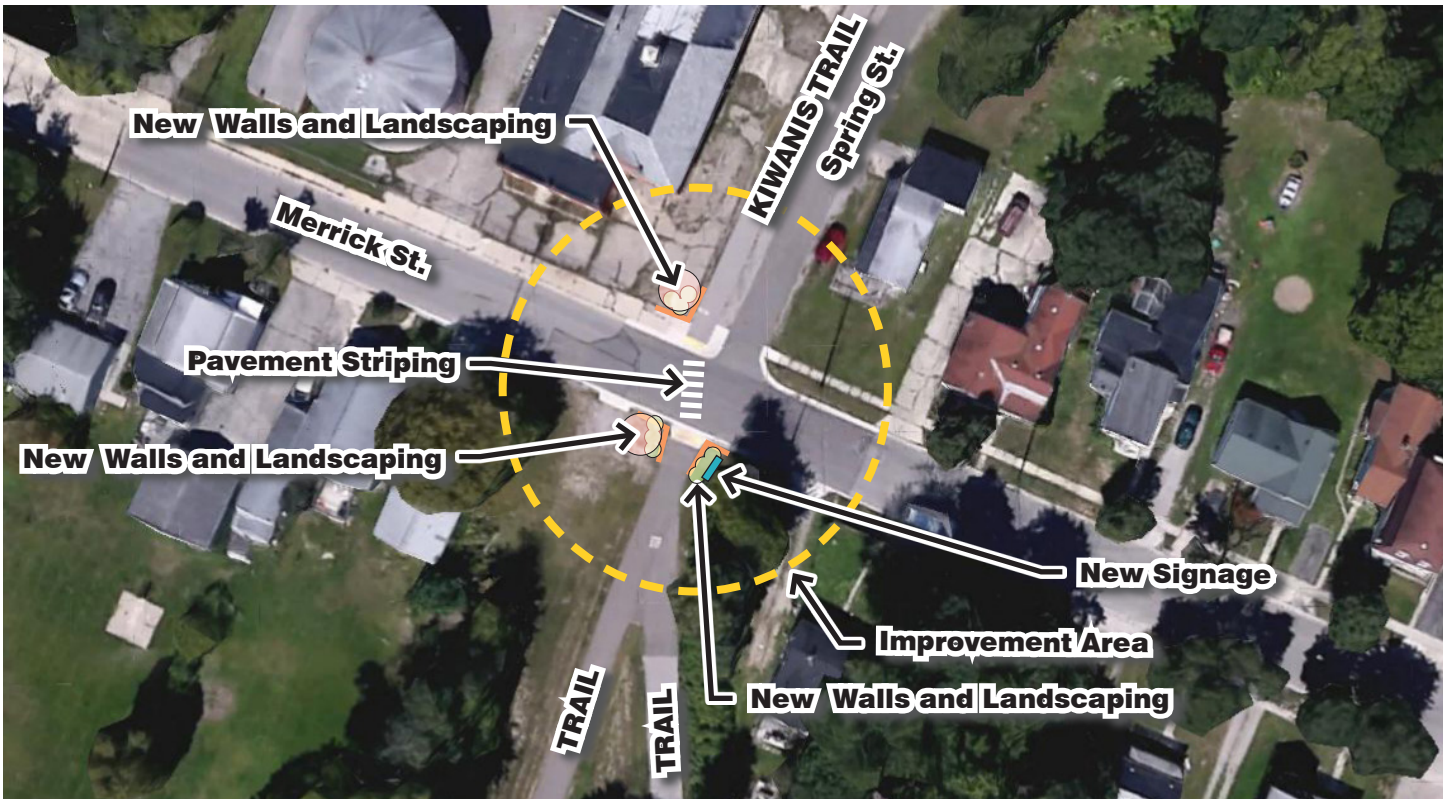
MERRICK STREET CROSSING

The Kiwanis Trail crossing at Merrick St. currently lacks visibility. Walls and landscaping should be added on both sides of the trail on the north side of the crossing to match the style of the other crossings throughout the city. Signage should be added on the north side of Merrick St. and a smaller directional sign should be added to the south side of the crossing. There is not enough room on the north side of the crossing to add walls and landscaping both the east and west sides of the trail. Walls and landscaping should still be added to the west side although this area may extend beyond the right-of-way which would require an easement from the adjacent landowner to install these items. Pavement striping should also be added to increase user safety.

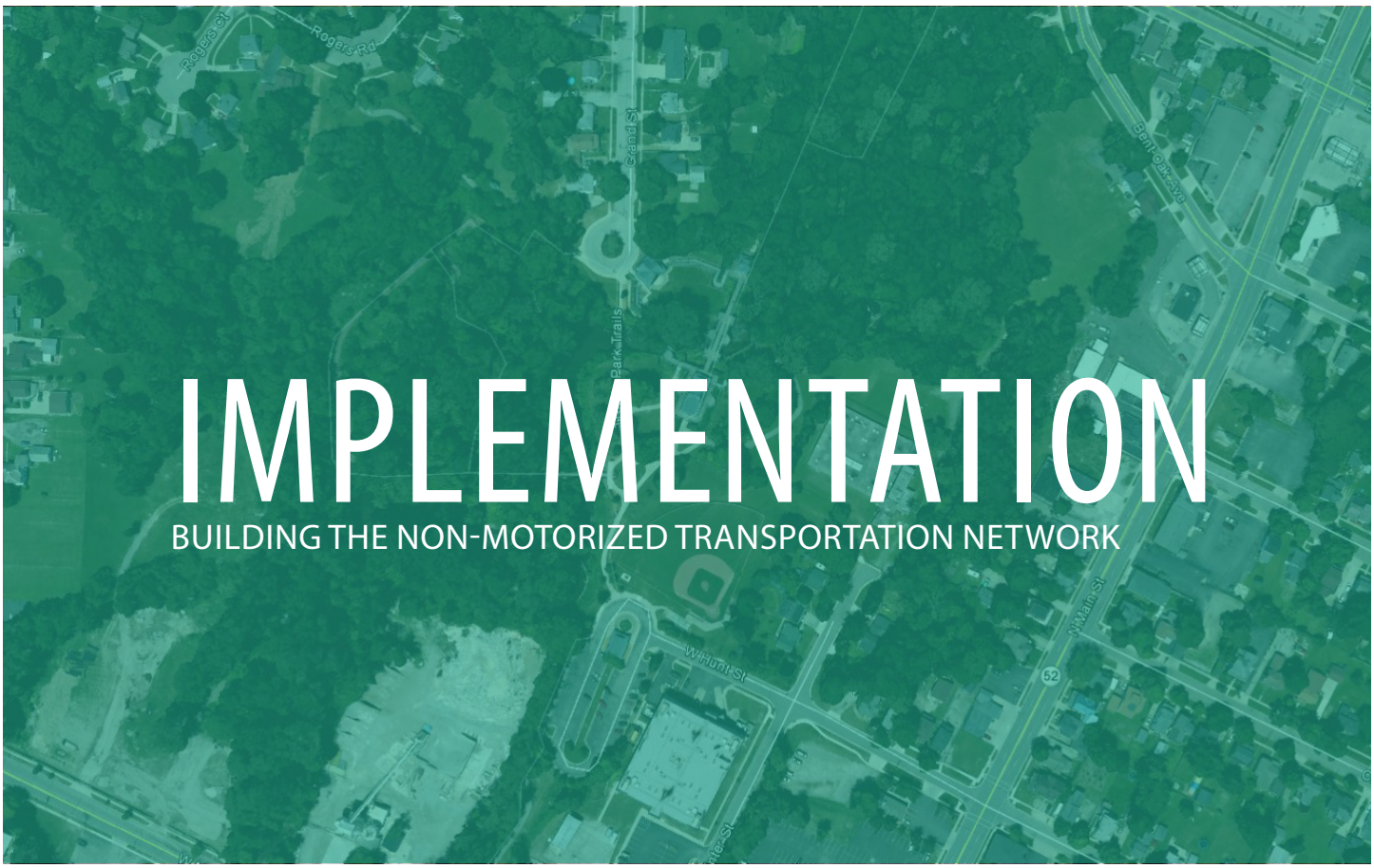


Proposed Improvements to Merrick Street Crossing





Above: Merrick Street Crossing



IMPLEMENTATION

BUILDING THE NON-MOTORIZED TRANSPORTATION NETWORK

IMPLEMENTATION STRATEGIES

The following strategies should be considered when adopting the Adrian Area Non-Motorized Transportation Plan (NMTP):

- Continue to actively pursue property acquisitions or public and private easements along proposed routes identified in the NMTP.
- Implement nationally recognized American Association of State Highway and Transportation Officials (AASHTO) design standards when designing non-motorized transportation facilities within the scope area.
- Incorporate Americans with Disabilities Act (ADA) standards when designing non-motorized transportation facilities within the scope area.
- Continue working with other State and Local review agencies during the implementation of the NMTP.
- Designate shared-use paths as publicly owned properties to allow the applicable jurisdiction access to manage and maintain them.

- Utilize a public input process at appropriate times during the design and construction of the NMTP.
- Actively pursue Federal, State and Local funding for the implementation of the NMTP.

General and specific recommendations for the Plan are summarized below and categorized into on road facilities, off road facilities, and other recommendations. Many of these recommendations need further study by the Planning Commissions and other appropriate review and approval agencies to see how they compare to the current ordinances and other adopted area planning studies prior to actual implementation. After its adoption, further detailed study needs to be completed for specific routes and conditions. The results of these studies and final analysis of each route needs to be presented to the appropriate municipal body for final review and approval.

COOPERATION

The NMTP will require cooperation and coordination, between the municipal bodies, residents and adjacent communities, to achieve successful implementation. The NMTP is a tool that allows for the sharing of information and clear communication with other agencies relative to the improvements under their control. Some of the other key agencies include:

- Adrian Community Development Department (CDD)
- Parks & Recreation Departments
- Adrian Downtown Development Authority (DDA)
- Public School Districts
- Lenawee County Drain Commission (LCDC)
- Lenawee County Road Commission (LCRC)
- Michigan Department of Transportation (MDOT)
- Other private entities and/or industries

Land acquisition is a key component to some of the specific routes identified in the NMTP and it will be a necessary step to implement the NMTP. When considering how to acquire land for trail development the following should be considered:

- **Donations** – recommended first when possible to lower trail costs
- **Easements** – where trail development needs specific rights
- **Leases** – lease specific rights for use
- **Purchases** – buy land from willing sellers at the appraised value

It is important to keep the lines of communication open during the implementation process of the NMTP. The public should be encouraged to remain involved in the planning process to help ensure its continued success. The manner in which the specific projects are communicated to the public is key to the success of this effort and important in all phases.

The NMTP is a long-term effort that will require substantial funding to implement beyond what the trail authority or any single municipality can afford to do alone. The NMTP may be used to initiate design of specific routes and to obtain funding from the State and local funding sources. One of the criteria for obtaining funding is having a comprehensive study in place that demonstrates proposed routing and connectivity to other communities. The implementation of the routes can be attained quicker by leveraging local dollars with other funding sources such as:

- State and Federal grants
- Set aside funds for acquisition
- Endowments and foundations
- Other public or quasi public agencies
- Others as they become available

IMPLEMENTATION TOOLS

Utilize the following tools as identified in the plan and as further listed below.

1. **Sidewalks** - The current sidewalk standard width for many municipalities is a 5′ minimum, but a 6′ wide minimum is preferred. LAP recommends that a standard minimum width of 6′ along major roadways be adopted to allow more adequate room for two-way traffic on sidewalks.

2. **Bikeways** - Add bikeways to existing roadways by re-striping the road within the existing section. This kind of change would require approval from the Lenawee County Road Commission, MDOT, or other applicable agency.

3. **Shared-Use Path** - Numerous shared-use paths are recommended throughout the NMTP. A shared-use path is typically 8′-10′ in width; their purpose is to provide multiple modes of non-motorized transportation for the user. See the NMTP map for specific locations.

4. **Lane Conversion** - Using the existing roadway section, a road may be converted from four to three lanes. When roads are being repaved or rebuilt, a lane conversion should be considered where appropriately identified on the Plan. Further study and the approval of applicable agencies is required prior to implementation of any lane conversion.

5. **Mid–block Crossing** - Several mid-block crossings currently exist throughout the length of the Kiwanis Trail. A Mid-block crossing, when proper signage, striping and other safety measures are utilized, can be a useful tool to not only allow people to cross the street safely but can also be used as a measure for traffic calming. Further study and the approval of applicable agencies is required prior to implementation of any mid-block crossings.

6. **Pedestrian Underpass** – Allows pedestrians safe passage under an obstacle, like Willoughby Road at the railroad corridor, and does not require the pedestrian to travel long distances out of the desired direction of travel to go around the obstruction. Further study and the approval of the applicable agencies is required prior to implementation of an underpass.

7. **Publicly Owned Land** - There are publicly owned lands identified in this study where a trail is being recommended. Any trail design must respect the rights of the adjacent landowners as much as possible. Individual landowners should be consulted during the preliminary design stage of the route to account for privacy measures among other design issues.

8. **Privately Owned Land** - One way to develop a trail on private land is by obtaining the private land and placing it in public ownership. Another way is to secure a private easement allowing the trail to be constructed on the private land. It is recommended that this be accomplished by either purchase or donation. It is not recommended that eminent domain or condemnation be used for this purpose. Riparian rights come with the landowner's bundle of rights. Riparian rights cannot be granted without the owner's permission through an easement or purchase.

9. **Public Easements** - It is recommended that when seeking easements for public use such as: utilities, maintenance, or other uses, a provision should be included to allow for recreational use or future trail construction within that easement.

10. **Private Easements** - Private easements are a good method of acquiring the land needed for the implementation of the NMTP, but does not require the same amount of money as the purchase of entire parcels.

OTHER IMPLEMENTATION ISSUES

1. **Design Criteria** - It is recommended that current design criteria be used to design the trail. This would include meeting the ADA (barrier free) standards, AASHTO (design standards), and others that are common for public trails. Privacy should be accommodated to the extent possible by the use of fencing, landscaping, or other visual barriers.

2. **Lighting** - Lighting is not recommended for the majority of the trail, but can be implemented and beneficial in areas of high use or security concerns. The hours of operation for trails are generally from dawn to dusk. The need for lighting usually appears only in densely populated areas where use is promoted after dark such as near downtown centers, retail areas, and event venues.

3. **Noise** - Non-motorized trails are generally quiet. Noise usually becomes a factor if large events are scheduled on the trail or if they are motorized. An occasional barking dog or a person's voice are the main sources of noise. However, if this is an area of concern, it is recommended that enforcement of regulations can control most of these disturbances.

4. **Materials** - It is recommended that the trail surfaces be considered during the planning process. Solid surfaces, such as asphalt and boardwalks, are the primary choices for shared-use paths; however, there are applications, like less frequently used trails in woods, in which gravel and wood chips are acceptable. The choice of materials must be based upon the site,

user groups and the frequency of use.

5. **Conservation Practices** - The most up to date conservation practices are recommended when developing a trail within any vegetated area. Enhance and/or avoid sensitive natural features whenever possible (primarily large healthy trees and/or underbrush). Use interpretative signage and education whenever possible to allow for a greater appreciation of natural resources. Develop conservation policies that protect and enhance the natural systems associated with this area.

6. **Trail Heads and Access Control** - A trail head acts as a point of entrance and exit and many times includes parking for cars. Trail heads are discouraged in neighborhoods as they can be unsightly and encourage large volumes of traffic and users. It is recommended to provide intimate connections to neighborhoods and destinations. Use barriers and/or gates to deter motor vehicles from entering the trail. Post signs to inform users of regulations.

7. **Other Agencies** - It is recommended to communicate with and utilize the expertise of other agencies (Drain Commission, Road Commission, Police Department, Public Service Department, Parks Department, Planning Department, and others) during the design, development, and management of this trail system.

8. **Screening** - It is recommended that there be adequate setbacks and generous screening or buffers between the trail and the adjacent property owner. Use vertical barriers, fencing or similar means to provide and create privacy where requested.

9. **Trail Advocacy Group** - A trail advocacy group is recommended to allow public participation in the development and monitoring of the trail. Work with local law enforcement agencies to implement police patrols and neighborhood watch programs from the initial stages of development. Add a regular bicycle patrol component to the police program. Allow designated neighbors to participate in the patrol of the trails and greenways and encourage communication and participation.

10. **Maintenance Program** - Designate the off-road trail areas as a publicly owned property and allow the applicable municipality to manage the property. The trail will require regular trash pick up, sweeping, and plowing. Provide the personnel and equipment necessary to perform these functions.

11. **Adjacent Communities** - Continue to communicate with the surrounding communities to discuss potential connection locations. The timing and exact connection points should be agreed upon so connectivity will happen between communities.

12. **Bridges** - Work with Michigan Department of Transportation (MDOT) and the Lenawee County Road Commission to coordinate any future improvements. Accommodation should be made to include non-motorized transportation provisions whenever a bridge reconstruction or new bridge is considered.

Further study will allow a more in-depth analysis and should be completed when specific routes are being considered for implementation. Refer to the Phasing Plan for recommended routing. A study process should include the following: study/design development, verification of funding (application for grants and/or allocation of local funds), implementation (construction plans, bidding and construction), maintenance and post evaluation.

PROPOSED IMPLEMENTATION PROCESS

It is recommended that an implementation process be considered for implementation of the routes proposed throughout the Adrian Area. The following is an example:

PLANNING

1. Determine the base information
2. Analyze data
3. Prepare a preliminary plan
4. Determine ownership – Agency in Charge (dedicated park vs. others)
5. Determine policies to govern the trail
6. Prepare a preliminary cost estimate

FUNDING

1. Apply for grant funding - Federal and State funding opportunities, private foundations, others.

2. Review budgetary allocations - matching funds for grants or approve allocation of local funds for implementation

DESIGN DEVELOPMENT

1. Meet with citizens to discuss design parameters with relationship to impacts on private properties
   a. Discuss individual needs
      i. Trail location within the proposed route
      ii. Individual access to trail from adjacent property
      iii. Privacy issues – fencing, landscaping, setbacks
   b. Review specific design issues
      i. Vehicle deterrents – bollards, gates, barriers
      ii. Drainage – trench drains, culverts, catch basins, etc.
      iii. Road crossings and/or intersections
      iv. Signs (location, type, size etc.)
      v. Amenities (benches, trail markers, exercise stations, etc.)
      vi. Materials (asphalt, concrete, limestone, cinders, etc.)
      vii. Refine preliminary cost estimate

CONSTRUCTION DOCUMENTS

1. Prepare construction documents
2. Prepare written specifications
3. Develop final cost estimates
4. Publicly bid project
5. Construction observation
6. Maintenance and post construction evaluation

FURTHER CONSIDERATIONS & STUDY

ORDINANCE CONSIDERATIONS

Some communities have completely restructured their zoning ordinances to permit mixed-use developments with higher densities and more open space than traditional neighborhood developments. Final trail policies should align with current ordinances or be modified to allow for pedestrian friendly design and implementation.

SIDEWALK ORDINANCE

Many sidewalk ordinances require that a minimum 5' wide sidewalk be installed. Two people walking side-by-side or passing one another generally require 1.4m (4.67') of space, while two people in wheelchairs need a minimum of 1.5m (5') to pass one another, so the current 5' wide sidewalk should be reviewed.

The sidewalk ordinance should be reviewed and consider a revision to require:

- 6' minimum width for all new sidewalks along major thoroughfares.
- 6' minimum width for all new sidewalks along secondary streets that act as connectors.

PLANNING CONSIDERATIONS

We recommend that the following principles be considered which can make the Adrian area more pedestrian friendly. Numerous tools can be used to accomplish this; however, one is to upgrade the land development/subdivision regulations. The principles that should be considered are:

- Discuss pedestrian accommodations early in the site planning process so that existing transportation efforts can be coordinated with any proposed developments.
- During review of new residential developments, consider sidewalk design that includes connectivity between adjacent parks, schools, other residential communities and commercial centers.
- During review of commercial developments, consider sidewalk design that includes pedestrian connections to neighborhood parks, schools, other residential communities and commercial centers.
- In commercial districts consider placing a higher emphasis on pedestrian access by setting maximum limits on the amount of parking, encouraging shared parking, and provide direct access to the front of building sites with direct sidewalk connections to the main streets
- Consider requiring the developer to pay for improvements such as the sidewalks and shared-use paths, similar to those shown on the NMTP for all new developments. This would include sidewalks or shared-use paths within the development and along right-of-ways.

SHARED-USE PATH DESIGN CRITERIA

Shared-use paths should contain the minimum design criteria listed below:

- 8' wide minimum for shared-use paths (10' preferred)
- Minimum 2' unobstructed area adjacent to both sides of trail
- Side slopes should not exceed 3:1 (33%)
- Vertical clearance to obstructions of 8'
- Grades not steeper than 5% recommended, with a graduated scale up to 11% or more for short distances
- Separation from roadways should be a minimum of 4'
- Cross slopes should not exceed 2%
- Path-roadway intersections should be carefully designed (See AASHTO Guide for the Development for Bicycle Facilities)

Once reviewed by the proper public process, the new widths should be adopted and incorporated into the zoning ordinance for implementation of future shared-use path design and construction.

ON-GOING CONSIDERATIONS

CITIZEN INITIATIVE

Once implemented, it is citizen participation that is crucial for the success of the approved NMTP. A trail advocacy group is needed to continue to voice support for non-motorized issues. It will take a long-term commitment and support by the community and residents to begin to change old planning practices where non-motorized transportation was not previously considered in the planning process.

There are a number of ways to implement those changes including, speaking with staff first, then attending Board meetings to speak on behalf of non-motorized projects being considered. When roadway projects are up for public review attend the Lenawee County Road Commission meeting to show support for non-motorized design. A continuous presence and positive outlook will signify the desire for a more pedestrian friendly community.

MAINTENANCE

Proper trail maintenance is just as important as using correct design and construction techniques. A sidewalk that becomes inaccessible because of inadequate maintenance or improper construction zone provisions can be just as inconvenient or undesirable as failing to construct the proper pedestrian facilities in the first place.

Public works agencies should have a program for routine maintenance checks of trails and should have a process in place to quickly respond to citizen reports of damaged surfaces, particularly along high-priority routes, so that pedestrians with mobility impairments do not have to seek alternative routes.

Public agencies should adopt a snow removal program for trails that includes ensuring that the most heavily used pedestrian routes are cleared, including bus stops and curb ramps at street crossings so that snow plows do not create impassible areas.

Vegetation along trails can be a safety issue. Prevent vegetation from encroaching into walkways. Roots should be controlled to prevent break-up of the sidewalk surface. Adequate clearances and sight distances should be maintained at driveways and intersections; pedestrians must be visible to approaching motorists.

A regular pruning and maintenance program is recommended. Vegetation and litter, including leaves and branches, should be removed on a regular basis. A checklist of surface repair and vegetation maintenance items should include:

- Frequent inspection of walkways for surface irregularities
- Responding to citizen complaints in a timely manner
- Repairing potential hazardous conditions immediately
- Performing preventative maintenance operations, such as keeping drains in operating condition and cutting back intrusive tree roots
- Sweeping of a project area after repair to any surface
- Cutting back vegetation to prevent encroachment in the path's clear zone

If a millage is considered to fund sidewalk and shared-use paths, some of the money allocated in an annual budget should be reserved for routine maintenance. Maintenance is an on-going expense that should be discussed. There are also maintenance costs associated with the bikeways and coordination with the road commission is important to establish maintenance procedures.

FUNDING STRATEGIES

There are multiple options available to fund the implementation of the NMTP. One source of implementation of the NMTP is the allocation of money available from local funds such as the DDA. The municipalities can also explore alternative methods of cost sharing with property owners. There are also a number of federal, state and private grants available for non-motorized projects and community improvements.

Maintenance and replacement will be an on-going cost throughout the life of the system and should be planned for accordingly. Other communities have successfully funded similar projects through the support of a millage. A sidewalk or trail millage allows for an annual funding source to provide maintenance and construction of the NMTP. A trail millage would also enable the local governments to apply for federal and state funding where local money can be leveraged to obtain grant funding from those agencies.

STATE RECREATION FUNDING FOR TRAILS

MICHIGAN NATURAL RESOURCES TRUST FUND (MNRTF)

The MNRTF is available through the Michigan Department of Natural Resources (MDNR), to any local unit of government, including school districts, or any combination of units in which authority is legally constituted to provide recreation. These funds are utilized to acquire land for outdoor recreation, natural resources protection, and to develop facilities for outdoor recreational opportunities including trailways. The MNRTF is supported by revenue, interest accrued to the Trust from oil and gas exploration, and sales from state land. The grant program requires at least 25% of the project costs to be covered by the grantee. The program currently has a maximum state contribution of $300,000. Projects that meet one or more of the special initiatives will be given additional points. Currently trails are a major initiative for the MNRTF.

LAND AND WATER CONSERVATION FUND (LWCF)

This federal program, administered in Michigan by the Michigan Department of Natural Resources (MDNR), funds the planning, acquisition, and development of land for federal and non-federal (known as "state-side") outdoor recreation. These funds can generally be used to acquire land, build or repair recreation or park facilities, provide riding and hiking trails, enhance recreational access, and provide wildlife and hunting areas. The program requires at least 50% of the project costs to be covered by the grantee. The current federal contribution per project is capped at $150,000 (as of 2016). This grant program currently has a trails priority that scores trail projects higher than other types of projects.

MICHIGAN RECREATION PASSPORT GRANT

The MDNR also administers a grant program funded by voluntary license plate fees that can be used to fund small recreation based capital improvement projects. The grant requires at least 25% of the project to be funded by the grantee and the state will provide up to $45,000 of the project costs.

FEDERAL FUNDING

Federal funding for pedestrian and bicycle facilities is available through a variety of programs enacted by legislation. While some programs can last for many years, many of the programs are subject to renewal and regular review by the legislative bodies that enacted them. Current funding opportunities should always be evaluated on a project-by-project basis as funding opportunities will likely change over the effective life of this plan. Current information for funding opportunities can be found on the Federal Highway Administration's website at http://www.fhwa.dot.gov/environment/bicycle_pedestrian/funding/funding_opportunities.cfm.

METROPOLITAN PLANNING ORGANIZATION FUNDING (MPO)

This funding is administered through the local regional Planning Commission office. A study must be submitted to the local Regional Planning Commission Office for review to see if it qualifies for funding. To be considered a project must have a cost estimate, fulfill a transportation need and be submitted through an Act 51 Agency. A local match is usually required by the applicant. The MPO funds non-motorized trails with monies allocated for proposed transportation projects. The funding is provided by Michigan Department of Transportation (MDOT). Funding availability varies each year.

PRIVATE FUNDING SOURCES

Robert Wood Johnson Foundation
www.rwjf.org
Mott Foundation
www.mott.org
Kellogg Foundation
www.wkkf.org
General Motors Corporation
www.gm.com

LOCAL PRIVATE FUNDING SOURCES

Granger Foundation
www.grangerfoundation.org
Meijer
www.meijer.com
Target
www.target.com
Wal-Mart
www.walmart.com

PLAN AMENDMENTS & PHASING PLAN REVISIONS

The NMTP should be reviewed and updated every five years and prior to the expiration of the NMTP. The Adrian Area may want to update portions of the Plan and review the priorities for each route, and status of obtaining required easements. The approved Plan may be amended at any time during the five-year period to reflect significant changes in community conditions, needs, or changes in obtaining significant easements in a particular area. If an amendment takes place during the five-year period, the changes should be presented at a public meeting where public participation is encouraged and considered. Update the Plan when the grant funding is different than the Phasing Plan. Some examples of funding sources are the State of Michigan (who handles the federal disbursement of monies), Michigan Department of Natural Resources (MDNR) or Michigan Department of Transportation (MDOT).

At a minimum amendments or updates should include:

- Public Input – This should include a description of the public involvement process used in development of the amendment including the pubic input methods utilized. Public input should be encouraged when considering any amendments or revisions.
- Review current base information and inventory changes such as new developments that have taken place since the adoption of the latest revision of the NMTP.
- Update the NMTP
- Discuss new technology for construction methods and materials.
- Update implementation costs based on inflation and priority adjustments.
- Review progress of securing easements or newly acquired properties.
- Review and evaluate overall connectivity to destination points such as parks, schools, neighborhoods and commercial areas, publicly owned properties and adjacent communities.
- Review and discuss possible funding opportunities; public and private.
- Document local adoption of the amendments or updates to the NMTP.
- Develop a written summary indicating what aspects of the NMTP have been revised and why the changes were made.
- Communicate and distribute the revised amendments to the general public and other public agencies.

Amendments should involve a public meeting and/or an input session to allow the public to be involved in the decision making process.

CONCLUSIONS

The efforts of the Adrian area and all agencies involved, coupled with input received from the community have resulted in an NMTP that is consistent with the wants and needs of the community. The overall map generated by these efforts shows an evolving network that includes sidewalks, bikeways, shared-use paths, and mid-block crossings. The internal network that is made up of these components is also designed to encourage physical activity and regional connectivity with adjacent communities.

The NMTP should be used as a planning tool and the implementation process of it should begin as soon as possible to realize the goals set forth in the NMTP, including the following action steps:

- Begin the process of obtaining public & private easements
- Embrace working with other agencies to obtain the NMTP goals
- Work with the public to implement the non-motorized transportation routes as identified in the NMTP
- Identify specific projects for implementation
- Explore funding opportunities and begin applying for State and Federal grant funding
- Implement a pilot project for promotion and evaluation

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