



# Marion Master Trails Plan

City of Marion, Iowa

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## Acknowledgements

The City of Marion appreciates the efforts of the numerous residents and community members who participated in the development of this plan. Their creativity, energy, and commitment were the driving force behind this planning effort. In addition, the following citizens, City staff, and other agency and organization members significantly contributed to the development of the Marion Master Trails Plan.

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# Chapter One: Introduction

## Purpose of the Plan

Bicycling, walking and trail use are on the rise in Marion. Residents and community members have expressed a growing interest in trail expansion. The City currently boasts a strong, interconnected sidewalk network, more than a dozen miles of sidepaths and bike lanes, and nearly ten miles of multi-use trails. Marion’s existing trails are heavily used for recreation, fitness and exercise, but their lack of connectivity afford little value for transportation-oriented trips. As the City continues to grow, it is important that future capital investments and development projects incorporate trails, on-street bikeways, and pedestrian paths as vital community.

The purpose of this Plan is to provide a framework for future investments in trails and on-street bikeways, with focus on improving connectivity to local destinations, tying into the regional trail network, improving safety and accessibility for all trail users, supporting economic development, and improving quality of life for Marion residents. Through a series of recommended physical improvements and supporting policies, programs, and activities, the Plan sets forth a comprehensive strategy that can strengthen and expand the trail and on-street bikeway network and encourage trail usage, walking and bicycling for transportation and recreation.

## The Planning Process

The planning process began in early 2014 with a review of existing plans, policies, legislation, and other background documents and information to better understand the policy and planning context in which the Plan was being developed. Through field visits, Geographic Information Systems (GIS) mapping, and other information sources, the planning team developed an inventory and analysis of existing physical conditions (trails, bike facilities, transportation networks, land uses, topography, hydrology, and other factors) and their impact on future trail development.

The City convened a Steering Committee, consisting of city staff, elected officials, coordinating agency and stakeholder representatives, local trail advocates, and community residents, to oversee the planning process, provide input and direction at key decision points, and encourage public participation. The Steering Committee met four times during the course of the planning process and supplied invaluable insight, ideas, and feedback to inform the Plan goals, objectives, and recommendations.



Figure 1: City staff and Steering Committee members tour the City on a cold February afternoon.



Figure 2: The Steering Committee at one of their four meetings during the course of the planning process.



The City held two open house events to encourage public participation and solicit input from community residents and stakeholders. The first open house, held on February 25, 2014, provided attendees with an overview of the planning process, highlighting the building blocks of a trail and on-street bikeway network and existing conditions for walking and bicycling in Marion. The second open house was held on May 29th, 2014 and presented the draft recommendations for new trails and on-street bikeways, as well as supporting programs and activities that can help to activate the trails and encourage more walking, bicycling and trail usage. More than ninety people attended the two open house events.



Figure 3: Kesha Billings, Associate Planner with the City of Marion, discusses the recommended trails and bikeways with community residents.

In addition to the open house events, public input was also provided through an online mapping tool and a survey, available both online and in print. Community members used the mapping tool to identify their current routes for walking and bicycling, highlight areas in which they would like to see future trail development, and point out obstacles they currently face when trying to access and use the Trail and On-Street Bikeway Network. More than 65 individual locations were added to the online mapping tool, which generated an additional 60 comments in a conversational format. The 62 survey responses provided additional information regarding current trail usage, desired locations for future trails, and other demographic and user-preference information. These two input sources provided invaluable information and ideas that informed the planning process and were used to develop the recommendations included in this Plan.

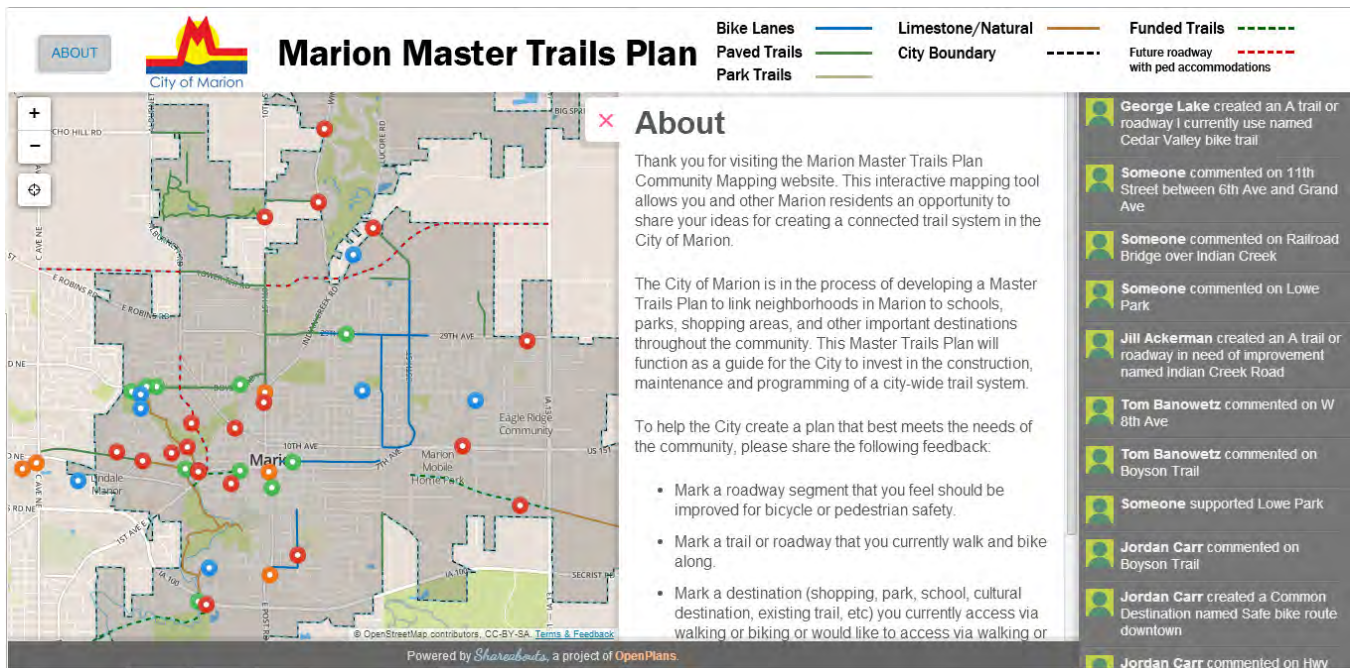


Figure 4: More than sixty individual locations for existing trail usage and new improvements were added to the map.





## The Benefits of Trails and Complete Streets

The benefits of trails and Complete Streets within communities are numerous and have been documented by planners, engineers, state legislatures, non-profit coalitions, state and county health departments, and others. The National Complete Streets Coalition ([www.completestreets.com](http://www.completestreets.com)) has published fact sheets on the many direct and indirect benefits Complete Streets provide. Some of the benefits that Marion can expect to realize in the implementation of a Master Trails Plan include the following:

### Healthy and Livable Communities

Today, many local governments and businesses are facing a crisis as they attempt to cope with the growing healthcare costs associated with chronic diseases, many of which are preventable. Obesity and sedentary lifestyles are major contributors to chronic disease for both adults and children.

The public health community recognizes that non-motorized or “active” travel helps citizens meet recommended levels of physical activity, thereby reducing the risk of chronic disease and associated health care costs.<sup>1</sup>

In 2009, the Centers for Disease Control and Prevention (CDC) released Recommended Community Strategies and Measurements to Prevent Obesity in the United States, a report recommending Complete Streets policy adoption as a strategy for obesity prevention.<sup>2</sup> Complete Streets and trails contribute to an environment that will encourage and promote healthier, more active lifestyles for residents.

### Improved Access

Access to jobs, education, grocery shopping, healthcare, and other destinations is vital in our urban areas. In Marion, an estimated 5.7 percent of households do not have access to a motor vehicle.<sup>3</sup> In addition, many seniors and disabled residents are limited in their ability to drive. Creating safe streets allows access and travel by pedestrians, wheelchair



Figure 5: Bicycling infrastructure can have a significant impact on physical activity and public health.



Figure 6: Bikeable and walkable communities support people of all ages and abilities.

<sup>1</sup> Safe Routes to School National Partnership, Quick Facts (2012). <http://www.saferoutespartnership.org/resourcecenter/quick-facts>.

<sup>2</sup> Keener, D., Goodman, K., Lowry, A., Zaro, S., & Kettel Khan, L. Recommended community strategies and measurements to prevent obesity in the United States: Implementation and measurement guide. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. [http://www.cdc.gov/obesity/downloads/community\\_strategies\\_guide.pdf](http://www.cdc.gov/obesity/downloads/community_strategies_guide.pdf)

<sup>3</sup> U.S. Census Bureau. (2008-2012). Marion city, Iowa, DP02 Selected housing characteristics [Data]. 2012 American Community Survey 5 Year Estimates. Retrieved from <http://factfinder2.census.gov>



users, cyclists, transit users and builds a more livable, accessible community for people of all ages, abilities, and income levels.<sup>4</sup>

### **Air Quality**

Reducing congestion along a roadway results in less vehicle idle times, thus reducing smog and ground level ozone, which are both large contributors of greenhouse gases. Complete Streets-designed corridors improve traffic flow by lessening the stop-and-go pace of vehicular traffic, help regulate vehicle speeds to appropriate levels for the corridor's function, and reduce the number of cars on the road as some motorists become choice pedestrians, bicyclists, and transit riders.

### **Improved Safety**

Streets without safe places to walk, cross, catch a bus, or bicycle put people at risk. The National Complete Streets Coalition publishes some sobering national statistics:

*“Pedestrian crashes are more than twice as likely to occur in places without sidewalks; streets with sidewalks on both sides have the fewest crashes. Of pedestrians killed in 2007 and 2008, more than 50% died on arterial roadways, typically designed to be wide and fast. More than 40% of pedestrian fatalities occurred where no crosswalk was available...Speed reduction has a dramatic impact on pedestrian fatalities. Eighty percent of pedestrians struck by a car going 40 mph will die; at 30 mph the likelihood of death is 40 percent. At 20 mph, the fatality rate drops to just 5 percent.”<sup>5</sup>*

Roadway design and engineering approaches commonly found in complete streets create long-lasting speed reduction. All road users - motorists, pedestrians and bicyclists - benefit from slower speeds.



Figure 7: Improving pedestrian safety around elementary schools can encourage children to walk to school.

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<sup>4</sup> Cromartie & Nelson, *Baby Boom Migration and Its Impact on Rural America*, United States Department of Agriculture, Economic Research Service, Economic Research Report No. (ERR-79) (2009). <http://www.ers.usda.gov/publications/err79/>

<sup>5</sup> National Complete Streets Coalition, *Fact Sheets* (2012). <http://www.completestreets.org/complete-streets-fundamentals/factsheets/>



## Economic Benefits

Creating walkable and bikeable environments can help stimulate the local economy by reducing consumers' transportation costs, increasing access to local businesses, attracting private investment, raising private property value, and attracting recreational and tourist activity. Cities across the country reaping the financial rewards of public investment in complete streets and off-street trails and greenways. The Mountain View, California's investment in pedestrian-oriented streetscapes and wide sidewalks in its downtown resulted in \$150 million in private investment, reenergizing the city's core as a vibrant, walkable destination. When the City of San Francisco, California added bike lanes along Valencia Street, adjacent businesses saw sales increase by 60 percent.<sup>6</sup>



*Figure 8: Trails and greenways can drive economic activity, increasing private investment in adjacent businesses and creating destinations for trail users and potential customers.*

Trails and greenways can have a similar affect, functioning like magnets that attracts economic activity. While residents and tourists alike come for the trails, they stay for lunch, shopping, hotels, and other amenities. Many communities are highlighting their trails and bicycling opportunities as the central focus of their tourism and economic development strategies, acknowledging the spending power of trail users and their economic impact on the local economy. In Dallas, Texas, the Mineral Wells to Weatherford Rail-Trail attracts nearly 300,000 visitors a year, generating local annual revenues of \$2 million. A study of economic impacts along the Little Miami Scenic Trail in Ohio found that visitors spend an average of \$13.54 per visit on food, beverages and transportation alone, with an estimated \$277 per person each year on clothing, equipment, and accessories to use during these visits.<sup>7</sup>

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<sup>6</sup> National Complete Streets Coalition, *Fact Sheets (2012)*.

<http://www.smartgrowthamerica.org/documents/cs/factsheets/cs-economic.pdf>

<sup>7</sup> Rails to Trails Conservancy, *Economic Benefits of Trails and Greenways*.

[http://www.railstotrails.org/resources/documents/resource\\_docs/tgc\\_economic.pdf](http://www.railstotrails.org/resources/documents/resource_docs/tgc_economic.pdf)



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## Chapter Two: Existing Conditions

### Introduction

Marion's strong foundation for future trail development is the result of a concerted effort of local and regional stakeholders, largely driven by a strong desire for trails, walking paths, on-street bikeways, and other facilities and programs that encourage active transportation and recreation. This existing conditions chapter examines current demographic characteristics and existing physical conditions in the City of Marion and identifies general opportunities for and constraints to the development of the City's trail network. Discussed in this chapter are general demographic and population growth characteristics, development patterns, existing bicycle and pedestrian facilities, desirable destinations, environmental conditions, accessible corridors, and other key elements pertaining to walking and bicycling. With a strong understanding of the local and regional context, the Marion Master Trails Plan can address identified constraints, build on the City's diverse strengths, and capitalize on trail development opportunities.

### General Opportunities and Constraints

#### Population Growth

The population of Marion grew significantly during the previous decade, from 26,294 in 2000 to 34,768 in 2010. When taken in context with a growth of nearly 20,000 in Linn County (191,701 in 2000 to 211,226 in 2010), population growth in Marion accounted for 43 percent of population growth countywide. Rapid population growth can have a debilitating impact on transportation infrastructure, particularly the road network. As discussed further below, population growth and accompanying development can provide opportunities to expand the trail system through the construction of trails, sidewalks, and on-street bikeways within the road right-of-way, as well as off-street trails located on separate rights-of-way.

#### Demographics

While all residents and visitors benefit from the City of Marion's trail system from a recreational standpoint, three demographic groups gain significant benefit from the transportation opportunities provided by interconnected bicycle and pedestrian facilities: children, seniors, and those without vehicles who depend on bicycling, walking and public transportation to travel throughout the community. Because children and many elderly persons cannot drive, they are often dependent on other means of transportation to access destinations throughout the community, such as schools, parks, medical offices, and grocery stores. In 2010, more than one in every four Marion residents (27 percent) was under the age of 17, with 15 percent under the age of 10. An additional 14 percent of the population was over the age of 65. When combined, more than 40 percent of Marion residents fall into these two age groups, presenting a significant opportunity to meet the recreational and transportation needs of a large portion of the population who travel on foot, bicycle, motorized or non-motorized mobility device, skateboard, and scooter through a comprehensive trail system.

#### Development

In many cities, rapid population growth and development can be a constraint to trail system development. However, planners and developers in Marion have done very well to ensure the necessary rights-of-way have been acquired for trail development and to incorporate trail projects into new roadways and developments. New residential subdivisions, public schools, city parks, and roadways in the City of Marion, particularly in higher growth areas in the north, incorporate trails as an important component of the transportation system. The vision for a comprehensive



trail system and the responsibility that comes with it have been fostered by years of planning at the local, regional and state levels. The 2005 *Marion Trails Master Plan*, 2010 *City of Marion Comprehensive Plan*, the 2010 *Connections 2040 Long Range Transportation Plan* for the Cedar Rapids Metropolitan Area, and *Iowa 2000*, the statewide trails plan all provide vision, direction and guidance for integrating trails into the fabric of the community. With clear expectations, private developers and the public sector have been able to direct the City's growth in a manner that values trails as a transportation and recreation asset.

## History

The origins of Marion as we now know it today began in the late 1830s and early 1840s, when settlers traveled west from Illinois and other points east to farm the area's rich, undulating prairies. The City of Marion was named after Revolutionary War hero General Francis Marion, "The Swamp Fox", and was established as the first seat of Linn County in 1839 (later to be moved to Cedar Rapids). The arrival of railroad lines in Linn County in the late 1850s and 1860s signaled new opportunities for Marion, whose agricultural goods could now reach markets as far away as Chicago. The City continued to grow at a steady pace through much of the 19th and 20th Centuries. Following World War II, suburban development in the Cedar Rapids Metropolitan Area began to shrink the distances between Cedar Rapids and nearby cities like Marion. Within a few decades, the boundary between the two cities became indistinguishable. While the City of Marion is often viewed as a suburban satellite of Cedar Rapids, the cultural, recreational and residential character of the community create a distinct place. As growth in Marion continues, the local trail network can play an important role positioning Marion as the ideal location in Linn County to live, work, learn and play.

## Planning and Policy Environment

As part of the planning process, a review of existing plans, background documents, policies and legislation was completed in order to better understand the context in which the Plan was being developed. The summary of findings below reveals strong support for the development of trails and bikeways, as well as a few challenges that must be addressed. A detailed summary of each document reviewed can be found in the appendix.

## Existing Plans and Background Documents

The Marion Master Trails Plan is being developed in a planning environment that is strongly supportive of regional and local efforts to improve bicycling and walking transportation. State, regional, and local background documents and plans are characterized by a long and robust history of regional collaboration, emphasis on local and regional connectivity, consideration for bicycle and pedestrian transportation as a key component of the transportation system, consideration for local needs and citizen input, and the potential of trails as an economic and community development tool. These positive attributes of planning efforts have carried over to local and regional implementation as well. Tower Terrace Road has begun to take shape across the northern Greater Cedar Rapids Metropolitan Area. The Marion Central Corridor Master Plan has yielded multiple studies as well as streetscape work in Uptown Marion. Transportation Enhancement funds are being used to implement a number of trail improvements recommended in previous plans, including the Grant Wood Trail underpass at Highway 13 and the Marion Trail from 35th Street to Highway 13.

While the strong precedent of supportive planning efforts provides a strong foundation for the development of the Marion Master Trails Plan, the review of these planning and background documents has identified some information gaps, inconsistencies, and ambiguities that can be addressed or resolved through this planning process. These include:



- **Planned Trail Alignment Inconsistencies.** While trails of regional significance are included in most planning documents reviewed, some smaller trails are included in some documents while left out of others.
- **Local versus Regional Trail Branding Challenges.** The Cedar Rapids Trails Plan in particular provides some examples of trail system branding, but the application of these branding standards may discount the efforts of neighboring municipalities and the character of the people and places they serve.
- **On-Street Bicycle Facility Types.** Non-motorized transportation planning has focused heavily on off-street multi-purpose trails and sidepaths adjacent to roadways. On-street bicycle facilities have been defined in previous projects, but there has been little focus on the application of specific bikeway types to specific roadways. The 2006 Marion Master Trails Plan, for example, identifies trails along roadway right-of-way, but does not recommend a specific bikeway type (sidepath, bike lane, shared lane, etc.).
- **Off-Street Multi-Purpose Trail Surfaces.** The Marion Master Trails Plan identifies future trail corridors and per-mile cost estimates for concrete and asphalt trail surface types, but does not include information on crushed limestone or granular surface trails. Since hard and soft trails are planned, the estimates should reflect the different types of trails, as well as maintenance requirements of each type.

This planning process will provide an opportunity for the City of Marion and its planning partners and stakeholders to consider these issues and identify clear, regionally-supported actions or recommendations to resolve these issues.

## **Policies and Legislation**

Existing policies and legislation have a significant impact on the development of a trails system in the City of Marion. State and local regulations determine the design, construction specifications, and safe use of trails, sidewalks and on-street bicycle facilities. Local regulations in the municipal code also govern behavior and interactions between various road users – motorists, bicyclists, and pedestrians – to support and encourage the safe use and enjoyment of public roadways. The current regulatory environment in the City of Marion is similar to other municipalities of similar character in the State of Iowa. The use of Chapter 12 of Iowa DOT’s SUDAS Manual promotes consistency in the design and construction of bicycle and pedestrian facilities. The adoption of sections of the Iowa State Code pertaining to pedestrian, bicycle and motorist movement and operation on public roadways also promotes behavior in conformance with statewide regulations.

A number of regulations and policies support and encourage the development and safe use of trails, bikeways and pedestrian facilities in the City of Marion. The Iowa Code acknowledges and supports trail development as a catalyst for economic development and improved community health. The Iowa Code also prohibits persons from throwing or projecting objects at cyclists. The SUDAS Manual provides detailed design guidelines and standards for the development of consistent non-motorized transportation facilities. The Iowa Driver’s Manual, Iowa Code, and Department of Justice promote safe passing of bicyclists by requiring motor vehicles to fully change lanes when overtaking bicycles. The City of Marion allows bicyclists to travel two abreast, which affords bicyclists a more comfortable and social bicycling experience.

There are also a number of challenges, contradictions and archaic policies that characterize the regulatory and policy environment. Marion municipal code requires bicycle licensing for all bicycles, limits park hours, which effectively closes multi-purpose trails for the purpose of transportation, and requires the use of existing sidepaths adjacent to the roadway where present. In addition, local standards for roadway design lack guidance for bicycle facilities. While the SUDAS Manual provides additional bicycle and pedestrian guidance to supplement the Cedar Rapids Metropolitan Area Engineering Design Standards Manual, the two documents do little to support one another and provide a consistent resource for developing on-street bicycle facilities, particularly within the context of larger roadway projects. These challenges may have unintended consequences for future trail development and use and should be addressed in the Marion Master Trails Plan.



## Trail Specific Opportunities and Constraints

### Pathway Types

Marion currently has four basic types of trails or pathways within the current trail system as described below. All existing trail facilities in Marion, along with key destinations in and around Marion, are displayed in Map 1: Existing Trails and Bikeways on page 13.

1. **Paved Off-Street Shared Use Path.** Commonly referred to as paved trails, shared use paths can function as both transportation and recreation facilities, depending on their location and their connectivity to adjacent destinations. There are roughly 3 miles of off-street shared use paths in Marion. These paths include the Lindale Trail (west of Lindale Road to the Cedar Rapid city limits), Lowe Park Trail, the Oak Ridge Middle School Trail, and the Oak Ridge – Echo Hill Connector. Funded trail projects utilizing federal funding administered through the Corridor MPO, including the CEMAR Trail and the two trail segments along the abandoned rail corridor, will be paved in order to meet funding requirements.
2. **Granular/Natural Surface Shared Use Path.** Crushed limestone and other granular surfaces are often used on trails that primarily serve a recreation purpose rather than transportation. There are approximately 6.9 miles of granular or natural surface trails in the City of Marion, including the Boyson Trail, which uses a compacted granular surface, and the Grant Wood Trail, which is primarily packed earth and grass. While the SUDAS manual does permit granular surface trails to be used for Type 3 Shared Use Paths (paths located in an independent right-of-way and primarily serving a recreation and fitness benefit), it also notes that hard, all-weather pavement surfaces are preferred due to the higher service quality and lower maintenance.



Figure 9: The Lindale Trail west of Lindale Road.

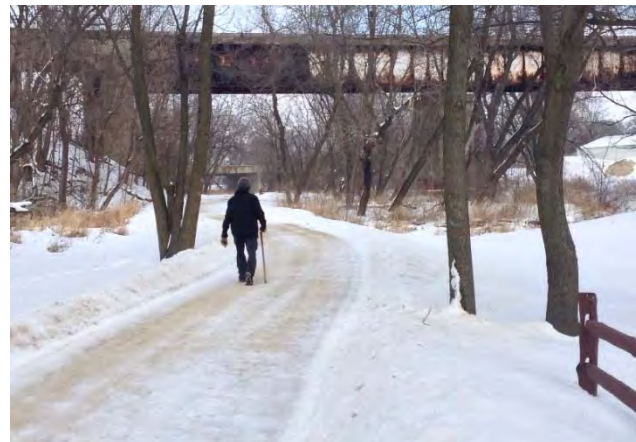


Figure 10: Despite cold temperatures, many trail users enjoy the Boyson Trail during winter months.





3. **Sidepath.** Also referred to as a roadside shared use path, a sidepath is a paved trail that parallels the road. These sidepaths are separated from the road with a curb and a planting strip. The majority of sidepaths in Marion can be found adjacent to arterial and collector roads along new development in the north part of the City, including 10th Street, Tower Terrace Road, Connection Avenue, 29th Avenue, and Boyson Road. Sidepath widths in the City of Marion vary from 8 to 10 feet. Current design guidelines in the SUDAS manual recommend a minimum width of 10 feet, greater widths should be considered where large volumes of trail users and/or larger maintenance vehicles are anticipated. The SUDAS manual does state that path width can be reduced to 8 feet, but only where specific conditions prevail, such as minimal expected bicycle traffic, minimal pedestrian use, or the presence of physical constraints for short distances.



Figure 11: The sidepath along 10th Street provides a direct connection to Linn-Mar High School and Indian Creek Elementary.

4. **Bike Lane.** Bike lanes are travel lanes designated exclusively for bicycle travel and separated from vehicle travel lanes with striping and pavement stencils. There are roughly 5.4 miles of bike lanes in the City of Marion, including segments of Grand Avenue, 8th Avenue, 10th Avenue, 29th Avenue, Tower Terrace Road, South 15th Street, 31st Street, and 35th Street. At 4 feet in width, many of these bike lanes are narrower than current standards require. The SUDAS manual indicates the preferred operating width for a bicycle lane is 5 feet, but may be as narrow as 4 feet where no parking or curb and gutters are present, and as wide as 7 or 8 feet in areas with high on-street parking turnover, heavy bicycle traffic, or high motor vehicle speeds and volumes.

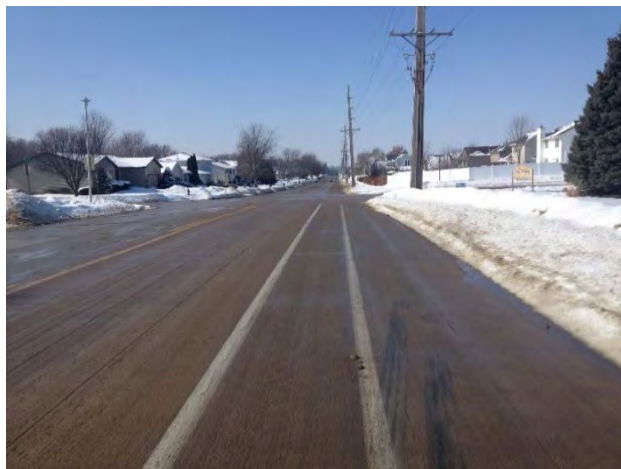


Figure 12: The eastbound bike lanes and adjacent parking on 29th Ave are cleared of snow during the winter months.

In addition to these four basic types of pathways, there are other types of pathways such as sidewalks, minor park loop trails, and mountain bike trails that provide additional linkages and recreational opportunities. While these pathways are important and will tie into the trail and on-street bikeway network, they are not a focus of this planning effort.



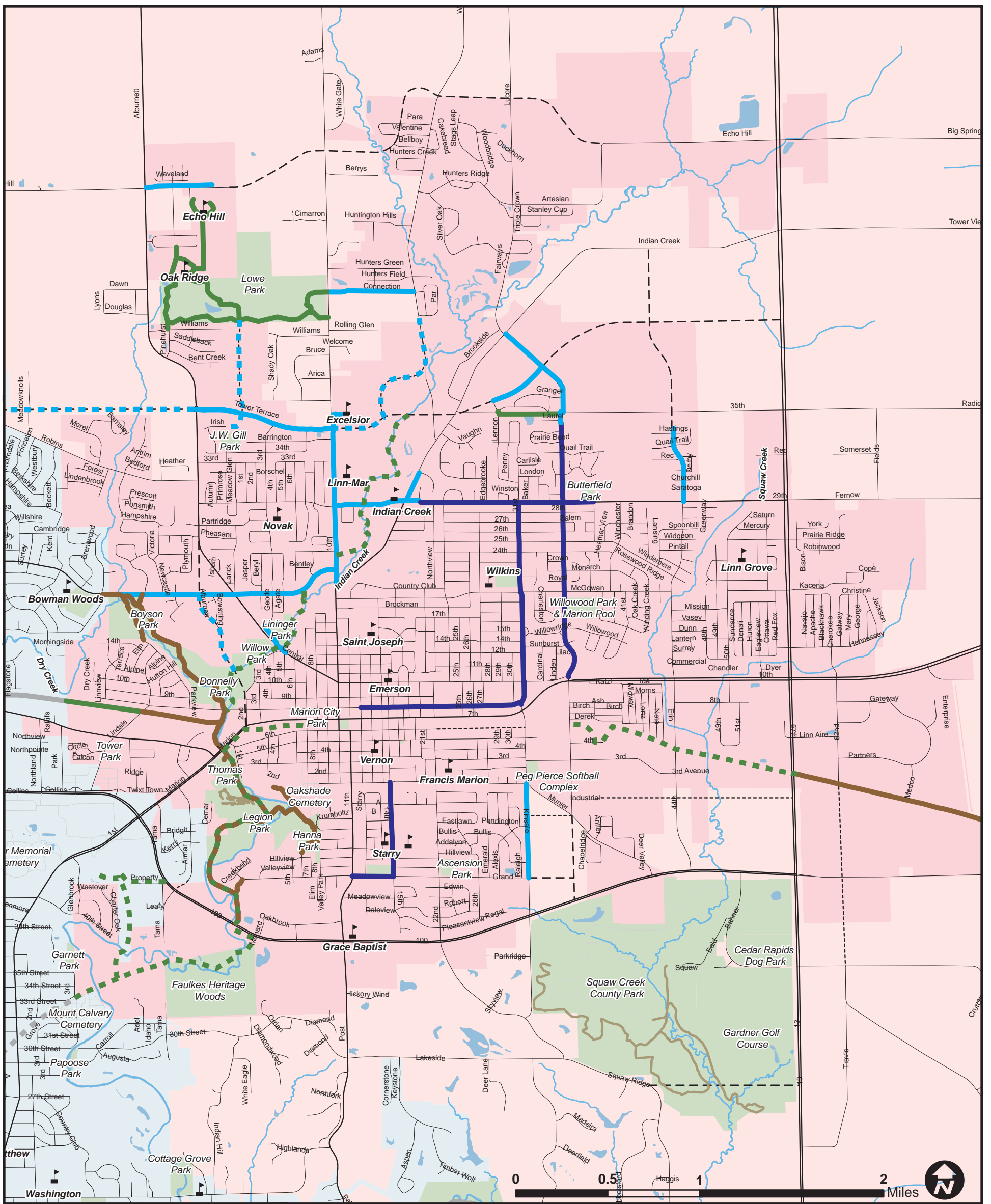
The City's sidewalk network is very comprehensive. Sidewalks are provided on the majority of residential, collector and arterial streets in both older and newer developments. There are, however, a number of crosswalk locations, particularly along busier streets and near locations with higher volumes of pedestrian traffic, such as Uptown Marion and near schools, where additional signage, pavement markings and physical improvements could increase pedestrian safety and comfort.

Additional recreational trails are located within municipal and county parks. Faulkes Heritage Woods includes a 1.5-mile hiking trail loop to provide area residents and visitors with recreational and wildlife viewing opportunities in a natural, undisturbed setting. There are numerous trails in Squaw Creek Park for hiking, mountain biking, equestrian use, and cross country skiing. In 2012, the Linn Area Mountain Biking Association (LAMBA), in cooperation with the Linn County Conservation Board and the International Mountain Biking Association, developed conceptual plans to improve existing mountain biking trails and develop additional trails to solidify Squaw Creek Park as a premier destination for mountain biking in Linn County.



Figure 13: LAMBA volunteers work on mountain bike trails in Squaw Creek Park (Source: [www.facebook.com/LinnAreaMTB](http://www.facebook.com/LinnAreaMTB)).





# MARION MASTER TRAILS PLAN

## EXISTING AND FUNDED TRAILS AND ON-STREET BIKEWAYS

Existing Trails and On-Street Bikeways		Funded Trails and On-Street Bikeways	
Paved Multi-Use Trail	Bike Lane	Paved Multi-Use Trail	Sidepath
Granular Surface Multi-Use Trail	Sidepath	Sidepath	Trails and Bikeways Outside of Marion's Jurisdiction
Natural Surface Trail	Trails and Bikeways Outside of Marion's Jurisdiction		

Roadway Network	Municipalities	Areas of Interest	Natural Features
Access Road	Marion	School	Creeks
Local	Cedar Rapids	Park	Bodies of Water
Collector	Marion Growth Area		
Arterial			
Proposed Collector			
Proposed Arterial			



Author: KN, Alta Planning + Design | Date: June, 2014  
 Data Sources: City of Marion, Linn County, Iowa DNR, Corridor MPO, Iowa DOT



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## Desirable Destinations

Major destinations for bicyclists and pedestrians are very similar, if not identical, to persons traveling by vehicle: Uptown Marion, schools, parks, employment centers, shopping centers, entertainment. Even the City's trails themselves are destinations for many residents and visitors. For destinations further away, bicyclists and pedestrians may choose to bike or walk to transit and use the Cedar Rapids Fixed Route Transit System for the majority of the trip.

## Parks and Recreation Opportunities

The City's park system of 20 individual park facilities provides residents and visitors with a variety of active and passive recreation opportunities, including open play areas, playgrounds, splash pads, natural woodlands, baseball diamonds, soccer fields, tennis courts, basketball courts, gazebos, pavilions, and picnic tables. Boyson, Donnelly, Tomas, Legion, and Hanna Parks are all connected by the Boyson Park Trail. While other parks in the City are adjacent to existing trails and bikeways, the lack of connectivity in the trail network limits park accessibility for pedestrians and bicyclists. In addition to these city parks, Linn County's 700-acre Squaw Creek Park is located on the southern border of Marion and provides area residents with a range of recreational opportunities, including camping, hiking and mountain biking trails, lodges, shelters, a dog training area, and wildlife viewing. The YMCA of the Cedar Rapids Metropolitan Area operates two facilities in the City of Marion. The Marion YMCA at the 3100 10th Avenue features a large gym, a six-lane pool, and fitness center. The Marion Independent Fitness Center, a unique shared facility operated by the YMCA and the Marion Independent School District, is a state-of-the-art fitness facility located at the Marion Independent School District High School at 675 S 15th Street.



*Figure 14: Lowe Park's diverse recreational opportunities include paved trails, baseball diamonds, soccer fields, an open play area, a new amphitheater, the Arts & Environment Center, and numerous programs and activities for residents of all ages.*



*Figure 15: City Park is a popular destination in Uptown Marion and home to numerous cultural and civic events and activities.*



## Schools

The City of Marion is served by two public school districts – the Marion Independent School District and the Linn-Mar Community School District. The Marion Independent School District’s facilities are located in central Marion. Marion Independent School District (MISD) facilities include one high school, one middle school (grades 5 through 8), one intermediate school (3- 4), two elementary schools (K- 2), one preschool, and the Marion Home School Assistance Program. MISD total enrollment is approximately 2,860 students, a 25 percent increase from 2000. The Linn-Mar Community School District (Linn-Mar) serves the newer developments on the periphery of Marion, as well as parts of Robbins, Cedar Rapids, and unincorporated Linn County. With seven elementary schools (K-5), two junior high schools (6-8), and one high school, Linn-Mar has a total enrollment of approximately 6,825 students. In addition to these public school districts, St. Joseph School (Pre-K through 8) and Grace Baptist School (K-12) are also located in the City of Marion.

## Residential Areas

From traditional gridded neighborhood streets surrounding Uptown Marion, to suburban residential developments abutting farmlands, the City of Marion has a diverse housing stock and a variety of neighborhoods to attract and retain a strong residential base. While the majority of residential areas consist of single-family units, recent developments include single-family attached dwellings, duplexes, multi-family units, manufactured housing, and senior living centers. This diversity of residential living options allows residents of various ages and incomes to age in place and remain part of the community.

Shifts in development patterns over the last fifty to sixty years have reduced street connectivity and increased distances between residential developments and commercial uses, employment, and other destinations. Both of these characteristics can make walking and bicycling difficult. In addition, some residential developments like Squaw Creek Village and Prairie Ridge are located adjacent to major highways, which can present additional challenges for walking and bicycling.



Figure 16: Even on a cold February day, students park their bikes at the bicycle racks at Excelsior Middle School on North 10th Street.



Figure 17: Residential development patterns in Marion have a significant impact on walkability and bikeability.





## Commercial Areas

Commercial activity in Marion can be generally grouped into three areas along the 1st Avenue NE/Marion Boulevard/7th Avenue corridor. Uptown Marion is the historic commercial heart of the City of Marion, characterized by multi-story brick buildings with commercial, office, retail and restaurants. The pedestrian-scale environment, the gridded street pattern, the presence of parks and civic buildings, and the mixture of activities make Marion a unique commercial destination. To the west, near the intersection of 1st Avenue NE and Collins Road NE is the Lindale Mall, as well as adjacent big box and strip commercial retail. While sidewalks are present along the perimeter of most properties, this area is predominately auto-centric. The lack of pedestrian scale and comfort, as well as long distances between destinations, make bicycle and pedestrian travel to, from and within this commercial area uncomfortable, if not difficult. To the east of Uptown Marion are additional strip commercial developments leading out Iowa Highway 13. These commercial properties, which include a mixture of retail, restaurant, and services, were developed over the course of many decades, and as a result lack a cohesive identity. The Tower Terrace Road corridor, located in northern Marion and currently being constructed in phases, will also function as a commercial corridor in the coming years.



Figure 18: Local businesses and professional services line the storefronts in Uptown Marion.

## Historic and Culturally Significant Places

There are 10 buildings and 3 districts in the City of Marion listed on the National Register of Historic Places, a national listing of districts, sites, buildings and structures deemed worthy of preservation. These historic places, which include Frank Lloyd Wright's Grant House (3400 Adel Street SE), the First Presbyterian Church of Marion (802 12th Street), and the Marion Carnegie Public Library (1298 7th Avenue), add to the character of Marion and provide a link to the City's unique heritage and history. These historic and cultural places can be showcased through historic walking tour maps and organized walks and bike rides.



Figure 19: Many of Marion's historic buildings are still standing today.

## Pathway Fragmentation

Trails and on-street bikeways both in and immediately surrounding the City of Marion are noticeably fragmented. This lack of connectivity limits bicycle and pedestrian trips for transportation and reduces accessibility of local trails and other community destinations. Marion is not alone in this regard. The Corridor MPO noted in the Connections 2040 Long Range Transportation Plan that, while there are many trails in the Greater Cedar Rapids Metropolitan Area, *there is no trail system*. Marion has the beginnings of a city-wide network in place, and improving connectivity between these existing trails and bikeways can increase both recreational opportunities and non-motorized transportation.



## Environmental Conditions

Trail and greenway development along riparian and drainage corridors can provide opportunities to improve water quality and restore native habitats. Greenway and trail projects along Indian Creek, Squaw Creek or smaller tributaries can incorporate native plantings, stream bank stabilization, trash removal events, outdoor classrooms, and educational components that transform local creeks from stormwater drainage systems to cultural, educational, and recreational assets. The Indian Creek is prone to flooding, and the parks department has had to rebuild the granular surface trail numerous times as a result. Consideration should be given to trail surface type and corresponding maintenance costs when deciding the future of existing and potential trails in floodplains along Indian and Squaw Creeks.



*Figure 20: Flooding events along the Indian Creek require costly maintenance on the Boyson Trail and adjacent park facilities.*

## Accessible Corridors

### Utility Corridors

Stormwater, sewer, electric, and other utility corridors can provide opportunities for linear trail development. In the City of Marion, many of these utilities often run within shared easements along the same corridor. While each easement may have unique challenges, such as minimal width, topographical constraints, or even legal descriptions and allowed uses within the easement itself, these corridors can be explored for their potential to provide valuable transportation and recreation facilities that contribute to the Marion trail network.



*Figure 21: A transmission corridor passes over Donnelly Park and the Boyson Trail and continues northeastward along Indian Creek.*



## Rail Corridors

Railroads played an integral role in the formation and early growth of the City of Marion. However, the rise of the automobile, the freeway, the semi-trailer truck have greatly reduced the railroad's primacy for intercity transportation and the shipping of goods. As a result, many rail corridors in Linn County have been abandoned, providing great opportunities for the development of linear trails and greenways known as rail-to-trail projects. Examples of completed projects in Linn County include the Grant Wood Trail, the Hoover Nature Trail, the Lindale Trail, and the Cedar Valley Trail. There are still segments of abandoned rail corridors visible today in the City of Marion, including the old Chicago, Milwaukee, St. Paul & Pacific Railroad, which runs through the heart of Marion. The railroad bridges over Marion Boulevard and Indian Creek still standing today provide the most tangible reminders of the railroads' presence in Marion. Funding has been secured to develop trails on segments of these rail beds, including a trail extension from the western terminus of the Grant Wood Trail westward to 35th Street and a connection from Thomas Park eastward into Uptown Marion. The City of Marion plans to construct a roadside trail along 6th Avenue to connect these segments, creating a continuous east-west trail facility along this rail corridor.



Figure 22: The abandoned rail corridor travels over 7th Street, Marion Boulevard, and Indian Creek via three separate bridge structures (Photo credit: Terri Thayer).

Funding has been secured to develop trails on segments of these rail beds, including a trail extension from the western terminus of the Grant Wood Trail westward to 35th Street and a connection from Thomas Park eastward into Uptown Marion. The City of Marion plans to construct a roadside trail along 6th Avenue to connect these segments, creating a continuous east-west trail facility along this rail corridor.

## Riparian Corridors

Trails and riparian corridors are a natural pairing. Providing trails and greenways along creeks and rivers can connect trail users to the natural environment, offer great opportunities for wildlife viewing, and provide unique educational experiences. Trails can also benefit the riparian environment by providing a buffer from adjacent development. Both the Indian Creek on the west side of Marion and the Squaw Creek on the east side of Marion provide ample opportunity for the development of greenway corridors to meet the transportation and recreation needs of Marion residents and visitors. The existing Boyson Trail and the northernmost section of the CEMAR Trail, which has been funded and scheduled for construction, utilize the Indian Creek corridor to provide connections to parks and neighborhoods in Marion. As mentioned above, consideration for future flooding events must be taken into account when determining alignment, surface type, and sub-surface preparation for future trail development within these riparian corridors.

## Highway Corridors

Iowa State Highways 13 and 100 are characterized by wide rights-of-way, which can provide ample room for the development of parallel shared use paths with considerable separation from motor vehicle traffic. Each of these state highways also connects directly to Squaw Creek Park, a major recreational destination in Linn County. While Marion residents have expressed their preference for off-street trails located in separate rights-of-way from motor vehicle traffic, the wide rights-of-way along Highways 13 and 100, in some cases as wide as 400 feet, can minimize the potential for motor vehicle conflict and can provide a more pleasant and comfortable experience than trails developed immediately adjacent to the roadway.





## Signage/Trail System Orientation

Safety and wayfinding signs are an integral component of a trail and on-street bike network. Safety and warning signs alert trail users and motorists to changing conditions, approaching intersections, and the presence of other road users. These signs encourage safe operational movements and impart mutual respect among motorists, pedestrians, bicyclists, and other trail and roadway users.

Trail network signage and wayfinding devices play an important role in acclimating trail users to the network and directing them to important local and regional destinations. Mile markers, trailhead maps and information kiosks, and route signage that includes distances and/or travel times to key destinations like Uptown Marion, nearby trails, parks, and schools increase user familiarity with the trail system and help to position the trail network as a viable form of transportation. In addition, wayfinding signage and additional safety and warning signs can increase motorists' awareness of trail users, particularly when traveling on an on-street bikeway or approaching a trail crossing.

While the City of Marion does use signs on its trails and on-street bike network, including mile markers, trailhead signage, bike route signs, and bike lane signs, these signs do not impart a unique, cohesive identity to an individual trail like the Boyson Trail, or to the trail network itself. As Marion's trail network continues to expand, the City has the opportunity to develop a comprehensive branding program and consider renaming individual trails, particularly to address the east-west corridor along the abandoned rail line.



Figure 23: The small wayfinding sign at the western entrance to the Lindale Trail does little to enhance the trail's presence.



Figure 24: Various trail signs can be seen on existing trails in and around Marion.



## Trail/Roadway Crossings

Like most shared use paths in built urban areas, trails in Marion must cross roadways at certain points. While at-grade crossings create a potentially high level of conflict between pathway users and motorists, well-designed crossings can minimize or even eliminate potential safety problems, as evidenced by the thousands of successful trails around the United States with at-grade crossings.

The only at-grade crossing of an off-street shared use path and a roadway in Marion is where the Lindale Trail intersects Lindale Road. While a marked crosswalk and trail crossing signs warn motorists of the presence of the Lindale Trail and potential trail users, there are no indicators that suggest or require motorists to yield or stop for trail users crossing Lindale Road. As such, crossing this two-lane road is a challenge for many bicyclists and pedestrians.

The existing roadside shared use paths cross many streets at both stop controlled and signalized intersections. At signalized intersections, it is common for trail crossings to include curb ramps, marked crosswalks, pedestrian countdown timers, and push buttons, similar to what one might experience at a sidewalk crossing in Marion. At unsignalized trail crossings at side streets, four-way stops or even private drives and access points, conditions vary considerably. Some intersections include marked crosswalks, but the majority of intersections provide little indication to motorists of the presence of the trail crossings. In addition, most trail crossings lack any kind of warning or signs for trail users to slow down or come to a stop when approaching the crossing.

In some cases, grade-separated crossings can be utilized to enhance safety of major crossings and further separate trail users from motor vehicle traffic. The conversion of existing at-grade pathway crossings to grade-separated crossings is a difficult and expensive undertaking and should be considered where heavy trail use and type of trail users indicate safety as a critical issue, where other traffic control measures do not allow for a safe crossing, or where the natural topography lends itself to a grade-separated crossing. The Boyson Trail utilizes grade-separated crossings at 8th Avenue and Marion Boulevard, and the Grant Wood Trail extension will incorporate a grade-separated crossing under Highway 13. A grade-separated crossing is also planned for the CEMAR Trail under Highway 100.



*Figure 25: Crossing Lindale Street while on the Lindale Trail can be difficult, as many motor vehicle drivers do not yield to or stop for pedestrian traffic at this intersection.*



*Figure 26: This trail crossing at 29th Avenue and Brookvalley Court lacks any signage, striping, or pavement markings to indicate the presence of the trail.*



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## Chapter Three: Best Practices in Complete Streets and Trail Design

### Introduction

Streets serve a multitude of functions: providing access to places, goods and services, serving as public space, capturing, channeling and sometimes filtering stormwater, and serving as corridors for key utility systems. Streets are such an integral part of everyday life, it is important that we maximize their value and their safety.

Marion's streets take several forms and serve a variety of functions. They can provide a safe, peaceful route for children to walk or bicycle to school; a way for employees to get to work by bicycle, automobile or public transit; a place for residents and visitors to access shopping and dining; and for people to just sit and relax. It is critical that these corridors move people and goods efficiently. When total preference is given to a particular use, this usually comes at the expense of other uses. Therefore, Marion's streets should be designed to give sufficient consideration to all uses.

In Marion, like most of the United States since the end of WWII, automobiles were given priority in the design of streets. This means that streets are *primarily* designed for cars and not for walking, bicycling and transit, or consideration of the natural environment. By contrast, the concept of Complete Streets takes into consideration context, roadway users and environmental concerns to create streets that are designed to reasonably balance the needs of all roadway users and uses.

With a complete network of safe, comfortable streets and off-street paths and trails, everyone benefits. Bicyclists, pedestrians, and other non-motorized users can enjoy continuous, connected and convenient transportation and recreation opportunities, regardless of their age or ability. Motorists benefit from increased awareness of other road users through safer intersections, trail crossings and street designs. Businesses profit from increased access for customers. Residents gain increased opportunities for healthful physical activity. The environment can benefit from reductions in point source pollution through decreases in motor vehicle trips.

The purpose of this chapter of the Plan is to provide a framework of best practices as a guide for Marion to use in its efforts towards developing a network of trails and Complete Streets throughout the City, for the benefit of all residents and visitors.



Figure 27: Complete streets take many different forms. In Indianapolis, Indiana, the Indianapolis Cultural Trail provides a cycle track to separate bicyclists from both pedestrians and motor vehicles.

**Definition of Complete Streets:** Complete Streets are streets for everyone. They are designed and operated to enable safe access for all users. Pedestrians, bicyclists, motorists, and public transportation users of all ages and abilities are able to safely move along and across a complete street. Complete Streets make it easy to cross the street, walk to shops, and bicycle to work. They allow buses to run on time and make it safe for people to walk to and from train stations. Of particular concern are drainage and stormwater runoff issues too common in traditional streets.



## Design for Pedestrians

The transportation network should accommodate pedestrians with a variety of needs, abilities, and possible impairments. Age is one major factor that affects pedestrians' physical characteristics, walking speed, and environmental perception. Children have low eye height and walk at slower speeds than adults. They also perceive the environment differently at various stages of their cognitive development. Older adults walk more slowly and may require assistive devices for walking stability, sight, and hearing.

The Manual of Uniform Traffic Control Devices (MUTCD) recommends a normal walking speed of three and a half feet per second when calculating the pedestrian clearance interval at traffic signals. Typical walking speeds can drop to two and a half to three feet per second in areas with older populations and persons with mobility impairments. While the type and degree of mobility impairment varies greatly across the population, the transportation system should accommodate these users to the greatest reasonable extent.

### Sidewalks

Sidewalks are the most fundamental element of the walking network, as they provide an area of pedestrian travel that is separated from vehicle traffic. Sidewalks are typically constructed of concrete and are separated from the roadway by a curb and gutter and preferably a landscaped planting strip area. Sidewalks are a common application in both urban and suburban environments.

Sidewalks should be more than areas to travel; they should provide places for people to interact. There should be places for standing, visiting, and sitting. Sidewalks should contribute to the character of neighborhoods and business districts, strengthen their identity, and be an area where adults and children can safely participate in public life.

Attributes of well-designed sidewalks include the following:

**Accessibility:** A network of sidewalks should be accessible to all users. Roadway crossing distances and distances between crossings should be minimized to accommodate and encourage pedestrian travel.



Figure 28: An inviting streetscape that supports pedestrian activity can bolster commercial activity.

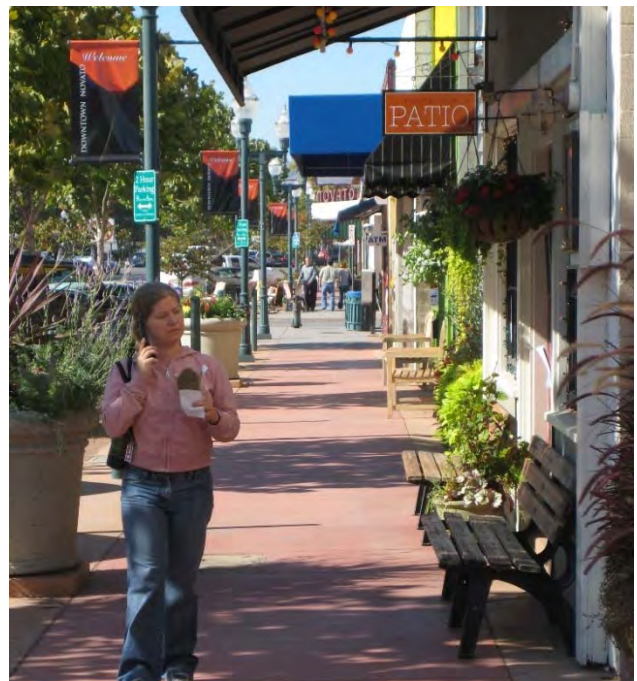


Figure 29: Benches, planters, pedestrian-scale street lighting create a unique pedestrian environment.





**Adequate width:** Two people should be able to walk side-by-side. Different walking speeds should be possible. In areas of intense pedestrian use, sidewalks should accommodate the high volume of walkers.

**Safety:** Design features of the sidewalk should allow pedestrians to have a sense of security and predictability. Sidewalk users should not feel they are at risk due to the presence of adjacent traffic.

**Continuity:** Walking routes should be obvious and should not require pedestrians to travel out of their way unnecessarily.

**Landscaping:** Plantings and street trees should contribute to the overall psychological and visual comfort of sidewalk users, and be designed in a manner that contributes to the safety of people.

**Drainage:** Sidewalks and curb ramps should be designed so that standing water is minimized.

**Social space:** There should be places for standing, visiting, and sitting. The sidewalk area should be a place where adults and children can safely participate in public life.

**Quality of place:** Sidewalks should contribute to the character of neighborhoods and business districts.



*Figure 30: Landscaping like street trees and planters can shade the sidewalk and provide a comfortable experience for pedestrians.*



*Figure 31: Wide sidewalks allow for socialization and a diversity of uses.*



## Sidewalk Zones

The sidewalk area can be broken down into four distinct zones:

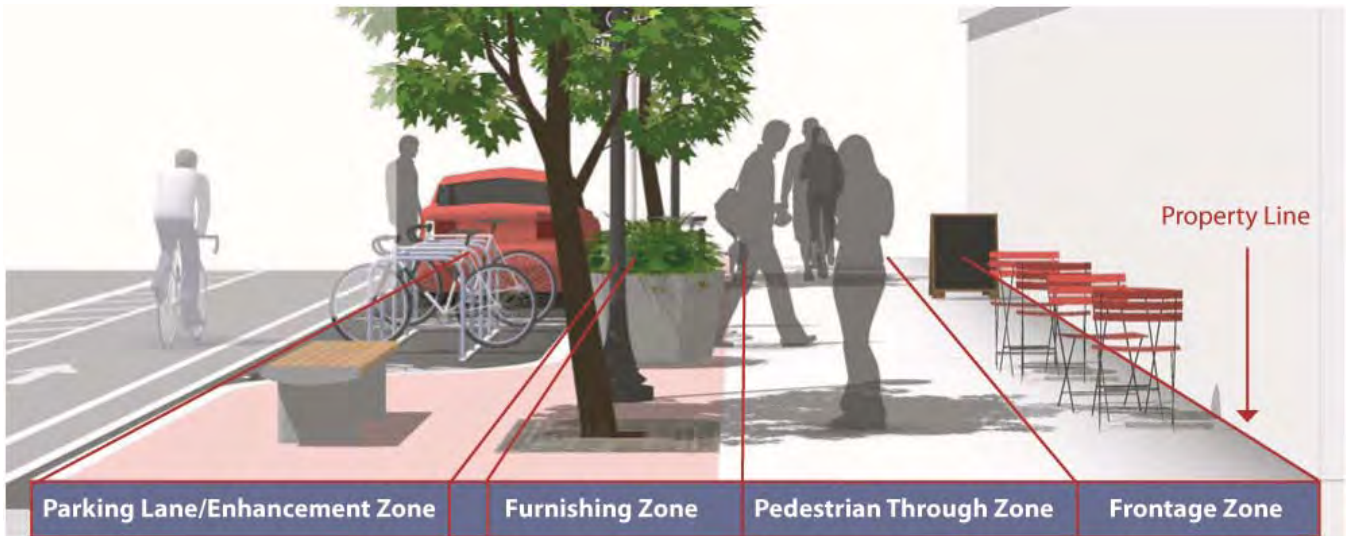


Figure 32: The four sidewalk zones.

The **Frontage Zone** allows pedestrians a comfortable “shy” distance from the building fronts. It provides opportunities for window shopping, to place signs, planters, or chairs. Not applicable if adjacent to a landscaped space.

The **Pedestrian through Zone** is the area intended for pedestrian travel. This zone should be entirely free of permanent and temporary objects. Wide through zones are needed in downtown areas or where pedestrian flows are high.

The **Furnishing Zone** buffers pedestrians from the adjacent roadway, and is also the area where elements such as street trees, signal poles, bicycle racks, signs, and other street furniture are properly located.

The **Parking Lane/Enhancement Zone** acts as a flexible space to further buffer the sidewalk from moving traffic. Curb extensions and bike corrals may occupy this space where appropriate.

The concept of sidewalk zones should be strictly followed, particularly in dense commercial areas, for a sidewalk to function properly and provide safe passage for all users. This is especially important for users with visual or physical impairments to be able to effectively navigate the corridor.

Other considerations such as sidewalk obstructions, driveways, width and access through construction areas are important to consider as well.



## Intersections

Intersections are also an important piece of the pedestrian realm. Attributes of pedestrian-friendly intersection design include:

**Clear Space:** Corners should be clear of obstructions. They should also have enough room for curb ramps, for transit stops where appropriate, and for street conversations where pedestrians might congregate.

**Visibility:** It is critical that pedestrians on the corner have a good view of vehicle travel lanes and that motorists in the travel lanes can easily see waiting pedestrians.

**Legibility:** Symbols, markings, and signs used at corners should clearly indicate what actions the pedestrian should take.

**Accessibility:** All corner features, such as curb ramps, landings, call buttons, signs, symbols, markings, and textures, should meet accessibility standards and follow universal design principles.

**Separation from Traffic:** Corner design and construction should be effective in discouraging turning vehicles from driving over the pedestrian area. Crossing distances should be minimized.

**Lighting:** Good lighting is an important aspect of visibility, legibility, and accessibility.

These attributes will vary with context but should be considered in all design processes. For example, more remote intersections may have limited or no signing. However, legibility regarding appropriate pedestrian movements should still be taken into account during design.



*Figure 33: Bulb-outs increase motorists' visibility of pedestrians while also reducing turning speeds.*



*Figure 34: Push button-activated crosswalks and pedestrian signal heads encourage pedestrian compliance at larger intersections.*





## Design for Bicyclists

Bicyclists, by nature, are much more affected by poor facility design, construction and maintenance practices than motor vehicle drivers. Bicyclists lack the protection from the elements and roadway hazards provided by an automobile's structure and safety features. By understanding the unique characteristics and needs of bicyclists, a facility designer can provide quality facilities and minimize user risk.

Similar to motor vehicles, bicyclists and their bicycles exist in a variety of sizes and configurations. These variations occur in the types of vehicle (such as a conventional bicycle, a recumbent bicycle or a tricycle), and behavioral characteristics (such as the comfort level of the bicyclist). The design of a bikeway should consider reasonably expected bicycle types on the facility and utilize the appropriate dimensions.

It is important to consider bicyclists of all skill levels when creating a non-motorized plan or project. Bicyclist skill level greatly influences expected speeds and behavior, both in separated bikeways and on shared roadways. Bicycle infrastructure should accommodate as many user types as possible, with decisions for separate or parallel facilities based on providing a comfortable experience for the greatest number of people.

The bicycle planning and engineering professions currently use several systems to classify the population, which can assist in understanding the characteristics and infrastructure preferences of different bicyclists. The most conventional framework classifies the "design cyclist" as Advanced, Basic, or Child. A more detailed understanding of the US population as a whole is illustrated in the adjacent figure. Developed by planners in Portland, OR and supported by data collected nationally since 2005, this classification provides the following alternative categories to address varying attitudes towards bicycling in the US:

**Strong and Fearless** (approximately 1% of population) – Characterized by bicyclists that will typically ride anywhere regardless of roadway conditions or weather. These bicyclists can ride faster than other user types, prefer direct routes and will typically choose roadway connections -- even if shared with vehicles -- over separate bicycle facilities such as shared use paths.

**Enthusied and Confident** (5-10% of population) – This user group encompasses bicyclists who are fairly comfortable riding on all types of bikeways but usually choose low traffic streets or shared use paths when available. These bicyclists may deviate from a more direct route in favor of a preferred facility type. This group includes all kinds of bicyclists such as commuters, recreationalists, racers and utilitarian bicyclists.

**Interested but Concerned** (approximately 60% of population) – This user type comprises the bulk of the cycling population and represents bicyclists who typically only ride a bicycle on low traffic streets or multi-use trails under favorable weather conditions. These bicyclists perceive significant barriers to their increased use of cycling, specifically traffic and other safety issues. These people may become "Enthusied & Confident" with encouragement, education and experience and higher level facilities, such as buffered and protected bike lanes.

**No Way, No How** (approximately 30% of population) – Persons in this category are not bicyclists, and perceive severe safety issues with riding in traffic. Some people in this group may eventually become regular cyclists with time and education. A significant portion of these people will not ride a bicycle under any circumstances.

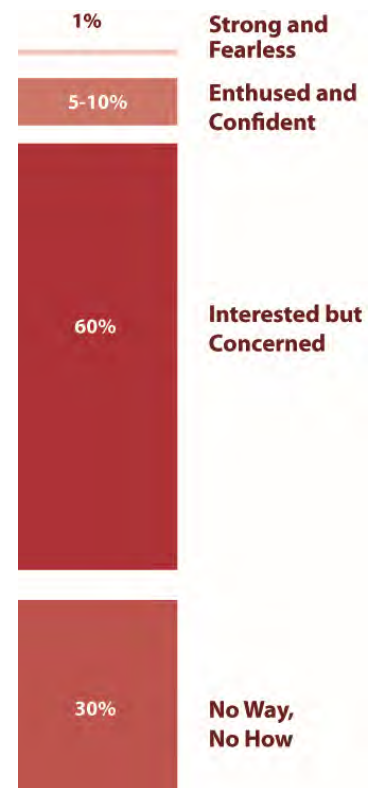


Figure 35: The four types of cyclists.



## Shared Roadways

On shared roadways, bicyclists and motor vehicles use the same roadway space. These facilities are typically used on roads with low speeds and traffic volumes, however they can be used on higher volume roads with wide outside lanes or shoulders. A motor vehicle driver will usually have to cross over into the adjacent travel lane to pass a bicyclist, unless a wide outside lane or shoulder is provided.

Shared roadways employ a large variety of treatments from simple signage and shared lane markings to more complex treatments including directional signage, traffic diverters, chicanes, chokers, and/or other traffic calming devices to reduce vehicle speeds or volumes.

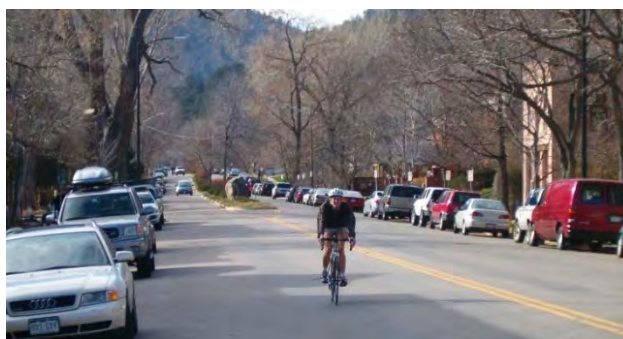


Figure 36: While not all roads have bicycle facilities, markings or signage, bicyclists may travel on any road except interstate highways.

## Signed Shared Roadway

Signed Shared Roadways are facilities shared with motor vehicles. They are typically used on roads with low speeds and traffic volumes, however can be used on higher volume roads with wide outside lanes or shoulders. A motor vehicle driver will usually have to cross over into the adjacent travel lane to pass a bicyclist, unless a wide outside lane or shoulder is provided.

Bicycle Route signage (D11-1) should be applied in the following circumstances:

- Beginning or end of Bicycle Route.
- At major changes in direction or at intersections with other bicycle routes.
- At intervals along bicycle routes not to exceed ½ mile.



Figure 37: Bicycle route signs like these help to direct bicyclists to local destinations.

## Marked Shared Roadway

A marked shared roadway is a general purpose travel lane marked with shared lane markings (SLM) used to encourage bicycle travel and proper positioning within the lane. In constrained conditions, the SLMs are placed in the middle of the lane to discourage unsafe passing by motor vehicles. On a wide outside lane, the SLMs can be used to promote bicycle travel to the right of motor vehicles. In all conditions, SLMs should be placed outside of the door zone of parked cars.



Figure 38: Shared lane markings help cyclists position themselves within the travel lane.



## Bicycle Boulevards

Bicycle Boulevards are low-volume, low-speed streets modified to enhance bicyclist by using treatments such as signage, pavement markings, traffic calming and/or traffic reduction, and intersection modifications. These treatments, also referred to as bicycle boulevards or quiet streets, allow through movements of bicyclists while discouraging similar through-trips by non-local motorized traffic.

Jurisdictions throughout the country use a wide variety of strategies to determine where specific treatments are applied. While no federal guidelines exist, several best practices have emerged for the development of bicycle boulevards. At a minimum, bicycle boulevards should include distinctive pavement markings and wayfinding signs. They can also use combinations of traffic calming, traffic diversion, and intersection treatments to improve the bicycling environment. The appropriate level of treatment to apply is dependent on roadway conditions, particularly motor vehicle speeds and volumes.



Figure 39: This Bicycle Boulevard in Portland, Oregon provides a comfortable experience for bicyclists of all types.

**Route Selection.** Bicycle boulevards should be developed on streets that improve connectivity to key destinations and provide a direct route for bicyclists. Bicycle boulevards parallel to commercial streets improve access for “interested but concerned” bicyclists and complement bike lanes on major roadways. Local streets with existing traffic calming, traffic diversions, or signalized crossings of major streets are good candidates, as they tend to be existing bicycle routes and have low motor vehicle speeds and volumes. Other streets where residents have expressed a desire for traffic calming are also good options.

**Basic Treatments.** Signs and pavement markings are the minimum treatments necessary to designate a street as a bicycle boulevard. Together, they visibly designate a roadway to both bicyclists and motorists. Signs, and in some cases pavement markings, provide wayfinding to help bicyclists remain on the designated route.



Figures 40 and 41: A combination of pavement markings and distinct signs distinguish bicycle boulevards from other shared travel lanes.





**Additional Treatments.** Vertical and horizontal traffic calming, intersection improvements, and even traffic diversion can be used to complement basic signage and pavement markings, improve safety, and reduce vehicle speeds and traffic volumes.

Common vertical traffic calming elements employed to reduce vehicle speed include speed humps, speed tables and raised crosswalks, which help to slow motor vehicles.

Horizontal traffic calming elements like curb extensions, chicanes, chokers, and traffic circles cause drivers to slow down by restricting the roadway space or by requiring careful maneuvering. Such measures may reduce the design speed of a street, and can be used in conjunction with reduced speed limits to reinforce the expectation of lowered speeds.

Intersection improvements are aimed at improving safety for all road users while giving priority to bicycle movements. These include stop signs at cross-streets, traffic circles, curb extensions, bike boxes, median islands, hybrid beacons, and rectangular rapid flashing beacons.

Traffic diversion measures are designed to reduce motor vehicle traffic volumes, which in turn increase bicyclists' comfort while also decreasing opportunities for conflict. Such traffic diversion measures include partial closures, diagonal diverters, median diverters, and even full closures.



Figure 42: A raised crosswalk doubles as a speed table to reduce motor vehicle speeds.



Figure 45: Curb extensions reduce turning radii and shorten pedestrian crossing distances.



Figure 43: Traffic circles have proven to be effective intersection treatments for bicycle boulevards.



Figure 44: Traffic diverters allow through bicycle movements while restricting motor vehicle traffic.



## Separated Bikeways

### Shoulder Bikeway

**Description.** Typically found in less-dense areas, shoulder bikeways are paved roadways with striped shoulders (4'+) wide enough for bicycle travel. Shoulder bikeways often, but not always, include signage alerting motorists to expect bicycle travel along the roadway. Shoulder bikeways should be considered a temporary treatment, with full bike lanes planned for construction when the roadway is widened or completed with curb and gutter. This type of treatment is not typical in urban areas and should only be used where constraints exist.

**Guidance.** If 4 feet or more is available for bicycle travel, the full bike lane treatment of signs, legends, and an 8" bike lane line would be provided. If it is not possible to meet minimum bicycle lane dimensions, a reduced width paved shoulder can still improve conditions for bicyclists on constrained roadways. In these situations, a minimum of 3 feet of operating space should be provided.



Figure 46: Shoulder bikeways provide a functional facility in rural contexts.



Figure 47: Shoulder bikeways are similar to bike lanes, but lack curbs and gutters like their more urban counterparts.

### Bike Lane

**Description.** Bike lanes designate an exclusive space for bicyclists through the use of pavement markings and signage. The bike lane is located adjacent to motor vehicle travel lanes and is used in the same direction as motor vehicle traffic. Bike lanes are typically on the right side of the street, between the adjacent travel lane and curb, road edge or parking lane.

Many bicyclists, particularly less experienced riders, are more comfortable riding on a busy street if it has a striped and signed bikeway than if they are expected to share a lane with vehicles.

Bike lanes adjacent to on-street parallel parking require special treatment in order to avoid crashes caused by an open vehicle door. The bike lane should have sufficient width to allow bicyclists to stay out of the door zone while not encroaching into the adjacent vehicular lane. Parking stall markings, such as parking "Ts" and double white lines create a parking side buffer that encourages bicyclists to ride farther away from the door zone.



Figure 48: Bicycle lanes provide dedicated space on the roadway for bicyclists.





**Guidance.** Bike lanes should be a minimum of 4 feet when no curb and gutter is present. When curb and gutter are present, a 5 foot minimum is required, or 3 feet more than the gutter pan width if the gutter pan is wider than 2 feet.

On arterial roads with higher speeds, greater widths are recommended. However, in order to discourage motor vehicle use of the bike lane, a 7 foot maximum width is recommended.

For bike lane adjacent to on-street parallel parking, 12-foot minimum from curb face to edge of bike lane is required, with a preferred width of 14.5 feet.

Conventional front-in diagonal parking is not compatible or recommended with the provision of bike lanes, as drivers backing out of conventional diagonal parking have limited visibility of approaching bicyclists. Under these conditions, shared lane markings should be used to guide bicyclists away from reversing automobiles.

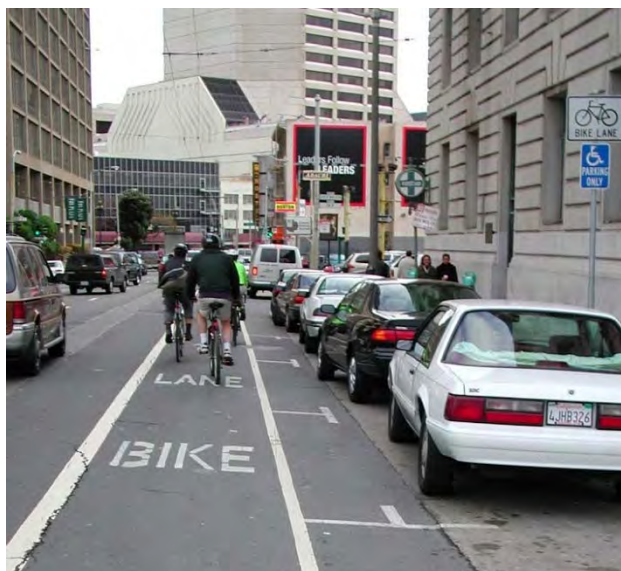


Figure 49: This bike lane example provides an extra two feet of buffer space to provide greater separation from parked vehicles.

### Buffered Bike Lane

**Description.** Buffered bike lanes are conventional bicycle lanes paired with a designated buffer space, separating the bicycle lane from the adjacent motor vehicle travel lane and/or parking lane. Buffered bike lanes are allowed as per MUTCD guidelines for buffered preferential lanes (section 3D-01).

Buffered bike lanes are designed to increase the space between the bike lane and the travel lane or parked cars. This treatment is appropriate for bike lanes on roadways with high motor vehicle traffic volumes and speed, adjacent to parking lanes, or a high volume of truck or oversized vehicle traffic.

**Guidance.** Where bicyclist volumes are high or where bicyclist speed differentials are significant, the desired bicycle travel area width is 7 feet.

Buffers between the bike lane and adjacent travel lane or parking lane should be at least 2 feet wide. If 3 feet or wider, buffers should be marked with diagonal or chevron hatching.



Figure 51: Buffer zones can be provided on both sides of the bike lane, increasing separation from both parked and traveling motor vehicles.

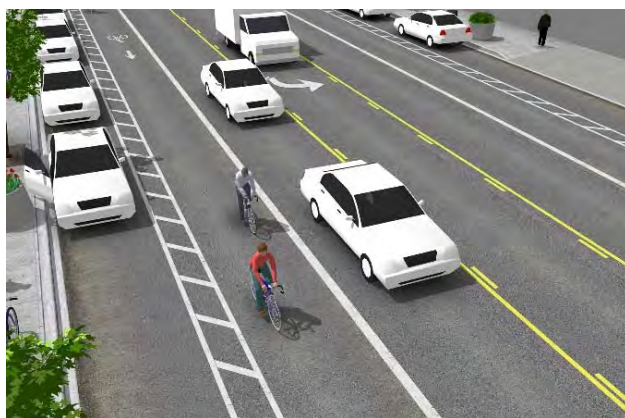


Figure 50: Buffered bicycle lanes are becoming more common throughout the United States.





## Cycle Track

**Overview.** A cycle track is an exclusive bike facility that combines the user experience of a separated path with the on-street infrastructure of a conventional bike lane. A cycle track is physically separated from motor traffic and distinct from the sidewalk. This separation offers a higher level of comfort than bike lanes and are attractive to a wider spectrum of the public. Cycle tracks have different forms but all share common elements—they provide space that is intended to be exclusively or primarily used by bicycles, and are separated from motor vehicle travel lanes, parking lanes, and sidewalks.

Cycle tracks may be one-way or two-way, and may be at street level, sidewalk level or at an intermediate level. If at sidewalk level, a curb or median separates them from motor traffic, while different pavement color/texture separates the cycle track from the sidewalk. If at street level, they can be separated from motor traffic by raised medians, on-street parking or bollards.



Figure 53: This two-way cycle track is separated from motor vehicle travel lanes by a raised concrete barrier.



Figure 52: A raised cycle track in Cambridge, Massachusetts.

A two-way cycle track is desirable when more destinations are on one side of a street (therefore preventing additional crossings), if the facility connects to a path or other bicycle facility on one side of the street, or if there is not enough room for a cycle track on both sides of the road.

Intersections and approaches must be carefully designed to promote safety and facilitate left-turns from the right side of the street.



Figure 55: This cycle track diagram incorporates raised bollards to separate bicyclists from motor vehicles.



Figure 54: A raised concrete barrier and vehicle parking create adequate separation to provide cyclists with a comfortable facility.



**Guidance.** Cycle tracks should ideally be placed along streets with long blocks and few driveways or mid-block access points for motor vehicles. Cycle tracks located on one-way streets have fewer potential conflict areas than those on two-way streets. In situations where on-street parking is allowed, cycle tracks shall be located between the parking lane and the sidewalk (in contrast to conventional bike lanes). Protection should be provided through physical barriers and can include bollards, parking, a planter strip, an extruded curb or on-street parking. Cycle tracks using these protection elements typically share the same elevation as adjacent travel lanes.

### Shared Use Path along Roadway (Sidepath)

**Description.** Similar to a two-way cycle track, a shared use path adjacent to a roadway provides for two way travel separated from motor vehicle traffic.

Occasionally referred to as a roadside trail or a sidepath, a shared use path allows for two-way, off-street bicycle use and also may be used by pedestrians, skaters, wheelchair users, runners and other non-motorized users. These facilities are frequently found in parks, along rivers, and in greenbelts or utility corridors where there are few conflicts with motorized vehicles.

Along roadways, these facilities create a situation where a portion of the bicycle traffic rides against the normal flow of motor vehicle traffic and can result in wrong-way riding where bicyclists enter or leave the path. In addition, driveways, cross streets, and other access points to the adjacent road increase the number of motor vehicle turning movements across the trail. These trail crossings must be carefully controlled with appropriate signage, pavement markings and other physical improvements to minimize the potential for conflict.

When designing a bikeway network, the presence of a nearby or parallel path should not be used as a reason to not provide adequate shoulder or bicycle lane width on the roadway, as the on-street bicycle facility is preferred over a sidepath or roadside trail by experienced bicyclists and those who are cycling for transportation purposes.

**Guidance.** While sidepath width varies depending on its context, volume, and mix of users, typical widths range from 10 to 14 feet. Twelve to 14 feet is recommended for heavy use situations with high concentrations of multiple users such as runners, bicyclists, inline skaters (rollerbladers) and pedestrians. In rare circumstances, a width of 8 feet may be permitted. These circumstances include as low bicycle traffic, occasional pedestrian use, minimal maintenance vehicle usage, and short distances in which physical constraints limit path width.

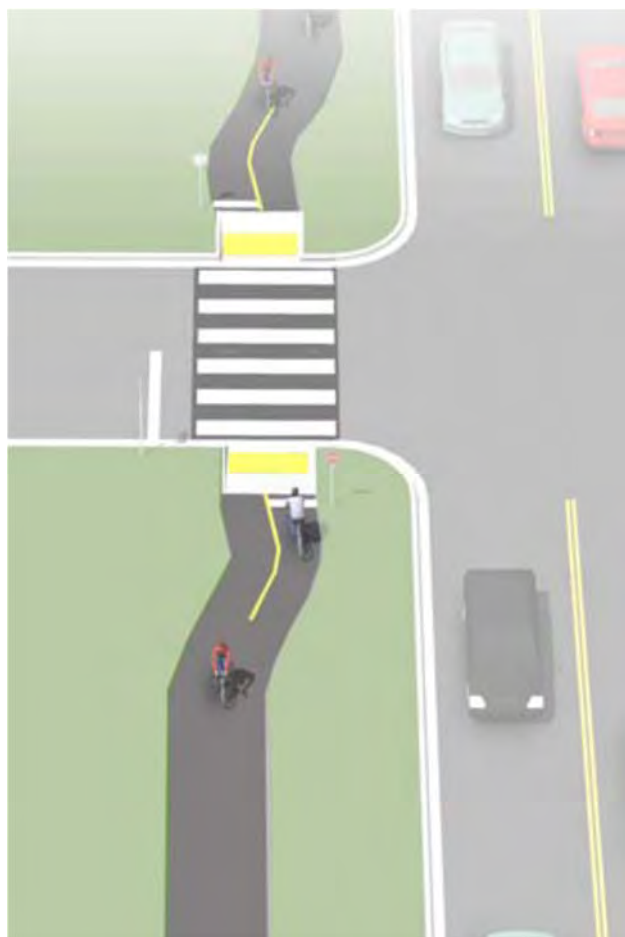


Figure 56: Sidepaths are separated from the road by a minimum of five feet.



Figure 57: This sidepath incorporates a yellow striped centerline to separate bi-directional traffic.



## Traffic Calming

Motor vehicle speeds affect the frequency at which automobiles pass bicyclists as well as the severity of bicycle and pedestrian crashes that can occur on a roadway. Slower vehicular speeds also improve motorists' ability to see and react to non-motorized users, minimize conflicts at driveways and other turning locations and in many cases can improve vehicular throughput. Maintaining slower motor vehicle speeds and reducing traffic in areas where pedestrian and bicycle traffic is regularly expected greatly improves comfort and safety for non-motorized users on a street.

This section presents an overview of traffic calming treatments that can be applied to Marion's roadways. Traffic calming treatments can be divided into two different types:

- “Hard” traffic calming are engineering measures taken with the sole intent of slowing traffic and reducing conflict.
- “Soft” traffic calming includes placemaking design measures that have the added effect of traffic calming, as well as educational and enforcement measures.

## Hard Traffic Calming Treatments

### Speed Limit Reduction

A reduction in speed limit is a simple way to make the roadway a safer place for pedestrians and bicyclists. Statistically, eighty percent of pedestrians struck by a car going 40 mph will die; at 30 mph the likelihood of death is 40 percent. At 20 mph, the fatality rate drops to just 5 percent (The National Highway Traffic Safety Administration)

### Lane Narrowing

Lane narrowing is when an excessively large lane is reduced through the striping of a shoulder or the addition of bike lanes. This helps reduce traffic speed and adds dedicated space for bicyclists.

### Road Diet

Road diets are a reduction in the number of lanes along a roadway. Typically, these are four lane roads reduced to three lanes (although larger road diets are done as well), often with the addition of bike lanes. This not only improves conditions for bicyclists, but it enhances the pedestrian environment and often improves traffic flow and vehicle-on-vehicle collision rates as well. Average annual daily traffic volumes (AADT) for potential road diet candidates can range from as low as 3,000 to more than 25,000. For roadways with higher levels of AADT, a thorough traffic analysis should be undertaken to alleviate safety and capacity concerns.



Figures 58 and 59: Before and after images from this road diet show how roadway space can be reallocated to increase space for bicyclists.





### Speed Humps/Speed Tables

Speed humps are raised areas usually placed in a series across both travel lanes. Longer humps reduce impacts to emergency vehicles. Some speed hump designs can be challenging for bicyclists, however gaps can be provided in the center or by the curb for bicyclists and to improve drainage. Speed humps can also be offset to accommodate emergency vehicles as seen in the image above.



Figure 60: A speed table can effectively reduce motor vehicle speeds, increasing bicycle and pedestrian safety.

### Traffic Diversion

Motor vehicle traffic volumes affect comfort for bicyclists and pedestrians on local streets. Higher vehicle volumes reduce bicycle and pedestrian comfort and can result in more conflicts. Traffic diversion treatments reduce motor vehicle volumes by completely or partially restricting through traffic on select neighborhood streets such as bicycle boulevards.



Figures 61 and 62: Traffic diverters allow through bicycle traffic while dispersing motor vehicle traffic onto adjacent roadways.



### Pinchpoints/Neckdowns

These are curb extensions placed on both sides of the street, narrowing the travel lane and encouraging all road users to slow down. When placed at intersections, pinchpoints are known as chokers or neckdowns. They reduce curb radii and further lower motor vehicle speeds.



Figure 63: A neckdown reduces the street width at an intersection, decreasing pedestrian crossing widths, limiting turning radii, and slowing down motor vehicle speeds.

### Chicanes

Chicanes are essentially curb extensions arranged in an alternating pattern that require cars to oscillate along a roadway to avoid them. These are effective on long, straight neighborhood streets where speeding is an issue.



Figures 64 and 65: Chicanes slow motor vehicle traffic, creating a more calm and welcoming environment for both bicyclists and pedestrians.





## Soft Traffic Calming Treatments

### Setback Reduction

Large setbacks in roadside development are a result of car-oriented development practices which typically locate a large parking lot in the front of the building. Redeveloping these properties with little or no setback creates a sense of enclosure, adds visual stimuli, and creates a seemingly pedestrian environment, all of which help to slow traffic.

### Street Trees, Landscaping and Other Aesthetic Elements

Street trees, landscaping and other aesthetic elements such as art or banners produce a feeling of enclosure and add visual stimuli along a roadway corridor. Green elements often have added environmental benefits as well.



Figures 66 and 67: Planter boxes, trees, shrubs and other landscaping can transform the streetscape and attract bicyclists and pedestrians.

### Street Material

Textured street material, such as the use of pavers, creates visual stimuli and a feeling of a special district or pedestrian-oriented area which can help to calm traffic.



Figures 68 and 69: The textured pavement markings and crosswalks help to build a sense of place and produce a unique and memorable experience for all road users.





### **Appropriately-Scaled Street Lighting**

Appropriately scaled street lighting can provide a safer, more inviting and more visible environment for all roadway users. Pedestrian-scaled street lighting along with other improvements such as street trees can alert motorists to a potential presence of pedestrians and bicycles, slowing down traffic in these areas. Lighting must have uniform distribution along a roadway and not be designed based on spacing of light poles and street trees.

### **Enforcement and Awareness Measures**

Enforcement and awareness measures such as signage, speed traps and educational programs can help to reduce speeding in problem areas. However, the effectiveness of these programs depends adequate frequency and duration.



*Figure 70: Pedestrian-scale lighting can support an active and vibrant night life.*

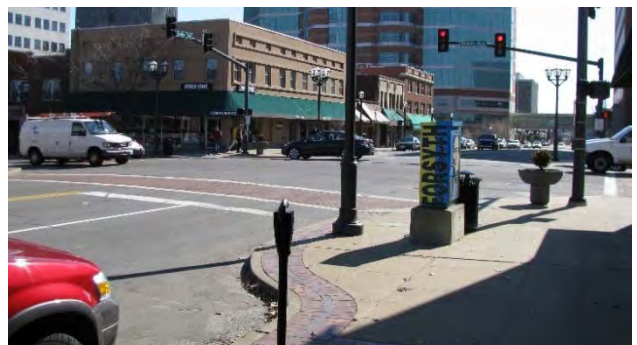
## **Intersection Improvements**

Intersections are junctions at which different modes of transportation meet and facilities overlap. An intersection facilitates the interchange between bicyclists, motorists, pedestrians and other modes in order to advance traffic flow in a safe and efficient manner. Designs for intersections with bicycle and pedestrian facilities should reduce conflict between non-motorized travelers and motorists by heightening the level of visibility, denoting clear right-of-way and facilitating eye contact and awareness with other modes. Intersection treatments can improve both queuing and merging maneuvers for bicyclists, and are often coordinated with timed or specialized signals.

## **Pedestrian/Trail Improvements**

### **Minimize curb radius / Curb Extensions**

The size of a curb’s radius can have a significant impact on pedestrian comfort and safety. A smaller curb radius provides more pedestrian area at the corner, allows more flexibility in the placement of curb ramps, results in a shorter crossing distance and requires vehicles to slow more on the intersection approach. During the design phase, the chosen radius should be the smallest possible for the circumstances. One effective way of minimizing the curb ramp radius is by adding curb extensions or bulb-outs, which are appropriate for any crosswalk where it is desirable to shorten the crossing distance and there is a parking lane adjacent to the curb.



*Figures 71 and 72: These curb extensions pictured above support pedestrian mobility in busy commercial districts. .*



### High-Visibility Crosswalk

A marked crosswalk signals to motorists that they must stop for pedestrians and encourages pedestrians to cross at designated locations. Installing crosswalks alone will not necessarily make crossings safer, especially on multi-lane roadways. However, high-visibility crosswalks make crossings more visible to motorists and add a sense of security for pedestrians. High-visibility crosswalks should be combined with advanced stop bars and other tools to increase safety. At mid-block locations, crosswalks can be marked where there is a demand for crossing and there are no nearby marked crosswalks.



Figure 73: High visibility crosswalks emphasize the importance of pedestrian mobility.

### Median Pedestrian Refuge

Median pedestrian refuges at intersections provide pedestrians with a secure place to stand in case they are unable to walk the entire distance of the crossing in one movement. This is especially important for young, elderly and disabled users in areas where crossing distances are great.

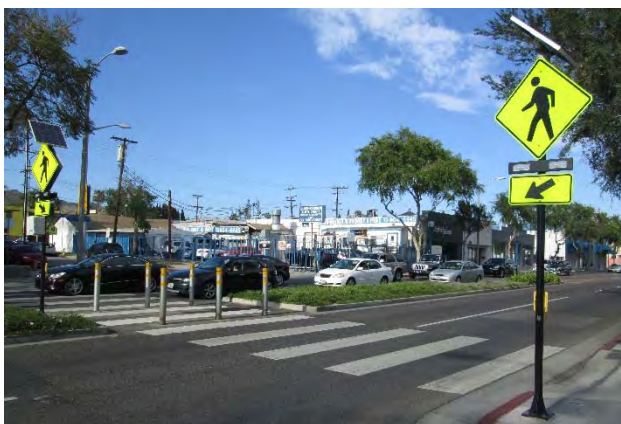


Figure 74: Median crosswalks increase pedestrian connectivity and access while also calming motor vehicle traffic.

### Traffic Circles

Traffic circles are a type of Horizontal Traffic Calming that can be used at minor street intersections. Traffic circles reduce conflict potential and severity while providing traffic calming to the corridor.

### Raised Crosswalks and Intersections

A raised crosswalk or intersection can eliminate grade changes from the pedestrian path and give pedestrians greater prominence as they cross the street. Raised crosswalks should be used where a special emphasis on pedestrian is desired.

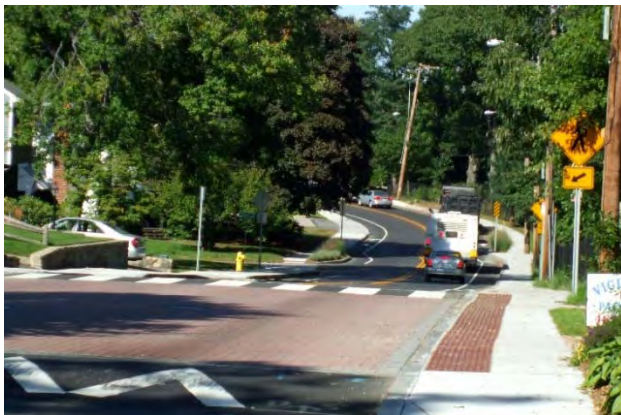


Figure 75: Raised crosswalks reinforce the blank of pedestrian travel by bringing motor vehicles up to the pedestrian level.

### Intersection Parking Control

Parking control involves restricting or reducing on-street parking near intersections with high pedestrian activity. Locating parking away from the intersection improves motorist's visibility on the approach to the intersection and crosswalk. Improved sight lines at intersections reduces conflicts between motorists and pedestrians. This can be accomplished in part through the use of bulb-outs.





### ADA-Compliant Curb Ramps

Curb ramps are the design elements that allow all users to make the transition from the street to the sidewalk. There are a number of factors to be considered in the design and placement of curb ramps at corners. Properly designed curb ramps ensure that the sidewalk is accessible from the roadway. A sidewalk without a curb ramp can be useless to someone in a wheelchair, forcing them back to a driveway and out into the street for access.



Figure 76: ADA-compliant curb ramps assist persons with physical disabilities in detecting, approaching, and crossing streets.

### Bicycle Improvements at Intersections

The configuration of a safe intersection for bicyclists may include elements such as color, signage, medians, signal detection and pavement markings. Intersection design should take into consideration existing and anticipated bicyclist, pedestrian and motorist movements. In all cases, the degree of mixing or separation between bicyclists and other modes is intended to reduce the risk of crashes and increase bicyclist comfort. The level of treatment required for bicyclists at an intersection will depend on the bicycle facility type used, whether bicycle facilities are intersecting, and the adjacent street function and land use.

#### Bike Boxes

A bike box is a designated area located at the head of a traffic lane at a signalized intersection that provides bicyclists with a safe and visible space to get in front of queuing motorized traffic during the red signal phase. Motor vehicles must queue behind the white stop line at the rear of the bike box.



Figure 78: Bike boxes allow bicyclists to proceed through the intersection before motor vehicles.

#### Bike Lanes at Right Turn Only Lanes

The appropriate treatment at right-turn lanes is to place the bike lane between the right-turn lane and the rightmost through lane or, where right-of-way is insufficient, to use a shared bike lane/turn lane. Figure 77 illustrates a bike lane pocket, with signage indicating that motorists should yield to bicyclists through the conflict area. Signage should be used to indicate that motorists should yield to bicyclists through the conflict area.



Figure 77: Bike lanes parallel to right-turn-only lanes help to reduce conflict between bicyclists and motorists.





### Colored Bike Lanes in Conflict Areas

Colored pavement within a bicycle lane increases the visibility of the facility and reinforces priority of bicyclists in conflict areas where the paths of motor vehicles and bicycles are likely to cross. For example, Figure 79 shows a motorist preparing to merge across the bicycle lane (the conflict area) and into the right-turn-only lane. Green colored pavement was given interim approval by the Federal Highways Administration in March 2011. The colored surface should be skid resistant and retro-reflective.



Figure 79: Green bike lanes increase road user attentiveness through high conflict areas.

### Shared Bike Lane/Turn Lane

The shared bicycle/right turn lane places a standard-width bike lane on the left side of a dedicated right turn lane. A dotted line delineates the space for bicyclists and motorists within the shared lane. This treatment includes signage advising motorists and bicyclists of proper positioning within the lane. This treatment is recommended at intersections lacking sufficient space to accommodate both a standard through bike lane and right turn lane. Maximum shared turn lane width is 13 feet, and the bike lane pocket should have a minimum width of 4 feet, with 5 feet preferred.



Figure 80: Where width is insufficient to provide a separate bike lane, providing a shared bike and right-turn-only lane can also be acceptable.

### Intersection Crossing Markings

Bicycle pavement markings through intersections indicate the intended path of bicyclists through an intersection or across a driveway or ramp. They guide bicyclists on a safe and direct path through the intersection and provide a clear boundary between the paths of through bicyclists and either through or crossing motor vehicles in the adjacent lane.



Figure 81: Bike lane markings inside the intersection box increases bicyclist predictability.



### Bicycle Detection and Actuation

User-activated push buttons, bicycle-activated loop detectors, video detection cameras, and remote traffic microwave sensor detection (RTMS) are all useful and effective tools to assist bicyclists at intersections. Proper bicycle detection should meet two primary criteria: 1) accurately detects bicyclists and 2) provides clear guidance to bicyclists on how to actuate detection (e.g., what button to push, where to stand). Bicycle loops and other detection mechanisms can also provide bicyclists with an extended green time before the light turns yellow so that bicyclists of all abilities can reach the far side of the intersection.



Figures 82 and 83: Signage and pavement markings direct bicyclists to use the pavement detection loop to activate a traffic signal.

### Bicycle Signal Heads

A bicycle signal is an electrically powered traffic control device that should only be used in combination with an existing conventional or hybrid signal. Bicycle signals are typically used to improve identified safety or operational problems involving bicycle facilities. Bicycle signal heads may be installed at signalized intersections to indicate bicycle signal phases and other bicycle-specific timing strategies. Bicycle signals are typically used to provide guidance for bicyclists at intersections where they may have different needs from other road users (e.g., bicycle-only movements, or leading bicycle intervals).



Figure 84: Bicycle signal heads can be used to allow bicyclists to clear the intersection before motor vehicles receive a green light.





## Wayfinding Signage

The ability to navigate through a city is informed by landmarks, natural features and other visual cues. Signs throughout the city should indicate to bicyclists:

- Direction of travel
- Location of destinations
- Travel time/distance to those destinations

These signs will increase users' comfort and accessibility to the bicycle systems.

Signage can serve both wayfinding and safety purposes including:

- Helping to familiarize users with the bicycle network
- Helping users identify the best routes to destinations
- Helping to address misperceptions about time and distance
- Helping overcome a “barrier to entry” for people who are not frequent bicyclists (e.g., “interested but concerned” bicyclists)

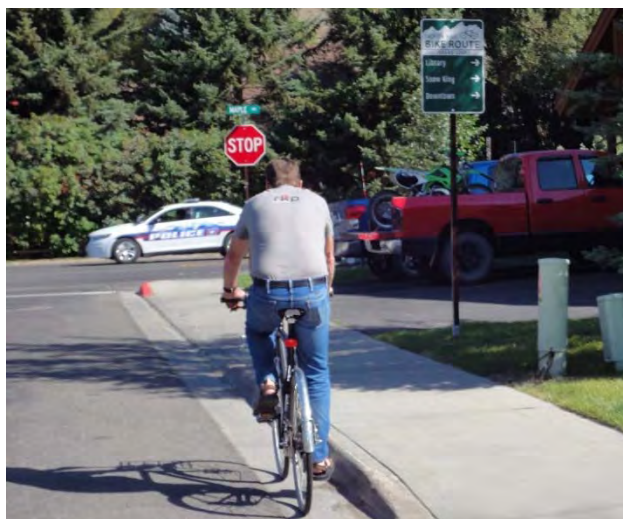
A community-wide bicycle wayfinding signage plan would identify:

- Sign locations
- Sign type – what information should be included and design features
- Destinations to be highlighted on each sign – key destinations for bicyclists
- Approximate distance and travel time to each destination

Bicycle wayfinding signs also visually cue motorists that they are driving along a bicycle route and should use caution. Signs are typically placed at key locations leading to and along bicycle routes, including the intersection of multiple routes. Too many road signs tend to clutter the right-of-way, and it is recommended that these signs be posted at a level most visible to bicyclists rather than per vehicle signage standards.

## Wayfinding Sign Types and Placement

A bicycle wayfinding system consists of comprehensive signing and/or pavement markings to guide bicyclists to their destinations along preferred bicycle routes. There are three general types of wayfinding signs: confirmation, turn, and decisions signs.



*Figure 85: Wayfinding signs can increase users' ability and confidence to bicycle throughout the community.*





### Confirmation Signs

Confirmation signs indicate to bicyclists that they are on a designated bikeway and make motorists aware of the bicycle route. These signs can include destinations and distance/time, but do not include arrows.

Confirmation signs should be placed every  $\frac{1}{4}$  to  $\frac{1}{2}$  mile on off-street facilities and every 2 to 3 blocks along on-street bike facilities, unless another type of sign is used. They should be placed soon after turns to confirm destination(s). Pavement markings can also act as confirmation that a bicyclist is on a preferred route.



Figure 86: An example of a typical confirmation sign.

### Turn Signs

Turn signs indicate where a bikeway turns from one street onto another street. Turn signs can be used with pavement markings and should include destinations and arrows.

Turn signs should be placed on the near-side of intersections where the bike routes turn (e.g. where the street ceases to be a bicycle route or does not go through). Pavement markings can also indicate the need to turn to the bicyclist.



Figure 87: Turn signs are placed in advance of a turn in the bike route network.

### Decisions Signs

Decisions signs mark the junction of two or more bikeways and inform bicyclists of the designated bike route to access key destinations. Decisions signs can include destinations and arrows, distances and travel times.

Decisions signs should be placed on the near-side of intersections in advance of a junction with another bicycle route, and along a route to indicate a nearby destination.



Figure 88: Decisions signs are used in advance of intersecting bike routes.



## Off-Street Multi-Use Trail (Shared Use Path) Design

An off-street multi-use trail allows for two-way, off-street bicycle use and also may be used by pedestrians, skaters, wheelchair users, joggers and other non-motorized users. These facilities, sometimes called greenways or shared use paths, are frequently found in parks, along rivers, beaches, and in greenbelts or utility corridors where there are few conflicts with motorized vehicles. Trail facilities can also include amenities such as lighting, signage, and fencing (where appropriate).



Figure 89: Shared use paths support both recreation and transportation uses.

Key features of multi-use trails include:

- Frequent access points from the local road network.
- Directional signs to direct users to and from the path.
- A limited number of at-grade crossings with streets or driveways.
- Terminating the path where it is easily accessible to and from the street system.
- Separate treads for pedestrians and bicyclists when heavy use is expected.

### General Design Practices

Multi-use trails can provide a desirable facility, particularly for recreation, and users of all skill levels preferring separation from traffic. Bicycle paths should generally provide directional travel opportunities not provided by existing roadways.

#### Width

Ten feet is the minimum allowed for a multi-use trail. Twelve to fourteen feet are recommended for heavy use situations with high concentrations of multiple users. A separate track (5' minimum) can be provided for pedestrian use. Multi-use trail widths can be narrowed to eight feet for rare exceptions, such as low anticipated bicycle use, minimal maintenance vehicle use, and physically constrained conditions.



Figure 90: Surrounding land uses, environmental conditions and other factors can influence trail width.





### Lateral Clearance

A 2 foot or greater shoulder on both sides of the trail should be provided. An additional foot of lateral clearance (total of 3') is required by the MUTCD for the installation of signage or other furnishings. When constructed from crushed limestone, decomposed granite, or a similar aggregate surface, a shoulder can also serve runners and walkers that desire a softer surface than asphalt or concrete, which effectively widens the functional width of the path. When developing a shoulder with the intention of serving runners and walkers, it is important to minimize cross slope in order to provide the flattest possible surface.

### Overhead Clearance

Clearance to overhead obstructions should be 8 feet minimum, with 10 feet recommended.

### Striping

When striping is required, use a 4 inch dashed yellow centerline stripe with 4 inch solid white edge lines. Solid centerlines can be provided on tight or blind corners, and on the approaches to roadway crossings. Edge striping can be provided along turns and in constrained situations with little or no shoulder or effective clear width.

### Material

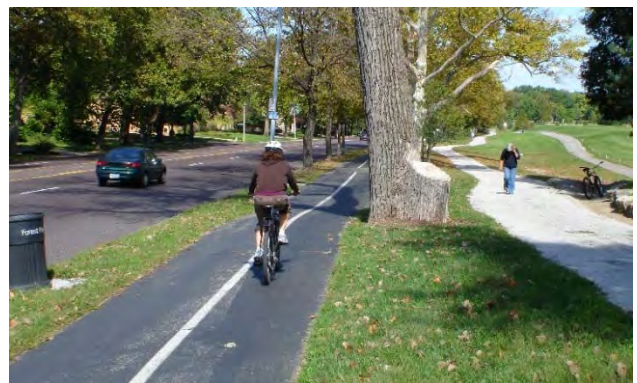
While asphalt is the most common surface for multi-use trails, concrete has proven to be more durable over the long term. Saw-cut concrete joints (rather than troweled) improve the experience of trail users. In contrast to paved surface paths, unpaved multi-use trails limit user types and are not as conducive to transportation-oriented trips, especially in wet or snowy conditions. In corridors with considerable bicycle and pedestrian use, the provision of 2 foot gravel shoulders or a parallel granular surface trail can help to separate bicycle and pedestrian traffic.



*Figure 91: Decomposed granite or crushed limestone can provide an excellent shoulder to meet clearance requirements and provide a desirable surface for walkers and runners.*



*Figure 92: Some shared use paths incorporate both centerline and edge striping.*



*Figure 93: A busy trail corridor incorporates both paved and unpaved surfaces to separate pedestrians from bicyclists and inline skaters.*





## Access

Any access point to the trail should be well-defined with appropriate signage designating the pathway as a bicycle facility and prohibiting motor vehicles. High-visibility access points and trailheads can also incorporate gateway structures, public art, or other unique features to highlight the trail as an important community amenity.



Figure 94: This trail access point utilizes a gateway structure to increase visibility.

## Wayfinding

A clear and consistent wayfinding signage program is essential to the success of any trail. These signs help trail users track their locations, mark their progress, and navigate a trail or trail system with confidence. A wayfinding signage program should include kiosk maps at trailheads, reference location signs (mile markers) along the trail, street and trail name signs at crossings, and guide signs highlighting destination(s) distance/time.



Figure 95: Maps and monuments provide clear orientation and direction for trail users.

Multi-use trail wayfinding signs should follow the general principles for bicycle route and guide signs found in the *AASHTO Guide to Bicycle Facilities* (4th Edition). The use of green and white **D Series Route Signs**, described in greater detail in the *Guide to Bicycle Facilities* and the FHWA's *Manual on Uniform Traffic Control and Design*, can provide continuity throughout the trail network, both on-street and off.

A trail or trail network should have a consistent, uniform brand that imparts a unique identity and resonates with both users of the trail system and the general community. This brand can be applied to trailheads, guide signs, mile markers, trail entry points, and trail crossings, and other points of increased visibility, the use of distinct, as well as printed and online material. While a combination of the D Series Route Signs and uniquely branded wayfinding signs can visually connect the on-street bikeway network to off-street shared use path(s), care must be taken to reduce visual clutter and still provide essential information to trail users.



Figure 96: This trailhead map provides a clear illustration of the park trail within the larger context of the regional trail network.



Map signs and information kiosks at trailheads convey important information to trail users before they begin their journey. This information can include maps of the trail or trail system, location of attractions and destinations, trail intersections with other trails or bikeways, trail etiquette, intended trail users, and hours of operation.

## Trail Crossings

Well-designed crossings can mitigate many operational issues and provide a higher degree of safety and comfort for path users. In most cases, at-grade path crossings can be properly designed to provide a reasonable degree of safety and can meet existing traffic and safety standards. Path facilities that cater to bicyclists can require additional considerations due to the higher travel speed of bicyclists versus pedestrians.

Consideration must be given to adequate warning distance based on vehicle speeds and line of sight, with the visibility of any signs absolutely critical. Directing the active attention of motorists to roadway signs may require additional alerting devices such as a flashing beacon, roadway striping or changes in pavement texture. Signing for path users may include a standard “STOP” or “YIELD” sign and pavement markings, possibly combined with other features such as bollards or a bend in the pathway to slow bicyclists. Care must be taken not to place too many signs at crossings lest they begin to lose their visual impact.



*Figure 97: Bollards, ADA compliant curb ramps, high-visibility crosswalk markings, and rectangular rapid flashing beacons help improve user safety at this street crossing.*

A number of striping patterns have emerged over the years to delineate path crossings. A median stripe on the path approach will help to organize and warn path users. Crosswalk striping is typically a matter of local and State preference, and may be accompanied by pavement treatments to help warn and slow motorists. In areas where motorists do not typically yield to crosswalk users, additional measures may be required to increase compliance.

## Marked/Unsignalized Crossings

A marked/unsignalized crossing typically consists of a marked crossing area, signage and other markings to slow or stop traffic. The approach to designing crossings at mid-block locations depends on an evaluation of vehicular traffic, line of sight, pathway traffic, use patterns, vehicle speed, road type, road width, and other safety issues such as proximity to major attractions.

When space is available, using a median refuge island can improve user safety by providing pedestrians and bicyclists space to perform the safe crossing of one side of the street at a time.



*Figure 98: At unsignalized trail crossings, high-visibility crosswalk markings increase motorist awareness of crossing pedestrians.*





### Active Warning Beacons

Enhanced marked crossings are unsignalized crossings with additional treatments designed to increase motor vehicle yielding compliance on multi-lane or high volume roadways. These enhancements include pathway user or sensor actuated warning beacons, Rectangular Rapid Flash Beacons (RRFB) shown below, or in-roadway warning lights.

Rectangular rapid flash beacons show the most increased compliance of all the warning beacon enhancement options. A study of the effectiveness of going from a no-beacon arrangement to a two-beacon RRFB installation increased yielding from 18 percent to 81 percent. A four-beacon arrangement raised compliance to 88%. Additional studies of long term installations show little to no decrease in yielding behavior over time.



Figure 99: Rectangular rapid flashing beacons help to identify important pedestrian crossings.

### Route Users to Signalized Crossings

Path crossings within approximately 400 feet of an existing signalized intersection with pedestrian crosswalks are typically diverted to the signalized intersection to avoid traffic operation problems when located so close to an existing signal. For this restriction to be effective, barriers and signing may be needed to direct path users to the signalized crossing. If no pedestrian crossing exists at the signal, modifications should be made.

Path crossings should not be provided within approximately 400 feet of an existing signalized intersection. If possible, route path directly to the signal. In the US, the minimum distance a marked crossing can be from an existing signalized intersection varies from approximately 250 to 660 feet. Engineering judgment and the context of the location should be taken into account when choosing the appropriate allowable setback. Pedestrians are particularly sensitive to out of direction travel and jaywalking may become prevalent if the distance is too great.

### Signalized/Controlled Crossings

Signalized crossings provide the most protection for crossing path users through the use of a red-signal indication to stop conflicting motor vehicle traffic. The two types of path signalization are full traffic signal control and hybrid signals.



Figures 100 and 101: Full signals (left) and hybrid signals (right) can be used at trail crossings.





A full traffic signal installation treats the path crossing as a conventional 4-way intersection and provides standard red-yellow-green traffic signal heads for all legs of the intersection.

Hybrid beacon installation faces only cross motor vehicle traffic, stays dark when inactive, and uses a unique ‘wig-wag’ signal phase to indicate activation. Vehicles have the option to proceed after stopping during the final flashing red phase, which can reduce motor vehicle delay when compared to a full signal installation. While full traffic signals must meet MUTCD pedestrian, school, or modified warrants, hybrid beacons may be installed without meeting traffic signal control warrants if roadway speed and volumes are excessive for comfortable path crossings.

### Underpasses

Bicycle/pedestrian underpasses provide critical non-motorized system links by joining areas separated by barriers such as railroads and highway corridors. In most cases, these structures are built in response to user demand for safe crossings where they previously did not exist.

Grade-separated crossings are advisable where existing bicycle/pedestrian crossings do not exist, where ADT exceeds 25,000 vehicles and where 85th percentile speeds exceed 45 miles per hour.

Safety is a major concern with underpasses. Shared-use path users may be temporarily out of sight from public view and may experience poor visibility themselves. To mitigate safety concerns, an undercrossing should be designed to be spacious, well-lit, equipped with emergency cell phones at each end and completely visible for its entire length from end to end.



Figure 102: Trail underpasses separate trail users from motor vehicle traffic and/or rail traffic, reducing delays for all users.

### Overpasses

Bicycle/pedestrian overcrossings provide critical non-motorized system links by joining areas separated by barriers such as deep canyons, waterways or major transportation corridors. In most cases, these structures are built in response to user demand for safe crossings where they previously did not exist.



Figures 103 and 104: Pedestrian and trail overpasses provide grade-separated crossings that can also serve as iconic structures, gateways, and unique branding opportunities for a trail system or community.



As mentioned above, grade-separated crossings may be needed where existing bicycle/pedestrian crossings do not exist, where ADT exceeds 25,000 vehicles, and where 85th percentile speeds exceed 45 miles per hour.

Overpasses require a minimum of 17 feet of vertical clearance to the roadway below versus a minimum elevation differential of around 12 feet for an undercrossing. This results in potentially greater elevation differences and much longer ramps for bicycles and pedestrians to negotiate.

Overcrossings for bicycles and pedestrians typically fall under the Americans with Disabilities Act (ADA), which strictly limits ramp slopes to 5% (1:20) with landings at 400 foot intervals, or 8.33% (1:12) with landings every 30 feet. These requirements can provide challenges in physically constricted conditions.

## Rail-To-Trails

Commonly referred to as Rails-to-Trails or Rail-Trails, these projects convert vacated rail corridors into off-street paths. Rail corridors offer several advantages, including relatively direct routes between major destinations, fewer at-grade crossings than parallel alternative routes, and generally flat terrain. Rail-Trails can be found in urban, suburban and rural settings, often traveling from cities and towns out into the countryside.

In some cases, rail owners may rail-bank their corridors as an alternative to a complete abandonment of the line, thus preserving the rail corridor for possible future use.

The railroad may form an agreement with any person, public or private, who would like to use the banked rail line as a trail or linear park until it is again needed for rail use. Municipalities should acquire abandoned rail rights-of-way whenever possible to preserve the opportunity for trail development.

Rail-to-trails can involve many challenges including the acquisition of the right of way, cleanup and removal of toxic substances, and rehabilitation of tunnels, trestles and culverts. It is often impractical and costly to add material to existing railroad bed fill slopes. This results in trails that meet minimum path widths, but often lack preferred shoulder and lateral clearance widths. A structural engineer should evaluate existing railroad bridges for structural integrity to verify they are capable of carrying the appropriate design loads.



*Figure 105: Abandoned rail corridors provide a flat surface that appeals to a wide variety of trail users.*



*Figure 106: The linear character of rails-to-trails projects allows for a high level of connectivity within a community and can serve both recreational uses transportation-oriented trips.*



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## Chapter Four: Goals and Objectives

The Marion Master Trails Plan will guide the development of trails and bikeways for years to come. In order to ensure this Plan reflects the desires of the community, capitalizes on potential opportunities, and respects the challenges that face future expansion of the trail network, a series of goals and objectives have been developed to guide decision making for future trail development and supporting programs. **Goals** are broad, value-based expression of the community's desires, describing the ideal situation that would result if all plan purposes were fully realized. Goals give direction to the plan as a whole and are concerned with the long-term. **Objectives** are action-oriented statements that should be undertaken to reach a particular goal.

These goals and objectives are firmly rooted in the input from community members, the guidance of the steering committee, and a detailed analysis of existing conditions. Each recommendation in this Plan will help to achieve one or more of the goals and objectives below, helping to build Marion's Trail and On-Street Bikeway Network into a local asset, a regional attraction, and a transformative catalyst to create a more healthy, active, and vibrant community.

### **Goal 1: The Marion Trail and On-Street Bike Network will be interconnected, regionally and locally.**

**Objective 1.1:** Connect to local destinations, including schools, parks, employment centers, residential areas, commercial areas, and civic buildings.

**Objective 1.2:** Link the Marion Trail and On-Street Bikeway Network to regional trails and amenities.

**Objective 1.3:** Collaborate with local, regional, and state agencies, organizations and stakeholders to strengthen partnerships, leverage resources, and expand the reach, effectiveness and impact of the Marion Trail and On-Street Bikeway Network.

**Objective 1.4:** Provide pertinent facility and network information through wayfinding signage, trailheads, maps, mileage markers on shared use paths and trails, brochures, and online communications.

### **Goal 2: The Marion Trail and On-Street Bikeway Network will be safe, accessible, and secure for all users.**

**Objective 2.1:** Follow ADA and national accessibility guidance and standards for trail design.

**Objective 2.2:** Develop trail facilities that support a variety of trail users, including walkers, bicyclists, runners and joggers, in-line skaters, mountain bicyclists, equestrians, and snowmobile riders, based on the context of the trail facility.

**Objective 2.3:** Develop on-street bikeways that provide safe routes for users with a wide range of ages and skill levels.

**Objective 2.4:** Incorporate lighting, trail mile markers, rescue and EMS access, call boxes, and other security features that promote crime prevention through environmental design (CPTED) principles into trail design.

**Objective 2.5:** Improve safety for all road users at trail/roadway crossings.



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### **Goal 3: The Trail and On-Street Bikeway Network will support economic activity in the City of Marion.**

Objective 3.1: Improve bicycle and pedestrian access to and from shops, restaurants, commercial districts, and other businesses and places of employment in Marion.

Objective 3.2: Brand and market the Marion Trail and On-Street Bikeway Network as a unique and valuable asset that draws visitors and residents to Marion.

Objective 3.3: Provide bicycle parking at community destinations to encourage bicycling.

### **Goal 4: The Trail and On-Street Bikeway Network will enhance the quality of life for Marion residents.**

Objective 4.1: Increase opportunities for active transportation.

Objective 4.2: Expand opportunities for recreation and physical activity through a variety of trail and on-street bikeway types.

Objective 4.3: Highlight the heritage and values of the community through interpretive trailheads, public art, and trail branding.

Objective 4.4: Increase exposure to the natural environment, including trees, native plantings and landscapes, and wildlife habitats.

### **Goal 5: Planning, policies, and design guidelines will provide for consistent and orderly implementation and maintenance of the Trail and On-Street Bike Network.**

Objective 5.1: Utilize trail surface type(s) for off-street trails that respect the social, transportation, recreation, environmental, fiscal, and land use contexts of each trail segment.

Objective 5.2: Maintain the Marion Trail and On-Street Bikeway Network with local resources.

Objective 5.3: Utilize citizen and technical advisory committees to provide guidance in the development of network projects and plan implementation.

Objective 5.4: Focus project selection and development on closing segment and service area gaps and expanding the trail network.

Objective 5.5: Incorporate network elements and facility types in roadway design standards and guidelines.

Objective 5.6: Include network elements in roadway improvements and new developments.

Objective 5.7: Preserve riparian and other environmentally sensitive areas for open space, recreation, and trail use.

Objective 5.8: Draft and adopt policies to incorporate trail development and bicycle parking into zoning ordinances and subdivision regulations.



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## **Goal 6: Education, encouragement, and enforcement programs will support and increase usage of the Trail and On-Street Bikeway Network.**

**Objective 6.1:** The City of Marion and its partnering organizations and agencies offer educational programs that teach basic bicycling skills, promote safe use of trails and roadways, and build awareness and respect for all road and trail users.

**Objective 6.2:** Increase walking and bicycling through programs, activities, and events that encourage trail usage and non-motorized transportation and recreation.

**Objective 6.3:** Partner with and support law enforcement agencies (Marion Police Department and Iowa State Patrol) to raise awareness of and enforce of traffic regulations in order to instill mutual respect amongst all road users.





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## Chapter Five: Recommended Trail Network

The City of Marion's existing trail facilities provide the foundation for the development of a city-wide network of trails and on-street bikeways that will make walking and bicycling safer, easier, and more convenient choices for transportation and recreation. The recommended network builds upon existing trail and bikeway facilities in and around Marion, local and regional planning efforts, and considerable input from Marion residents, bicycle and trail stakeholder groups, and the Master Trails Plan Steering Committee.

The recommended bicycle and trail network includes a comprehensive and diverse set of trail and on-street bicycle facilities connecting key destinations in and around Marion. System improvements include establishing a formalized, interconnected on-street bikeway system, building new trails, addressing gaps in the existing trail system, upgrading intersections for safer trail crossings, and developing non-infrastructure initiatives to encourage non-motorized transportation and recreation. Suggested improvements include both low-cost measures that will yield immediate results, such as striping of roads to accommodate bike lanes, and long-term improvements, such as expanding the local trail system in conjunction with development in future growth areas. Together, these improvements represent a comprehensive and coordinated strategy for transforming Marion into a bicycle- and pedestrian-friendly community.

While this chapter identifies and lists each project that composes the recommended Trail and On-Street Bikeway Network, these projects are further evaluated and ranked later in the Plan to guide project phasing, selection and development. This chapter is organized into trail and on-street bikeway improvements, specifically suggesting where the City could implement each of these designs. It should be noted that final facility design will be subject to relevant design guidelines (e.g. Iowa DOT's SUDAS, MUTCD, AASHTO) depending on their location.

### Recommended Trails and On-Street Bikeways

The recommended trails and on-street bikeways listed in this chapter have been developed to meet the goals and objectives of this Plan and create a city-wide, interconnected network that serves both transportation and recreation users. More than 130 miles of trails, sidepaths, bike lanes, bicycle boulevards, and other on-street bikeways will expand and enhance the system of existing trails and bikeways. Map 2 on page 61 shows the recommended Marion Trail and On-Street Bikeway Network. Paved shared-use paths represent the core of the trail and bikeway network. These paved trails are accessible to all users and function as both transportation and recreation corridors, providing the greatest benefit to the community. Unpaved shared-use paths, sidepaths, on-street bike lanes, and other trail and on-street bikeway types expand the reach of the trail network into residential neighborhoods, commercial corridors and districts, and parks and open spaces. Recommendations below are grouped according to facility type.

### Off-Street Facilities

#### Paved Multi-Use Trails

A total of 27.13 miles of paved multi-use trails are recommended in the Plan. While several of the recommended paved multi-use trails links are short connectors that enhance system connectivity, the majority are longer corridors, like the Squaw Creek Trail and the Dry Creek Trail, that will enhance regional connectivity and expand the regional trail network. Table 1 lists the recommended paved multi-use trails projects, including facility extent and length.



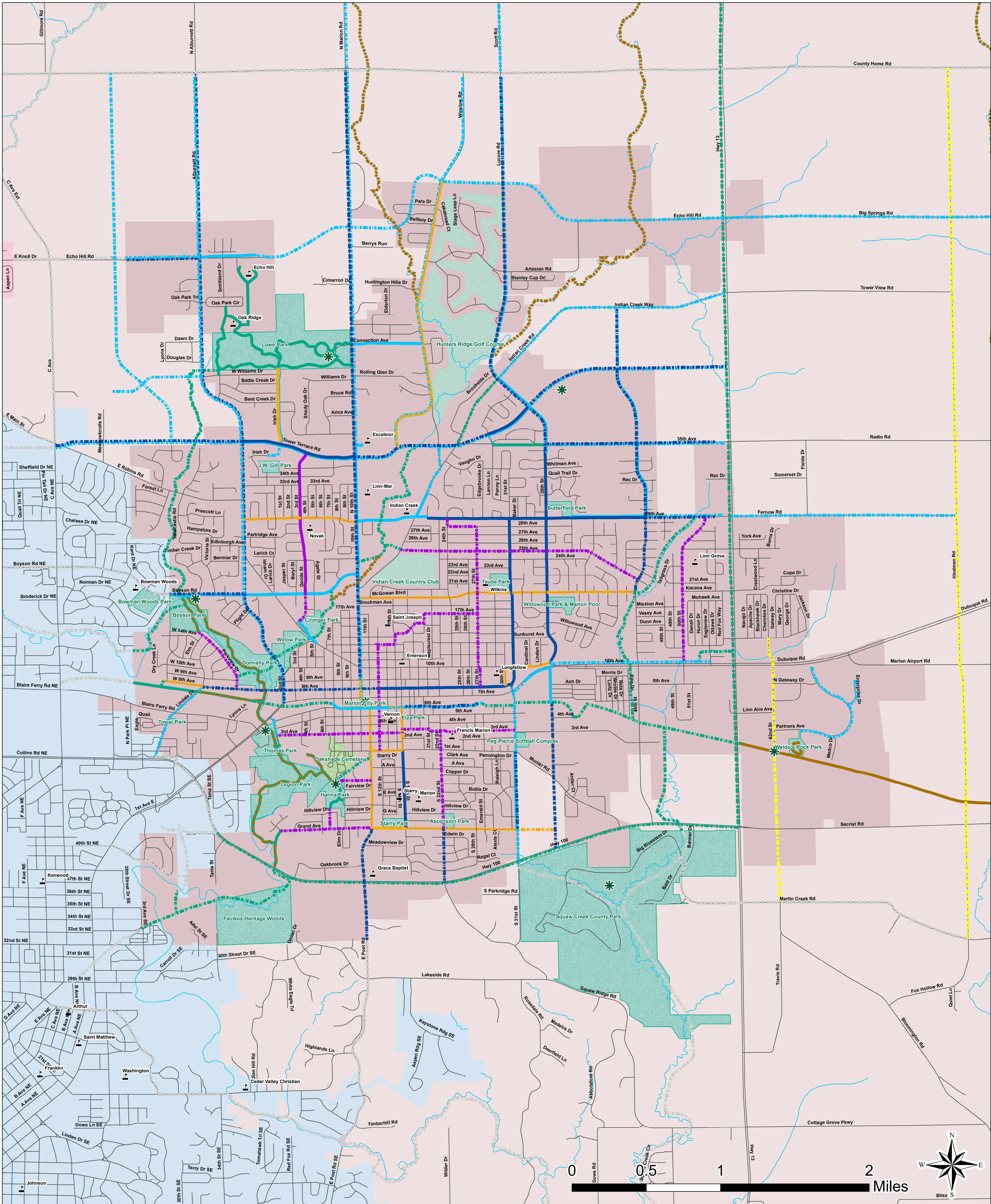
**Table 1: Recommended Paved Multi-Use Trails**

Corridor	From	To	Length (mi)
Highway 13	Highway 100	Prairie Chapel Rd	6.18
Squaw Creek Trail	Sac & Fox Trail	Marion City Limit	5.24
Highway 100	Marion City Limit	Highway 13	3.66
Dry Creek Trail	Boyson Trail	Council St	2.43
Boyson Trail	Boyson Rd	Low Park	1.96
Squaw Creek Trail	Grant Wood Trail	29th Ave	1.62
Indian Creek Trail	10th St	Tower Terrace Rd	1.16
Indian Creek Trail	Boyson Trail	Boyson Rd	0.95
Squaw Creek/31 St Connector	Squaw Creek Trail	31st St	0.78
Indian Creek Rd	Lucore Rd	Tower Terrace Rd	0.53
Squaw Creek Trail	Grant Wood Trail	Marion City Limit	0.49
Squaw Creek Village Connector	50th St	Highway 13	0.39
Hanna Park-11th St Connector	Boyson Trail	11th St	0.35
Highway 100 Connector	Highway 100	The Marketplace on 1st	0.29
Marion Railroad Trail	31st St	35th St	0.25
Lindale - Dry Creek Connector	Lindale Trail	Dry Creek Trail	0.22
Marion Railroad Trail Bridges	Lindale Trail	Cemar Trail	0.21
Parkview-Boyson Trail Connector	Boyson Trail	Parkview Dr	0.15
40th Street Connector	40th Street	Cemar Trail Spur	0.12
Indian Creek - 25th Ave Connector	Indian Creek Rd	Indian Creek Trail	0.11
Lindale Trail - 8th Ave Connector	8th Ave	Lindale Trail	0.04
<b>Total:</b>			<b>27.13</b>



*Figure 107: Paved multi-use trails provide a comfortable and enjoyable experience for all users.*





# Marion Master Trails Plan

## Recommended Trails and On-Street Bikeways



Legend			
<b>Existing Trails</b>	<b>Proposed Trails and On-Street Bikeways</b>	<b>Transportation and Municipalities</b>	<b>Areas of Interest</b>
Sidepath	Sidepath	Trails and Bikeways Outside of Marion's Jurisdiction	Cemetery
Bike Boulevard	Bike Boulevard	Roads	Golf
Bike Lane	Bike Lane	Marion City Limit	Park
Shared Lane Markings	Shared Lane Markings	Cedar Rapids	Trailheads
Paved Multi-Use Trail	Paved Multi-use Trail	Marion Growth Area	Creeks
Pave Existing Trail	Unpaved Multi-Use Trail		Schools
Unpaved Multi-Use Trail	Shoulder Bikeway		





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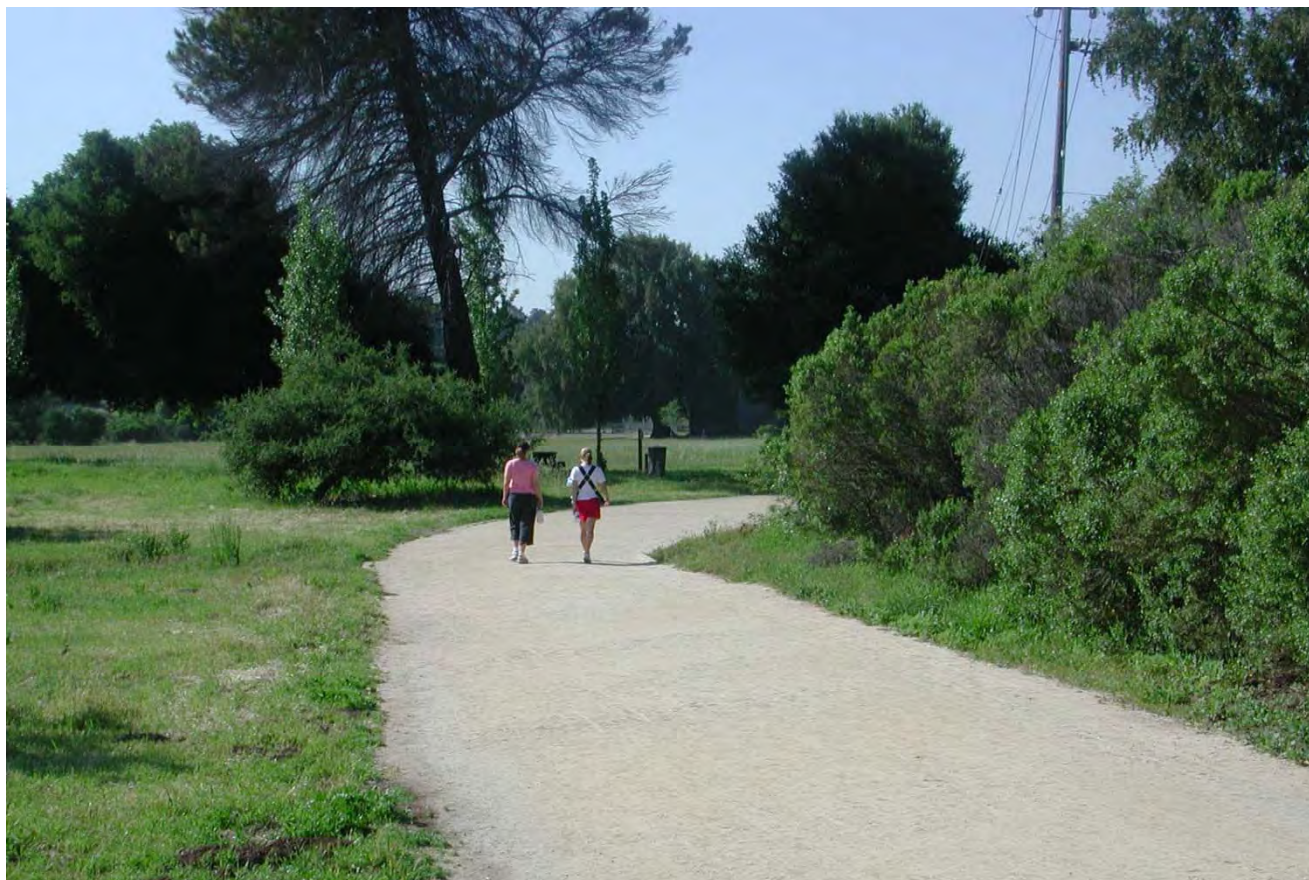


### Unpaved Multi-Use Trails

There are 22.74 miles of unpaved multi-use trails recommended in the Marion Master Trails Plan, as shown Map 2. These trails are generally located in future growth areas and present lower-cost opportunities to provide residents and visitors with recreation opportunities.

**Table 2: Recommended Unpaved Multi-Use Trails**

Corridor	From	To	Length (mi)
<b>Crabapple Creek Trail</b>	Prairie Chapel Rd	Grant Wood Trail	7.84
<b>Dry Creek</b>	Mentzer Rd	Outer Loop Trail / 10th St	4.55
<b>Indian Creek Trail</b>	Lucore Rd	Outer Loop Trail	4.00
<b>Berry's Run Trail</b>	Winslow Rd	Outer Loop Trail	3.02
<b>Outer Loop Trail</b>	10th St / Dry Creek Trail	Highway 13	2.85
<b>Indian Creek Trail</b>	South of Boyson Rd	East of 10th St	0.48
<b>Total Miles:</b>			<b>22.74</b>



*Figure 108: A shared use path composed of decomposed granite or crushed limestone can provide a suitable surface for most trail users.*





## On-Street Facilities

### Sidepaths

Sidepaths are shared facilities for bicyclists, walkers, runners, persons with disabilities and/or mobility assistance devices, inline skaters, and other non-motorized road users. These facilities are located adjacent to the road, separated by a tree lawn (minimum of five feet wide). Similar to paved multi-use trails located outside the right-of-way, sidepaths should also have a minimum width of 10 feet. Because of their separation from motor vehicle traffic and the level of comfort and sense of safety they provide for a variety of bicyclist types and other users, sidepaths have been widely employed in Marion already, with more than 6.6 miles of sidepaths already in place throughout the City of Marion, and an additional 2.05 miles of funded projects. The Plan recommends an additional 34.76 miles of sidepaths, with the majority located in northern Marion and in the future growth areas to the north and east. These facilities are displayed in Table 3 on the following page. It should be noted that many experienced bicyclists will choose to ride on the roadway rather than an adjacent sidepath in order to maintain a higher travel speed and avoid potential conflicts with pedestrians. Where applicable, the addition of shared lane markings or bike lanes on roadways adjacent to sidepaths should be considered in order to provide additional accommodations for bicyclists who choose to travel on the roadway.



Figure 109: This sidepath example includes pavement markings to indicate that both pedestrians and bicyclists are permitted to use the facility.



**Table 3: Recommended Sidepath Projects**

Corridor	From	To	Length (mi)
10th St	Tower Terrace Rd	Outer Loop Trail	3.65
Lucore Rd	Indian Creek Rd	Outer Loop Trail	3.27
Echo Hill Rd	10th St	Highway 13	2.87
Winslow Road	County Home Rd	North of Tower Terrace Rd	2.28
Big Springs Rd	Highway 13	Crabapple Creek Trail	1.87
Tower Terrace Rd	Alburnett Rd	C Ave	1.76
Indian Creek Rd	Lucore Rd	Highway 13	1.75
Fernow Rd	Hindman Rd	Highway 13	1.53
Tower Terrace Rd	35th St	Highway 13	1.42
Echo Hill Rd	Alburnett Rd	Robins City Limit	1.26
35th Ave	35th St	Highway 13	1.23
Marion Central Corridor	7th St	31st St	1.22
29th Ave	Highland St	Highway 13	1.06
7th Avenue	35th St	50th St	0.90
Munier Rd	31st St	Highway 100	0.86
Alburnett Road Trail	Boyson Rd	7th Ave	0.82
10th St	6th Ave	McGowan Blvd	0.74
Echo Hill Rd	Echo Hill Elementary	10th St	0.68
Main St	C Ave	Robins City Limit	0.66
44th St Sidepath	Hastings	Tower Terrace Rd	0.63
Tower Terrace Rd	10th Street	Lennon Lane	0.62
Lindale Dr	Twixt Town Rd	8th Ave	0.59
Highway 100	Twixt Town Rd	Western Marion City Limit	0.57
Irish Dr	Tower Terrace Rd	Williams Rd / Lowe Park	0.52
31st St	8th Ave	1st Ave	0.45
44th Street	Indian Creek Rd	Tower Terrace Rd	0.41
Indian Creek Rd	Stone Creek Rd	Tower Terrace Rd	0.35
31st St	Grand Avenue	South of Hwy 100	0.25
Twixt Town Rd	Lindale Dr	Collins Rd	0.20
Irish Dr	Tower Terrace Rd	Existing Irish Dr / Gill Park	0.14
1st St - 6th Ave - CEMAR Connector	Future Cemar Trail / Marion Blvd	3rd Ave	0.13
10th St	McGowan Blvd	North of Indian Creek Rd	0.07
<b>Total Miles:</b>			<b>34.76</b>



### Bike Lanes

A total of 12.25 miles of bike lanes are recommended in the Plan. These recommended bike lane projects will complete gaps in the existing bike lane network, extend the reach of existing bike lanes, and where demand for bicycle facilities has been demonstrated. Table 4 displays recommended bike lane projects, including facility extent and length.

**Table 4: Recommended Bike Lane Projects**

Corridor	From	To	Length (mi)
<b>Alburnett Rd</b>	Boyson Rd	County Home Rd	3.63
<b>East Post Rd</b>	Sac & Fox Trail	Marion City Limit	1.43
<b>C Ave</b>	Echo Hill Rd	County Home Rd	1.39
<b>35th St</b>	Highway 100	7th Ave	1.25
<b>C Ave</b>	Tower Terrace Rd	Echo Hill Rd	1.24
<b>8th Ave</b>	Lindale Trail	12th St	1.18
<b>Grand Ave</b>	15th St	35th St	1.00
<b>East Post Rd</b>	Southern City Limit	Grand Ave	0.77
<b>22nd St</b>	Grand Ave	Highway 100	0.36
<b>Total Miles:</b>			<b>12.25</b>

In addition to the installation of new bike lanes as recommended above, Marion must also bring the 5.18 miles of existing bike lanes up to current standards for bike lane design. These bike lanes are important components of the City’s Trail and On-Street Bikeway Network, but are currently in poor condition and experience minimal usage.



Figure 110: When designed properly, bicycle lanes separate bicyclists from motor vehicle traffic while also protecting bicyclists from the opening doors of parked cars.





## Bicycle Boulevards

To encourage new bicyclists or bicyclists who do not feel comfortable riding in traffic, a number of low-traffic, low-stress bikeways are recommended to connect residents to community destinations such as schools and paths. A total of 10.55 miles of recommended bicycle boulevards are shown on Map 2. Bicycle boulevards can vary greatly in design and cost. The cost opinions used are intended to provide a range of potential costs for bicycle boulevard treatments, but each project may vary depending on design. Table 5 shows proposed bicycle boulevard projects, including facility extent and length.

**Table 5: Recommended Bicycle Boulevard Projects**

Corridor	From	To	Length (mi)
<b>12th St - 17th Ave - 27th St</b>	1st Ave	29th Ave	2.37
<b>Windemere Way</b>	Indian Creek Rd	Squaw Creek Trail	1.74
<b>3rd Ave</b>	1st St	31st St	1.64
<b>3rd St - Geode St</b>	Alburnett Rd Sidepath	Tower Terrace Rd	1.17
<b>50th St</b>	7th Ave / 10th Ave	29th Ave	1.03
<b>22nd St</b>	Grand Ave	3rd Ave	0.66
<b>Grand Ave</b>	Western terminus	11th St	0.61
<b>Parkview</b>	8th Ave	Boyson Trail	0.48
<b>40th Street</b>	1st Ave	Charter Oak	0.46
<b>Krumboltz</b>	Hanna Park / Boyson Trail	11th St	0.25
<b>6th St</b>	Grand Ave	Hanna Park	0.14
<b>Total Miles:</b>			<b>10.55</b>



Figure 111: This bicycle boulevard example incorporates traffic diversion elements to reduce through motor vehicle traffic.



### Shared Lane Markings

Shared lane markings are recommended on multiple roadways throughout the City of Marion where constrained conditions do not allow for the installation of a bike lane, or are otherwise inappropriate for bicycle boulevard treatment, but where bicyclists will benefit from an enhanced shared roadway. A total of 5.35 miles of recommended shared lane marking projects are shown on Map 2. Table 6, below, shows proposed shared lane marking projects, including facility extent and length.

**Table 6: Recommended Shared Lane Marking Projects**

Corridor	From	To	Length (mi)
<b>McGowan Blvd</b>	10th St	Squaw Creek Trail	1.86
<b>11th St</b>	6th Ave	Grand Ave	0.81
<b>29th Ave</b>	Alburnett Rd	10th St	0.76
<b>Banner Dr</b>	Highway 13	Squaw Creek Trail	0.70
<b>10th Ave</b>	30th St	35th St	0.31
<b>15th St</b>	6th Ave	1st Ave	0.29
<b>West 8th Ave</b>	Lindale Trail Connector	Lindale Dr	0.27
<b>1st Ave</b>	11th St	15th St	0.22
<b>30th St</b>	8th Ave	10th Ave	0.13
<b>Total Miles:</b>			<b>5.35</b>



Figure 112: Shared lane markings raise motorists' awareness that the road they are driving on is a preferred corridor for bicycle travel.





### Shoulder Bikeways

A total of 18.84 miles of shoulder bikeways are shown on Map 2. Shoulder bikeways are typically recommended along roadways without full curb and gutter, outside the dense area. Roadway shoulders serve a number of purposes (e.g., break down lanes and snow storage). The City of Marion, Linn County, Corridor MPO, and IDOT should work closely in coming years to coordinate expectations and use of roadway shoulders as bikeway facilities. Table 7, below, shows proposed shoulder bikeway projects, including facility extent and length.

**Table 7: Recommended Shoulder Bikeway Projects**

Corridor	From	To	Length (mi)
County Home Rd	Mentzer Rd	Jordans Grove	7.83
Hindman Rd	Martin Creek Rd	County Home Rd	5.86
62nd St	Martin Creek Rd	Hennessey	1.79
Prairie Chapel Rd	Highway 13	Crabapple Creek Trail	1.76
Martin Creek Rd	Highway 13	Hindman Rd	1.60
<b>Total Miles:</b>			<b>18.84</b>



Figure 113: A shoulder bikeway can provide an adequate facility for bicyclists while also serving as a break down lane for motor vehicles.





## Community-Wide Improvements

In addition to the recommended trails and bikeways, the City of Marion should implement the following community-wide improvements and policies in order to enhance safety, connectivity, accessibility, and convenience for pedestrians and bicyclists:

### Trailheads

Trailheads play an important role in the City's Trail and On-Street Bikeway Network, functioning as entry points and network hubs, orienting trail users to the system, and providing basic amenities that welcome trail users and enhance their recreation and/or transportation experiences. The physical components that constitute a trailhead can vary from a gravel parking lot and trail system orientation map to a programmed park with ample parking for bicycles and motor vehicles, restrooms, pavilions, lighting, and even public art. These components depend heavily on siting opportunities and constraints and context within the trail network. As the Marion Trail and On-Street Bikeway Network expands, existing trailheads should be updated to provide a higher level of service to trail users. At a very minimum, each trailhead should provide adequate bicycle and motor vehicle parking, an orientation map to familiarize trail users with existing trail and on-street bikeways, as well as key destinations in and around the City, and basic information about trail user responsibilities and etiquette. Map 2 on page 61 identifies locations of existing and future trailheads, with the latter to be developed in conjunction with adjacent trail facilities.



Figure 114: This simple trailhead includes an information kiosk, benches, bike racks and trash can.

### Bicycle Wayfinding Signage Plan

Landmarks, natural features, civic destinations, neighborhood business districts and other visual cues help residents and visitors navigate through Marion. However, many of the recommended bicycle routes utilize less familiar, lower-volume roadways that residents may not typically use while traveling by bus or car. Placing signs throughout the City indicating to bicyclists their direction of travel, location of destinations, and the distance (and travel time by bike) to those destinations will increase users' comfort and the convenience of the bicycle system. Wayfinding signs also visually cue motorists that they are driving along a bicycle route and should use caution.

Marion should develop an on-street wayfinding signage system for use along bicycle facilities. Signage can serve both wayfinding and safety purposes including:

- Helping to familiarize users with the bikeway system;



Figure 115: Wayfinding signs are an integral component of the bicycle and trail network.



- Helping users identify the best routes to destinations;
- Helping to address misperceptions about travel time and distance; and
- Helping overcome a “barrier to entry” for people who do not bicycle often and who fear becoming lost.

Wayfinding signs are a relatively cost-effective means for improving the walking and bicycling environment. Signs are typically placed at key locations leading to and along bicycle routes, including the intersection of multiple routes.

Marion should create a community-wide Bicycle Wayfinding Signage Plan that identifies:

- Sign locations along existing and planned bicycle routes;
- Sign type – what information should be included and what is the sign design;
- Destinations to be highlighted on each sign – key destinations for bicyclists; and
- Approximate distance and riding time to each destination.

General cost estimates for wayfinding signage have been incorporated into each recommended bikeway project to establish a comprehensive wayfinding system that connects destinations in and around the City of Marion. The wayfinding system can utilize MUTCD guidance with branded elements that identify regional and local network facilities and distinguish signature trails and network elements.

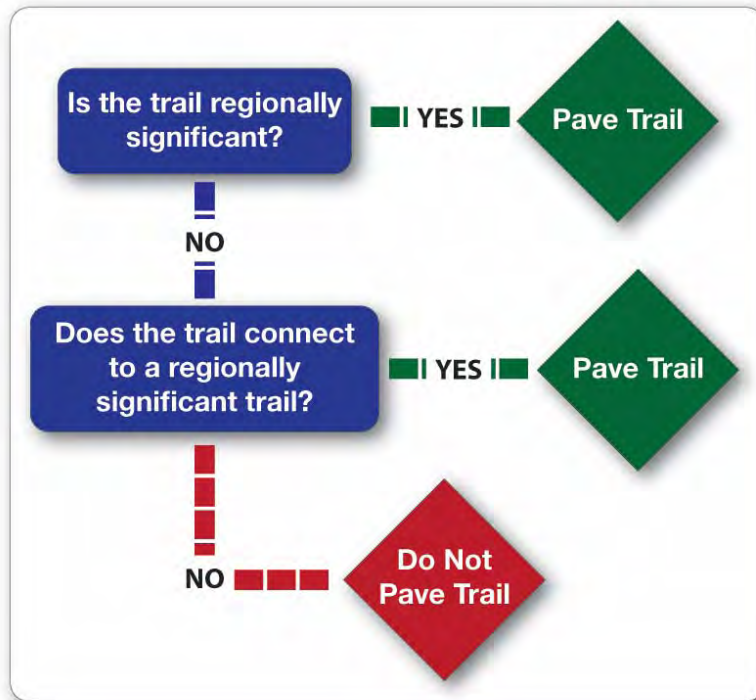
## **Trail Surface Diversity and Upgrades**

As the Marion Trail Network continues to grow, it will be necessary to evaluate existing and potential use of each trail corridor and balance the needs of various trail users. Trail surface type is a significant determinant for trail user type. Paved multi-use trails provide for the greatest diversity of users, including recreational cyclists, transportation cyclists, walkers, joggers, dog walkers, runners, persons with mobility assistance devices, and in-line skaters.

Unpaved multi-use trails, which utilize a crushed stone aggregate such as crushed limestone, also provide a firm, stable surface that can accommodate many of the same users; however, when wet and saturated, the surface is subject to rutting, pocking, and pooling, and can even experience significant washout in larger flooding events. Wet surfaces on a granular trail and the associated spatter can also reduce desirability for transportation.

Natural surface trails accommodate even fewer users, as their design and construction are not restricted by ADA standards such as width, running slope, cross slope, obstructions, and turning radii. These trails appeal most to mountain bikers, hikers, walkers, and trail runners, many of whom appreciate their natural terrain and aesthetic, as well as the challenges inherent in the trails themselves (tight switchbacks, grade changes, etc.). Other trail users, such as cross country skiers and equestrians, have unique needs with regard to trail characteristics. There may be opportunities to accommodate such users on trail facilities developed as a result of this plan; however, these categories of trail users are not intended design users for the purposes of this Plan.

While it is important to balance the needs of all trail users, the growth of the trail system will provide opportunities to create an accessible, interconnected network of trail facilities that functions for transportation and recreation purposes. Network gaps will be closed, trails will be connected, and new trails will expand the reach of the Marion Trail Network, tying the City to the region’s growing trail system. In order to improve accessibility and provide for a diversity of user types, paved multi-use trails should replace granular trails that are regionally significant or connect to regional trails. The following flow chart displays the brief process through which the City can determine if a new or existing trail facility should be paved.



**Figure 116: Trail Surface Flow Chart**

It should be noted that this flow chart does not apply to natural surface trails, such as single track hiking and mountain biking trails. These trails are generally recreational in nature and serve a more narrow range of users than a typical shared use path, paved or unpaved. Natural surface trails should be developed and preserved to provide a diversity trail types that serve residents and visitors alike. As Marion continues to grow, areas for future development of natural surface trails should be identified that offer unique user experiences and enhance the City’s offerings of recreational opportunities. The City should consider natural surface trails in future parklands, in existing parks and open spaces, and as spurs and loops that originate along larger multi-use trails. Where space is limited, pocket bike parks can provide compact yet diverse offering of bike trails and facilities for both mountain bikers and BMX bikers. Comparable to skate parks for skateboarders, inline skaters and BMX bikers, these pocket bike parks often include a mixture of skill development areas, pump tracks, jump tracks, flow trails, and other features that help introduce visitors to the basics of mountain biking in a fun, inviting and accessible environment.





## Bicycle Parking

Just like motor vehicles, bicycles require space to be parked when not in use. Without a safe and convenient place to secure their bicycles, many people will choose a different mode of transportation or recreation, or a different destination altogether. In order to provide high-quality bicycle parking facilities, the City of Marion should develop a Bicycle Parking Program with the dual purpose of supplying safe and convenient bike parking at public facilities and assisting other public institutions and private businesses in providing bike parking as well. Because bicycle parking facilities vary widely in terms of design, functionality, and quality, a Bike Parking Program could also afford some level of control over the aesthetics, quality, and uniformity of bike racks throughout Marion. In addition to basic bike racks, the City should also consider bike corrals in locations with high demand for bicycle parking. Bike corrals, often in a repurposed motor vehicle parking space, provide secure parking for multiple bicycles. A single motor vehicle parking space can be converted to provide parking for up to ten bicycles. While bike corrals are most often permanent installations, they can also be installed on a temporary basis to accommodate bicycle parking at farmer's markets, parades, and other large events. Additional guidance for bicycle parking can be found in the Association of Pedestrian and Bicycle Professionals' *Bicycle Parking Guidelines, 2nd Ed.* (2010), available online at:

<http://www.apbp.org/?page=publications>.

## Sidewalk Infill

Sidewalks should be considered an important extension of the Trail Network. For most residents in Marion, sidewalks provide that vital connection from their front door to the trail system. While Marion's sidewalk network is very comprehensive, spot replacement of deteriorated sidewalks and targeted sidewalk infill can reduce gaps in the sidewalk network, increase compliance with ADA standards, and expand the reach of the sidewalk and trail networks.

The City of Marion Sidewalk Advisory Committee, consisting of seven members appointed by the mayor, are charged with identifying properties without sidewalks and prioritizing areas in need of sidewalks. These high-priority sidewalk projects are then included as part of the Engineering Department's work program. Separate from the Sidewalk Advisory Committee, the City of Marion also operates a sidewalk inspection program to identify deficient sidewalks throughout the City and notify property owners to replace these sidewalks, as is their responsibility according to Chapter 141 of the Code of Ordinances.



Figure 118: Simple staple racks, or "inverted U" racks, provide cyclists with the necessary security and stability to properly lock their bicycles.



Figure 117: Bike corrals can help remove bicycles and bicycle parking areas from the pedestrian realm and free up space for outdoor dining and other activities.



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## Chapter Six: Four E's Programs and Activities

This chapter presents possible programs that the City can explore to support the Master Trails Plan, and bicycling and walking in the City of Marion. Programmatic recommendations follow a multi-disciplined strategy that incorporates the four “E’s”: education, encouragement, enforcement and evaluation, which work in unison with engineering to gain acceptance of walking and bicycling as viable modes of transportation, as well as recreational activities. City promotion of bicycling and walking will support the implementation of the Master Trails Plan and build momentum for walking, bicycling and trail facilities as vital community assets.

The majority of recommended programs require some level of partnership between the City and other government agencies, local non-profits, school districts, advocacy groups, or even private businesses. The City may use its discretion in implementing the recommended programs as budget, partnerships, and staff time permit.

### Education Programs

Education programs provide the opportunity for children and adults to learn safe bicycling and walking skills. Safe Routes to School is a popular program that incorporates walking and bicycling skills into school curriculums. Local advocacy groups offer bicycle skill classes for adults.

### Safe Routes to School Program

Safe Routes to School is multi-disciplined program which is comprised of much more than just education, it includes sub-programs commonly referred to as the 4 E's: education, encouragement, enforcement and evaluation. Successful Safe Routes to School programs implement all four sub-programs.

Successful Safe Routes to School Programs require support and leadership from the school district, individual schools, and Parent-Teacher Associations. Once a program has been established in the schools, the City may provide assistance by constructing infrastructure improvements and providing bicycle and pedestrian safety programs supported by police, parks and recreation staff and other city departments.

**Recommendation:** This City is encouraged to work with the school district and Iowa Bike Coalition to develop school specific Safe Routes to School programs that includes Marion Health Services and other interested stakeholders. Possible low cost first steps are to promote National Bike to School Day in May, as well as International Walk to School Day, which is the first Wednesday in October. Federal and State Safe Routes to School grants provide program and infrastructure funding annually.

**Sample Program:** More information about the National Center for Safe Routes to School can be found at the website below.

<http://www.saferoutesinfo.org/>



*Figure 119: Parents provide important input for a successful Safe Routes to School program.*





## Adult Bicycle Education

**Purpose:** Adult bicycle education is a critical part of encouraging people to ride their bikes. It is also important for motorists to know how to interact with bicyclists on roadways and at trail crossings. Skills training for adults is critical to educate bicyclists and motor vehicle users on safe interaction of travel modes. Typically, a local advocacy group or trained city staff teaches bicycle skills and rules of the road classes.

**Recommendation:** This Master Trails Plan recommends the City to explore working with the Iowa Bicycle Coalition and League of American Bicyclists to provide adult bicycle education classes for City of Marion residents. The classes could be hosted at one of the Marion park facilities, or City Hall. The City should also consider shorter bike education classes, educational rides, and educational material distributed at events throughout the City, which can supplement formal classes and reach a wider audience.

**Sample Program:** League of American Bicyclist Cycle Safe, TS 101 or TS201 training. More information about these training programs can be found using the links below.

<http://bikeleague.org/ridesmart>

<http://bikeed.org/>



Figure 120: A cycling instructor leads participants through the League of American Bicyclists' Cycle Safe training course.

## Safety Campaign

**Purpose:** Creating awareness of bicycling and walking and promote safety for all road and/or trail users.

**Description:** A marketing campaign that highlights bicyclist and pedestrian safety is an important part of creating awareness. Communities can utilize a variety of media outlets to reach the general public or focus on a target audience, including billboards, print, bus shelters, radio, television, online advertising, and social media. Safety campaigns can be an effective way to reach the general public and reinforce other education and outreach messages. A well-produced safety campaign will be memorable and effective.

### Sample Programs:

Bike Pittsburgh's Drive with Care, Pittsburgh, PA:

<http://bikepgh.org/care/>

Bike Cleveland's Ride Together Cleveland, Cleveland, OH:

<http://www.bikecleveland.org/what-we-do/public-awareness/>

Street Smart Pedestrian & Bicycle Safety Campaign, Washington, D.C.:

<https://www.mwcog.org/transportation/activities/planning/safety.asp>

Florida Department of Transportation's "Alert Today, Alive Tomorrow":

<http://www.alerttodayflorida.com/atat.html>



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## Encouragement Campaigns and Programs

### Walk and Bike to Health Campaign

**Purpose:** Encourage healthy lifestyles through making choices such as bicycling and walking for transportation and recreation.

**Description:** The Walk and Bike to Health Campaign would integrate current efforts with new activities to promote exercise and active lifestyles. Such a program would offer ample opportunities to partner with the Marion Blue Zones Project and build upon their efforts to encourage healthy and active lifestyles. This campaign could include some of the following events/outreach:

- Organized walks/bike rides to the Farmers' Market.
- Regular walks from Senior Centers coordinated with classes and events.
- A table at the Farmers' Market and other local events providing information about walking, bicycling, and transit routes in Marion, as well as resources for bicycling such as helmet, light, or bell giveaways.

**Sample Program:** Find thirty. It's not a big exercise®

<http://www.find30.com.au/>

### Senior Bicycling and Walking Programs

**Purpose:** Encourage and educate seniors about walking and bicycling.

**Description:** Seniors often experience limitations in mobility as they age. Programs designed to increase walking and bicycling can help seniors maintain independence and mobility, improve health, and provide an opportunity for social interaction. A senior walking and bicycling program may include any of the following components:

- Group walks and bicycle rides developed in coordination with senior centers and assisted living facilities.
- Coordinating with local bicycle shops and/or advocacy organizations to provide comfort bicycles and/or adult tricycles that are easy for seniors to use in light of balance, strength, or comfort issues.
- Bicycling maps at senior centers.
- Senior participation in Safe Routes to Schools programs (e.g. crossing guard or Walking School Bus volunteer).
- Targeted infrastructure investments aimed at senior mobility problems.
- Policy and traffic operations changes to assist seniors, such as increased walk cycle time and Leading Pedestrian Intervals (LPIs) that allow pedestrians to begin crossing before other traffic proceeds.

**Sample Programs:**

Portland Safe Routes to Senior Centers Program:

<http://www.streetfilms.org/archives/portland-or-older-adults-bike-program/> (video)

Transportation Alternatives' Safe Routes for Seniors Program:

<http://www.transalt.org/campaigns/pedestrian/safeseniors>

<http://www.aarp.org/livable-communities/Plan/planning/info-2013/safe-routes-for-seniors.html>

<http://walksteps.org/tactics/create-a-safe-routes-for-seniors-program/>



## Bicycling and Walking Maps

**Purpose:** Encourage residents and visitors to bike and walk on Marion trails and local bikeways by providing route and facility information and highlighting walking and bicycling destinations and connections in a convenient and attractive format.

**Description:** Maps offer a chance to encourage residents and visitors to walk and bicycle through the City and on local and regional trails. An information-based Trail Map, which highlights unique historic landmarks throughout the City would connect the trail plan to the rich history of the area. The map can be developed so it also focuses on existing amenities, services, shopping districts, parks and community gardens. Bicycle facilities and trails, when implemented, can be added to the map as they are developed. Mountain bike and hiking trails should be included as important recreation destinations.

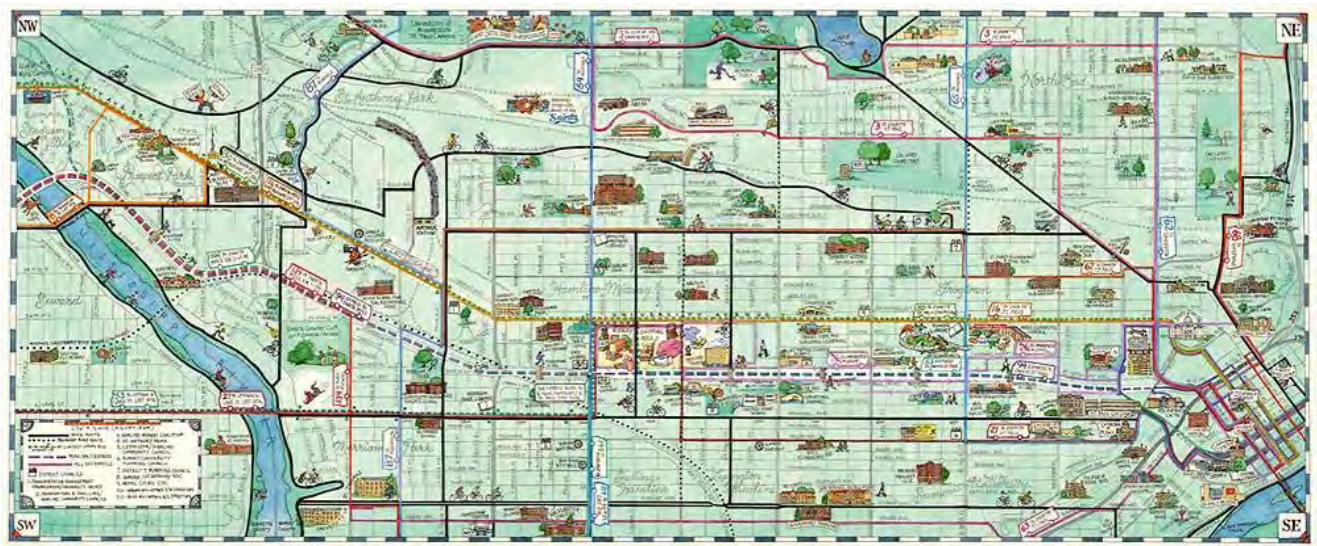


Figure 121: St. Paul Smart Trips Map showing bicycle and pedestrian destinations (Source: <http://www.smart-trips.org/maps.php>).

This information could be made into a brochure, which could be printed on paper or made available online as an interactive map to promote bicycling and walking. Once the map is produced, it should be made available online and should be made available at City Hall, the Lowe Park Arts and Environment Center, recreation centers, local bike shops, and community events. The bike map can also be promoted through flyers in utility bills, city newsletters, and other community media outlets. The map should be updated every few years to incorporate new bikeways or other changes.

### Sample Programs/Maps:

Des Moines Bicycle Collective Trail Map:

[http://dsmbikecollective.org/wp/wp-content/uploads/2013/05/ALL\\_DesMoines-2013.pdf](http://dsmbikecollective.org/wp/wp-content/uploads/2013/05/ALL_DesMoines-2013.pdf)

Great Rivers Greenway Bike St. Louis Map:

[http://www.greatriversgreenway.org/Portals/0/Bike%20St%20Louis%20Map/2013BikeStLouis\\_2%202013.pdf](http://www.greatriversgreenway.org/Portals/0/Bike%20St%20Louis%20Map/2013BikeStLouis_2%202013.pdf)





## Bike Light and Helmet Giveaways

**Purpose:** To increase bicycling safety and overcome barriers by providing free or low-cost bicycling gear, such as helmets and bike lights, to those in need or those riding without appropriate safety equipment.

**Description:** Free or low-cost helmets are a great way to address bicycling safety in a low-income community. Not having a helmet may be a barrier to bicycling for some, while others may ride without a helmet because the cost is prohibitive. As part of a larger community event or in schools, helmets can be offered to adults and children for free or at a reduced cost. A helmet giveaway should include education on how to properly fit and wear a helmet, as well as information on when to replace an old helmet. Local or regional bike shops or interested groups may sponsor the program to get free or discounted helmets.

A bike light safety promotion program provides free bike lights to bicyclists. Lights are given out at dusk at dangerous intersections or on commonly used routes, promoting visibility and enhancing safety for everyone on the road. Programs often have memorable names such as “Get Lit” or “Lights On”, and many take place in the fall to coincide with the end of daylight savings time or back to school time.

Both types of programs can be launched jointly with a safety awareness campaign.

### Sample Programs:

Iowa City has launched a ticket diversion program. Bicyclists without lights are given a ticket, but if they choose to buy a light set at a participating bike retailer, the ticket is voided. \$90 ticket, or \$35 lights.

Community Cycling Center “Get Lit” Program, Portland, OR:

<http://www.communitycyclingcenter.org/index.php/programs-for-adults/get-lit/>

Bike Pittsburgh Pop-Up Bike Light Giveaway, Pittsburgh, PA:

<http://bikepgh.org/2013/09/30/pop-up-bike-light-giveaway/>

## Bike to Work Day/Week/Month

**Purpose:** Bike to Work Day, Week, and Month activities will demonstrate the City’s dedication to bicycling and reducing greenhouse gas emissions and a healthy and active community.

**Description:** Energizer stations provide snacks and promotional items to the biking commuters, and they are a great way to encourage people to bicycle to work on Bike to Work Day. Held on the third Friday in May, Bike to Work Day is merely one day of celebrating bicycling to work, but the whole month as Bike to Work Month.

Increased participation in Bike to Work month activities will demonstrate the City’s dedication to bicycling and reducing greenhouse gas emissions and a healthy and active community.

Additional activities may include:



Figure 122: Walk Bike Marin's Lights On! campaign helped equip bicyclists with the proper head lamps and tail lights to effectively and safely bicycle at night.



- City hosting an energizer station in Downtown, which may include a speech from a local prominent figure, touting the benefits of bicycling to work.
- Developing a Bike to Work Challenge in partnership with the Iowa Bicycle Coalition, a contest between employers to ride the most miles to work in May.
- Organized bike rides to destinations throughout the City that familiarize area residents with preferred bike routes.

#### Sample Programs:

Cascade Bike Club Bike Month Activities, Seattle, WA:

<http://www.cascade.org/bikemonth>

Trailnet Bike to Work Month Activities, St. Louis, MO:

<http://trailnet.org/work/bicycling/bike-work-day-month/>

Trailnet's Shift Your Commute Program:

<http://shiftyourcommute.com/>

League of American Bicyclists' National Bike Challenge:

<https://nationalbikechallenge.org>

## Open Streets Events

**Purpose:** Encourage walking and biking by providing a car-free street event.

**Description:** These programs have many names: Summer Streets, Sunday Parkways, Ciclovias, and Sunday Streets. Open Streets are periodic street closures that create a temporary park that is open to the public for walking, bicycling, dancing, hula hooping, roller skating, etc. They have been very successful internationally and are rapidly becoming popular in the United States. Open streets events promote health by creating a safe and attractive space for physical activity and social contact, and are cost-effective compared to the cost of building new parks for the same purpose. These events can be weekly or one-time events, and are generally very popular and well-attended. The City can explore the feasibility of hosting a Saturday or Sunday Street event Downtown. Marion's Downtown offers a variety of shopping and entertainment opportunities for participants. An Open Streets event on Saturday could be hosted in coordination the City's Saturday morning farmers' market at the City Square Park on 7th Avenue.



*Figure 123: A Sunday Parkways event in Portland, OR provides fun and engaging activities for the whole family.*

#### Sample Programs:

Open Streets in Decorah, IA:

<http://www.decorahopenstreets.com/learn-more/>



Ferguson Sunday Parkways, Ferguson, MO:  
<http://www.livewellferguson.com/sundayparkways.shtml>

DSMove, Des Moines, IA:  
<http://dsmove.org/>

## Bicycle and Pedestrian Section of the City Website

**Purpose:** Provide resource for residents and businesses for bicycling information, activities and on line maps.

**Description:** As part of the Master Trails Plan development, the City developed and hosted an online mapping tool that can evolve into an ongoing website element offering a central location for implementation updates, schedule of activities, information about city programs and events, bicycle safety and educational materials, online maps of planned and implemented bicycle and pedestrian routes, links to partner and sponsor websites, and a public input form. The ongoing website section is a valuable resource for residents to learn more about walking and bicycling in Marion, and the region. In addition, the website can solicit ongoing public input regarding the state of bicycling and walking in Marion.

**Sample Websites:**

City of Seattle, WA:  
<http://www.seattle.gov/transportation/bikemaster.htm>

City of Minneapolis, MN:  
<http://www.ci.minneapolis.mn.us/bicycles/>



Figure 124: The City of Seattle's website offers a wide variety of information to encourage bicycling for transportation and recreation.

## Safety and Enforcement

### Bicycle and Pedestrian Related Targeted Enforcement

**Purpose:** Targeted enforcement is an effective way of encouraging lawful behavior in traffic and can focus on a specific issue that may increase the potential for bicycle and pedestrian related collisions. Motorists are not the only roadway users endangering bicyclists and pedestrians, however. Bicyclists who ride the wrong way or ride at night without proper lights and reflective materials, and pedestrians who cross midblock where no marked crosswalk exists also increase the potential for collisions.

**Description:** The Police Department can provide targeted enforcement at schools, particularly along roadways where speeding motorists have been an ongoing issue. The Police Department can routinely stop bicyclists riding the wrong way and provide educational information to offenders in safe bicycling and walking.





## Speed Reader Board Deployment / Yard Sign Lender Program

**Purpose:** Reduce speeding on neighborhood streets.

**Description:** Speeding vehicles endanger bicyclists and pedestrians, and discourage bicycling and walking. A yard sign lender program provides signs to neighbors and schools that have messages such as, “Slow Down! Look for Kids & Seniors,” “Stop for Pedestrians,” and “Look for Bikes: Pass Safely.” The signs remind drivers to travel at appropriate speeds and to watch for vulnerable road users.

**Sample Programs:**

Yard sign lender program, Portland, OR:

<http://www.portlandoregon.gov/transportation/article/141759>

Speed trailer program, Mahwah, NJ:

<http://www.mahwahpd.org/Cit-e-Access/webpage.cfm?TID=65&TPID=6831>



Figure 125: Volunteers for the Atlanta-based PEDS advocacy group pass out yard signs at a neighborhood event.

## Evaluation and Planning

### Bicycle and Pedestrian Collision Analysis

**Purpose:** Analyzing bicycle collision data provides the City with the locations and causes of bicycle and pedestrian related collisions, which helps the City to determine the appropriate facility improvements that may increase safety.

**Recommendation:** This Plan recommends the City analyze bicycle and pedestrian collision data annually. The City may use this analysis as a baseline to compare future analyses.

### Bicycle and Pedestrian Counts

**Purpose:** Bicycle and pedestrian count data is important for understanding collision rates, activity levels, infrastructure needs, and level of effectiveness of a project. Marion has only done limited trail counts to collect bicycle and pedestrian counts on a regular basis.

**Description:** Develop a volunteer program that supports count activities on trails and bikeways to increase bicycle and pedestrian count data, as well as include bicycle and pedestrian counts as part of all traffic counts. While the Linn Count Trails Association has a trail counts program, administering a separate program under the purview of the City of Marion would ensure that bicycle and pedestrian activity on local trails and on-street bikeways is documented. The City should establish a database of



Figure 126: Manual trail counts like these can capture a variety of useful demographic information, including age, gender, helmet usage, group dynamics, and race.



bicycle and pedestrian counts, and coordinate with the Iowa Department of Transportation, Linn County Trails Association, Corridor MPO, and the City of Cedar Rapids for trail count information.

**Resources:**

National Bicycle and Pedestrian Documentation Project:

<http://bikepeddocumentation.org/>

## **Bicycle and Pedestrian Survey**

**Purpose:** Track walking and bicycle opinions and trends; measure success of the Master Trails Plan.

**Description:** Explore the administering of a bicycle and pedestrian survey and analyze its results every two years. The National Bicycle and Pedestrian Documentation project provides sample questionnaires, recommended survey dates and administration instructions.

**Resources:**

National Bicycle and Pedestrian Documentation Project:

<http://bikepeddocumentation.org/>

## **Student Travel Tally and Parent Surveys**

**Purpose:** Identify school issues, parental attitudes and inform the City and the school districts about the percentage of children walking and bicycling to school. This will provide key safe routes to school performance measure.

**Recommendation:** This Master Trails Plan recommends the City explore working with the school district in conducting a student hand tally survey at the beginning of the school year. The National Center for Safe Routes to School provides a sample student hand tally surveys.

**Sample Program:** More information about the student travel tallies and parent surveys can be found at the National Center for Safe Routes to School website below.

<http://www.saferoutesinfo.org/>



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## Chapter Seven: Plan Implementation

### Introduction

This Plan provides a comprehensive set of trail and on-street bicycle improvement projects that, once constructed, will allow Marion residents and visitors to walk and bike more often for more types of trips. The order in which projects in this Plan are constructed will depend on many factors, including budget and grant availability, community support and local government policies.

Given the present day economic challenges faced by the City of Marion and communities throughout the United States, it can be difficult to develop an accurate implementation program; however, the set of diverse and comprehensive recommendations put forth in this Plan provide a range of projects, programs, policies, and actions to improve Marion's trail network. This Plan is a vision and a guide to the future. It seeks to forecast what Marion should do in order to develop a complete, connected, and safe trail and bikeway network; increase opportunities for recreation and alternative transportation; and add to the quality of life that makes the City of Marion a great place to live. With this charge firmly in mind, the following text provides a comprehensive implementation strategy to realize the goals and objectives set forth in this Plan.

### Early Action Steps

The following early action steps should be undertaken to begin Plan implementation and set the foundation for future progress:

#### **Step 1: Adopt the Plan**

Adopting the Plan is an important step, not just for its symbolic value representing the City's commitment to trails, but also for its policy value as a guiding document for future capital investments and land use decisions. The adoption procedures vary from community to community, depending on existing policies and procedures. The City of Marion should undertake a formal adoption process and incorporate this Plan as a supplemental document supporting the Comprehensive Plan.

#### **Step 2: Designate Bicycle and Pedestrian Coordinator**

A bicycle and pedestrian coordinator functions as primary point of contact for trails and bicycle and pedestrian issues - a liaison between City departments, elected officials, outside agencies and organizations, and the public. The recommendation to designate a bicycle and pedestrian coordinator does not suggest hiring additional staff, but rather identifying a current staff member to assume these responsibilities. This staff person will not be solely responsible for all Plan implementation activities; instead, the coordinator ensures that each department responsible for projects, programs, and activities recommended in the Plan is completing said responsibilities in a timely and efficient manner. The Plan recommends that the bicycle and pedestrian coordinator position to be housed within the City of Marion Planning Department at an associate planner level position.



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### **Step 3: Form a Bicycle and Pedestrian Advisory Committee**

Creating a Bicycle and Pedestrian Advisory Committee will ensure that key stakeholders, agencies and organizations are involved in the implementation of the Plan. Members of the Steering Committee for the planning process should be invited to serve on the Bicycle and Pedestrian Advisory Committee, along with other leaders throughout the community, including public safety representatives, the Marion Blue Zones Project, the Marion Chamber of Commerce, and Corridor Running Club. This new committee should be a forum for leaders to convene periodically and discuss implementation progress, keep members up-to-date on trail-related projects throughout the region, share resources and tools, and maintain momentum for trails as important recreation and transportation assets. Key duties of the committee should include the following:

- Champion for implementing the Master Trails Plan;
- Advise the City on plan implementation;
- Facilitate cooperation among local agencies and jurisdictions;
- Identify and recommend sources of funding; and
- Monitor plan implementation through various performance measures.

The committee can also function as a conduit to the community at-large, sharing information about implementation progress and achievements and directing residents and visitors to the appropriate resources and information.

### **Step 4: Complete Funded Projects**

Marion and its regional partners have applied for and received funding for more than nine miles of sidepaths (constructed as part of larger roadway projects) and trails in Marion, each of which is in various stages of project development. Many of these projects are regionally significant, including the CEMAR Trail, the Grant Wood Trail Highway 13 undercrossing, and the Grant Wood Trail extension westward to 35th Street. The completion of these projects will be a significant accomplishment for the City of Marion and demonstrate its commitment to walking and bicycling.

### **Step 5: Pursue Short-Term, Low-Cost Projects**

There are a number of low-cost on-street bikeways and short trail and sidepath segments that can be implemented in the near-term and have a significant impact on the Marion Trail and On-Street Bikeway Network. These projects, listed further below in this section of the Plan, are located within the city limits, directly connect to existing or funded trails or bikeways, and have a high-end cost estimate of \$120,000 or less. The completion of these projects will immediately expand the network and eliminate gaps between existing facilities.

## **Policy Recommendations**

### **Complete Streets Ordinance**

A complete streets ordinance codifies a jurisdiction's desire and intent to plan, design, operate, and maintain streets in order to enable safe, comfortable and convenient travel for users of all ages and abilities, regardless of their mode of transportation. While ten communities in Iowa have endorsed complete streets through policy statements, resolutions, or adopted plans, only the City of Cedar Falls has adopted a complete streets ordinance. Unlike resolutions and policy statements, an ordinance provides greater strength and accountability, ensuring that the adopting agency has clear procedures to address and incorporate all modes of transportation in roadway projects. The Cedar Falls Complete Streets Ordinance is provided in the appendix for reference. In addition, Marion should look to the National Complete Streets Coalition, whose *Complete Streets Local Policy Workbook* provides the



basic building blocks for local agencies to craft a complete streets ordinance that meets their specific values and needs. The workbook and other valuable resources can be accessed at [www.completestreets.org](http://www.completestreets.org).

## Bicycle Parking Ordinance

While the expansion of the Trail and On-Street Bikeway Network will draw additional bicyclists, the lack of convenient, accessible, and secure bicycle parking may deter residents and visitors from taking bicycle trips to local businesses, parks, schools, and other destinations in the community. While bicycle parking can encourage bicycle trips, the City Code does not require bicycle parking for new developments or major renovations. A bicycle parking ordinance would require a certain number of bicycle parking spaces for new development and major renovations based on land use classification. A model bicycle parking ordinance has been included in the appendix for reference. The Association of Pedestrian and Bicycle Professionals' *Bicycle Parking Guide, 2nd Ed.* (2010) should be consulted for additional guidance related to rack selection, installation, and maintenance.

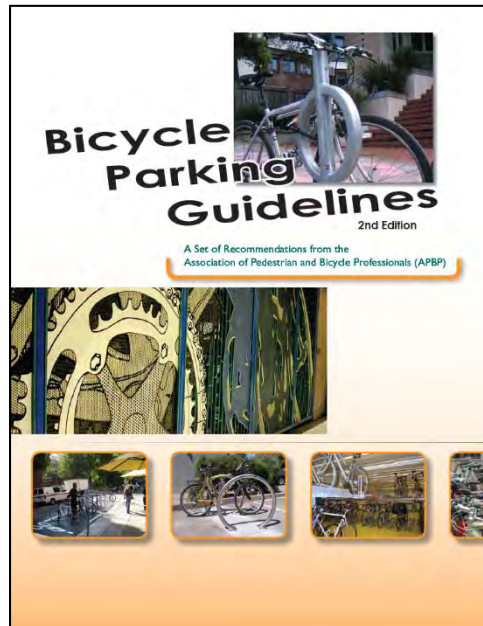


Figure 127: Bicycle Parking Guidelines, 2nd Ed.

## Trail and Open Space Land Bank

Land banking involves land acquisition in advance of expanding urbanization. The price of an open space parcel prior to development pressures is more affordable to a jurisdiction seeking to preserve open space. A city or county might use this technique to develop a greenbelt or preserve key open space or agricultural tracts. With a definite and overt purpose of land banking to acquire undeveloped land and riparian corridors for open space and trail development, the City of Marion can assemble important properties both within the current city limits and in future growth areas that will function as valuable public spaces for years to come.





## Project Prioritization

The recommended trail and on-street bikeway projects represent Marion’s ambitious efforts to create a comprehensive and well-connected on-street and greenway network serving users of all types and abilities. The 93 recommended trail and on-street bikeway projects, which total more than 130 miles, will significantly expand Trail and On-Street Bikeway Network. In order to determine which projects can bring the greatest benefit to Marion residents and to the Trail Network, a series of network evaluation criteria were developed in conjunction with the project steering committee to prioritize and group proposed projects into three basic categories:

- Level 1: High-Priority Projects
- Level 2: Medium-Priority Projects
- Level 3: Low-Priority Projects

Each of the sixteen network evaluation criteria correspond directly with goals and objectives in the Plan. Projects that scored highly in the prioritization process meet multiple plan goals and objectives, such as connecting Marion to regional trail facilities, removing gaps in the trail network, providing trail and bicycle facilities that accommodate a wide variety of trail users, and supporting economic activity in Uptown Marion and other commercial areas throughout the City. The network evaluation criteria are listed in Table 8 below.

**Table 8: Network Evaluation Criteria**

Network Evaluation Criteria	Corresponding Objective
Number of local destinations within 1/4-mile of segment.	1.1
Regional significance of segment. (Is the segment a regional priority as identified through this Plan and/or previous planning efforts? Does the segment connect to an existing or planning regional trail facility?)	1.2
Number of outside agencies, organizations and/or stakeholders involved with segment implementation.	1.3
Does the facility include wayfinding signage and/or trailhead facilities?	1.4
Can/does the facility meet ADA and PROWAG standards?	2.1
Number of potential user types that can utilize facility.	2.2
May be used by trail users from 8 to 80 years old with a diverse range of skill levels.	2.3
Ability to address crossings, eliminate or minimize conflict.	2.5
Connects to Uptown Marion. Connects to other commercial areas. Connects to regional employment centers and commercial destinations.	3.1
Signature, highly visible element of the network.	3.2
Facility type.	4.1
Does the facility accommodate multiple user types? Does the facility create an enjoyable recreation experience for intended users?	4.2
Does the facility provide or improve opportunities to connect residents to the natural environment?	4.4
Durability and lifecycle of proposed facility surface type.	5.2
Closes segment gap. Closes service area gap. Expands trail network.	5.4
Overlaps with planned capital improvement(s). Within primary, secondary, or tertiary growth areas identified in the City's Land Use Plan.	5.6



Each segment of the Trail and On-Street Bikeway Network has been evaluated and scored using these sixteen criteria. The resulting scores were then used to rank and group the recommended segments into three priority levels: high-priority projects, medium-priority projects, and low-priority projects. These priority levels are not intended to rigidly divide the projects into exclusive groups, nor are they intended to direct project phasing. Instead, these priority levels provide insight into which projects will have the most significant impact on the community and help accomplish the Plan goals and objectives.

## High-Priority Projects

Twelve individual high-priority projects totaling more than 23 miles are recommended in the Plan. Most of these projects are regionally significant or connect to regional trails; all but one are off-street, paved trails that accommodate a variety of trail user types and bicyclists with a wide range of skill levels; and all can be used comfortably for both recreation and transportation purposes. These high-priority projects reflect the community’s desire for more off-street trails that will connect existing trails and expand Marion’s Trail and On-Street Bikeway Network to connect to other regional trails in adjacent communities. It is important to note that not all projects are within Marion’s jurisdiction; it is therefore imperative that the City strive to create and sustain partnerships to develop local and regional trails and on-street bikeways. The following table lists these high-priority projects:

**Table 9: High-Priority Projects**

Facility Type	Corridor	From	To	Length (mi)
Paved Multi-use Trail	Dry Creek Trail	Boyson Trail	Council St	2.43
Paved Multi-use Trail	Highway 100	Marion City Limit	Highway 13	3.66
Paved Multi-use Trail	Highway 13	Highway 100	Prairie Chapel Rd	6.18
Paved Multi-use Trail	Indian Creek Trail	10th St	Tower Terrace Rd	1.16
Paved Multi-use Trail	Indian Creek Trail	Boyson Trail	Boyson Rd	0.95
Paved Multi-use Trail	Marion Railroad Trail	31st St	35th St	0.25
Paved Multi-use Trail	Marion Railroad Trail Bridges	Lindale Trail	Cemar Trail	0.21
Paved Multi-use Trail	Squaw Creek Trail	Sac & Fox Trail	Marion City Limit	5.24
Paved Multi-use Trail	Squaw Creek Trail	Grant Wood Trail	29th Ave	1.62
Paved Multi-use Trail	Squaw Creek Trail	Grant Wood Trail	Marion City Limit	0.49
Paved Multi-use Trail	Squaw Creek Village Connector	50th St	Highway 13	0.39
Sidepath	Marion Central Corridor	7th St	31st St	1.22
<b>Total Miles</b>				<b>23.80</b>

## Medium-Priority Projects

There are a total of 32 medium-priority projects recommended in the Plan, comprising 30.57 miles of off-street trails and on-street bikeways, as identified in Table 10 on the following page. These medium-priority projects will help to expand the Marion Trail and On-Street Bikeway Network throughout the City, connecting Marion residents and visitors to both regional trails and local destinations. As a group, these projects differ from the high-priority projects described above in a number of ways. Most noticeably, fewer of these projects are regionally significant; instead, many focus on creating neighborhood connections and providing trails and bikeways in areas slated for future growth and development. These projects extend further from the heart of Marion and are in undeveloped areas. Those projects that are within the developed areas of Marion are primarily on-street facilities like bike boulevards and sidepaths.



**Table 10: Medium-Priority Projects**

Facility Type	Corridor	From	To	Length (mi)
Bike Boulevard	12th St - 17th Ave - 27th St	1st Ave	29th Ave	2.37
Bike Boulevard	3rd Ave	1st St	31st St	1.64
Paved Multi-use Trail	40th Street Connector	40th Street	Cemar Trail Spur	0.12
Paved Multi-use Trail	Boyson Trail	Boyson Rd	Lowe Park	1.96
Paved Multi-use Trail	Hanna Park-11th St Connector	Boyson Trail	11th St	0.35
Paved Multi-use Trail	Highway 100 Connector	Highway 100	The Marketplace on 1st	0.29
Paved Multi-use Trail	Indian Creek - 25th Ave Connector	Indian Creek Rd	Indian Creek Trail	0.11
Paved Multi-use Trail	Lindale - Dry Creek Connector	Lindale Trail	Dry Creek Trail	0.22
Paved Multi-use Trail	Lindale Trail - 8th Ave Connector	8th Ave	Lindale Trail	0.04
Paved Multi-use Trail	Parkview-Boyson Trail Connector	Boyson Trail	Parkview Dr	0.15
Paved Multi-use Trail	Squaw Creek / 31 St Connector	Squaw Creek Trail	31st St	0.78
Sidepath	10th St	Tower Terrace Rd	Outer Loop Trail	3.65
Sidepath	10th St	6th Ave	McGowan Blvd	0.74
Sidepath	10th St	McGowan Blvd	North of Indian Creek Rd	0.07
Sidepath	1st St - 6th Ave - CEMAR Connector	Future Cemar Trail / Marion Blvd	3rd Ave	0.13
Sidepath	29th Ave	Highland St	Highway 13	1.06
Sidepath	31st St	8th Ave	1st Ave	0.45
Sidepath	31st St	Grand Avenue	South of Hwy 100	0.25
Sidepath	7th Avenue	35th St	50th St	0.90
Sidepath	Alburnett Road Trail	Boyson Rd	7th Ave	0.82
Sidepath	Highway 100	Twixt Town Rd	Western Marion City Limit	0.57
Sidepath	Indian Creek Rd	Stone Creek Rd	Tower Terrace Rd	0.35
Sidepath	Irish Dr	Tower Terrace Rd	Williams Rd / Lowe Park	0.52
Sidepath	Irish Dr	Tower Terrace Rd	Existing Irish Dr / Gill Park	0.14
Sidepath	Lindale Dr	Twixt Town Rd	8th Ave	0.59
Sidepath	Lucore Rd	Indian Creek Rd	Outer Loop Trail	3.27
Sidepath	Tower Terrace Rd	Alburnett Rd	C Ave	1.76
Sidepath	Tower Terrace Rd	35th St	Highway 13	1.42
Sidepath	Tower Terrace Rd	10th Street	Lennon Lane	0.62
Sidepath	Twixt Town Rd	Lindale Dr	Collins Rd	0.20
Unpaved Multi-use Trail	Dry Creek	Mentzer Rd	Outer Loop Trail / 10th St	4.55
Unpaved Multi-use Trail	Indian Creek Trail	South of Boyson Rd	East of 10th St	0.48
Bike Boulevard	12th St - 17th Ave - 27th St	1st Ave	29th Ave	2.37
<b>Total Miles</b>				<b>32.14</b>





## Low-Priority Projects

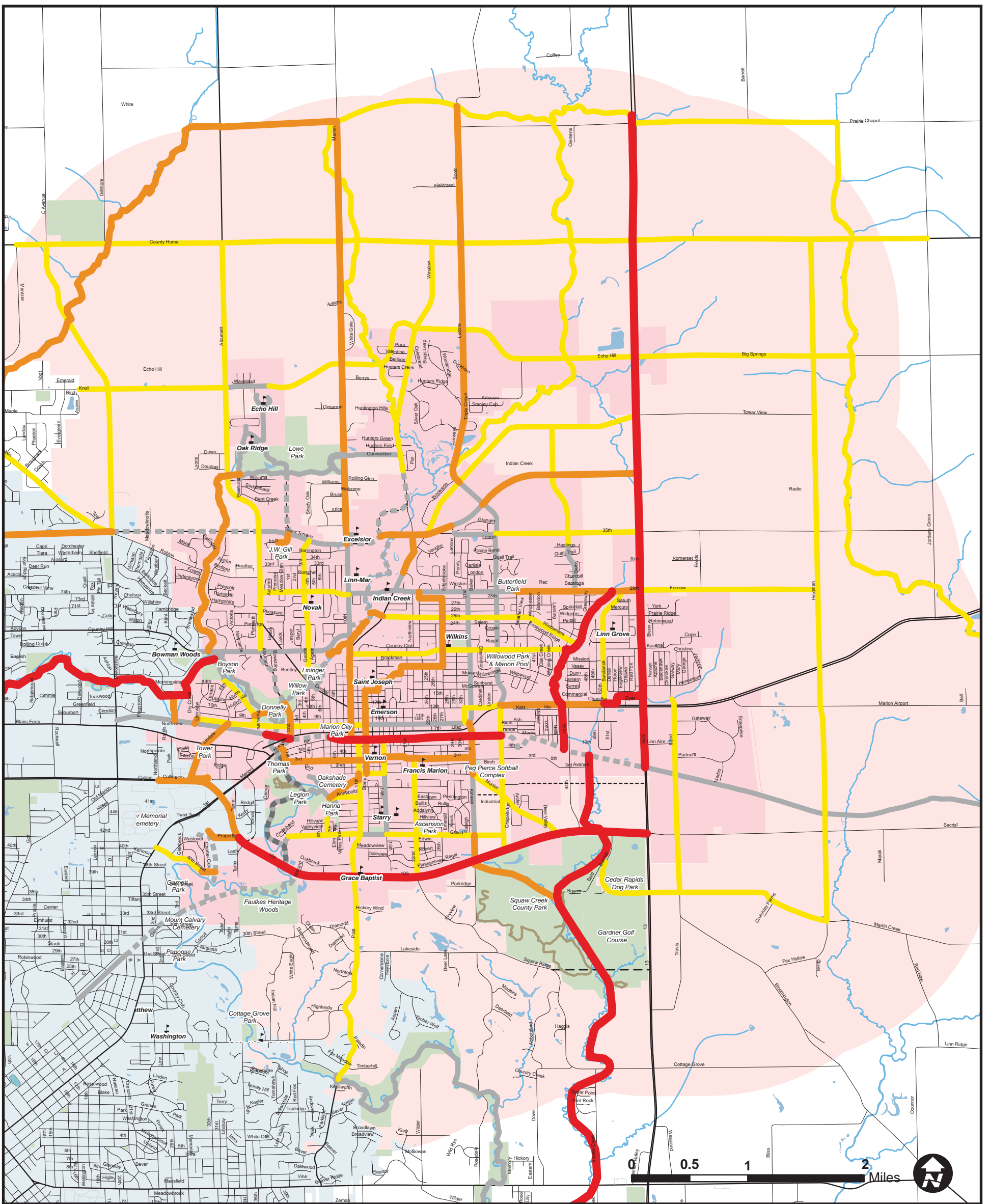
There are a total of 49 low-priority projects recommended in the Plan, consisting of more than 77 miles of off-street trails and on-street bikeways. Like the medium-priority projects, these low-priority projects, which are listed below in Table 11, also focus on enhancing connectivity to the regional trail network and expanding the local network into local neighborhoods and future growth areas. Given the long-range nature of this Plan, it is necessary to identify opportunities for trail development and on-street bike facilities into sparsely-populated areas of the City and further into the City's 2-mile planning area for future growth (shown in the Prioritized Trails and Bikeways Maps as a lighter pink color around the City). While development in the future growth area may not occur for five, ten, or even twenty years, it is important that the City of Marion consider how capital improvements like trails, on-street bikeways, and pedestrian paths will serve these areas in the future. These recommended low-priority projects can be incorporated into capital improvements and future land development. When this plan is updated, it will be important to revisit these low-priority projects, determine if they still provide the benefit and level of service as initially intended, and revise as necessary.

**Table 11: Low-Priority Projects**

Facility Type	Corridor	From	To	Length (mi)
Bike Boulevard	22nd St	Grand Ave	3rd Ave	0.66
Bike Boulevard	3rd St - Geode St	Alburnett Rd Sidepath	Tower Terrace Rd	1.17
Bike Boulevard	40th Street	1st Ave	Charter Oak	0.46
Bike Boulevard	50th St	7th Ave / 10th Ave	29th Ave	1.03
Bike Boulevard	6th St	Grand Ave	Hanna Park	0.14
Bike Boulevard	Grand Ave	Western terminus	11th St	0.61
Bike Boulevard	Krumboltz	Hanna Park / Boyson Trail	11th St	0.25
Bike Boulevard	Parkview	8th Ave	Boyson Trail	0.48
Bike Boulevard	Windemere Way	Indian Creek Rd	Squaw Creek Trail	1.74
Bike Lane	22nd St	Grand Ave	Highway 100	0.36
Bike Lane	35th St	Highway 100	7th Ave	1.25
Bike Lane	8th Ave	Lindale Trail	12th St	1.18
Bike Lane	Alburnett Rd	Boyson Rd	County Home Rd	3.63
Bike Lane	C Ave	Echo Hill Rd	County Home Rd	1.39
Bike Lane	C Ave	Tower Terrace Rd	Echo Hill Rd	1.24
Bike Lane	East Post Rd	Sac & Fox Trail	Marion City Limit	1.43
Bike Lane	East Post Rd	Southern City Limit	Grand Ave	0.77
Bike Lane	Grand Ave	15th St	35th St	1.00
Paved Multi-use Trail	Indian Creek Rd	Lucore Rd	Tower Terrace Rd	0.53
Shared Lane Markings	10th Ave	30th St	35th St	0.31
Shared Lane Markings	11th St	6th Ave	Grand Ave	0.81
Shared Lane Markings	15th St	6th Ave	1st Ave	0.29
Shared Lane Markings	1st Ave	11th St	15th St	0.22
Shared Lane Markings	29th Ave	Alburnett Rd	10th St	0.76
Shared Lane Markings	30th St	8th Ave	10th Ave	0.13
Shared Lane Markings	Banner Dr	Highway 13	Squaw Creek Trail	0.70
Shared Lane Markings	McGowan Blvd	10th St	Squaw Creek Trail	1.86



Shared Lane Markings	West 8th Ave	Lindale Trail Connector	Lindale Dr	0.27
Shoulder Bikeway	62nd St	Martin Creek Rd	Hennessey	1.79
Shoulder Bikeway	County Home Rd	Mentzer Rd	Jordans Grove	7.83
Shoulder Bikeway	Hindman Rd	Martin Creek Rd	County Home Rd	5.86
Shoulder Bikeway	Martin Creek Rd	Highway 13	Hindman Rd	1.60
Shoulder Bikeway	Prairie Chapel Rd	Highway 13	Crabapple Creek Trail	1.76
Sidepath	35th Ave	35th St	Highway 13	1.23
Sidepath	44th St Sidepath	Hastings	Tower Terrace Rd	0.63
Sidepath	44th Street	Indian Creek Rd	Tower Terrace Rd	0.41
Sidepath	Big Springs Rd	Highway 13	Crabapple Creek Trail	1.87
Sidepath	Echo Hill Rd	10th St	Highway 13	2.87
Sidepath	Echo Hill Rd	Alburnett Rd	Robins City Limit	1.26
Sidepath	Echo Hill Rd	Echo Hill Elementary	10th St	0.68
Sidepath	Fernow Rd	Hindman Rd	Highway 13	1.53
Sidepath	Indian Creek Rd	Lucore Rd	Highway 13	1.75
Sidepath	Main St	C Ave	Robins City Limit	0.66
Sidepath	Munier Rd	31st St	Highway 100	0.86
Sidepath	Winslow Road	County Home Rd	North of Tower Terrace Rd	2.28
Unpaved Multi-use Trail	Berry's Run Trail	Winslow Rd	Outer Loop Trail	3.02
Unpaved Multi-use Trail	Crabapple Creek Trail	Prairie Chapel Rd	Grant Wood Trail	7.84
Unpaved Multi-use Trail	Indian Creek Trail	Lucore Rd	Outer Loop Trail	4.00
Unpaved Multi-use Trail	Outer Loop Trail	10th St / Dry Creek Trail	Highway 13	2.85
<b>Total Miles</b>				<b>76.93</b>



# MARION MASTER TRAILS PLAN

## PRIORITIZED TRAILS AND ON-STREET BIKEWAYS

### Network Prioritization

- High-Priority Projects
- Medium-Priority Projects
- Low-Priority Projects
- Existing Trails and Bikeways
- - - Funded Trails and Bikeways
- - - - Funded Paving Projects (CeMar Trail)

### Roadway Network

- Access Road
- Local
- Collector
- Arterial
- Freeway
- Freeway Ramp
- - - Proposed Collector
- - - - Proposed Arterial

### Municipalities

- Marion
- Cedar Rapids
- Marion Growth Area

### Areas of Interest

- School
- Park

### Natural Features

- Creeks
- Bodies of Water



Author: KN, Alta Planning + Design | Date: June, 2014  
 Data Sources: City of Marion, Linn County, Iowa DNR,  
 Corridor MPO, Iowa DOT





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## Cost Estimates

Cost estimates are an essential planning tool used for programming capital improvements and drafting applications for external funding sources. A project cost range for each type of on-street bikeway facility is listed in Table 12 below. These estimates were developed based on initial planning-level examples of similar constructed projects and industry averages. These costs were then refined with the assistance of the City of Marion Engineering Department. All facility designs and associated cost estimates proposed in this plan are conceptual in nature and should undergo final engineering design and review through coordination between all concerned departments in order to arrive at detailed project costs. These costs are provided in 2014 dollars and do not include costs for right-of-way acquisition.

**Table 12: Cost Estimates for Trail and Bikeway Facility Types**

Facility Type	Unit Price (Per Mile)	Notes
<b>Paved Multi-Use Path</b>	\$500,000 - \$2,000,000	The cost for paved multi-use trails can vary significantly based on path width, surface type (asphalt, concrete, pervious asphalt, pervious concrete, etc.), buffer, bridge structures, soil conditions, earthwork, grading, base, retaining walls, utilities, signs, and supporting amenities like benches, lighting, and landscaping.
<b>Unpaved Multi-Use Trail</b>	\$50,000 - \$250,000	Like paved multi-use trails, unpaved trails can vary widely in cost, but are generally less expensive. Factors that influence the cost of unpaved trails include path width, buffer, bridge structures, soil conditions, earthwork, grading, base, retaining walls, utilities, signs, and supporting amenities like benches, lighting, and landscaping.
<b>Sidepath</b>	\$400,000 - \$550,000	The most influential factors affecting the cost of sidepath construction are width and number of curb cuts and intersection crossings. When programmed and constructed as part of a larger capital improvement, like a new roadway or roadway reconstruction, as is often the case in Marion, the costs will be lower than if the sidepath were to be constructed independently.
<b>Bike Lanes</b>	\$40,000 - \$50,000	Assumes 2 bicycle lane lines and 30 symbols per mile on each side of the roadway; 20 regulatory and route signs per mile. Does not include striping removal or pavement costs.
<b>Bicycle Boulevard</b>	\$50,000 - \$100,000	Assumes 30 pavement markings per mile on each side of the roadway, 20 bike route signs per mile, and traffic calming and/or traffic diverting features such as curb extensions, median refuge island, stop sign reconfiguration, mini traffic circles, and similar physical improvements.
<b>Shared Lane Marking</b>	\$20,000 - \$30,000	Assumes 30 shared lane marking symbols per mile on each side of the roadway, and 20 bike route signs per mile.
<b>Shoulder Bikeway</b>	\$15,000 - \$280,000	The cost of shoulder bikeways is heavily dependent on the need to construct new shoulders or pave existing gravel shoulders. If paved shoulders already existing, only pavement markings and signage will be necessary. If no shoulders are present, or shoulders are gravel only, additional excavation, aggregate base, shoulder paving and striping will be necessary.



Table 13 and Table 14 apply these cost estimates to the recommended projects, which are grouped by facility type and by priority level, respectively. A more detailed table in the appendix of this Plan provides cost estimates for each individual facility.

**Table 13: Cost Estimates by Facility Type**

Facility Type	Total Projects	Total Length (mi)	Price (Low)	Price (High)
<b>Paved Multi-Use Path*</b>	21	27.13	\$21,460,000	\$65,840,000
<b>Unpaved Multi-Use Trail</b>	6	22.74	\$1,137,000	\$5,685,000
<b>Sidepath</b>	32	34.76	\$13,904,000	\$18,249,000
<b>Bike Lanes</b>	9	12.25	\$490,000	\$612,500
<b>Bicycle Boulevard</b>	11	10.55	\$527,500	\$1,055,000
<b>Shared Lane Marking</b>	9	5.35	\$107,000	\$160,500
<b>Shoulder Bikeway</b>	5	18.84	\$282,600	\$5,275,200
<b>Totals</b>	<b>93</b>	<b>131.62</b>	<b>\$37,908,100</b>	<b>\$96,877,200</b>

\* Includes an estimated \$8 - \$12 million for Marion Railroad Trail Bridge spans over Marion Boulevard and Indian Creek.

**Table 14: Cost Estimates by Priority Level**

Priority Level	Total Projects	Total Length (mi)	Price (Low)	Price (High)
<b>High Priority Projects*</b>	12	23.80	\$19,673,000	\$57,380,500
<b>Medium Priority Projects</b>	32	30.57	\$9,466,000	\$18,891,250
<b>Low Priority Projects</b>	49	77.25	\$8,769,100	\$20,605,450
<b>Totals</b>	<b>93</b>	<b>131.62</b>	<b>\$37,908,100</b>	<b>\$96,877,200</b>

\* Includes an estimated \$8 - \$12 million for Marion Railroad Trail Bridge spans over Marion Boulevard and Indian Creek.





## Project Phasing

### Short-Term, Low-Cost Projects

Many of the projects identified in the Plan, such as longer segments of paved multi-use trails and sidepaths, will require considerable design and coordination, as well as funding availability and procurement. There are, however, a number of low-cost projects that can act as catalysts for Plan implementation and build support for the City's efforts to expand the Trail and On-Street Bikeway Network. The short-term, low-cost projects identified below consist of on-street bicycle facilities like shared lane markings, bicycle boulevards, and bike lanes, as well as shorter segments of multi-use trails and sidepaths. On-street bicycle facilities like shared lane markings, bicycle boulevards, and bike lanes are particularly important in the early stages of plan implementation for their low cost per linear mile and minimal engineering and design work in comparison to off-street trails. Each of these projects is located within the City of Marion, connects to an existing or funded trail or on-street bikeway, and has a high-end cost estimate of less than \$120,000. These short-term, low-cost projects are listed below in Table 15 and displayed on Map 4 on page 101.

**Table 15: Recommended Short-Term Projects**

Facility Type	Corridor	From	To	Length (mi)	Cost Low	Cost High
Bike Boulevard	3rd St - Geode St	Alburnett Rd	Tower Terrace Rd	1.17	\$58,500	\$117,000
Bike Boulevard	6th St	Grand Ave	Hanna Park	0.14	\$7,000	\$14,000
Bike Boulevard	Grand Ave	Western terminus	11th St	0.61	\$30,500	\$61,000
Bike Boulevard	Krumboltz	Hanna Park / Boyson Trail	11th St	0.25	\$12,500	\$25,000
Bike Boulevard	Parkview	8th Ave	Boyson Trail	0.48	\$24,000	\$48,000
Bike Lane	35th St	Highway 100	7th Ave	1.25	\$50,000	\$62,500
Bike Lane	8th Ave	Lindale Trail	12th St	1.18	\$47,200	\$59,000
Bike Lane	East Post Rd	City Limit	Grand Ave	0.77	\$30,800	\$38,500
Bike Lane	Grand Ave	15th St	35th St	1.00	\$40,000	\$50,000
Paved Multi-use Trail	Lindale Trail - 8th Ave Connector	8th Ave	Lindale Trail	0.04	\$20,000	\$80,000
Shared Lane Markings	10th Ave	30th St	35th St	0.31	\$6,200	\$9,300
Shared Lane Markings	11th St	6th Ave	Grand Ave	0.81	\$16,200	\$24,300
Shared Lane Markings	15th St	6th Ave	1st Ave	0.29	\$5,800	\$8,700
Shared Lane Markings	1st Ave	11th St	15th St	0.22	\$4,400	\$6,600
Shared Lane Markings	29th Ave	Alburnett Rd	10th St	0.76	\$15,200	\$22,800
Shared Lane Markings	30th St	8th Ave	10th Ave	0.13	\$2,600	\$3,900
Shared Lane Markings	McGowan Blvd	10th St	Squaw Creek Trail	1.86	\$37,200	\$55,800
Shared Lane Markings	West 8th Ave	Lindale Trail Connector	Lindale Dr	0.27	\$5,400	\$8,100
Sidepath	10th St	McGowan Blvd	n/o Indian Creek Rd	0.07	\$28,000	\$36,750
Sidepath	Irish Dr	Tower Terrace Rd	Existing Irish Dr / Gill Park	0.14	\$56,000	\$73,500
Unpaved Multi-use Trail	Indian Creek Trail	South of Boyson Rd	East of 10th St	0.48	\$24,000	\$120,000
<b>Totals:</b>				<b>12.23</b>	<b>\$521,500</b>	<b>\$924,750</b>



## Long-Term, Opportunities-Based Projects

Continued growth and expansion of the Marion Trail and On-Street Bikeway Network beyond the above-referenced short-term, low-cost projects will occur as funding is available, as new development and aging infrastructure drive new capital improvements, and as other opportunities arise. These projects are a mixture of low-cost projects located further from existing trail facilities, and higher-cost projects that will require a convergence of driving factors, such as strong public support, funding availability, and synergistic developments and/or capital improvements. These long-term, opportunities-based projects are described below in Table 16.

**Table 16: Recommended Long-Term, Opportunities-Based Projects**

Facility Type	Corridor	From	To	Length (mi)	Cost Low	Cost High
Bike Boulevard	12th St - 17th Ave - 27th St	1st Ave	29th Ave	2.37	\$118,500	\$237,000
Bike Boulevard	22nd St	Grand Ave	3rd Ave	0.66	\$33,000	\$66,000
Bike Boulevard	3rd Ave	1st St	31st St	1.64	\$82,000	\$164,000
Bike Boulevard	40th Street	1st Ave	Charter Oak	0.46	\$23,000	\$46,000
Bike Boulevard	50th St	7th Ave / 10th Ave	29th Ave	1.03	\$51,500	\$103,000
Bike Boulevard	Windemere Way	Indian Creek Rd	Squaw Creek Trail	1.74	\$87,000	\$174,000
Bike Lane	22nd St	Grand Ave	Highway 100	0.36	\$14,400	\$18,000
Bike Lane	Alburnett Rd	Boyson Rd	County Home Rd	3.63	\$145,200	\$181,500
Bike Lane	C Ave	Echo Hill Rd	County Home Rd	1.39	\$55,600	\$69,500
Bike Lane	C Ave	Tower Terrace Rd	Echo Hill Rd	1.24	\$49,600	\$62,000
Bike Lane	East Post Rd	Sac & Fox Trail	Marion City Limit	1.43	\$57,200	\$71,500
Paved Multi-use Trail	40th Street Connector	40th Street	Cemar Trail Spur	0.12	\$60,000	\$240,000
Paved Multi-use Trail	Boyson Trail	Boyson Rd	Lowe Park	1.96	\$980,000	\$3,920,000
Paved Multi-use Trail	Dry Creek Trail	Boyson Trail	Council St	2.43	\$1,215,000	\$4,860,000
Paved Multi-use Trail	Hanna Park-11th St Connector	Boyson Trail	11th St	0.35	\$175,000	\$700,000
Paved Multi-use Trail	Highway 100	Marion City Limit	Highway 13	3.66	\$1,830,000	\$7,320,000
Paved Multi-use Trail	Highway 100 Connector	Highway 100	The Marketplace on 1st	0.29	\$145,000	\$580,000
Paved Multi-use Trail	Highway 13	Highway 100	Prairie Chapel Rd	6.18	\$3,090,000	\$12,360,000
Paved Multi-use Trail	Indian Creek - 25th Ave Connector	Indian Creek Rd	Indian Creek Trail	0.11	\$55,000	\$220,000
Paved Multi-use Trail	Indian Creek Rd	Lucore Rd	Tower Terrace Rd	0.53	\$265,000	\$1,060,000
Paved Multi-use Trail	Indian Creek Trail	10th St	Tower Terrace Rd	1.16	\$580,000	\$2,320,000
Paved Multi-use Trail	Indian Creek Trail	Boyson Trail	Boyson Rd	0.95	\$475,000	\$1,900,000

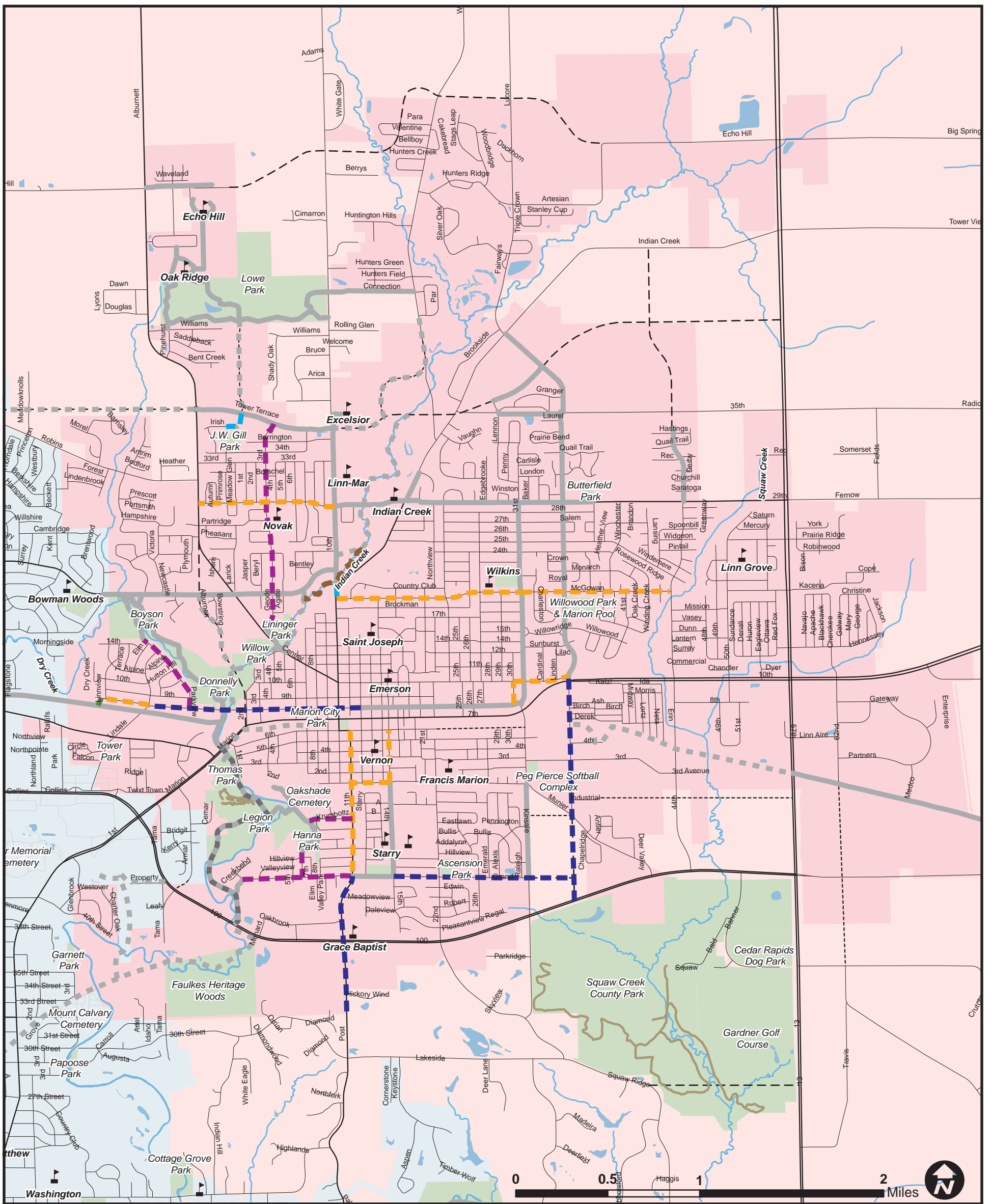


Paved Multi-use Trail	Lindale - Dry Creek Connector	Lindale Trail	Dry Creek Trail	0.22	\$110,000	\$440,000
Paved Multi-use Trail	Marion Railroad Trail	31st St	35th St	0.25	\$125,000	\$500,000
Paved Multi-use Trail	Marion Railroad Trail Bridges	Lindale Trail	Cemar Trail	0.21	\$8,000,000	\$12,000,000
Paved Multi-use Trail	Parkview-Boyson Trail Connector	Boyson Trail	Parkview Dr	0.15	\$75,000	\$300,000
Paved Multi-use Trail	Squaw Creek Trail	Sac & Fox Trail	Squaw Creek Park	4.92	\$2,460,000	\$9,840,000
Paved Multi-use Trail	Squaw Creek Trail	Grant Wood Trail	29th Ave	1.62	\$810,000	\$3,240,000
Paved Multi-use Trail	Squaw Creek Trail	Grant Wood Trail	Squaw Creek Park	0.81	\$405,000	\$1,620,000
Paved Multi-use Trail	Squaw Creek Village Connector	50th St	Highway 13	0.39	\$195,000	\$780,000
Paved Multi-use Trail	Squaw Creek/31 St Connector	Squaw Creek Trail	31st St	0.78	\$390,000	\$1,560,000
Shared Lane Markings	Banner Dr	Highway 13	Squaw Creek Trail	0.70	\$14,000	\$21,000
Shoulder Bikeway	62nd St	Martin Creek Rd	Hennessey	1.79	\$26,850	\$501,200
Shoulder Bikeway	County Home Rd	Mentzer Rd	Jordans Grove	7.83	\$117,450	\$2,192,400
Shoulder Bikeway	Hindman Rd	Martin Creek Rd	County Home Rd	5.86	\$87,900	\$1,640,800
Shoulder Bikeway	Martin Creek Rd	Highway 13	Hindman Rd	1.60	\$24,000	\$448,000
Shoulder Bikeway	Prairie Chapel Rd	Highway 13	Crabapple Creek Trail	1.76	\$26,400	\$492,800
Sidepath	10th St	Tower Terrace Rd	Outer Loop Trail	3.65	\$1,460,000	\$1,916,250
Sidepath	10th St	6th Ave	McGowan Blvd	0.74	\$296,000	\$388,500
Sidepath	1st St - 6th Ave - CEMAR Connector	Future Cemar Trail / Marion Blvd	3rd Ave	0.13	\$52,000	\$68,250
Sidepath	29th Ave	Highland St	Highway 13	1.06	\$424,000	\$556,500
Sidepath	31st St	8th Ave	1st Ave	0.45	\$180,000	\$236,250
Sidepath	31st St	Grand Avenue	South of Hwy 100	0.25	\$100,000	\$131,250
Sidepath	35th Ave	35th St	Highway 13	1.23	\$492,000	\$645,750
Sidepath	44th St Sidepath	Hastings	Tower Terrace Rd	0.63	\$252,000	\$330,750
Sidepath	44th Street	Indian Creek Rd	Tower Terrace Rd	0.41	\$164,000	\$215,250
Sidepath	7th Avenue	35th St	50th St	0.90	\$360,000	\$472,500
Sidepath	Alburnett Road Trail	Boyson Rd	7th Ave	0.82	\$328,000	\$430,500
Sidepath	Big Springs Rd	Highway 13	Crabapple Creek Trail	1.87	\$748,000	\$981,750
Sidepath	Echo Hill Rd	10th St	Highway 13	2.87	\$1,148,000	\$1,506,750
Sidepath	Echo Hill Rd	Alburnett Rd	Robins City Limit	1.26	\$504,000	\$661,500
Sidepath	Echo Hill Rd	Echo Hill Elementary	10th St	0.68	\$272,000	\$357,000





Sidepath	Fernow Rd	Hindman Rd	Highway 13	1.53	\$612,000	\$803,250
Sidepath	Highway 100	Twixt Town Rd	Western Marion City Limit	0.57	\$228,000	\$299,250
Sidepath	Indian Creek Rd	Lucore Rd	Highway 13	1.75	\$700,000	\$918,750
Sidepath	Indian Creek Rd	Stone Creek Rd	Tower Terrace Rd	0.35	\$140,000	\$183,750
Sidepath	Irish Dr	Tower Terrace Rd	Williams Rd / Lowe Park	0.52	\$208,000	\$273,000
Sidepath	Lindale Dr	Twixt Town Rd	8th Ave	0.59	\$236,000	\$309,750
Sidepath	Lucore Rd	Indian Creek Rd	Outer Loop Trail	3.27	\$1,308,000	\$1,716,750
Sidepath	Main St	C Ave	Robins City Limit	0.66	\$264,000	\$346,500
Sidepath	Marion Central Corridor	7th St	31st St	1.22	\$488,000	\$640,500
Sidepath	Munier Rd	31st St	Highway 100	0.86	\$344,000	\$451,500
Sidepath	Tower Terrace Rd	Alburnett Rd	C Ave	1.76	\$704,000	\$924,000
Sidepath	Tower Terrace Rd	35th St	Highway 13	1.42	\$568,000	\$745,500
Sidepath	Tower Terrace Rd	10th Street	Lennon Lane	0.62	\$248,000	\$325,500
Sidepath	Twixt Town Rd	Lindale Dr	Collins Rd	0.20	\$80,000	\$105,000
Sidepath	Winslow Road	County Home Rd	North of Tower Terrace Rd	2.28	\$912,000	\$1,197,000
Unpaved Multi-use Trail	Berry's Run Trail	Winslow Rd	Outer Loop Trail	3.02	\$151,000	\$755,000
Unpaved Multi-use Trail	Crabapple Creek Trail	Prairie Chapel Rd	Grant Wood Trail	7.84	\$392,000	\$1,960,000
Unpaved Multi-use Trail	Dry Creek	Mentzer Rd	Outer Loop Trail / 10th St	4.55	\$227,500	\$1,137,500
Unpaved Multi-use Trail	Indian Creek Trail	Lucore Rd	Outer Loop Trail	4.00	\$200,000	\$1,000,000
Unpaved Multi-use Trail	Outer Loop Trail	10th St / Dry Creek Trail	Highway 13	2.85	\$142,500	\$712,500
<b>Totals:</b>				<b>119.39</b>	<b>\$37,386,600</b>	<b>\$95,952,450</b>



# MARION MASTER TRAILS PLAN

## SHORT-TERM, LOW-COST PROJECTS

<b>Short-Term, Early Action Projects</b> <ul style="list-style-type: none"> <li><span style="color: green;">■ ■ ■ ■</span> Paved Multi-Use Trail</li> <li><span style="color: brown;">■ ■ ■ ■</span> Unpaved Multi-Use Trail</li> <li><span style="color: blue;">■ ■ ■ ■</span> Sidepath</li> <li><span style="color: blue;">■ ■ ■ ■</span> Bike Lane</li> <li><span style="color: purple;">■ ■ ■ ■</span> Bike Boulevard</li> <li><span style="color: orange;">■ ■ ■ ■</span> Shared Lane Marking</li> </ul>		<b>Existing and Funded Trails and On-Street Bikeways</b> <ul style="list-style-type: none"> <li><span style="color: gray;">— — — —</span> Existing Trails and On-Street Bikeways</li> <li><span style="color: lightgray;">— — — —</span> Funded Trails and On-Street Bikeways</li> <li><span style="color: darkgray;">■ ■ ■ ■</span> Funded Paving Projects (Cemar Trail)</li> </ul>	
<b>Roadway Network</b> <ul style="list-style-type: none"> <li><span style="color: gray;">—</span> Access Road</li> <li><span style="color: black;">—</span> Local</li> <li><span style="color: black;">—</span> Collector</li> <li><span style="color: black;">—</span> Arterial</li> <li><span style="color: orange;">—</span> Freeway</li> <li><span style="color: orange;">—</span> Freeway Ramp</li> <li><span style="color: black;">- - -</span> Proposed Collector</li> <li><span style="color: black;">- - -</span> Proposed Arterial</li> </ul>	<b>Municipalities</b> <ul style="list-style-type: none"> <li><span style="color: pink;">■</span> Marion</li> <li><span style="color: lightblue;">■</span> Cedar Rapids</li> <li><span style="color: lightpink;">■</span> Marion Growth Area</li> </ul>	<b>Areas of Interest</b> <ul style="list-style-type: none"> <li><span style="color: black;">▲</span> School</li> <li><span style="color: green;">■</span> Park</li> </ul>	<b>Natural Features</b> <ul style="list-style-type: none"> <li><span style="color: blue;">—</span> Creeks</li> <li><span style="color: lightblue;">■</span> Bodies of Water</li> </ul>



Author: KN, Alta Planning + Design | Date: June, 2014  
 Data Sources: City of Marion, Linn County, Iowa DNR, Corridor MPO, Iowa DOT



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## Project Information Sheets

In order to assist the City with implementation of the Master Trails Plan, project information sheets have been developed for six individual projects to provide additional details and a unique, project-specific map and/or graphic. With considerable input from City staff and the steering committee, the following six projects were identified:

- Squaw Creek Trail – Grant Wood Trail to Squaw Creek Park
- 12 St – 17th Ave – 27th St Bicycle Boulevard – 1st Ave to 29th Ave
- Marion Railroad Trail – 31st St to 35th St
- Marion Railroad Trail Bridges
- Grand Avenue Bicycle Boulevard & Bike Lanes – Cemar Trail to 35th St
- 3rd Avenue Bicycle Boulevard – 1st St to 31st St

Please refer to the larger system maps for each project’s context within the Marion Trail and On-Street Bikeway Network.



## Squaw Creek Trail – Grant Wood Trail to Squaw Creek County Park

### Project Overview

The Grant Wood Trail and Squaw Creek County Park are two significant regional destinations. Despite their close proximity, there is no convenient, safe and enjoyable connection between the two. Similarly, many community members have expressed a desire for a better, more direct connection to Squaw Creek County Park from Uptown Marion and other city neighborhoods. With the future expansion of the Grant Wood Trail westward under Highway 13 to 35th Street already funded, Squaw Creek provides an ideal riparian corridor to connect these two destinations.

### Recommended Improvements

A ten to twelve foot wide paved multi-use trail is recommended to provide this vital connection. This trail facility type will provide a comfortable, accessible, and enjoyable experience for both recreation and transportation users.

### Project Cost Range

Off-street multi-use trails range in cost based on a variety of factors, including surface type, path width, grading, retaining walls, bridge structures, trail amenities and other features. Initial conceptual-level cost estimates range from \$405,000 to \$1,620,000.

### Corridor Map





## 12 St / 17th Ave / 27th St Bicycle Boulevard – 1st Ave to 29th Ave

### Project Overview

Uptown Marion and the neighborhoods to the north and south benefit from a strong grid network of streets, with short blocks, wide tree lawns, mature street trees, and well-connected sidewalks. A well-marked, highly-visible, bike boulevard on 12th Street, 17th Avenue, 27th Street, and other local streets can increase connectivity to and from Uptown Marion, neighborhood schools, and a host of institutional and cultural destinations. The project will also tie into a proposed trailhead at City Park, which will serve as a hub for the local network of trails and bikeways.

### Recommended Improvements

Bicycle boulevard pavement markings, unique wayfinding signage, and traffic calming features to create an environment that prioritizes bicycle movements and calms and/or diverts motor vehicle traffic. These traffic calming features are determined during the design and engineering phases of project development.

### Project Cost Range

Bike boulevards can range considerably in cost depending on the amount and type of traffic calming improvements incorporated at the design and engineering phase of project development. Initial conceptual-level estimates of cost range from \$118,500 to \$237,000.

### Project Corridor Map



### Project Corridor Images







## Marion Railroad Trail Bridges

### Project Overview

The Marion Railroad Trail Bridges over Marion Boulevard and Indian Creek will represent a critical component of the trail network. As trail facilities, they will be an integral link to Uptown Marion from the Lindale Trail and Cedar Rapids to the west. They will also function as a gateway into Marion for both trail users who travel on the bridge, and over 22,000 motorists traveling under the bridge on Marion Boulevard. These bridges will be the most visible elements of the entire trail network and will strengthen Marion's image as a desirable destination for regional trail users and recreational tourists alike.

### Corridor Map



### Project Information

The steel stringer bridge over 7th Ave and the plate girder bridge over Indian Creek are both abandoned and are in the City's possession. For most of their functional life, these double track bridges held two parallel sets of tracks and could carry the weight of two trains passing in opposite directions. These wide bridges now provide ample room for a multi-use path, as well as additional space for an elevated park or open space. A number of communities have begun to transform elevated railways and bridges into parks, trails and open spaces, including St. Louis, Missouri and Chicago, Illinois. The repurposing of these bridges for linear trail and park space will create a unique user experience unparalleled in Iowa.

### Project Images



### Project Cost Range

Bridge rehabilitation costs can vary widely depending on the condition of the bridge and the necessity for and extent of structural repairs. Using cost estimates for a similar elevated railway/bridge conversion project, a conceptual-level cost for the development of an elevated trail and park space ranges from \$8-\$12 million.



### Conceptual Images from Similar Projects





## Marion Railroad Trail – 31st St to 35th St

### Project Overview

This segment of the Marion Railroad Trail will bring the Grant Wood Trail one step closer to reaching Uptown Marion. While an extension of the Grant Wood Trail westward under Highway 13 to 35th Street is already funded, this project will take the trail an additional quarter mile west to 31st Street, where it will connect with a planned extension of 6th Avenue and into Uptown Marion.

### Recommended Improvements

A ten to twelve foot wide paved multi-use trail is recommended to provide this vital connection. This trail facility type will provide a comfortable, accessible, and enjoyable experience for both recreation and transportation users.

### Project Cost Range

Off-street multi-use trails range in cost based on a variety of factors, including surface type, path width, grading, retaining walls, bridge structures, trail amenities and other features. Initial conceptual-level cost estimates for this project range from \$125,000 to \$500,000. The lack of topographical challenges or stream crossings through this corridor should keep project costs near the low end of this range.

### Project Corridor Images



### Project Corridor Map







## Grand Avenue Bicycle Boulevard & Bike Lanes – Cemar Trail to 35th St

### Project Overview

Grand Avenue is another important east-west corridor for bicycle and pedestrian travel in Marion. Existing destinations along the corridor include Hanna Park and its trails, Starry and Ascension Parks, Starry Elementary, Marion High School, and commercial destinations at East Post Rd and Grand Ave. A combination of bike lanes and a bicycle boulevard treatment will improve local connectivity and will help facilitate regional connectivity from the Cemar Trail eastward to Squaw Creek County Park.

### Recommended Improvements

A combination of a bicycle boulevard treatment (from Cemar Trail to East Post Road) and bike lanes (from East Post Road to 35th Street) will provide a safe and comfortable facility for bicyclists and trail users. Bike lanes east of 15th Street may require removal of parking on one side of the road. Advisory bike lanes may be utilized should parking removal present significant challenge to project development.

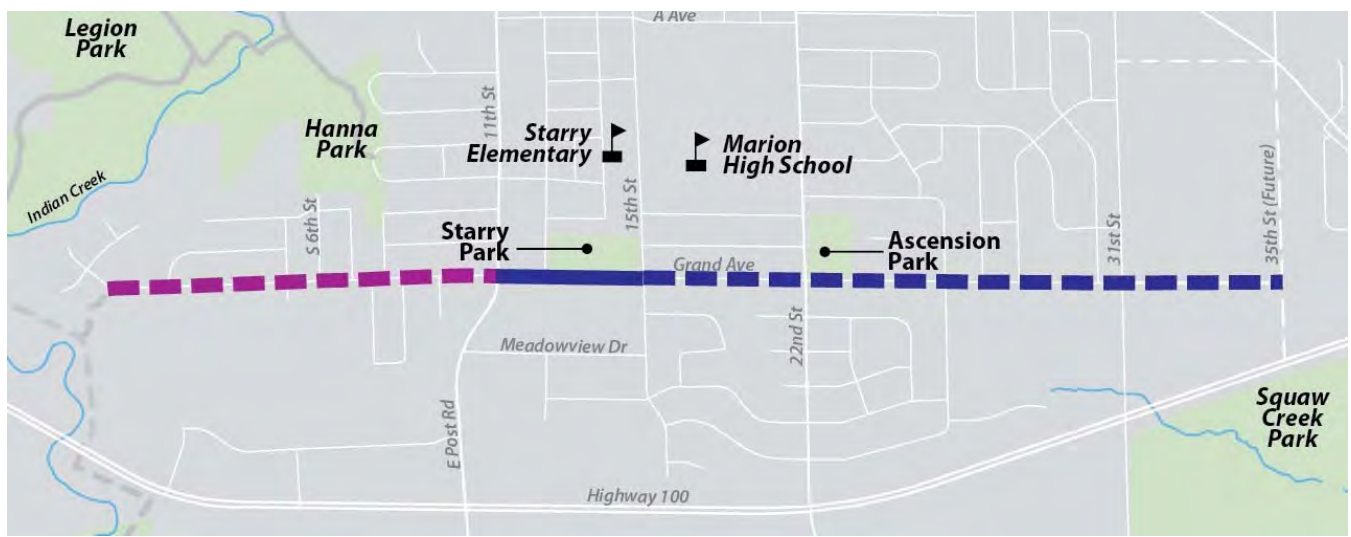
### Project Cost Range

Initial conceptual-level estimates of cost range from \$30,500 to \$61,000 for the bicycle boulevard component, and \$40,000 to \$50,000 for the bike lanes from 22nd St to future 35th St. Total project cost may range from \$70,500 to \$111,000. This cost does not include necessary improvements to the existing bike lanes on Grand Ave from East Post Rd to 15th St.

### Project Corridor Images



### Project Corridor Map







## 3rd Avenue Bicycle Boulevard – 1st St to 31st St

### Project Overview

3rd Avenue represents a key east-west corridor for bicycle and pedestrian travel in Marion. Destinations along (and adjacent to) 3rd Avenue include Thomas Park, MISD Athletic Fields, Gospel Light Baptist Church, Oakshade Cemetery, Vernon Middle School, Francis Marion Elementary, and the Peg Pierce Softball Complex. Connections to future trails and bikeways will provide access to further destinations like Uptown Marion and Marion High School.

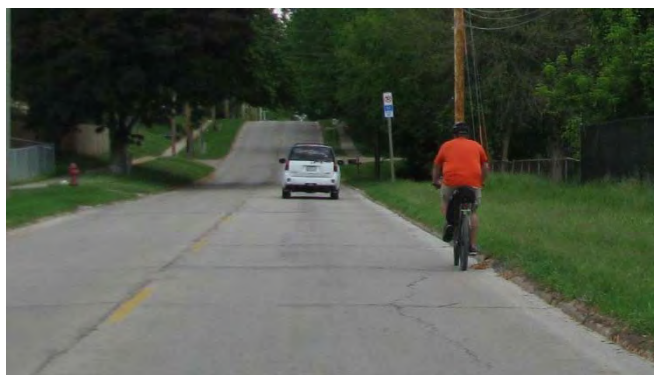
### Recommended Improvements

Bicycle boulevard pavement markings, unique wayfinding signage, and traffic calming features to create an environment that prioritizes bicycle movements and calms and/or diverts motor vehicle traffic. These traffic calming features are determined during the design and engineering phases of project development.

### Project Cost Range

Bike boulevards can range considerably in cost depending on the amount and type of traffic calming improvements incorporated at the design and engineering phase of project development. Initial conceptual-level estimates of cost range from \$82,000 to \$164,000.

### Project Corridor Images



### Project Corridor Map





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## Funding Sources

Funding the implementation of the Plan requires ingenuity, resourcefulness, patience, and persistence. Despite the diversity of funding sources, many external sources for infrastructure improvements and programs are either highly competitive or relatively small.

### Local Funding Sources

While external funding sources for bicycle and pedestrian projects and programs continue to be in short supply and high demand, local funds can often be the most reliable funding source to get a project done or develop an encouragement or education program. In addition, local funding is often required as match for external funding sources. With this in mind, it is imperative that the City of Marion explore, identify, and pursue one or more of these local funding strategies as a means of implementing the plan.

### Capital Improvement Plan Set-Aside

As with most cities, Marion has limited funds with which to implement bicycle and pedestrian projects and programs. By creating a dedicated set-aside in the Capital Improvement Plan, Marion can focus, prioritize, and plan for capital expenditures for trails, on-street bikeways, and other projects that improve conditions for walking and bicycling. This set-aside may also be used as a local match for external funding sources, or as contributory towards bicycle and pedestrian elements of larger projects.

### Local Option Sales Taxes

Voter-approved sales taxes can also provide a dedicated funding stream for capital improvements and infrastructure related to parks, stormwater, and economic development. As with all voter-approved ballot measures, public support is critical for the passage of a sales tax.

### Federal Highway Administration

Since the early 1990s, federal transportation funding through the United States Department of Transportation Federal Highway Administration has been a significant source for bicycle and pedestrian facility development. While specific programs, legislation, resources and formulas have changed over the years, federal transportation funding has significantly contributed to the advancement of bicycle and pedestrian mobility throughout the Cedar Rapids Metropolitan Area in the form of transportation enhancements. In the State of Iowa, federal transportation funds are administered by the Iowa Department of Transportation and metropolitan planning organizations and distributed to local project sponsors, including local governments, school districts, or other public agencies.



### MAP-21

The Federal Highway Administration directs the current surface transportation funding and authorization bill, Moving Ahead for Progress in the 21st Century, commonly referred to as MAP-21. Many of the funding programs from the previous transportation bill, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), have been consolidated and reorganized in a manner that allows for greater discretion for state and local entities. The following MAP-21 programs consider bicycle and pedestrian projects an eligible activity for which funding may be allocated.



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### **Surface Transportation Program**

The Surface Transportation Program (STP) provides funding that may be used by States and localities for projects to preserve and improve the conditions on any Federal-aid highway, bridge and tunnel projects, public road projects, pedestrian and bicycle infrastructure, and transit capital projects. Bicycle and pedestrian infrastructure projects include ADA sidewalk modification, recreational trails, bicycle transportation, on- and off-road trail facilities for non-motorized transportation, and infrastructure projects and systems that will provide safe routes for non-drivers, including children, older adults and individuals with disabilities to access daily needs.

### **Highway Safety Improvement Program**

The Highway Safety Improvement Program (HSIP) is intended to achieve significant reduction in traffic fatalities and serious injuries on all public roads by funding projects, strategies and activities consistent with a state's Strategic Highway Safety Plan (SHSP).

### **Iowa Clean Air Attainment Program**

The Iowa Clean Air Attainment Program (ICAAP) funds projects that help areas meet (or maintain compliance with) the national ambient air quality standards for ozone, carbon monoxide, and particulate matter. Eligible projects include traffic flow improvements, travel demand management, transit improvements, and bicycle and pedestrian facilities and programs. The City of Marion has a strong track record of successful applications and funding awards through the ICAAP program. Most recently, in 2013, Marion received \$1 million in funding for complete streets and capacity improvements along the Central Corridor.

### **Transportation Alternatives Program**

The Transportation Alternatives Program (TAP) provides funding for a variety of non-motorized transportation facilities and activities previously funded under separate program categories in SAFETEA-LU, including the Recreational Trails Program, Transportation Enhancements, and Safe Routes to Schools. Eligible activities and projects include on- and off-road pedestrian and bicycle facilities, infrastructure projects improving access to public transportation, recreational trails projects, projects and systems that provide safe routes for non-drivers, safe routes to school projects, and boulevards and roadways in the right-of-way of former Interstate System routes.

### **National Highway Performance Program**

The National Highway Performance Program (NHPP) can be used to preserve, improve, and expand the National Highway System, a 220,000-mile network of interstates, highways and significant roadways that are important to the nation's economy, defense, and mobility. Bicycle transportation and pedestrian projects are eligible for funding, so long as they are associated with an NHS facility.

### **Section 402 State and Community Highway Safety Grant Program**

Section 402 funds can be used to develop education, enforcement and research programs designed to reduce traffic crashes, deaths, severity of crashes, and property damage. Eligible program areas include reducing impaired driving, reducing speeding, encouraging the use of occupant protection, improving motorcycle safety, and improving bicycle and pedestrian safety. Examples of bicycle and pedestrian safety programs funded by Section 402 are comprehensive school-based pedestrian and bike safety education programs, helmet distribution programs, pedestrian safety programs for older adults, and general community information and awareness programs.

### **TIGER Discretionary Grants Program**

The Department of Transportation's Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grants Program was created as part of the American Recovery and Reinvestment Act of 2009 with the purpose of funding road, rail, transit and port projects that achieve critical national objectives, including livability, economic competitiveness, environmental sustainability, and safety. Of the 52 projects awarded funding in 2013,





fifteen of the projects explicitly incorporate bicycle and/or pedestrian facilities as either a key component of the project or the sole component of and singular purpose for the project. These diverse projects include a shared-use path in Missoula County, Montana, the Southwest Atlanta Beltline Corridor Trail in Atlanta, Georgia, the Regional Pedestrian System in Foley, Alabama, and the Lee County Complete Streets Initiative in Lee County, Florida. 2013 awards ranged from \$1.4 million to \$20 million.

## **Iowa Economic Development Authority**

### **Vision Iowa**

Vision Iowa was developed to support projects in communities throughout the State of Iowa that provide recreational, cultural, entertainment, and educational attractions. Funded projects are intended to function as economic development catalysts that attract tourism and strengthen a community's competitiveness as a desirable place to live, work and play. Included in the Vision Iowa program are the Community Attraction and Tourism (CAT) and River Enhancement Community Attraction and Tourism (RECAT) programs. All projects developed with Vision Iowa funds must be open and available to the general public.

The City of Marion was awarded \$250,000 in 2013 to assist in the construction of the Lowe Park Sculpture Trail and Amphitheater, and other communities throughout the state have utilized these sources for trail development.



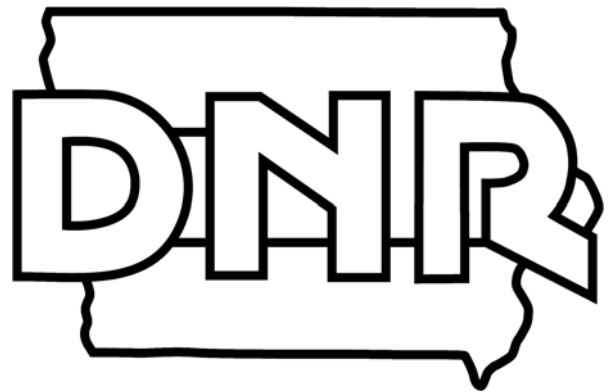
### **Community Development Block Program**

The Community Development Block Grant (CDBG) program provides money for streetscape revitalization, which may be largely comprised of pedestrian improvements. Federal Community Development Block Grant grantees may “use Community Development Block Grants funds for activities that include, but are not limited to: acquiring real property; reconstructing or rehabilitating housing and other property; building public facilities and improvements, such as streets, sidewalks, community and senior citizen centers and recreational facilities; paying for planning and administrative expenses, such as costs related to developing a consolidated plan and managing Community Development Block Grants funds; provide public services for youths, seniors, or the disabled; and initiatives such as neighborhood watch programs.” The CDBG program is administered by the Iowa Economic Development Authority.

## **Iowa Department of Natural Resources**

### **Resource Enhancement and Protection Program**

The Iowa Department of Natural Resources' Resource Enhancement and Protection Program (REAP) funds a variety of projects throughout the state, including local parks and open spaces, roadside vegetation, historical resources, public land management, and soil and water enhancement. REAP's City Parks and Open Space competitive grant program helps local communities establish natural areas, encourage outdoor recreation, and manage resources for the enjoyment of the community for generations to come. The program routinely funds trail projects, like the Chichaqua Trail from Bondurant to Des Moines in Polk County.





## Private and Foundation Funding Sources

### People for Bikes Grant Program

People for Bikes, formerly known as Bikes Belong, is a national organization working to make bicycling better throughout the United States through programs and advocacy work. People for Bikes has funded numerous infrastructure projects and education and encouragement programs since it first launched in 1999, including five in the State of Iowa for a total of \$31,500. The five projects funded in Iowa reflect the diversity of bike and trail related initiatives in place across the state. In 2011, People for Bikes provided \$6,000 in funding for the Iowa Bicycle Coalition and the University of Northern Iowa Sustainable Tourism and Environment Program to study the economic impacts of bicycling in the State of Iowa. In 2008, \$10,000 was provided to the Raccoon River Valley Trail Association to help fund a trail project in west-central Iowa.



### Community Foundations

Community and corporate foundations can play an important role in funding bicycle and pedestrian infrastructure and programs. With a growing evidence base highlighting the connection between the built environment and community health outcomes, health foundations throughout the country have joined environmental foundations to support infrastructure projects that increase opportunities for walking, bicycling and physical activity. National foundations like the Surdna Foundation and the Robert Wood Johnson Foundation have funded initiatives to reduce obesity, increase physical activity, and achieve other positive health-related outcomes.

### Local Business Community

Businesses large and small recognize the benefit of bicycling, walking, and related infrastructure as economic drivers and indicators of quality of life. From Fortune 500 companies to local healthcare providers to small bike shops, businesses have expressed interest in investing in bicycle and pedestrian infrastructure that fosters healthy and active communities, creates recreation and transportation choices, and improves quality of life. Support from the business community is often the result of strong relationship-building efforts and may come in a variety of forms, from the funding of capital projects or associated amenities to the provision of volunteers to assist in trail maintenance activities. The Blue Zones Project, led by Healthways and sponsored by Wellmark Blue Cross Blue Shield, has successfully engaged local businesses to support and encourage healthier and active lifestyles, including more walking, bicycling, and physical activity on Marion's trails. Rockwell Collins, the area's largest employer, has been very supportive of trail development initiatives in Marion and Cedar Rapids, providing funding for the development of the Lindale Trail extension into Cedar Rapids.



### Volunteer Assistance

Support for plan implementation – facility development, maintenance and operations, programs, etc. – can and should come in all shapes and sizes. By soliciting volunteer assistance and partnering with local non-profits and community organizations, Marion and its collaborating partners can provide opportunities for area residents to play a role in making these cities better places to walk and bike. Adopt-A-Trail programs provide an opportunity for area



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residents, Boy and Girl Scout Troops, and other civic groups to support maintenance efforts on area trails. Group bike rides and walks can be a great opportunity to engage local historians, the Marion Historical Society, or even faculty and students at nearby Coe College, Mount Mercy University, or Kirkwood Community College. Local high school students in the Linn-Mar and Marion Independent School Districts can assist Marion and partnering agencies in the delivery of education and encouragement programming.





## Performance Measures

As the City begins to implement the Plan, it will be necessary to utilize clear, quantifiable performance measures to track implementation and document success. Given the diversity of goals and objectives set forth in this Plan, the performance measures are intended to quantify a wide range of implementation activities, from the development of trails and on-street bikeways (including a variety of sub-categories as well), to the delivery of education and encouragement programs, to the adoption of policies that ensure bicycling, walking, and trails are considered in future capital projects and private development.

The following performance measures can be used to track implementation of the plan and measure the impact that the expanding trail network has on transportation and recreation outcomes. A number of performance measures have been identified as high priorities. These measures correspond to important actions, the completion of which will significantly improve the trail and on-street bikeway network, establish essential programs and policies, or build the City’s capacity to monitor and evaluate implementation activities for years to come. The following table displays each performance measure, time frame for completion, corresponding goal and objective, and priority level.

**Table 17: Performance Measures**

Performance Measure	Timeframe	Plan Objective	High Priority
Number of documented destinations served by the built Master Trail Plan network.	Annual	1.1	
Number of local trail network segments connected to the regional trail network.	Annual	1.2	
Number of local on-street network segments connected to the regional trail network.	Annual	1.2	
Marion Bicycle and Pedestrian Working Group established to guide plan implementation and biking and walking activities in the city.	One-time	1.3	
Marion Bicycle and Pedestrian Working Group representative/s identified to serve on regional and statewide bicycling, walking and trail committees. Annual report of participation by Marion.	One-time, Annual	1.3	*
Wayfinding signage concept developed for the Marion Master Trails Plan Network.	One-time	1.4	*
Number of network miles with wayfinding signage implemented.	Annual	1.4	*
Number of network miles with mile markers implemented.	Annual	1.4	
Marion Master Trail Map developed and updated on a bi-annual basis, both print and on-line. Information will be provided on the map for safety and encouragement for network use.	Biennial	1.4	*
Number of trailheads identified in the plan that are implemented.	Annual	1.4	
Annual Report Card of Progress posted on the City Website.	Annual	1.4	*
Number of miles of constructed network facilities that meet ADA and PROWAG standards, per those that are able to meet these standards.	Annual	2.1	*
Number of miles of developed network routes that support the defined network users in Objective 2.2.	Annual	2.2	*
Miles of trails, sidepaths and bicycle boulevards implemented.	Annual	2.3	*
Number of network miles implemented that include security elements and lighting.	Annual	2.4	
Number of crossings improved that meet AASHTO and NACTO standards.	Annual	2.5	*
Qualitative measure (A-F) on status of connections to and from commercial and	Annual	3.1	



employment destinations.			
Wayfinding signage concept developed for the Marion Master Trails Plan Network (See Plan Measure 1.4.1).	One-time	3.2	*
Marion Master Trail Map developed and updated, both print and on-line. Information will be provided on the map for safety and encouragement for network use (See Plan Measure 1.4.4).	Biennial	3.2	*
Number of community events and activities that utilize the Marion Trail and On-Street Bikeway Network each year.	Annual	3.2	*
Number of short and long term bicycle parking spaces implemented.	Annual	3.3	*
Public survey that gauges perception of active transportation opportunities in Marion.	Biennial	4.1	*
Public survey that gauges perception of recreational trail and on-street bikeways (See Plan Measure 4.1.1 above).	Biennial	4.2	
Number of Interpretive trailheads, public art included in trail development.	Annual	4.3	
Number of households with access to open space per Trail and On-Street Bikeway Network.	Biennial	4.4	
Number of parks, open spaces, conservation areas, and natural habitats connected to the Trail and On-Street Bikeway Network.	Annual	4.4	
Miles of hard and soft surface trails implemented.	Annual	5.1	*
Maintenance expenditures, annually, budget and actual for network.	Annual	5.2	
Marion Bicycle and Pedestrian Working Group established to guide plan implementation and biking and walking activities in the city (See Plan Measure 1.3.1).	One-time	5.3	*
Number of network gaps created or eliminated.	Annual	5.4	
Current MUTCD adopted, and resolution passed to recognize the NACTO Bikeway Guide and Street Design Guide.	One-time	5.5	*
Design manual used by the city is supplemented with detail sheets, which provides guidance on addressing trail plan implementation along and across streets.	One-time	5.5	*
Number of miles of on-street bikeways, or side paths implemented as part of capital or operational roadway improvement projects (On network and off network)	Annual	5.6	
Number of miles of on-street bikeways, or side paths implemented as part of community development projects (On and off network)	Annual	5.6	
Acres of land preserved for open space, recreation and trail use for implementing the network defined in the plan.	Biennial	5.7	
Complete Streets Ordinance Adopted.	One-time	5.8	*
Bicycle Parking Ordinance Adopted into the Zoning Code.	One-time	5.8	*
Number of adult and child skill trainings and activities held each year and number of participants.	Annual	6.1	*
Increase use of non-motorized travel per census data to 2% by 2020, and 3% by 2030.	Biennial	6.2	
Number and type of annual events sponsored by the City of Marion to encourage safe use of trails and roadways for bicyclists, pedestrians or motor vehicle users.	Annual	6.2	*
Law enforcement training program implemented in police department ongoing staff development activities.	Annual	6.3	*



## Facility Maintenance

The quality and condition of each trail and bikeway facility is essential to the long-term success of the Marion Trail and On-Street Bikeway Network. Maintenance can be separated into two categories: routine maintenance and remedial maintenance. Routine maintenance refers to the regularly-scheduled and day-to-day activities to keep the trails and bikeways in a functional and orderly condition. These activities, which can be incorporated in normal routine maintenance by operations staff, include trash and debris removal, landscaping, weed and dust control, trail and street sweeping, snow removal, shoulder mowing, and tree and shrub trimming. Spot maintenance such as sealing cracks, filling potholes, and replacing damaged or worn signs also fall under this category. Remedial maintenance refers to the correcting of significant facility defects and the repairing, replacing and restoring of major facility components. Remedial maintenance activities include periodic repairs like seal coating asphalt pavement; restriping of bike lanes; replacement of wayfinding and other signs; repainting, replacement of trail amenities and furnishings (benches, bike racks, lighting, etc.); and more substantial projects like hillside stabilization, bridge replacement, trail or street surface repaving; and trail repairs due to washout and flooding. Minor remedial maintenance can be completed on a five to ten-year cycle, while larger projects should be budgeted on an as-needed or anticipated basis.



Figure 128: A street crew adds new bike lane markings after a resurfacing project.

## Network Stewardship and Enhancement

Stewardship is the long-term care and oversight of the Marion Trail and On-Street Bikeway Network as a resource that adds value to the community and enhances the quality of life for citizens of the region. The Network will require active stewardship by those who operate the facilities (and those who benefit from it) to ensure this valuable recreation and transportation infrastructure can provide a high level of service and a quality user experience for generations to come. This will require coordination among all agencies involved in the care and maintenance of the trails, bikeways, and their surroundings; protection of these resources from external factors that may reduce their value and utility; and encouragement of community participation in the upkeep and enhancement of the Network as a valuable community asset. The City of Marion should identify an individual or committee of representatives of various agencies, such as the Bicycle and Pedestrian Advisory Committee recommended to be established in this Plan, to identify stewardship activities and develop a timeframe or schedule for completion. Such activities may include identifying and managing trail steward volunteers to remove trash or monitor activities on the trail, annual trail cleanup events, coordinating the use of the trails and bikeways for educational activities, and increasing public awareness of the Network as a resource to diverse members of the community.



Figure 129: Volunteers gather for a trail cleaning and clearing event.





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## A-1: Review of Background Documents and Plans

Numerous local, regional and state agencies have developed plans, reports, handbooks, and other documents that support and enhance local efforts to develop pedestrian, bicycle and trail plans and facilities. This working paper summarizes existing plans and background documents relevant to the development of the 2014 Marion Master Trails Plan.

### Plans and Documents Reviewed

Document	Agency	Year
City of Marion Comprehensive Plan	City of Marion	2010
Marion Master Trails Plan	City of Marion	2005
Marion Central Corridor Master Plan	City of Marion	2009
West End Corridor Plan	City of Marion	2011
Uptown Streetscape Plan	City of Marion	2010
Tower Terrace Road Corridor Management Plan	Corridor MPO	2010
Connections 2040: Long Range Transportation Plan	Corridor MPO	2010
Linn County Parks & Outdoor Recreation Plan	Linn County RPC	2004
Linn County Comprehensive Plan	Linn County	2013
Cedar Rapids Comprehensive Trails Plan	City of Cedar Rapids	2012
Iowa In Motion: Planning Ahead 2040	Iowa DOT	2012
Iowa Trails 2000	Iowa DOT	2000
Connecting People and Trails: Local Community Planning for Bicyclists and Pedestrians	Iowa DOT	2000
Implementing Trail-Based Economic Development Programs: A Handbook for Iowa Communities	Iowa DOT	2000
Smart Planning in Iowa: A Guide to Principles, Strategies and Policy Tools	Rebuild Office, State of Iowa	2011
Cedar Rapids Metropolitan Area Priority Trails	Linn County RPC / Corridor MPO	2005
County Trail Corridors	Linn County RPC / Corridor MPO	2007
Cedar Rapids Area Bicycle Trails Map	Iowa DOT	2012

The Marion Master Trails Plan is being developed in a planning environment that is strongly supportive of regional and local efforts to improve bicycling and walking transportation. State, regional, and local background documents and plans are characterized by a long and robust history of regional collaboration, emphasis on local and regional connectivity, consideration for bicycle and pedestrian transportation as a key component of the transportation system, consideration for local needs and citizen input, and the potential of trails as an economic and community development tool. These positive attributes of planning efforts have carried over to local and regional implementation as well. Tower Terrace Road has begun to take shape across the northern Greater Cedar Rapids Metropolitan Area. The Marion Central Corridor Master Plan has yielded multiple studies as well as streetscape work in Uptown Marion. Transportation Enhancement funds are being used to implement a number of trail improvements recommended in previous plans, including the Grant Wood Trail underpass at Highway 13 and the Marion Trail from 35th Street to Highway 13.



While the strong precedent of supportive planning efforts provides a strong foundation for the development of the Marion Master Trails Plan, the review of these planning and background documents has identified some information gaps, inconsistencies, and ambiguities that can be addressed or resolved through this planning process. These include:

- **Planned Trail Alignment Inconsistencies.** While trails of regional significance are included in most planning documents reviewed, some smaller trails are included in some documents while left out of others.
- **Local Versus Regional Trail Branding Challenges.** The Cedar Rapids Trails Plan in particular provides some examples of trail system branding, but the application of these branding standards may discount the efforts of neighboring municipalities and the character of the people and places they serve.
- **On-Street Bicycle Facility Types.** Non-motorized transportation planning has focused heavily on off-street multi-purpose trails and sidepaths adjacent to roadways. On-street bicycle facilities have been defined in previous projects, but there has been little focus on the application of specific bikeway types to specific roadways. The 2006 Marion Master Trails Plan, for example, identifies trails along roadway right-of-way, but does not recommend a specific bikeway type (sidepath, bike lane, shared lane, etc.).
- **Off-Street Multi-Purpose Trail Surfaces.** The Marion Master Trails Plan identifies future trail corridors and per-mile cost estimates for concrete and asphalt trail surface types, but does not include information on crushed limestone or granular surface trails. Since hard and soft trails are planned, the estimates should reflect the different types of trails, as well as maintenance requirements of each type.

This planning process will provide an opportunity for the City of Marion and its planning partners and stakeholders to consider these issues and identify clear, regionally-supported actions or recommendations to resolve these issues.



## City of Marion Comprehensive Plan (2010)

### Description

The City of Marion's Comprehensive Plan, adopted in 2010, functions as the City's official policy guide for physical improvements and developments for a 15 to 20-year period. The Plan envisions a future in which the City of Marion "continues to improve the quality of life for its residents, the quality of the business climate for its businesses, and the quality of the visitor's experience. The City will strive to attract retail and service providers, enhance its neighborhoods, expand its employment base, and achieve a healthy balance of residential, commercial, office and industrial land uses."

### Key Takeaways

The Plan acknowledges the importance of bicycle and pedestrian infrastructure as recreation and transportation assets that support strong residential neighborhoods, enhance the character of commercial areas, strengthen connectivity throughout the community, improve safety for bicyclists and pedestrians, encourage public transit use, promote regional connectivity, support high-quality growth and development, and enrich quality of life.

#### The Transportation & Circulation Plan

Alternative transportation represents a significant component of the Transportation & Circulation Plan chapter of the document. The chapter incorporates conceptual cross sections for arterial and collector streets, all of which incorporate bicycle and pedestrian facilities in the form of sidewalks, bike lanes, and/or shared use paths. In addition, the plan calls for strategic linkages between segmented neighborhoods and adherence to the conventional street grid system in order to improve fine-grained connectivity and provide route options for bicyclists and pedestrians.

The importance of trails, sidewalks, and bikeways is evident in the goals, objectives, and policies that guide future development and infrastructure improvements throughout the City, as seen below:

Transportation & Connectivity Goal 2: Continue to expand the City's trails and connect various segments into an integrated trail network.

#### Objectives:

Continue to link parks and open space through the expansion of the local multi-use trail system.

Establish local trail connections to the larger trail network and regional parks and natural areas.

Establish a universal signage system for the City's parks and local trails systems that utilizes the elements of the City's new marketing and branding efforts.

Transportation & Connectivity Goal 3: Provide a safe and coordinated pedestrian/bicycle transportation network that connects community residents to key amenities throughout the City.

#### Objectives:

Work with school districts and residents to create safe "walk to school" routes.

Establish a program to construct new sidewalks in established areas of the City where the sidewalk network is incomplete and unlikely to be significantly added to by new development, prioritizing identified "walk to school" routes.

Ensure that all new development provides sidewalks and sufficient street lighting on both sides of the street to promote pedestrian circulation and enhance pedestrian safety.

Budget for on-going maintenance and repairs of City-owned sidewalks as part of the Capital Improvement Plan.

Install pedestrian scaled lighting in the Uptown District, providing, at a minimum, street lighting at each block intersection, to improve pedestrian safety and encourage pedestrian activity.

Establish a wayfinding signage system that directs pedestrians to key community destinations, including schools, parks, the library, City Hall, and Uptown.

Explore opportunities to expand the local trail network into commercial areas and improve pedestrian connections between the City's residential neighborhoods and its shopping areas.

Continue to expand the City's trail system and work towards an interconnected local trail system that connects to components of the larger regional trail system such as Grant Wood Trail, the proposed Bowman Woods Trail and Marion Trail, and Squaw Creek Park.

In addition to specific goals and objectives, the Plan's Transportation & Connectivity Plan chapter includes a Trails and Transit Plan that builds on the 2006 Marion Master Trails Plan and lays out a city-wide trail network to meet the transportation and recreation needs of the community. The Trails and Transit Plan, shown in the image below, consists of a local trail network that interconnects parks and other community facilities, multi-use trails along the City's three creeks and along the Illinois





Central Gulf Railroad Corridor, and in the rights-of-way of existing and proposed streets. Segments in the trail network are prioritized based on demand, connectivity, and other important factors.

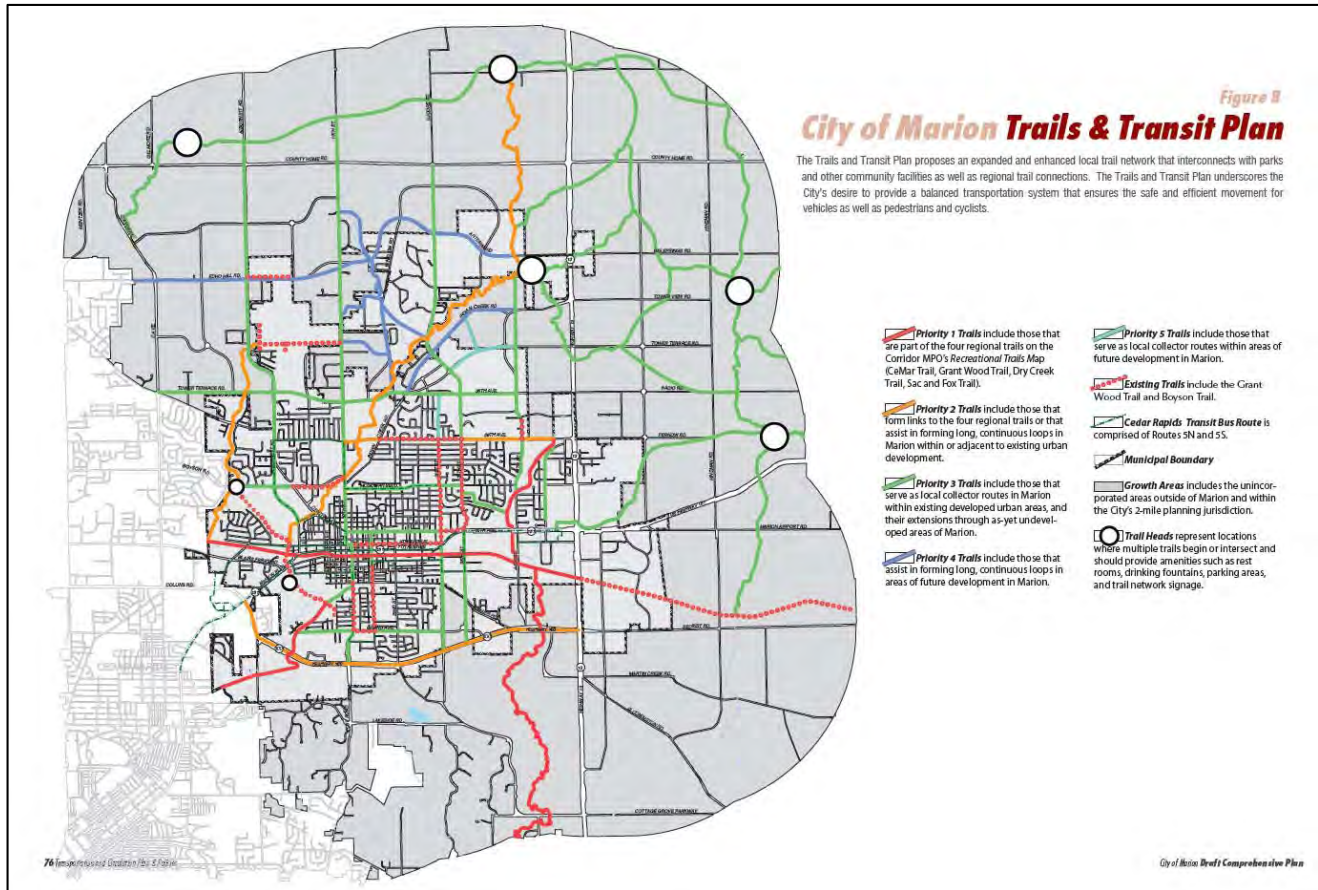


Figure 1: City of Marion Trails and Transit Plan identifies and prioritizes trail corridors in and around the City of Marion.

#### Parks, Open Space & Environmental Features Plan

Non-motorized transportation infrastructure can support and enhance the City and regional park systems by improving connectivity to residential neighborhoods and by providing additional outlets and opportunities for both active and passive recreation. The plan notes that as new development occurs, "the City should require developers to build new trails linking to existing and planned paths, parks and areas of open spaces. These new trails should be designed and integrated into their respective developments."

Greenways along riparian corridors represent a significant opportunity for the development of recreational facilities, particularly along Indian Creek and Squaw Creek. These greenways could function as north-south corridors and create opportunities for new parks and open space areas, as well as trail connections in both established neighborhoods and future growth areas.



## Marion Master Trails Plan (2005)

### Description

The Marion Master Trails Plan recommends a network of greenways, trails, and on-street bike facilities that connect residents to parks, schools and other local facilities, as well as the regional trail network. Trails are distinguished by “type” (greenway, rail corridor, and public road rights-of-way) and prioritized based on regional importance, connections to local destinations, and proposed function within the trail network.

### Key Takeaways

#### Plan Recommendations Development

The Plan builds on the Green Network concept of greenways and “green streets” put forth in the 1997 Marion Comprehensive Plan. This Green Network forms the foundation of the recommendations included in this Trails Master Plan. The Plan then overlays the Linn County RPC’s Recreational Trails Map proposed trails to incorporate regional facilities. The final layer of additional trails added to the recommendations consists of steering committee input and ideas, most of which related to the Fringe Area in north Marion and unincorporated Linn County.

#### Trail Policies

The Plan recommends four policies for the City of Marion to begin implementation of the Plan and ensure future development incorporates these recommendations where feasible.

Adopt the Marion Master Trails Plan as a document that establishes the City’s recreational trails policy.

Add the trails proposed by the Marion Master Trails Plan to the Linn County Regional Planning Commission’s MPO recreational trails map in order for these trails to be considered by the Iowa DOT as eligible for planning and construction funding. Coordinate with Linn County and other entities regarding trails outside Marion city limits.

Adopt provisions to the municipal ordinance that future plats and subdivisions must allocate adequate space for any trail that is included on the MPO recreational trails map.

Add policy pertaining to Green Streets to the municipal ordinance and develop Green Streets Guidelines that include provisions for recreational trails.

It is important to note that these four trail policies focus on the recreational element of a trail system, diminishing the value of trails as an integral component of the transportation network.

#### Trail Design Guidelines

The Plan includes a detailed chapter on trail facility design guidelines and standards, utilizing AASHTO, FHWA, Iowa DOT, and other sources. While multi-purpose trail standards have changed little since the adoption of this Plan, on-street bicycle facility standards and guidance have changed significantly.

Neither the recommended trail network (Section 5 of the Plan), which includes descriptions of each recommended project, nor the Trail Design Guidelines (Section 6) include information regarding proposed surface of each recommended facility. Estimates of Probable Costs (Section 7) provides detailed costs for each facility type except for a granular surface multi-purpose trail. This is important because the purpose, application and cost of granular surface trails can vary significantly compared to paved surface multi-purpose trails. In addition, trail surface can impact trail use. For example, granular surface trails are more recreational by nature and are not as conducive to transportation-oriented cycling.



## Marion Central Corridor Master Plan (2009)

### Description

The Central Corridor Master Plan provides a strategy for the city to invest in key public infrastructure improvements along 6th and 7th Avenues between 7th and 31st Streets. This corridor was part of the original thoroughfare between Marion and Cedar Rapids and runs through Uptown Marion. This failing commercial corridor suffers from access management issues, pedestrian safety concerns, incompatible land uses, undesirable aesthetics, and a lack of branding, identity and continuity. The Central Corridor Master Plan sets forth a vision and framework to transform this corridor into the commercial and economic backbone of the community through the development of a new roadway and access management plan, a multi-use trail, pedestrian-scale development pattern, new street trees, and a mixture of commercial, office, retail, and residential land uses.

### Key Takeaways

Recommended public improvements stress the project's pedestrian-oriented nature:

New, 10-ft wide, multi-purpose trail connecting several community landmarks

A rebuilt and tree-lined "Marion Avenue"

Greatly improved access control and pedestrian safety

A pedestrian-scale development pattern promoting walkability

Over 300 new street and trail-side trees

"Formal" green spaces on the east and west side of the corridor, connected by the new urban trail system.

General design characteristics and guidelines reinforce the primacy of the pedestrian in both the public and private realms: off-street parking is located behind buildings; vehicular access points are limited; intersection design and signal timing provide for the comfort and safety of the pedestrian first; the trail system should include information kiosks relating to the history, culture, and sustainable streetscape elements of the project. The rendering below illustrates how the public and private spaces come together to create a singular aesthetic and identity that focuses on pedestrian comfort, safety and movement.

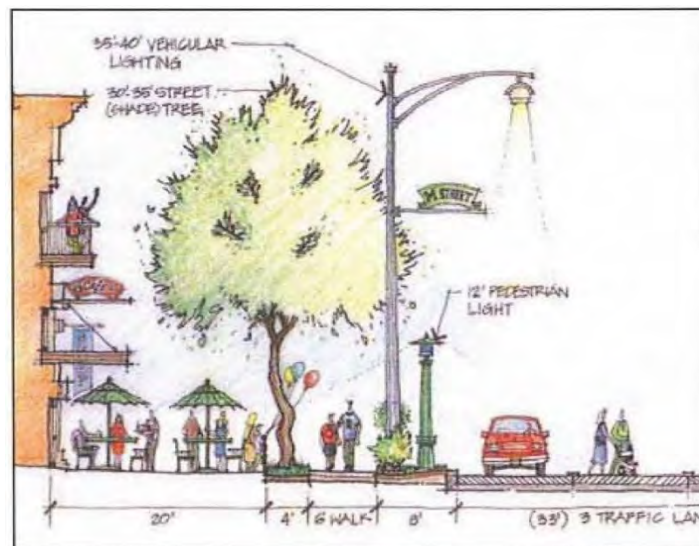


Figure 2: This rendering from the Plan's Design Library Appendix Uptown District illustrates how streetscape elements like wide sidewalks, lighting, landscaping, and other street furniture come together to create a welcoming pedestrian environment.

While the proposed multi-purpose trail represents a significant component of the Central Corridor Plan, there are many factors that may impact the trails functionality, design, safety, and ultimately future use. Frequent curb cuts, adjacent land uses, vehicular conflicts, and other characteristics of an urban environment that apply to the Central Corridor may impact the





design and use of the trail.

## West End Corridor Plan (2011)

### Description

The West End Corridor Plan builds on the Central Corridor Master Plan (2009) by providing a more detailed conceptual plan for the western-most segment of the Central Corridor. This ten-block segment of Marion Boulevard and West 7th Avenue from 6th Avenue to 9th Street functions as the gateway from Cedar Rapids into Marion's commercial and civic core.

### Key Takeaways

#### Multi-Use Trail & Bridge Structure

The multi-use trail will enter the project area from the west and cross over Marion Boulevard/7th Avenue just west of 2nd Street. The Railroad abandoned the rail line in 2004 and the City purchased the property and bridges in 2007. A study in 2010 determined the bridge over Indian Creek obsolete and in need of replacement, and the bridge over Marion Boulevard in need of significant improvements.

The West End Corridor Plan proposes further evaluation of the bridge over Indian Creek, and either renovation of the existing Marion Boulevard overpass bridge structure (\$318,750), or removal and replacement (\$768,750). This second bridge over Marion Boulevard represents a vital link to the City's past and has the potential to function as an iconic gateway into the City. The decision to renovate or replace will be determined by a committee to be formed in the future.



Figure 3: Conceptual Plans for the West End Corridor propose a renovation or replacement of the railroad bridge over Marion Boulevard for bicycle and pedestrian use.



## Uptown Streetscape Plan (2010)

### Description

The Uptown Streetscape Plan represents the first efforts to implement the Central Corridor Master Plan and provides a more detailed design concept for the Uptown Area of the corridor, bound by 8th Avenue to the north, 5th Avenue to the south, 15th Street to the east, and 9th Street to the west. The Plan builds on Uptown’s architectural character and prominence as the historic and civic heart of the City by redesigning streetscapes for the pedestrian scale, with textures, street furniture, and landscaping that accentuates the City’s past while paving the way for future growth and development.

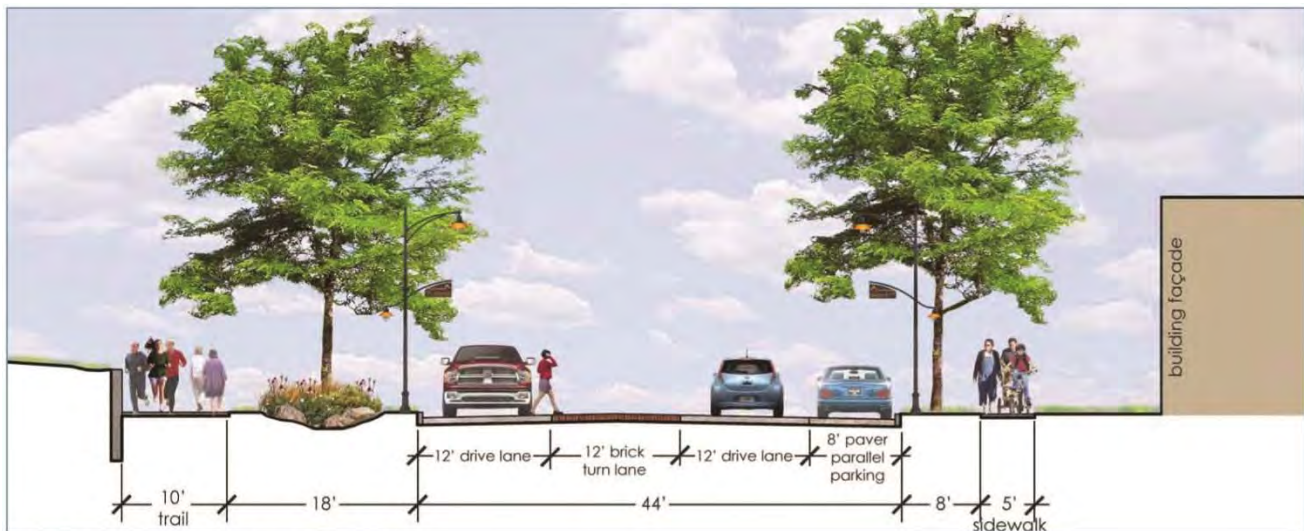
### Key Takeaways

The Uptown Area of the Central Corridor includes some significant civic and recreational destinations, including the City Square Park and Pavilion, City Hall, Marion Public Library, and Vernon Middle School.

There is a great need to increase awareness and recognition of the pedestrian environment. The Plan calls for wider sidewalks throughout the uptown area, in some cases as wide as 15’ to allow for outdoor seating, dining, information kiosks and district markers, and other street furniture.

The design of public spaces in Uptown Marion, and the organization and relationships of the elements that make up these public spaces “must encourage and facilitate multi-modal activity, the community’s desired use for the area.” The Plan notes that vehicular level of service ratings are more difficult to assign in urban areas, like Uptown Marion, a place that puts an equal emphasis on pedestrians. There are, however, additional level of service ratings that incorporate pedestrian, bicycle, and even transit level of service to develop a more comprehensive understanding of transportation needs. A multi-modal level of service analysis can be a valuable tool to evaluate transportation needs in central business districts, arterial corridors, or even community-wide contexts.

The proposed multi-purpose trail runs through the Uptown Area, in some cases fronting existing and/or proposed commercial buildings, which may pose some challenges to the functionality of the trail for recreation purposes. However, as noted in the Uptown Streetscape Plan, the intention of the Uptown streetscape design is to provide for a balance of uses to ensure the safety and primacy of pedestrians.



Future Cross Section – 6th Avenue looking east

Figure 4: Conceptual Plans for the 6th Avenue in the Uptown District incorporate a 10-foot wide multi-use trail, sidewalks, and street trees to create a unique pedestrian realm.



## Cedar Rapids Comprehensive Trails Plan (2012)

### Description

The Cedar Rapids Comprehensive Trails Plan provides a detailed strategy for developing a 105-mile system of interconnected trails, greenways, and multi-modal facilities in and around the City of Cedar Rapids. The plan includes design details and cross-sections for a variety of on- and off-street contexts; recommendations and cost estimates for each of the 52 segments that make up the 105-mile Primary Connectivity Network; and an implementation strategy that focuses on project phasing, funding, and maintaining the trails system for years to come.

### Key Takeaways

A number of recommended projects in each of the three phases of plan development fall within the Marion City Limits and will improve connectivity between the two cities:

#### Phase 1 Plan (0-5 years)

CeMar Trail

Dry Creek Trail

#### Phase 2 Plan (5-10 years)

Tower Terrace Road

29th Avenue

44th Street

#### Phase 3 Plan (10+ years)

Boyson Road

Grant Wood Trail

Rockwood Connector Trail

Squaw Creek Trail

In addition to proposed on- and off-street trail projects, the Cedar Rapids Comprehensive Trails Plan also recommends comprehensive branding, signage, and trailhead locations to create a cohesive identity for the entire trail network. While the branding and signage proposed in the plan are generally regional in nature, the plan acknowledges the challenge of creating “a simple meaningful logo type that is widely accepted, recognized, and offers the flexibility to be used in many ways, including other jurisdictions.”



Figure 5: Conceptual sign designs focus on a regional brand for the Cedar Rapids Trail system, which includes recommended trail projects in the City of Marion.





## Connections 2040: The Corridor MPO's Long Range Transportation Plan (2010)

### Description

Connections 2040 integrates growth and land use patterns, environmental sustainability, regional competitiveness and complete streets concepts into the 20+ year strategy to guide investment of public funds in the Cedar Rapids area multi-modal transportation system. The Plan provides the context for selecting transportation projects for inclusion in the Capital Improvement Program, the regional program for implementing highway, transit, bike and pedestrian projects.

### Key Takeaways

Connections 2040 is progressive and ambitious in its vision for a multi-modal transportation system. Transportation goals and objectives highlight the need for an interconnected bicycle and pedestrian transportation network that incorporates both on-street bikeways and pedestrian paths as well as off-street multi-purpose trails. The existing network of bicycle and pedestrian facilities is sparse and disconnected. While corridor-specific and even municipal plans address these issues, a larger, region-wide approach must be developed in order to create a comprehensive, interconnected non-motorized transportation network.

"It is also recognized that the region's economic vitality is dependent upon the region's competitiveness with other cities and towns throughout the United States and the world. The specific target market for being competitive is retaining 20 to 50 year olds with higher education and salary. Cities and regions that are attracting this age group are those that offer amenities and choices, including parks and trails, a variety of housing choices for this age cohort, and opportunities to live and work within the same area."

### Existing Conditions

**Transit.** There is a lack of basic amenities at transit stops outside downtown Cedar Rapids. Many transit stops are located on arterial roadways that lack sidewalks or concrete pads for waiting for the bus. Coupled with hourly service and the hub-and-spoke route structure, existing transit service is underperforming.

**Bicycle.** The Corridor MPO region does not have a bicycle network, but rather a handful of regional trails that are not connected and do not provide connections between different parts of the metropolitan area. The lack of a functional bicycle network is a deterrent to young professionals who value amenities like multi-use trails and on-street bicycle networks, "which can be used to travel to work and shop, exercise, improve the environment, and for recreation."

**Pedestrian.** The effectiveness of the pedestrian system is directly related to the age of development and the planning and development requirements that were required at the time. Older areas of the region are characterized by a grid system comprised of short blocks and sidewalks on all streets. Late 20th Century, auto-oriented suburban developments lack both connectivity and sidewalks. Regional arterials lack sidewalks outside the urban cores.

"There are currently few places where it is enjoyable – or even possible – to walk in safety and comfort (p 6-1)."

### Plan Vision

Vision: Create a pre-eminent integrated land use and multi-modal transportation system that meets sustainable regional growth expectations, supports economic vitality and quality of life, efficiently moves people and goods while sustaining and improving the regions' livability and environment in the Greater Cedar Rapids Metropolitan Area.

### Trail-Related Goals and Objectives

Goal 1: Maintain our existing transportation system.

Objective 1.2: Maintain surface condition of existing sidewalks, bicycle paths and trails.

Goal 2: Maximize efficiency of the existing transportation system.

Objective 2.2: Maximize transit, bicycle and pedestrian accessibility.

Goal 4: Offer travel choices.

Objective 4.1: Provide travel choice including transit, bicycle trails and paths, and sidewalks.

Objective 4.2: Provide a transportation network which supports land use planning.

Goal 5: Provide safe and secure transportation.

Objective 5.1: Promote improvements which reduce accidents.

Goal 6: Support economic vitality.



Objective 6.1: Provide accessibility to existing and future developments.

Objective 6.2: Plan for a transportation system that is affordable and sustainable.

Objective 6.3: Attract new business by retaining and attracting young professionals by providing regional amenities including transportation choices.

Goal 8: Protect the environment and conserve resources.

Objective 8.1: Reduce fuel consumption.

Objective 8.2: Minimize air pollution.

Objective 8.3: Minimize vehicle miles of travel.

Objective 8.4: Minimize impacts on the natural environment.

Objective 8.5: Reduce impacts on neighborhoods, cultural and historic resources.

### **Growing Smarter: The Land Use and Transportation Connection**

Improving transportation and land use connections requires a variety of different approaches, including integration of transportation choices, multi-modal and complete streets design, and zoning regulations that support and encourage mixed-use and higher intensity development.

Multi-modal corridors should support bicycling and walking through complete sidewalk networks, bicycle facilities and signage, safe street crossings, ped signals and countdown signal heads, enhancements at transit stops, and a mixture of land uses with a high concentration of uses.

### **Roadway Standards & Complete Streets**

Current standards for roadway design provided in the Statewide Urban Design and Specifications (SUDAS) Manual are designed for higher-speed environments and favor clear zones over bicycle and pedestrian provisions. Through thoughtful design and consideration of all roadway users, particularly pedestrians, bicyclists, and transit users, the region can incorporate complete streets principles into future roadway projects and create a more livable, safer transportation system.

As part of the LRTP, concept plans were developed for six roadway segments that represented various roadway typologies for which Complete Streets concepts could be applied and implemented. Two segments identified are in the City of Marion: 7th Avenue from 1st Street to 10th Street, and 11th Street from Meadowview Drive to 1st Avenue.

The LRTP proposed a set of Base Standards to replace/supplement the SUDAS standards, and a set of Context Based Street Standards that place greater emphasis on transportation and land use connections and complete streets design elements.

### **Bicycle/Trails Vision**

An on- and off-street trail system is envisioned in the plan to create a functional regional bicycle network. \$3 million of trails projects were already programmed in the 2011-2014 TIP. An additional \$88 million in expenditures in off-street trails and another \$6.2 million in on-street bikeway expenditures were identified to create the total network.

### **Pedestrian Vision**

A safe system of sidewalks, crosswalks and trails compose the pedestrian network. While policies should reflect the importance placed on pedestrian mobility and safety, and new developments should be required to incorporate sidewalks on both sides of the street, the Pedestrian Vision also recommends a budget set-aside of \$100,000 per year to add sidewalks to arterial roads and address critical gaps in the pedestrian network.

### **Fiscally Constrained Transportation Plan**

Accounting for potential funding limitations, the recommended trail projects are prioritized and abbreviated based on their ability to maximize the efficiency of the existing system, offer travel choices, support economic vitality, and minimize travel time. This shortened list of trails still provides for a basic network connecting Cedar Rapids, Marion and Hiawatha.



## Tower Terrace Road Corridor Management Plan (2010)

### Description

This Corridor Management Plan provides a comprehensive approach and guide to the future platting and construction of the Tower Terrace Road and the orderly growth and development of adjacent land.

### Key Takeaways

Tower Terrace Road is envisioned to fully comply with the idea of a complete street, to include bike lanes, sidewalk, sidepath and transit improvements. Typical cross section elements include travel lanes, a raised median, 5'-6.5' bike lanes, multi-purpose trail, sidewalk, clear zone, utility accommodation, street lighting, and landscaping.

The plan acknowledges that while a multi-purpose trail and bike lanes in the same cross section may seem redundant, they accommodate different user types. "Commuter cyclists and experienced adult riders vastly prefer on-street accommodations for higher speeds and avoidance of conflicts with pedestrians, turning vehicular traffic, and the discomfort of pedestrian ramps. Less experienced riders (including children) need the accommodation provided by a sidepath, and can tolerate the conflict with pedestrians (p 8)."

Recent progress in cycle track design has allowed for this innovative bikeway to be used on corridors similar in character to the future Tower Terrace Road as a means of addressing bicycle needs and anticipated use through a single bikeway type rather than through two separate bikeways. The separated nature of cycle tracks provides an additional level of safety and comfort that allows a wider variety of cyclist types to utilize the roadway.

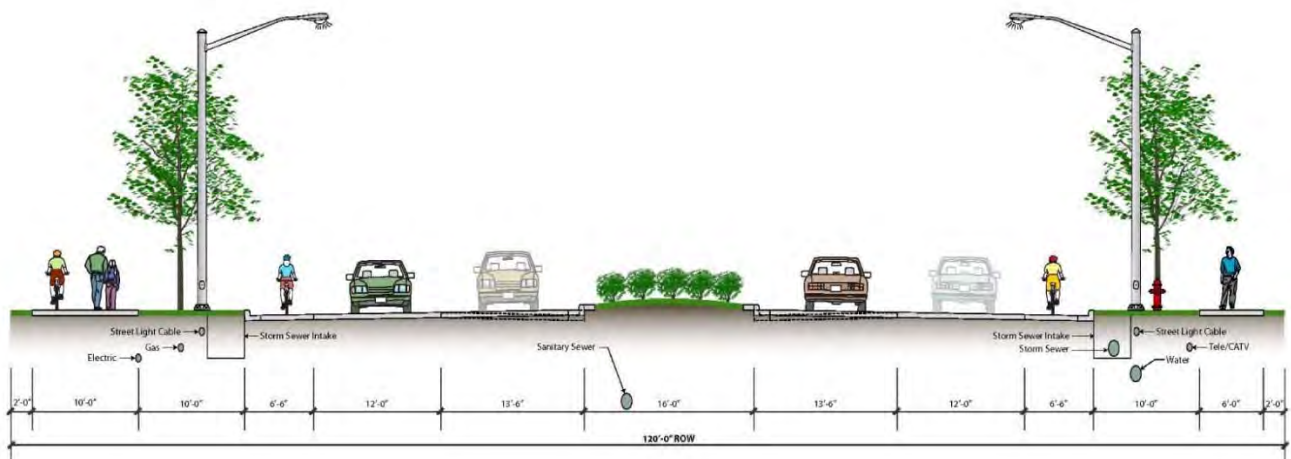


Figure 6: Conceptual cross sections for a 120-foot right-of-way section of the Tower Terrace Road includes bike lanes, sidewalks, a raised median, and a multi-use trail.





## Linn County Parks & Outdoor Recreation Plan (2004)

### Description

**The Parks and Outdoor Recreation Plan provides an analysis of the metro area park systems and identifies potential growth and improvement opportunities.**

### Key Takeaways

The Linn County Parks & Outdoor Recreation Plan is now ten years old, and the information and statistics in the Plan may be out-of-date. In addition, the Plan does not include a timeframe for evaluation or updating the document. Given these factors, as well as the general focus on physical park lands and park improvements over linear trail systems, this Plan provides less insight than other background documents as it pertains to existing conditions and previous recommendations for trail, bikeway, and pedestrian facility development in and around the City of Marion.

#### Marion Trails

Marion possesses three trails:

Marion Parks Trail, 2.06 miles long, connecting Boyson, Donnelly, Legion/Thomas, and Hanna Parks

Grant Wood Trail, mileage not listed

Low Park, 1 mile complete, six total miles planned

An average 300 persons per day use the Marion Parks Trail.

The Plan recommends the City of Marion acquire as much of the abandoned Illinois Central Railroad line for rail-to-trail conversion. In addition, the City should preserve the Dry, Indian and Squaw Creeks.

#### Cedar Rapids Trails

Cedar Rapids maintains 23.23 miles of trails, including:

Cedar River Trail, 10.8 miles, paved, with an additional 1.94 miles in design/ROW acquisition/construction process.

Cedar Lake Loop Trail, 1.61 miles

Bowling Street Trail, 1.8 miles

Sac & Fox Trail, 7.33 miles

20 parks have walking trails of a mile or less

An estimated 1,500 to 2,000 persons per day use the Cedar River Trail, depending on weather conditions.

#### Linn County Trails

Linn County manages 5.64 miles of the 52-mile Cedar Valley Nature Trail, an asphalt and crushed limestone trail connecting Hiawatha to Evansdale. An average of 400 people used the Cedar Valley Trail each day in 2003.



**Linn County Comprehensive Plan – A Smarter Course: Building on the Past, Embracing the Future of Rural Linn County (2013)**

**Description**

The Linn County Comprehensive Plan serves as a 10- to 20-year guide for the physical, social and economic development in Linn County, seeking to balance urban and rural interests, incorporate Iowa Smart Planning Principles and Elements, and promote intergovernmental and regional cooperation.

**Key Takeaways**

The Linn County Comprehensive Plan builds on the Iowa Smart Planning Principles and Elements and highlights many opportunities to incorporate walking and bicycling into the fabric of the county’s transportation network. Beyond transportation, the Plan acknowledges the benefits of walking and bicycling for environmental, social, health, economic, and sustainability purposes. A number of goals, objectives and strategies in the Plan relate to active transportation, trails, and livability. These have been provided below for reference:

**Livable Communities Goals, Objectives, and Strategies**

- Goal 1: Protect and enhance the health and safety of all Linn County residents.
- Objective 1.2: Promote and support opportunities for healthy and active lifestyles.
- Strategy 1.2.1: Ensure that county trail projects align with adopted trails plans.
- Strategy 1.2.4: Support the goals and objectives of the Complete Streets initiative, where appropriate.
- Strategy 1.2.5: Support the goals and objectives of the Safe Routes to School initiative, where appropriate.
- Goal 3: Enhance connectivity and opportunities for all through improvements in transportation, education and communication.
- Objective 3.1: Encourage an accessible, affordable, and safe multi-modal transportation system.
- Strategy 3.1.1: Encourage a wide range of safe transportation options for all age groups and income levels, and for people with disabilities or other special needs.
- Strategy 3.1.2: Incorporate new technologies to improve transportation access and safety.
- Strategy 3.1.3: Support compact or infill development near transportation hubs and urban areas, as appropriate.
- Strategy 3.1.4: Collaborate with regional transportation organizations in support of regional transportation initiatives.
- Strategy 3.1.5: Promote improved accessibility to jobs, schools, and civic sites.

**Resource Protection Goals, Objectives, and Strategies**

- Goal 5: Support initiatives designed to protect or improve local air quality.
- Objective 5.1: Reduce the rate of increase in Linn County vehicle miles traveled (VMT).

**Sustainable Development Goals, Objectives, and Strategies**

- Goal 1: Maximize the use of existing gray infrastructure and adopt innovative green infrastructure techniques.
- Objective 1.1: Encourage development in locations that maximize the efficiency of existing utilities and infrastructure and minimize the need for new utilities and infrastructure.
- Strategy 1.1.1: Encourage higher density in areas identified for urban and suburban development.
- Strategy 1.1.2: Encourage infill of existing residential development areas.
- Strategy 1.1.3: Discourage scattered and leapfrog development.
- Goal 3: Incorporate enhanced stormwater management and erosion control practices into county development standards.
- Objective 3.4: Minimize impervious surfaces.
- Strategy 3.4.1: Utilize, where practical, permeable surfacing materials for trails, driveways, parking areas, and other outdoor areas that would usually be paved.

**Transportation Goals, Objectives, and Strategies**

- Goal 1: Ensure land use decisions are coordinated with city, county and regional transportation plans.
- Objective 1.1: Ensure that decisions regarding transportation are consistent with adopted transportation plans.
- Strategy 1.1.1: Support the Corridor MPO 2040 Plan, the ECICOG Long Range Transportation Plan, and other adopted



transportation plans.

Strategy 1.1.2: Support the efforts of local municipalities to incentivize the development of transportation alternatives.

Strategy 1.1.3: Encourage public transportation as a means of reducing pressure on the current transportation system.

Objective 1.2: In partnership with Linn County cities and towns, promote biking as a recreation and commuter system through bike lanes and a county-wide bike system.

Strategy 1.2.1: Ensure that county trail projects align with adopted trails plans.

Strategy 1.2.2: Encourage Linn County cities and towns to include pedestrian and bicycle accessibility and facilities in all transportation planning efforts.

Objective 1.6: Identify, communicate and coordinate planning efforts with strategic stakeholder groups.

Strategy 1.6.1: Participate in transportation planning efforts by partnering with strategic stakeholder groups, including the Iowa Bicycle Coalition, Linn County Trails Association, Linn County Conservation, Iowa Bikes, Iowa Department of Transportation, Safe Routes to School, and the American Discovery Trail.

Objective 1.7: Manage the location and type of growth in a manner to make alternative transportation modes more feasible.

Objective 1.8: Encourage a future land use pattern that efficiently utilizes the capacity of the existing transportation system.

Goal 2: Encourage alternatives to auto-dependent travel when making transportation, land use and infrastructure decisions.

Objective 2.1: Support and plan for future trails acquisition and enhanced trail connectivity.

Strategy 2.1.1: Consider easements for new development that are in conformance with existing trails plans.

Strategy 2.1.2: Maintain or add bike and pedestrian trails along former rail corridors.

Strategy 2.1.3: Assist with grant funding opportunities for trails improvements and expansion including the Federal Recreational Trails Program, State Recreational Trails Program, and Federal Transportation Enhancement Program.

Objective 2.2: Consider the incorporation of bikeway, pedestrian, and other facilities as a part of all major roadway improvement projects.

Strategy 2.2.1: As appropriate, incorporate paved shoulders on secondary roads for alternative transportation modes.

Strategy 2.2.2: Encourage the Linn County Secondary Roads Department to consider adding or improving bicycle facilities as part of major roadway improvements, and to consider adopting "Share The Road" signage, where appropriate.

Objective 2.3: Encourage connectivity and expansion of the trail systems between communities and recreational, historic, and scenic points of interest.

Strategy 2.3.1: Assist with trails expansion and planning efforts with all appropriate local, regional, and state entities.

Objective 2.4: Promote the development of safe bicycle and pedestrian routes to schools and other community facilities.

Strategy 2.4.1: Encourage all municipalities to adopt guidelines that promote and enhance pedestrian and bicycle trips to community facilities such as parks, schools, and libraries.

Goal 3: Consider environmental, cultural and historic resources in planning future transportation corridors, and in the physical design of transportation infrastructure.

Objective 3.1: Encourage pedestrian or bicycle connectivity and signage to environmental, cultural and historic resources.

Goal 4: Encourage a transportation system that improves the mobility, accessibility, connectivity, and safety for all residents.

Objective 4.3: Identify and address existing and potential safety problems within the transportation network.

Goal 5: Promote comprehensive strategies to reduce dependency on non-sustainable fuel sources and increase fuel efficiency.

Objective 5.2: Support strategies to reduce commuter vehicle miles traveled (VMT).

Strategy 5.2.1: Support pedestrian and bicycle connections from park-and-ride lots, bus transfer points, and other intermodal facilities.

Objective 5.4: Promote awareness of pedestrian and bicycle facilities and trails.





## Iowa In Motion: Planning Ahead 2040 (2012)

### Description

Iowa in Motion provides a 20-year long range plan for maintenance, expansion and operation of the state's multi-modal transportation system. The Plan is intended to assist the Transportation Commission in making informed transportation investment decisions for the state, while also functioning as a guide for local agencies to help frame their own transportation investment decisions. The Plan's three broad-based and far-reaching goals of safety, efficiency, and quality of life provide significant latitude for Iowa Department of Transportation to address unique statewide, regional and local challenges and opportunities.

### Key Takeaways

With regard to bicycle and pedestrian issues, the Plan stresses the importance of transportation investments as a means to improving community livability. This can be done by investing in multiple transportation modes, maintaining current infrastructure, expanding bicycle and pedestrian facilities, and coordinating new investments with surrounding communities.

The Plan refers to Iowa Trails 2000, a previous planning effort that identified a 4,908-mile trail network for the State of Iowa. The trails system is divided into levels to represent state, regional, and local significance. There are over 2,300 miles of bicycle and pedestrian facilities in Iowa, 1,780 of which are off-road, multi-purpose trails. The remaining miles consist of on-road facilities such as bike lanes, paved shoulders and widened sidewalks.

Based on a study completed in the Fall of 2011 by the University of Northern Iowa, commuter cyclist spending generates \$51,965,317 annually in direct and indirect impacts to the State of Iowa. Recreational riders generate an estimated \$364,864,202 annually in direct and indirect benefits.

Bicycling and walking trends in Iowa include increased trail usage, increased helmet usage, greater integration of bicycle and pedestrian needs, greater demand for sidewalks, and an increase in bicycling and walking, particularly in school age children.

Key issues related to bicycling in Iowa include a need for funding bicycle system expansion and maintenance, a need for complete streets policies, need for improved coordination to better connect Iowa's trails systems, a need for education and encouragement programming.

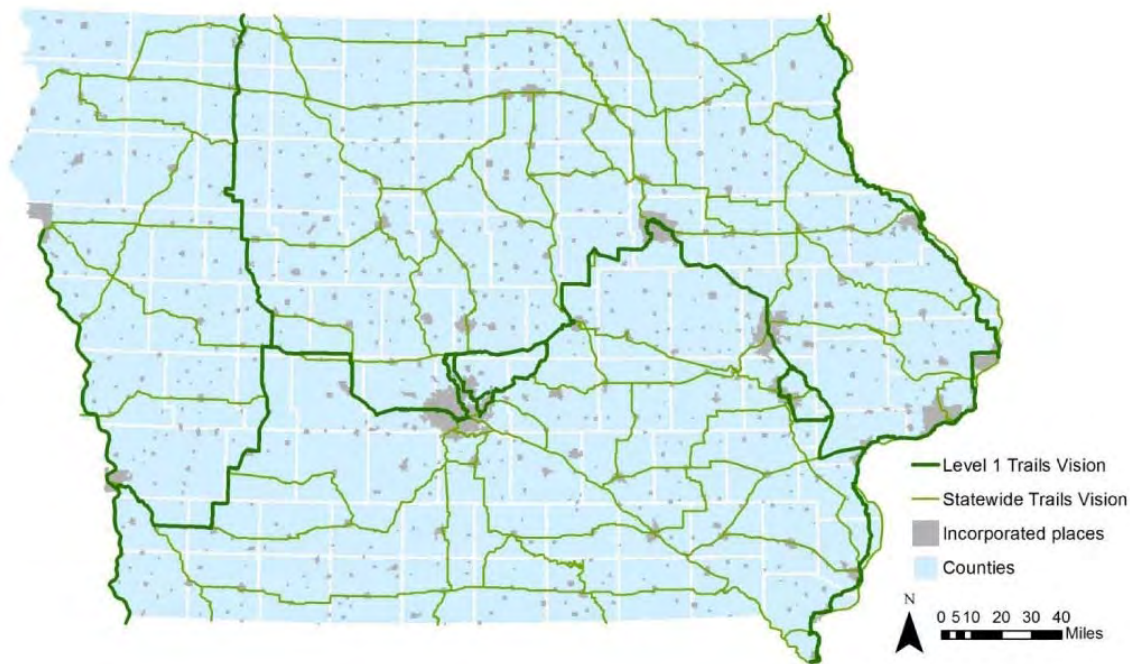


Figure 7: Level One and Level Two trails are identified in the Statewide Transportation Plan.



**Bicycle Investment Actions (By Plan Goal):**

Safety

Develop recommended facility maintenance and signage practices.

Develop pedestrian safety program.

Expand bicycle safety program.

Develop projects that minimize barriers and promote more walking and bicycling to school.

Efficiency

Focus investments on statewide Level 1 trails.

Continue investments on regional and local Level 2 and 3 trails.

Improve coordination and corporation among trail developers (in-state and across borders).

Maintain a bicycle and pedestrian facility data inventory.

Support the acquisition of abandoned rail lines for trail development.

Quality of Life

Provide accessible accommodations on Iowa's roadway corridors for bicycles and pedestrians (e.g., complete streets policy).

Promote bicycling and walking as an alternative to driving to reduce emissions and improve the health and mobility of citizens.

Continue and enhance proactive involvement in education, promotion and advocacy.

Update state bicycle map on a regular basis.

An anticipated shortfall in funding for bicycle and pedestrian trails will have significant impacts on the development of the statewide trail system. The system will remain disconnected. Some trails may not be adequately maintained. The lack of facilities may restrict or hinder recreational opportunities, health outcomes, quality of life, and the state's tourism economy.



## Iowa Trails 2000

### Description

Iowa Trails 2000 is a resource document developed to assist local governments, non-profits, and other trail developers in achieving a shared vision of an interconnected, multi-modal, easily accessible statewide trails system. The Plan provides the overarching vision for a statewide trails system, guidance for facility planning and design, and enunciates the benefits of trails as valuable recreation, transportation, and quality of life assets.

### Key Takeaways

While this comprehensive statewide trails plan functions as a valuable resource for local communities, the age of the document should be taken into account. Bikeway design has progressed considerably; hundreds of miles of trails have been constructed throughout the state; and statewide, regional and local priorities may not be the same as they were in 2000.

#### Trail Location Criteria

The creation of a statewide trail system took into account a wide range of trail location criteria in order to ensure quality trail projects that provide a variety of amenities throughout the state. These criteria include natural landscapes and features; design issues like safety and topography; nearby services like campgrounds, historic and cultural resources, and state and regional parks; land use considerations; corridor characteristics such as continuity; user need based on the SCORP and on grassroots support; and financial considerations.

#### Design Guidance

Design guidelines are established to increase user safety and comfort; promote universal access; promote consistency across the state; reduce cost and increase ease of maintenance through standardized design and implementation; reduce liability by following generally accepted design guidelines; ensure compatibility with roads and highways; and ensuring the long-term viability of trails by recommending good planning and design principles.

The guidelines provide thorough and comprehensive design recommendations for trail facilities based on intended use type and volume, utilizing AASHTO's Guide for the Development of Bicycle Facilities (1999), MUTCD, the AASHTO "Green Book", and other a host of other design guidelines. While the design resources included are diverse, considerable advancements to facility design, particularly on-road bikeways, over the last 14 years warrants the use of more current design guides.

#### Implementing the Vision

Implementing the statewide plan will require considerable coordination, continued public involvement and participation, increased support and buy-in for the statewide trails vision, effective operations and maintenance, and creative and efficient use of available funding sources.

While the Plan was developed by the Department of Transportation, much of the implementation efforts to-date (2000) have been completed by local governments, with funding often provided by Iowa DOT or DNR. This system allows local governments to prioritize and pursue trail corridors that meet local needs. Iowa Trails 2000 asserts that state agencies like the DOT and DNR will be taking a more active role in implementation. The Plan clarifies the roles and responsibilities of a diverse group of Plan implementers, include DOT, DOT District Offices, DNR, MPOs, county conservation boards, local governments, and private entities. Local entities like the City of Marion or Linn County "are the primary developers and owners of specific trail projects at the local level.... They are responsible for local coordination, public involvement, and final trail design, including alignment determination. They are also usually responsible for seeking funding through federal, state, local, and private sources; contracting with appropriate consultants; and operation and maintenance of the completed trail."





## Connecting People and Trails: Local Community Planning for Bicyclists and Pedestrians (2000)

### Description

This handbook was developed by the Iowa Department of Transportation in conjunction with the *Iowa Trails 2000* Statewide Trails Plan to function as a resource for local communities to develop bicycle and pedestrian facilities plans.

### Key Takeaways

#### Four Key Principles to Bicycle and Pedestrian Planning

Local bicycle and pedestrian systems should provide safe and comfortable facilities.

Direct access to destinations and continuity through facilities encourages the use of bicycle and pedestrian facilities.

The design and extent of a bicycle and pedestrian system should reflect the needs of the community.

A bicycle and pedestrian plan should be implemented in phases over a reasonable period of time.

#### Planning Considerations

The Statewide Trails Plan, *Iowa Trails 2000*, identifies a statewide network of state, regional and local trail facilities, and also clarifies the roles and responsibilities of various agencies involved in implementation. Local trails, bikeways and walkways should seek to connect into regional and statewide trails and greenways while also functioning at a local scale and meeting the needs of local citizens.

Roadway design and traffic operations have a significant impact on bicycle and pedestrian mobility, and the provision of walkways and bikeways alone may not fully address cyclists' and pedestrians' concerns, particularly on high-speed, high-volume roadways. The addition of traffic calming measures may help to slow traffic, reduce crashes, increase the safety and pleasure of walking and bicycling, improve corridor aesthetics and appeal, and provide opportunities for the shared use of streets as public spaces.

#### Creating a Bicycle System Plan

A bicycle network is a continuous, well-connected system of trails and on-street bikeways that accommodates the needs of the average cyclist safely and conveniently. In order to select facilities to be included in a route network, bicycle network criteria – directness, continuity, safety, comfort, access to destinations, and timely implementation – should be used to identify and select roadways and trails corridors. It is important to consider priority destinations like parks, trails, schools, shopping areas, and employment centers. Ultimately, the bicycle network should function just like a street network for motor vehicles, as cyclists desire to reach the same destinations. Bicycle networks should consist of a variety of on- and off-street facility types to best meet the needs of local cyclists while also working within the constraints of the existing transportation system. Facility types such as shared roadways, bicycle lanes, wide curb lanes, paved shoulders, and multi-use trails constitute the basic building blocks of a bicycle system.

#### Developing an Implementation Plan

An implementation plan is a critical component of a bicycle and pedestrian plan, as it sets the stage for future action, programs and prioritizes projects, delegates roles and responsibilities, identifies funding sources, and identifies supporting programs and activities to encourage safe usage of the non-motorized transportation system.



## Implementing Trail-Based Economic Development Programs: A Handbook for Iowa Communities (2000)

### Description

This handbook, produced by the Iowa Department of Transportation, is an outgrowth of the *Iowa Trails 2000* Plan intended to assist governments, businesses, chambers of commerce, tourism promoters, and individual citizens develop and implement trail-based economic development programs. The handbook sets forth guiding principles for trail-based development programs and utilizes case studies to provide best practices and lessons learned from other successful programs.

### Key Takeaways

#### Guiding Principles for Trail-Based Economic Development

- Understand community capacity and desires.
- Identify target markets based on trail characteristics.
- Determine community's relationship to the trail system.
- Choose trailhead sites based on desired user markets and impacts.
- Locate trailheads within town boundaries to concentrate economic impacts.
- Build off existing markets.
- Cultivate partnerships.

#### Case Studies

The variety of case studies included in the handbook are Midwestern examples of successful trail-oriented economic and community development programs. The scale of the program is often tied to the existing physical, social, or cultural capital, or to a desired outcome. Sample programs focus either on regional economic development, tourism development, or main street revitalization efforts. The handbook emphasizes the importance of trails is just one element of a larger visitor experience or of a community's quality of life, noting that trails alone will not attract and retain visitors. Successful case studies show the need for shared community responsibility, year-round activity, the responsibility of individual business owners to take risks as entrepreneurs, and the need to galvanize community support through a shared identity that is both internalized and communicated outward to attract economic opportunity.

#### Five Steps to Capitalizing on Trail Recreation

While the process for developing trail-based economic development programs is usually organic, there are basic steps that can be followed in order to build local capital, develop roles and responsibilities, and initiate a program. The handbook identifies and describes five basic steps:

- Enlist citizen involvement.
- Build a community identity.
- Develop a marketing plan.
- Choose an economic development approach.
- Organize for implementation.



## Smart Planning in Iowa: A Guide to Principles, Strategies and Policy Tools (2011)

### Description

Following the passage of Smart Planning legislation in 2010, the Rebuild Office of the State of Iowa developed this brief guide to assist local communities in incorporating smart planning principles and strategies into local planning efforts. Highlighting ten basic smart planning principles, the guide aims to help communities balance economic, environmental, and social sustainability and expand the function of comprehensive planning beyond land use decisions alone.

### Key Takeaways

The ten Smart Planning Principles create a holistic approach to long-term sustainable development for Iowa communities and are intended to be incorporated into comprehensive planning processes and products. These ten principles are:

Collaboration

Efficiency, transparency and consistency

Clean, Renewable and efficient energy

Occupational diversity

Revitalization

Housing diversity

Community character

Natural resources and agricultural protection

Sustainable design

Transportation diversity

Walkability

Promoting walkability is identified as a key strategy for developing or enhancing community character, and can be developed through the creation of human-scaled, mixed use developments; pedestrian malls and corridors; sidewalk requirements; lower speed limits; safe walkways and routes; and streetscaping.

Connections to Nature/Natural Resources

Trails, greenways, green spaces, and urban wilderness can be used as tools to foster greater physical and cultural connections to natural resources.

Sustainable Design

Mixed-use, pedestrian- and transit-oriented development, planned unit developments, zoning overlays, and other tools can be used to encourage public and private development that best utilizes resources. These development and zoning tools can be used to create denser, walkable environments.

Transportation Diversity

Encouraging multi-modal transportation through the development of safe bicycle and pedestrian facilities can encourage outdoor activity, improve the quality of neighborhoods and commercial districts, support healthy school environments, and enhance quality of life. Physical improvements such as signage, dedicated bike lanes, trails, wider sidewalks, slower speed limits, and pedestrian-oriented design can foster walking and bicycling as viable transportation modes.

Another transportation diversity strategy identified in the guide is discouraging excessive personal vehicle usage. The long-term approach to decreasing vehicle miles traveled is through land use and development policies that encourage compact and accessible design, which can better support and encourage walking, bicycling and transit.

Promoting connectivity through short, grid-like streets, complete and connected sidewalks, bike racks on buses, transit stations at trails heads, and the development of a bicycle network can encourage the use of alternative transportation.





## Cedar Rapids Metropolitan Area Priority Trails (2005)

### Description

This brief document provides cost estimates, trail segment descriptions, and a map of twelve priority trail projects throughout the Cedar Rapids Metro Area. The trails identified are a refinement of previous trail planning efforts, which culminated in the Metro Area Trails System (MATS) Plan, a 1993 collaboration between the Hawkeye Bicycle Club and the Linn County Regional Planning Commission. The trails are prioritized one through twelve based on length, potential users served, right-of-way needs, cost, and destinations along each segment. Anticipated funding source for these projects is the Transportation Enhancements Program.

### Key Takeaways

The trails map produced by the Corridor MPO is nearly nine years old and does not include a timetable for re-evaluating the regional trail network. In addition, there is little context provided as to how this Priority Trails document was developed. However, the map does provide a valuable resource as a region-wide conceptual trail system. While each trail is vital to the functionality and success of the entire trail system, five of the twelve trails identified in the document have greater significance for the City of Marion, as they either fall within the city limits (fully or partially) or come within a short distance from the City. These five trails are numbered below based on their priority among all twelve trails.

**CEMAR Trail.** The CEMAR Trail provides the most direct link between downtown Cedar Rapids and the City of Marion. More than 37,000 people live within a mile of the proposed alignment. Cost estimate: \$1,367,000.

**Marion Trail.** Traveling entirely through the City of Marion from the Boyson Trail to Squaw Creek Park, the Marion Trail provides access to more than 20,000 people who live within a mile of the alignment.

**Dry Creek Trail.** Extending from Cedar Valley Nature Trail to the Boyson Trail, the Dry Creek Trail provides a vital connection to the region's longest trail corridor. Cost estimate: \$1,788,000.

**Grant Wood Trail Connector.** This trail connector runs from the current western terminus of the Grant Wood Trail at Highway 13 south to Highway 100, then west to Squaw Creek Park, where it connects with the proposed Marion and Squaw Creek Trails. Cost estimate: \$316,600.

**Squaw Creek Trail.** Running entirely through unincorporated Linn County, the Squaw Creek Trail connects Squaw Creek Park and proposed trails in the City of Marion with the Sac & Fox Trail in southeast Cedar Rapids and unincorporated Linn County. Cost estimate: \$984,200.

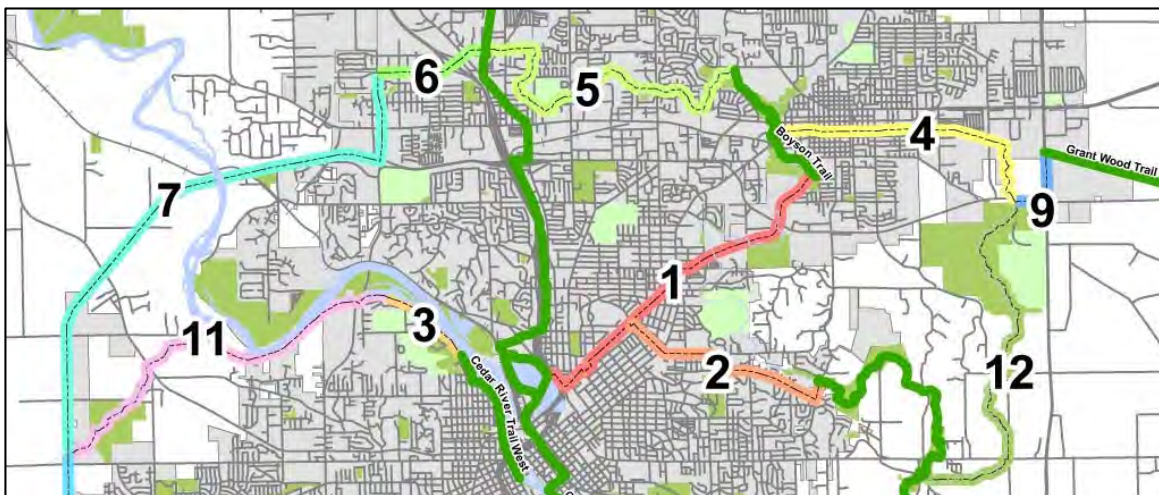


Figure 8: Priority trails in the City of Marion include the CEMAR Trail (#1), the Marion Trail (4), the Dry Creek Trail (5), the Grant Wood Trail Connector (#9), and the Squaw Creek Trail (12).



### County Trail Corridors (2007)

#### Description

This map, developed by the Linn County Regional Planning Commission, overlays the Metro Area Priority Trails with additional trail corridors extending outside the Greater Cedar Rapids Metropolitan Area and into greater Linn County. The document provides little context or background as to how these corridors were developed.

#### Key Takeaways

Similar to the 2005 Regional Trails Map, the County Trail Corridors Map does not provide any background information as to the map's development, whether or not this map is part of a larger plan, if there was any public participation or input, etc. The Map identifies 134 miles of trails with a total estimated cost of \$40,213,707 based on a \$300,000 per mile cost. Three trail corridors lead into or near the City of Marion:

1. The Highway 13 Trail, leading from the Grant Wood Trail to Coggon and stretching a distance of 16.94 miles.
2. The County Home Road Trail, with a distance of 6.41 miles from the Cedar Valley Nature Trail to Highway 13.
3. The Alburnett Road South Trail, from Lowe Park in north Marion northward to Paris Road (5.62 miles).

### Iowa DOT Cedar Rapids Area Bicycle Trails Map (2012)

#### Description

This high level bicycle trails map provides an overview of the existing trail system in the Cedar Rapids Metropolitan Area. The Cedar Rapids Area Bicycle Trails Map is one of a number of metropolitan area maps developed by the Iowa Department of Transportation in conjunction with the creation of a statewide bicycle trails map in 2012.

#### Key Takeaways

The map provides a snapshot of regional trail development for the Cedar Rapids Metropolitan Area. Regional trails like the Cedar Valley Nature Trail, the Cedar Rivers Trail, the Sac & Fox Trail, and the Grant Wood Trail stand out as regional trail corridors. Shorter trails like the Lowe Park Trail, the Boyson Trail, and the 35th Street Trail function as local corridors for recreation and transportation. Marion's on-street bike network is joined by recently added on-street bikeways in Cedar Rapids on Jacolyn, Wilson, and 33rd. While the map does show some progress on trail and bikeway development when compared to previous area maps from years prior, it is evident that there is still little connectivity within and between Marion and Cedar Rapids. The existing trails are disconnected and still represent only the beginnings of a region-wide trail network.



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## A-2: Review of Existing Policies and Legislation

Local, regional and state policies play an important role in planning, development, design, construction and maintenance of trails, bikeways and walkways. This working paper summarizes existing policies and legislation pertinent to the development of the Marion Master Trails Plan.

### Policies and Legislation Reviewed

Document	Agency	Year
City of Marion Municipal Code	City of Marion	N/A
Resolution No. 23328: Adoption of SUDAS Chapter 12	City of Marion	2013
Statewide Urban Design and Specifications (SUDAS) Chapter 12: Sidewalks and Bicycle Facilities	Iowa DOT	2013
Cedar Rapids Metropolitan Area Engineering Design Standards Manual	City of Cedar Rapids, Marion and Hiawatha	2006
Local Option Sales Tax Spending Plan	City of Marion	2013
2014 Iowa Code	The Iowa Legislature	2014

Existing policies and legislation have a significant impact on the development of a trails system in the City of Marion. State and local regulations determine the design, construction specifications, and safe use of trails, sidewalks and on-street bicycle facilities. Local regulations in the municipal code also govern behavior and interactions between various road users – motorists, bicyclists, and pedestrians – to ensure the safe use and enjoyment of public roadways. The current regulatory environment in the City of Marion is similar to other municipalities of similar character in the State of Iowa. The use of Chapter 12 of Iowa DOT’s SUDAS Manual promotes consistency in the design and construction of bicycle and pedestrian facilities. The adoption of sections of the Iowa State Code pertaining to pedestrian, bicycle and motorist movement and operation on public roadways also promotes behavior in conformance with statewide regulations.

A number of regulations and policies support and encourage the development and safe use of trails, bikeways and pedestrian facilities in the City of Marion.

This regulatory and policy environment pertaining to bicycling and walking in the City of Marion, while similar to that of other areas of the state. The Iowa Code acknowledges and supports trail development as a catalyst for economic development and improved community health. The Iowa Code also prohibits persons from throwing or projecting objects at cyclists. The SUDAS Manual provides detailed design guidelines and standards for the development of consistent non-motorized transportation facilities. The Iowa Driver’s Manual, Iowa Code, and Department of Justice promote safe passing of bicyclists by requiring motor vehicles to fully change lanes when overtaking bicycles. The City of Marion allows bicyclists to travel two abreast, which affords bicyclists a more comfortable and social bicycling experience.

There are also a number of challenges, contradictions and archaic policies that characterize the regulatory and policy environment. Marion municipal code requires bicycle licensing for all bicycles, limits park hours, which effectively closes multi-purpose trails for the purpose of transportation, and requires the use of existing sidepaths adjacent to the roadway where present. In addition, local standards for roadway design lack guidance for bicycle facilities. While the SUDAS Manual provides additional bicycle and pedestrian guidance to supplement the Cedar Rapids Metropolitan Area Engineering Design Standards Manual, the two documents do little to support one another and provide a consistent resource for developing on-street bicycle facilities, particularly within the context of larger





roadway projects. These challenges may have unintended consequences for future trail development and use and should be addressed in the Marion Master Trails Plan.

City of Marion Municipal Code
<p><b>General Description</b></p> <p>The City of Marion Municipal Code is the set of laws and regulations that provide for safe and orderly enjoyment of public and private property, development and use of private property, travel on public property, and other actions and activities. There are a number of regulations related to bicycle and pedestrian mobility that are defined and described in the municipal code. These regulations are described below.</p>
<p><b>Chapter 47: Park Rules</b></p> <p>47.03 Park Hours. All parks are closed to public use from 10:00 pm to 6:00 am. When trails that comprise the non-motorized transportation network traverse city parkland, this park hour requirement will effectively close trails used for public transportation from 10:00 pm to 6:00 am. This need for accessibility and connectivity must be properly balanced with the need for safety and security. In addition, trail use in parks for transportation purposes may require additional lighting,</p>
<p><b>Chapter 61: Traffic Control Devices</b></p> <p>61.01 Traffic Control Devices. The Council has the power to establish by resolution traffic control devices such as parking locations, no parking zones, stop lights, stop signs, school zones, safety zones, and play streets.</p> <p>61.04 Crosswalks. The Council is authorized to designate crosswalk locations where there is a particular danger to pedestrians crossing the street.</p>
<p><b>Chapter 62: General Traffic Regulations</b></p> <p>62.01 Violation of Regulations. The City of Marion General Traffic Regulations adopt a number of sections of the Code of Iowa that pertain to bicycle and pedestrian responsibilities and interactions with motor vehicles:</p> <p>Section 321.329.1 Every driver of a vehicle shall exercise due care to avoid colliding with any pedestrian upon any roadway and shall give warning by sounding the horn when necessary and shall exercise due care upon observing any child or any confused or incapacitated person upon a roadway.</p> <p>Section 321.330. Pedestrians shall move, whenever practicable, upon the right half of crosswalks.</p> <p>Section 321.381A. A low-speed vehicle shall not be operated on a street with a posted speed limit greater than thirty-five miles per hour. This section shall not prohibit a low-speed vehicle from crossing a street with a posted speed limit greater than thirty-five miles per hour.</p> <p>Section 321.434. A bicycle shall not be equipped with and a person shall not use upon a bicycle any siren or whistle. This section shall not apply to bicycles ridden by peace officers in the line of duty.</p> <p>62.02 Play Streets Designated. Whenever authorized signs are erected indicating any street or part thereof as a play street, no person shall drive a vehicle upon any such street or portion thereof except drivers of vehicles having business or whose residences are within such closed area, and then any said driver shall exercise the greatest care in driving upon any such street or portion thereof.</p>
<p><b>Chapter 63: Speed Regulations</b></p> <p>Speed regulations in the City of Marion are generally established based on Section 321.285 of the State Code of Iowa:</p> <p>Business District – 20 mph</p> <p>Residence or School District – 25 mph</p> <p>Suburban District – 45 mph</p> <p>Chapter 63 also establishes Special Speed Zones ranging from 15 mph (any mobile home park) to 55 mph (established zones along Iowa Highway 13 and Business Highway 151). The ability of the Council to establish speed limits can be used to lower vehicle speeds on roadways used as part of the trail and on-street bicycle system, if such reduction of speed were necessary.</p>
<p><b>Chapter 64: Turning Regulations</b></p>



64.01 Turning at Intersections. Section 1. Both the approach for a right turn and a right turn shall be made as close as practical to the right-hand curb or edge of the roadway.

This section of Chapter 64 indicates that, when turning right, a motor vehicle operator should approach and turn as close to the curb as practical. If a bike lane exists, this would encourage the motor vehicle to merge into the bike lane rather than approaching from the travel lane and overtaking any through-traveling bicyclists. While there is some ambiguity on the part of motorists with regard to a right turn maneuver when bicyclists are present, adherence to this regulation can reduce the occurrence of “right hook” crashes.

#### **Chapter 65: Stop or Yield Required**

65.05 Yield to Pedestrians in Crosswalks. Where traffic control signals are not in place or in operation, the driver of a vehicle shall yield the right-of-way, slowing down or stopping, if need be, to yield to a pedestrian crossing the roadway within any marked crosswalk or within any unmarked crosswalk at an intersection.

#### **Chapter 67: Pedestrians**

67.01 Walking in Street. Pedestrian shall at all times, when walking on or along a street, walk on the left side of the street.

While this regulation appropriately addresses the safety of pedestrians along roadways with no accommodations for pedestrians, it can be perceived as overly burdensome for pedestrians using sidewalks along a roadway. Additional clarification may be necessary so as to reduce undue liability on pedestrians.

67.03 Pedestrian Crossing. Every pedestrian crossing a roadway at any point other than within a marked crosswalk or within an unmarked crosswalk at an intersection shall yield the right-of-way to all vehicles upon the roadway.

#### **Chapter 76: Bicycle Regulations**

These regulations pertaining to bicyclists and the operation of a bicycle upon public rights-of-way are generally consistent with most local and state regulations, in part because many of these regulations have been adopted from the Code of Iowa. While sections like Section 76.03 Two Abreast Limit are more permissive than regulations in other states where riding two abreast is explicitly prohibited, other sections like 76.05 Bicycle Paths can be perceived as overly restrictive by mandating that bicyclists use a sidepath, if present, rather than the roadway. In addition, the vagueness of particular terms in the regulation, such as “usable” and “adjacent”, leave this regulation open to interpretation.

76.02 Traffic Code Applies. Every person riding a bicycle upon a roadway shall be granted all of the rights and shall be subject to all of the duties applicable to the driver of a vehicle by the laws of the State declaring rules of the road applicable to vehicles or by the traffic code of the City applicable to the driver of a vehicle, except as to those provisions which by their nature can have no application. Whenever such person dismounts from a bicycle the person shall be subject to all regulations applicable to pedestrians.

76.03 Two Abreast Limit. Persons riding bicycles upon a roadway shall not ride more than two (2) abreast except on paths or parts of roadways set aside for the exclusive use of bicycles. All bicycles ridden on the roadway shall be kept to the right and shall be operated as near as practicable to the right-hand edge of the roadway.

76.05 Bicycle Paths. Whenever a usable path for bicycles has been provided adjacent to a roadway, bicycle riders shall use such path and shall not use the roadway.

76.09 Riding on Sidewalks. The following shall apply to riding bicycles on sidewalks:

1. Business District. No person shall ride a bicycle upon a sidewalk within the Business District.
2. Other Locations. When signs are erected on any sidewalk or roadway prohibiting the riding of bicycles thereon by any person, no person shall disobey the signs.
3. Yield the Right-of-Way. Whenever any person is riding a bicycle upon a sidewalk, such person shall yield the right-of-way to any pedestrian and shall give audible signal before overtaking and passing.

76.12 Parking. No person shall park a bicycle upon a street other than upon the roadway against the curb or upon the sidewalk in a rack to support the bicycle or against a building or at the curb, in such a manner as to afford the least obstruction to pedestrian traffic.

76.14 Special Penalty. Any person violating the provisions of this chapter may, in lieu of the scheduled fine for bicyclists or standard penalty provided for violations of the Code of Ordinances, allow the person’s bicycle to be impounded by the City for not less than five (5) days for the first offense, ten (10) days for a second offense and thirty (30) days for a third offense.

76.15 Exemptions. The provisions of this Code of Ordinances pertaining to bicycles do not apply to the operation of any bicycle by an officer of the Marion Police Department while on duty.



### **Chapter 77: Bicycle Licensing**

Bicycle licensing has been implemented by local municipalities primarily as a means of tracking stolen, lost, and abandoned bicycles. Chapter 77 indicates that the City of Marion also uses bicycle licensing as a means of inspecting bicycles to ensure safe and proper mechanical condition. While optional bicycle registration through the police department may be a practical tool for recovering stolen or lost bicycles, mandatory bicycle licensing can be costly from an administrative standpoint and overly burdensome for citizens.

77.01 License Required. No person shall ride or propel a bicycle on any public area, path, right-of-way, street or sidewalk within the City unless such bicycle has been licensed and a license tag is attached thereto as provided in this chapter.

77.08 Impoundment of Unlicensed Bicycles. Bicycles which bear no City of Marion license, but whose owner resides within the City, parked or left standing in public places, may be impounded until such time as the owner purchases a license.

### **Chapter 141: Sidewalk Regulations**

Chapter 141 establishes requirements for the clearance, maintenance, financing, and obstruction of public sidewalks. The maintenance of sidewalks and the clearance of snow and debris is the responsibility of the adjacent landowner. The replacement of sidewalks is also the responsibility of the property owner as well, and the City Council may require the owner to repair, replace or reconstruct sidewalks and may assess the cost to abutting property owners in accordance with the provisions set forth in the Code of Iowa.

### **Chapter 176 : Zoning Regulations**

The City of Marion Zoning Regulations establish rules and requirements for the use and development of private property to ensure the safety, health and welfare of the public while also promoting orderly growth and development in accordance with the City's Comprehensive Plan. Zoning regulations often include requirements pertaining to the development of private property may impact bicycle and pedestrian movement and experience. Based on a review of the Marion Zoning Regulations, few such requirements have been identified.

Parking Requirements. Section 176.29 establishes parking requirements that dictate the location and number of parking spaces required to serve adjacent buildings and land uses. Minimum parking requirements are based on square foot of gross floor area, number of units, or other calculations. Parking minimums are often calculated based on maximum potential use of a space, which can lead to an excess of parking spaces. While current parking requirements do not address bicycle parking, the City of Marion is in the process of updating the zoning code and will incorporate bicycle parking as a component of this parking requirements section. Bicycle parking requirements can be incorporated into zoning regulations for commercial and multi-family housing land uses to encourage the use of alternative modes of transportation.

Cluster Development Option and Planned Unit Developments. These zoning tools allow developers greater flexibility and/or density through a relaxation of conventional zoning controls. Evaluation criteria for the review of submitted plans includes an assessment of pedestrian circulation to ensure that pedestrian movements are well accommodated.



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## Resolution No. 23328: Adoption of SUDAS Chapter 12

### Description

On August 22, 2013, the City Council passed and the Mayor signed into law a resolution adopting the Statewide Urban Design and Specifications (SUDAS) Manual, Chapter 12 – Sidewalk and Bicycle Facilities in lieu of the standards set forth in the Corridor MPO design standards manual.

### Key Takeaways

The adoption of Chapter 12 of the SUDAS Manual ensures uniformity with statewide standards for bicycle and pedestrian facilities.





## Statewide Urban Design and Specifications (SUDAS) Chapter 12: Sidewalks and Bicycle Facilities

### Description

Iowa DOT, in partnership with the Institute for Transportation at Iowa State University, has developed the Statewide Urban Design and Specifications (SUDAS) Manual to provide statewide standards for the development of public improvements. SUDAS helps to ensure consistent, uniform public facilities for citizens and system users; reduces contractor confusion and mistakes due to differing specifications; reduces costs through uniformity, understanding and acceptance; and provides a method for study and statewide implementation of latest techniques and material use.

Chapter 12 relates specifically to the design of pedestrian and bicycle facilities.

### Key Takeaways

#### Pedestrian Facilities

Sidewalks are grouped into three classes based on relationship to the right-of-way line. Class A sidewalks begin at the back of curb and extend to the right-of-way line. These are typical in downtown areas, where they may abut adjacent buildings. Class B Sidewalks are constructed with the back edge of the sidewalk 1 foot or more off the right-of-way line. Class C sidewalks have the back edge of the sidewalk on the right-of-way line.

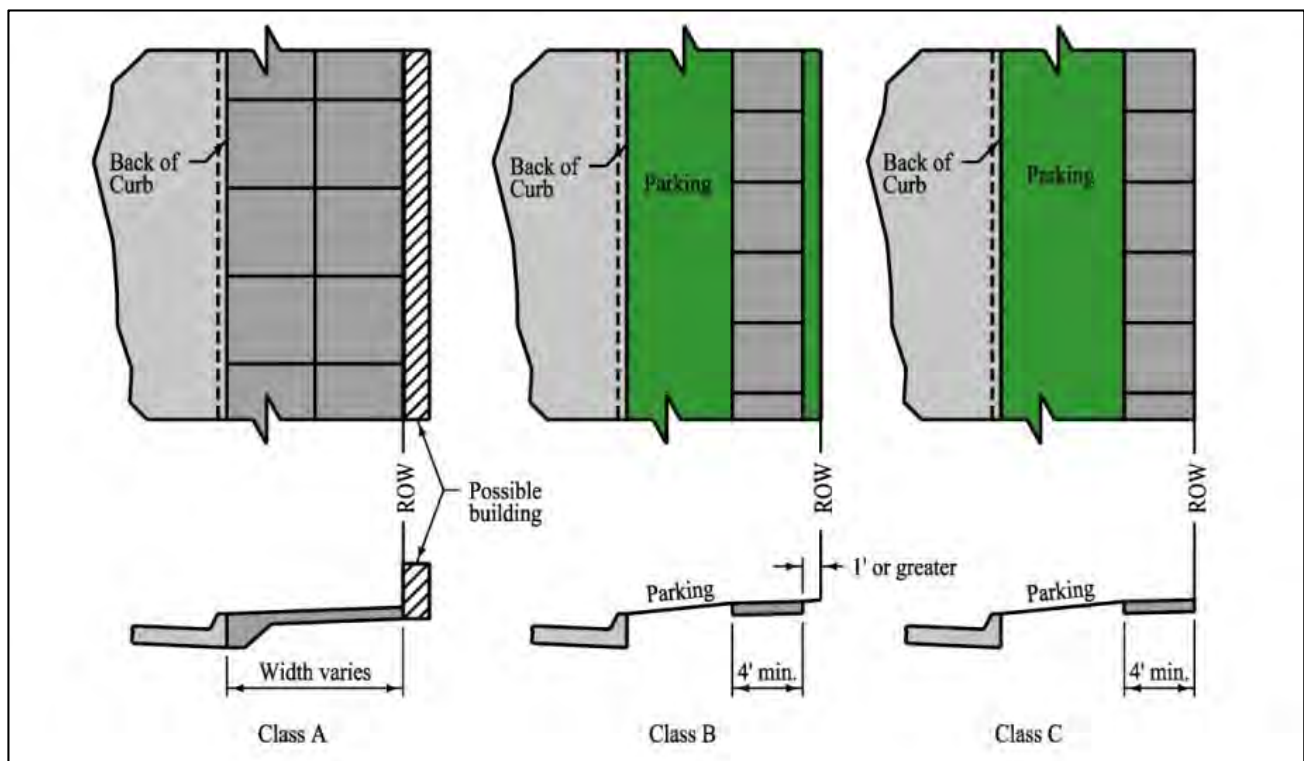


Figure 1: SUDAS sidewalk classes illustration

Accessible sidewalk requirements compose a significant portion of the pedestrian-related design guidance. These requirements are based primarily on the Americans With Disabilities Act Accessibilities Guidelines (ADAAG) and Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG). SUDAS clarifies that resurfacing is an alteration that triggers the requirement for curb ramps if it involves work on a street or roadway spanning from one intersection to another. This includes new layer of surface material, reconstruction, concrete pavement rehabilitation or reconstruction, open-graded surface course, microsurfacing, cape seals, and in-place asphalt recycling. Where elements are altered or added to existing facilities, but the pedestrian circulation path is not altered, ADA upgrades are not required. Accessibility requirements are not required for maintenance work, such as pavement markings, crack filling and sealing, surface sealing, chip or slurry seals, joint repairs, diamond grinding, and even minor sidewalk repair that does not include the turning space and curb ramps.



## Sidewalk Elements

Basic elements of the standard sidewalk and curb ramp are defined and illustrated in Figure 2 below, along with cross slope, running slope, width, and passing spaces requirements.

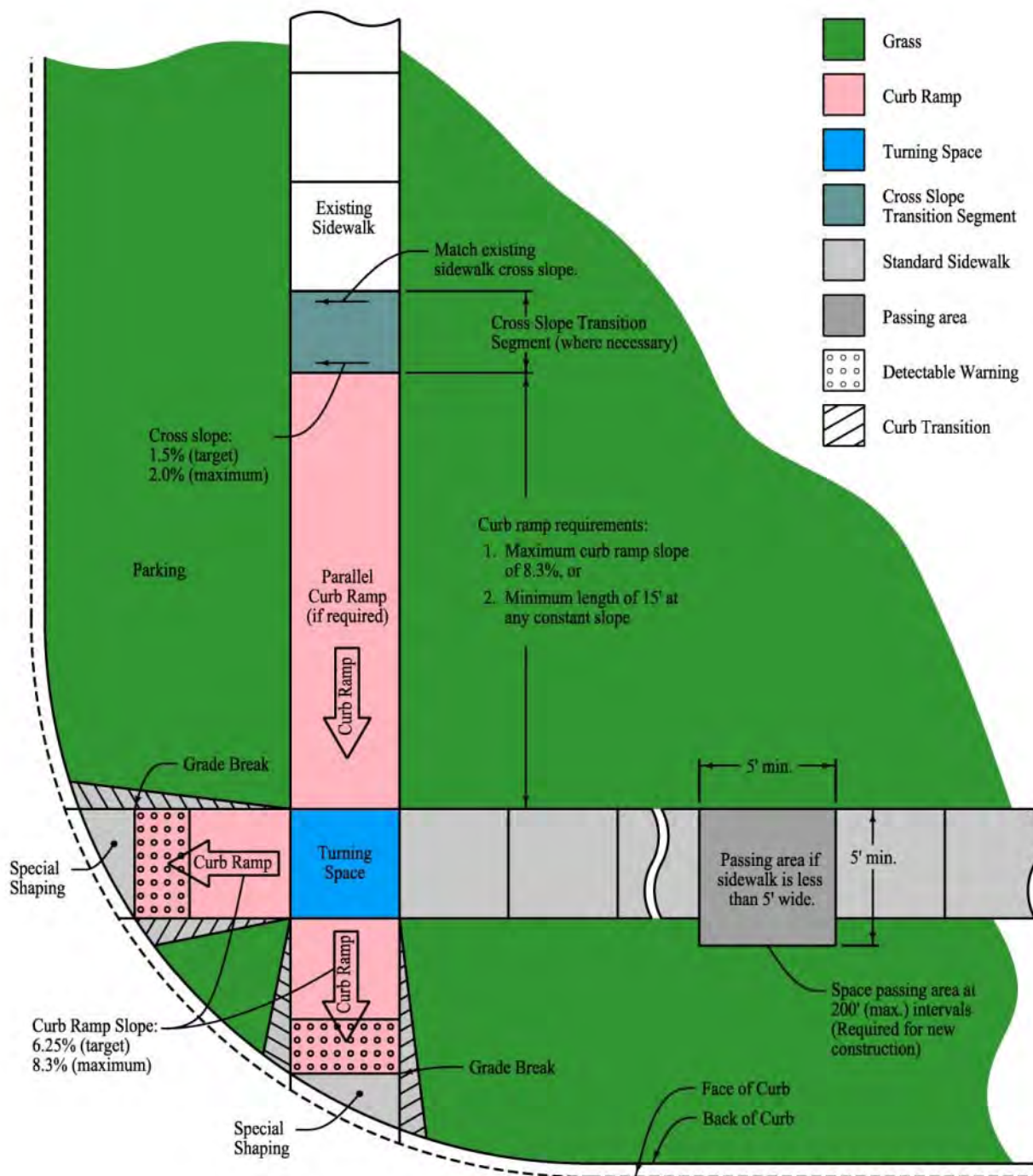


Figure 2: Basic sidewalk and curb ramp elements as defined in SUDAS.

Additional pedestrian facility design details discussed at length in Chapter 12 include pedestrian street crossings; curb ramps; detectable warnings; bus stop shelters and pads; accessible pedestrian signals; protruding object locations and



vertical and horizontal clearance requirements; and pedestrian facilities during construction requirements;

#### Bicycle Facility Development

The development of bicycle facilities, both on-street and off-street, requires comprehensive systematic design that addresses facilities needs and objectives; potential use; access; directness and convenience; continuity with shared use path network; attractiveness of route; safety and security; delays; cost of improvements; shared use of facility; maintenance; conflicts with other vehicles; and adequacy of street use.

#### On-Street Bicycle Facilities

Design guidance for on-street bike facilities SUDAS - shared lanes, paved shoulders, bike lanes, bike boulevards – is extracted from the 2012 draft of the AASHTO *Guide for the Development of Bicycle Facilities*. Shared lanes include wide curb/outside lanes, marked shared lanes, and signed shared roadways. Each of these basic facility types may have applications for on-street components of a city-wide trail network in the City of Marion. Additional information and references are provided with regard to bicycle guide signs, railroad crossings, traffic signals, bridges and viaducts, traffic calming, intake grates, and roundabouts.

#### Shared Use Path Design

SUDAS utilizes the AASHTO Guide for the Development of Bicycle Facilities, the Proposed Architectural Barriers Act “Accessibility Guidelines for Outdoor Developed Areas” (AGODA), and PROWAG to ensure shared use path design meets functional and accessible standards and requirements. Shared use paths are divided into three types based on location and characteristics:

Type 1 shared use paths are adjacent or in close proximity to the roadway and function similarly to a sidewalk.

Type 2 shared use paths are within an independent right-of-way, not in close proximity to the roadway, and serve as a transportation route to facilities that fulfill a basic life need or provide a safe route for non-drivers.

Type 3 shared use paths are within an independent right-of-way, not in close proximity to the roadway, and primarily serve a recreation and fitness purpose.

Type 1 and Type 2 shared use paths shall be paved.

Additional design considerations discussed in detail regarding shared use paths include width; surface thickness; cross slope; separation from roadway; lateral and vertical clearance; shoulder width and slope; safety rails; design speed and alignments; stopping sight distance; accessibility requirements; intersection sight distance; surface; crossings at unpaved surfaces; railroad crossings; pavement markings; signage; lighting; and drainage.



## Cedar Rapids Metropolitan Area Engineering Design Standards Manual

### Description

The Cedar Rapids Metropolitan Area Engineering Design Standards Manual, adopted in 2006, provides the basic criteria for the design of public improvements, including roadways, pedestrian facilities and right-of-way-widths, for the cities of Cedar Rapids, Hiawatha, and Marion.

### Key Takeaways

Cedar Rapids roadway design standards apply to local, collector, minor arterial and major arterial roadways. The lack of guidance or standards for on-street bikeways (including sidepaths and multi-purpose trails adjacent to the roadway) may have detrimental effects on the development of a consistent regional non-motorized transportation network. The inclusion of such design information into roadway and sidewalk design, as well as right-of-way considerations, can also serve to encourage local agencies to consider bicycle and pedestrian needs and incorporate on-street bikeways into roadway projects.

In order to address the lack of trail and bikeway design, the City of Marion adopted Chapter 12 – Sidewalks and Bicycle Facilities of the Iowa Department of Transportation SUDAS Manual in lieu of Chapter 8 – Sidewalks of the Cedar Rapids Metropolitan Area Engineering Design Standards Manual. Chapter 12 of the SUDAS Manual is also reviewed in this document.





## Local Option Sales Tax Spending Plan

### Description

The Local Option Sales Tax (LOST) Spending Plan provides a detailed proposal for capital expenditures funded by the 2013 voter-approved ballot measure to extend the 1-percent local option sales tax through 2024. The Plan was developed to inform citizens of the City's intentions and timeline to improve a host of community facilities, including parks and trail improvements, library expansion, fire department replacements, roadway improvements, sanitary sewer projects, regional stormwater detention, and other capital projects.

### Key Takeaways

Trail expenditures identified in the LOST Spending Plan are limited to \$350,000 in year one, which consists of Boyson Road Trail lighting (\$150,000) and Donnelly Park Trail bridge replacement (\$200,000). While no other funds have been planned for specific trail projects, bicycle and pedestrian improvements can be incorporated into arterial, collector, and local roadway projects. More than \$26.6 million in roadway improvements have been programmed based on income from the local option sales tax. Individual arterial and collector roadway projects are listed on a year-by-year basis:

Year 1: 13th St (8th to 10th Ave); Tower Terrace ROW purchase; 35th St reconstruction (Bus. 151 to RR ROW).

Year 2: West 8th Ave (Lindale to Indian Creek); Alburnett Rd extension; Winslow Road reconstruction.

Year 3: Tower Terrace ROW purchase; 35th/Munier improvements; 29th Ave/Indian Creek intersection improvements; 44th/100 intersection improvements.

Year 4: Echo Hill Rd culvert; Lindale Dr reconstruction; 10th St/10th Ave intersection improvements; 1st Ave reconstruction (partial).

Year 5: Lucore Rd reconstruction; Tower Terrace Rd (Winslow to Lennon – partial); 1st Ave reconstruction (partial).

Year 6: Tower Terrace Rd (Winslow to 35th).

Year 7: No major roadways programmed.

Year 8: Tower Terrace Road (35th St East).

Year 9: 1st Ave reconstruction; 7th Ave improvements.

Year 10: Unidentified arterial reconstruction and intersection improvement projects.



2014 Iowa Code
<b>Description</b>
<p>Laws passed by the Iowa Legislature are compiled into the Iowa Code. A number of these laws and regulations pertain to bicyclists and interactions between bicyclists and motor vehicles. These bicycle-specific state laws are listed and described below, with a focus on their pertinence to the Marion Master Trails Plan.</p>
<b>321.281 Actions Against Bicyclists</b>
<p>This chapter provides bicyclists with protection against dangerous motor vehicle behavior by prohibiting persons operating motor vehicles from “steering unreasonably close to or toward a person riding a bicycle on a highway, including the roadway or the shoulder adjacent to the roadway.” The law also prohibits a person from projecting an object or substance at a person riding a bicycle on a highway. Both of these acts are misdemeanors punishable by a fine of \$250.</p>
<b>321.234 Bicycles, Animals, or Animal-Drawn Vehicles</b>
<p>321.234.2: A person, including a peace officer, riding a bicycle on the highway is subject to the provisions of this chapter and has all the rights and duties under this chapter applicable to the driver of a vehicle, except those provisions of this chapter which by their nature can have no application or those provisions for which specific exceptions have been set forth regarding police bicycles.</p>
<b>321.299 Overtaking a Vehicle</b>
<p>321.299.1: The driver of a vehicle overtaking another vehicle proceeding in the same direction shall pass to the left of the other vehicle at a safe distance and shall not again drive to the right side of the roadway until safely clear of the overtaken vehicle.</p>
<p>This law has been open to interpretation and subject to considerable attention in recent years, primarily based on the conception that bicycles, as human powered devices, are not vehicles, and therefore this law does not apply to passing bicycles. The Iowa Attorney General’s office issues a letter of clarification in on July 12, 2013 that clarifies the law by stating that 1) bicycles are vehicles, and 2) the rules set forth in Section 321.299 relating to the overtaking and passing of vehicles also apply to the overtaking and passing of bicycles. Legal precedent set forth in multiple court cases also supports “a termination that the rules set forth in Iowa Code 321.299 also apply to the overtaking and passing of bicycles on the streets and highways in the State of Iowa.”</p>
<p>The safe passing distance is further clarified for Iowa motorists in the 2013-2014 Iowa Driver’s Manual, which states that “when passing a bicycle rider, pass as if the cyclist were a vehicle and move into the other lane. On narrow, two-way roads, wait for a break in traffic before passing. Do not pass if oncoming traffic is near. After passing, cautiously return to your lane – a bicyclist could be in your blind spot.”</p>
<p>In effect, state regulations require passing motor vehicles to give a full lane’s width to a bicyclist when overtaking that bicyclist.</p>
<b>321.326 Pedestrians on Left</b>
<p>321.325: Pedestrians shall at all times when walking on or along a highway, walk on the left side of such highway.</p>
<b>321.327 Pedestrians’ Right-Of-Way</b>
<p>321.327: Where traffic-control signals are not in place or in operation the driver of a vehicle shall yield the right-of-way, slowing down or stopping if need be to so yield, to a pedestrian crossing the roadway within any marked crosswalk or within any unmarked crosswalk at an intersection, except as otherwise provided in this chapter.</p>
<b>321.328 Crossing at Other Than Crosswalk</b>
<p>321.328.1: Every pedestrian crossing a roadway at any point other than within a marked crosswalk or within an unmarked crosswalk at an intersection shall yield the right-of-way to all vehicles upon the roadway except that cities may restrict such a crossing by ordinance.</p>
<p>321.328.2: Any pedestrian crossing a roadway at a point where a pedestrian tunnel or overhead pedestrian crossing has been provided shall yield the right-of-way to all vehicles upon the roadway.</p>
<p>321.328.3: Where traffic-control signals are in operation at any place not an intersection pedestrians shall not cross at any place except in a marked crosswalk.</p>



### **321.329 Duty of Driver – Pedestrian Crossings**

321.329.1: Notwithstanding the provisions of section 321.328 every driver of a vehicle shall exercise due care to avoid colliding with any pedestrian upon any roadway and shall give warning by sounding the horn when necessary and shall exercise due care upon observing any child or any confused or incapacitated person upon a roadway.

### **564.3 Pedestrian Rights-Of-Way or Easements**

564.3: An easement or right-of-way for pedestrian traffic shall not be acquired by prescription or adverse use for any length of time except when claimed in connection with an easement or right-of-way to permit passage of public or private vehicular traffic.

### **Chapter 465B Recreation Trails**

This entire chapter of the State Code acknowledges the importance of recreation trails and their benefit to the health and well-being of Iowans and visitors, as well as their impact on the state's economy. Chapter 465B then goes on to establish a program to acquire, develop, promote and manage existing and new recreation trails; call for the preparation of a long-range plan to guide trail development throughout the state; identify state agencies that will assist the Department of Transportation in this process, including the Department of Natural Resources, the Economic Development Authority, and the Department of Cultural Affairs; and identify various funding sources (general assembly appropriations, private grants and gifts, and federal grants) to be used by state and local agencies and private organizations to develop, maintain and promote the trail system.

This law led to the creation of the Iowa DOT's 1990 statewide trail plan and the subsequent *Iowa Trails 2000* plan, the latter of which has set the stage for trail development throughout the state and provided policy direction and guidance for local agencies for over a decade.



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## A-3: Model Complete Streets Policy

Prepared by Carol Failor, Deputy City Clerk, City of Waterloo, 715 Mulberry Street, Waterloo, IA 50703, (319) 291-4323.

### RESOLUTION NO. 2013-474

RESOLUTION ESTABLISHING A COMPLETE STREETS POLICY IN THE CITY OF WATERLOO, BLACK HAWK COUNTY, IOWA AND ESTABLISHING THE COMPLETE STREETS ADVISORY COMMITTEE.

WHEREAS, the mobility of freight and passengers and the safety, convenience, and comfort of motorists, cyclists, pedestrians - including people requiring mobility aids, transit riders, and neighborhood residents of all ages and abilities should all be considered when planning, designing, and improving Waterloo's streets; and

WHEREAS, integrating sidewalks, bike facilities, transit amenities, and safe crossings into the initial design of street projects avoids the expense of retrofits later; and

WHEREAS, streets are a critical component of public space and play a major role in establishing the image and identity of a city, providing a key framework for current and future development; and

WHEREAS, streets are a critical component of the success and vitality of adjoining private uses and neighborhoods; and

WHEREAS, the Waterloo Blue Zones Project attaches certification for the community to development and adoption of a Complete Streets Policy; and

WHEREAS, a goal of Complete Streets is to improve the access and mobility for all users of streets in the community by improving safety through reducing conflict and encouraging non-motorized transportation and transit; and

WHEREAS, it is recognized that there are some streets or corridors in the City which would not fully satisfy a complete streets environment - where it would not be advisable to have non-motorized travel; and

WHEREAS, the National Complete Streets Coalition recognizes ten (10) elements of a successful Complete Streets Policy.

NOW, THEREFORE BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF WATERLOO, IOWA, that the City of Waterloo hereby adopts the Complete Streets Policy attached as Exhibit "A", which is consistent with the National Complete Streets Coalition guidance, and establishes the Complete Streets Advisory Committee.






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Resolution No. 2013-474  
Page 2

PASSED AND ADOPTED this 10<sup>th</sup> day of June, 2013.

  
\_\_\_\_\_  
Ernest G. Clark, Mayor

ATTEST:

  
\_\_\_\_\_  
Suzy Schares, CMC  
City Clerk



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## Exhibit "A"

### Waterloo, Iowa Complete Streets Policy

The following elements shall constitute the Waterloo, Iowa Complete Streets Policy:

#### **1. Sets a Vision**

This Complete Streets Policy incorporates the simple and basic concept that streets and roadways should be designed, constructed, and operated to be safe and accessible for all transportation users whether they are pedestrians, bicyclists, transit riders, vehicular motorists or trucks.

Further, Complete Streets are designed to improve mobility and connectivity, improve health, increase safety, enhance neighborhoods, businesses, and institutions, and advance the quality of life for all Waterloo citizens and visitors.

#### **2. Specifies all Users**

The City of Waterloo will ensure that the safety, access, and convenience of all users of the transportation system are accommodated in all future roadway projects, as defined in the Exceptions element of this Policy (#4 below), including: pedestrians (including persons with mobility aids), bicyclists, transit users, persons with disabilities, youth, seniors, scooter riders, motorcyclists, private motorists, commercial vehicle drivers, freight providers, emergency responders, and adjacent land uses.

#### **3. All Projects (All New and Reconstruction Projects)**

Develop as many transportation improvement projects as possible in an affordable, balanced, responsible, and equitable way that accommodates and encourages travel by motorists, bicyclists, public transit vehicles and their passengers, and pedestrians.

For the City of Waterloo, Complete Streets may be achieved through single projects or incrementally through a series of smaller improvements activities over time.

Transportation improvements will include facilities and amenities that are recognized as contributing to Complete Streets, which may include street and sidewalk lighting; sidewalks and pedestrian safety improvements such as median refuges or crosswalk improvements; improvements that provide Americans with Disabilities Act (ADA) compliant accessibility; transit accommodations including improved pedestrian access to transit stops and bus shelters; bicycle accommodations including bicycle storage, bicycle parking, bicycle routes, shared-use lanes, wide travel lanes or bike lanes as appropriate; and street trees, boulevard landscaping, and street furniture.

#### **4. Exceptions**

Exemptions to this Policy shall only be granted when the Complete Streets Advisory Committee, as authorized, defined, and established in the Implementation element of this Policy (#10 below), recommends, and the City Engineer and Planning and Programming Director concurs, and City Council determines that any of the following are evident:



- a. The project is occurring on a roadway where non-motorized use is prohibited by law; or
- b. A cost and/or health impact assessment demonstrates that the cost for a particular Complete Streets project would be excessive compared to the need, public health benefit, safety improvement and probable use of that particular street; or
- c. There is absence of use by all, except motorized road-users, that would continue in the future even if the street were a Complete Street; or
- d. An alternate facility has been previously programmed at that location; or
- e. A legal and/or regulatory impediment or constraint exists.

Bicycle, pedestrian, and transit facilities shall be included in new street construction, re-construction, and other transportation improvement projects, except under one or more of the following conditions. Any condition approval shall follow the Implementation process outlined in the corresponding element in this Policy (#10 below).

- a. A project involves only ordinary maintenance activities designed to keep assets in serviceable condition, such as mowing, cleaning, sweeping, patching, joint repair, crack-filling, or pothole filing, or when interim measures are implemented on temporary detour or haul routes;
- b. There is insufficient space to safely accommodate new facilities, as determined by the Complete Streets Advisory Committee, Planning and Programming Director, City Engineer, and City Council;
- c. Where determined by the Complete Streets Advisory Committee, Planning and Programming Director, City Engineer, and City Council to have relatively high safety risks;
- d. Where the City Council exempts a project due to the excessive and disproportionate cost of establishing a bikeway, walkway or transit enhancement as part of a project;
- e. Where jointly determined by the Complete Streets Advisory Committee, City Engineer, Planning and Programming Director, and City Council that the construction is not practically feasible or cost effective because of significant or adverse environmental impacts to streams, floodplains, remnants of native vegetation, wetlands, steep slopes or other critical areas, or due to impacts on neighboring land uses, including impact from right-of-way acquisition.

## **5. Creates a Network**

The City of Waterloo recognizes the absolute necessity of promoting pedestrian, bicycle and public transportation network connectivity as an alternative to the automobile in order to provide transportation options and to protect all road users, reduce negative environmental impacts, promote healthy living, and advance the well-being of commuters. Furthermore, the City acknowledges that as public spaces, roads must be designed to afford safety and accessibility to all users. Finally, the City recognizes that the full integration of all modes of travel in the design of streets and highways will help increase the capacity and efficiency of the road network, hopefully reduce traffic congestion by improving mobility options, reduce greenhouse gas emissions, and therefore improve the general quality of life.

## **6. Jurisdictional (Project) Application**

This Policy shall apply to all local and/or private development transportation improvement projects whether proposed and/or constructed by the City or private developer, unless specifically excluded through the Exceptions element of this Policy (#4 above). Federal and state transportation improvement projects shall be encouraged to consider inclusion of Complete Streets elements.





## 7. Design Criteria

The design of new or reconstructed facilities should anticipate likely future demand for bicycling, walking and transit facilities and should not preclude the provision of future improvements. Said design criteria must be guided by national or state recognized standards (i.e. AASHTO, SUDAS, etc.) for the City of Waterloo. For example, under most circumstances bridges (which last for 75 years or more) should be built with sufficient width for safe bicycle and pedestrian use in anticipation of a future need for such facilities.

The City will generally follow accepted or adopted design standards when implementing improvements intended to fulfill this Complete Streets policy but will consider innovative or non-traditional design options where a comparable level of safety for users is present.

## 8. Context Sensitivity

It will be important to the success of the Complete Streets policy to ensure that the project development process includes early consideration of the land use and transportation context of the project, the identification of gaps or deficiencies in the network for various user groups that could be addressed by the project, and an assessment of the tradeoffs to balance the needs of all users. The context factors that should be given high priority include the following:

- a. Whether the corridor provides a primary access to a significant destination such as a community or regional park or recreational area, a school, a shopping / commercial area, or an employment center;
- b. Whether the corridor provides access across a natural or man-made barrier such as a river or freeway;
- c. Whether the corridor is in an area where a relatively high number of users of non-motorized transportation modes can be anticipated;
- d. Whether a road corridor provides important continuity or connectivity links for an existing trail network; or
- e. Whether nearby routes that provide a similar level of convenience and connectivity already exist.

## 9. Performance Measures

The City of Waterloo shall develop, apply, and report on walking and bicycling transportation performance measures in order to evaluate the functioning of the non-motorized transportation system; to ensure consistency with current industry standards; to identify strengths, deficiencies and potential improvements; and to support development of new and innovative facilities and programs. Several factors shall be measured or used by the Complete Streets Advisory Committee, City Engineer, and Planning and Programming Director to evaluate the effectiveness of this Policy on an annual basis. However, the City recognizes that assessing the effectiveness of this Policy is a long-term process and that the community may not experience large scale improvements or be able to collect sufficient data during the initial two (2) years of the implementation of a Complete Streets project. The measures may include:

- a. Changes in traffic counts;
- b. Changes in transit system ridership;





- c. Change in school transportation survey information (transportation to-and-from school);
- d. Changes in bicycle and pedestrian count data; and/or
- e. Other measures, which may include: miles of on-street bicycle routes; new linear feet of pedestrian sidewalks; number of new or reconstructed curb ramp; number of new or repainted crosswalks; number of new street trees planted; percentage of transit stops with shelters; change in Level of Service (LOS) measurement; customer satisfaction surveys; etc.

**10. Implementation**

In order to ensure Implementation of this Policy, the City of Waterloo will create a Complete Streets Advisory Committee, which will provide recommendations to the City Engineer and Planning and Programming Director regarding implementation of this Policy. The City Engineer and Planning and Programming Director will then be responsible for providing formal recommendations to the Mayor and City Council for consideration.

Membership on the Committee will be inter-departmental and inter-agency and will be subject to appointment by the Mayor and approval by the City Council. The Committee will include members of City’s Engineering, Planning and Programming, Traffic, Community Development, Park and Recreation, and the Police and Fire Departments. The Committee may also include representatives from the Waterloo Blue Zones Policy Committee, representatives from the bicycling, trail, disabled, youth and elderly communities, governmental entities including the Iowa Northland Regional Council of Governments (INRCOG) and the Metropolitan Planning Organization (MPO), and other advocacy agencies and organizations, as may be relevant.

Within six (6) months of the passage of this Policy, the Committee will develop its own administrative guidelines (i.e. rules of procedure, operating or governing rules, bylaws, etc.) and will develop implementation strategies related to this Policy. This Committee will meet as needed, but not less than quarterly, and provide a written report to the City Council evaluating the City’s progress regarding implementation of this Policy.

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Approved by Waterloo City Council on June 10, 2013 by Resolution No. 2013-474  
 Authorized by: [Signature] (Mayor) Attest: [Signature] (City Clerk) Date Approved: June 10, 2013



## A-4: Model Bicycle Parking Ordinance

The following ordinance can be downloaded online via the following link:

<http://www.atpolicy.org/sites/default/files/Model%20Bike%20Parking%20Ordinance%20without%20Annotations%20-%20Public%20Health%20Law%20and%20Policy.pdf>



## Model Bicycle Parking Ordinance

This model ordinance was developed for communities in the state of Illinois.  
October 2011.

[www.phlpnet.org](http://www.phlpnet.org)



*PHLP is a nonprofit organization that provides legal information on matters relating to public health. The legal information provided in this document does not constitute legal advice or legal representation. For legal advice, readers should consult a lawyer licensed to practice law in Illinois.*

*This tool was developed with support from the Centers for Disease Control and Prevention. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention.*

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**[CITY/VILLAGE/TOWNSHIP] OF \_\_\_\_\_**  
**ORDINANCE NO: \_\_\_\_\_**

A draft ordinance based on this model may include “findings” of fact (“whereas” clauses) that support the need for the municipality to adopt the ordinance. The findings section is part of the ordinance, but it usually does not become codified in the local government code. The findings contain factual information supporting the need for the law – in this case, documenting the need for bicycle parking. An adopting body should select those findings it views as most significant for its community and add findings related to local conditions or concerns. The footnotes are provided in order to assist those who wish to understand the evidence for a given finding, and are not intended to be included in the adopted Ordinance.

**FINDINGS.** [The City/Village/Township] hereby finds and declares as follows:

- 1. WHEREAS**, the [Adopting Body] has a goal of improving the health of its residents and the air quality of the community; and
- 2. WHEREAS**, obesity has become a significant health concern for our nation, with overweight and obesity leading to increased risk of heart disease; diabetes; endometrial, breast, and colon cancers; high blood pressure; high cholesterol; stroke; liver and gallbladder disease; sleep apnea and respiratory problems; osteoarthritis (a degeneration of cartilage and its underlying bone within a joint); and gynecological problems;<sup>1</sup> and
- 3. WHEREAS**, obesity is often caused in part by lack of sufficient physical activity;<sup>2</sup> and
- 4. WHEREAS**, bicycling is a safe, low-impact aerobic activity, enjoyed by millions of Americans, which can provide an ideal opportunity to obtain physical exercise while traveling to work, shops, restaurants, and many other frequent destinations;<sup>3</sup> and



5. **WHEREAS**, bicycling is a feasible alternative to driving in many cases since 25 percent of all car trips are to destinations within one mile of home,<sup>4</sup> 40 percent of all trips taken are two miles or less,<sup>5</sup> and around 30 percent of the working population travels five miles or less to work;<sup>6</sup> and
6. **WHEREAS**, replacing car trips with bicycle trips can also reduce pollution and congestion and increase air quality, given that transportation accounts for nearly one-third of all carbon dioxide emissions in the United States and an average motor vehicle emits 8.8 kilograms of carbon dioxide per gallon of gasoline that it burns, while biking emits none;<sup>7</sup> and
7. **WHEREAS**, providing safe, convenient, and adequate bicycle parking is necessary to encourage increased use of bicycles as a form of transportation;<sup>8</sup> and
8. **WHEREAS**, cities that have improved bicycle infrastructure, including parking, have seen a measurable increase in bicycle trips;<sup>9</sup> and
9. **WHEREAS**, it is advisable, for all of the reasons stated above, to add new bicycle parking requirements designed to provide increased safe, convenient, and adequate bicycle parking;

**NOW THEREFORE**, BE IT ORDAINED BY [THE CITY/VILLAGE/TOWNSHIP] as follows:

**SECTION 1: THAT [TITLE AND/OR CHAPTER OF CODE] IS AMENDED BY [AMENDING/ENACTING] A NEW CHAPTER [1] THEREOF, “BICYCLE PARKING REQUIREMENTS FOR NEW DEVELOPMENT AND MAJOR RENOVATIONS,” TO READ AS FOLLOWS:**

**Chapter [1-1]: PURPOSE:** The purpose of this [Title/Chapter] is to provide sufficient safe and convenient bicycle parking in new development and major renovations so as to encourage bicycling as a form of transportation, which in turn reduces traffic congestion, pollution, and wear and tear on roads, and fosters healthy physical activity.





**Chapter [1- 2]: DEFINITIONS: Unless the context clearly requires otherwise, the following terms shall have the following meanings:**

- A. “Bicycle Parking Space”:** A physical space that is a minimum of [2.5] feet in width by [6] feet in length with a vertical clearance of at least [7] feet that allows for the parking of one bicycle.
- B. “Bike Rack”:** A device consistent with industry standards that (i) is capable of supporting a bicycle in a stable position, (ii) is made of durable materials, (iii) is no less than [36] inches tall (from base to top of rack) and no less than [2] feet in length, (iv) permits the securing of the bicycle frame and one wheel with a U-shaped lock, and (v) is of a character and color that adds aesthetically to the immediate environment.
- C. “Bike Locker”:** A lockable enclosure consistent with industry standards that (i) can hold one bicycle, (ii) is made of durable material, (iii) is designed to fully protect the bicycle against [*insert specific local weather concerns, e.g.: rain, snow, ice, high winds*], (iv) provides secure protection from theft, (v) opens sufficiently to allow bicyclists easy access, and (vi) is of a character and color that adds aesthetically to the immediate environment.
- D. “Short-Term Bicycle Parking”:** Bicycle parking primarily intended for bicyclists who need bicycle parking for three hours or less.
- E. “Short-Term Bicycle Parking Space”:** A Bicycle Parking Space that provides Short-Term Bicycle Parking.
- F. “Long-Term Bicycle Parking”:** Bicycle parking that is primarily intended for bicyclists who need bicycle parking for more than three hours and is fully protected from the weather.
- G. “Long-Term Bicycle Parking Space”:** A Bicycle Parking Space that provides Long Term Bicycle Parking.
- H. “In-Street Bicycle Parking”:** A portion of a vehicle parking lane or other area on a roadway that is set aside for the parking of bicycles.



**Chapter [1-3]: BICYCLE PARKING SPACES REQUIRED:** Short-Term and Long-Term Bicycle Parking Spaces shall be required for all new development, with the exception of single-family housing, in the amounts identified in the table below.

**A. Required Bicycle Parking Spaces:**

GENERAL USE CATEGORY	SPECIFIC USE	NUMBER OF MINIMUM SHORT-TERM BICYCLE PARKING SPACES REQUIRED	NUMBER OF MINIMUM LONG-TERM BICYCLE PARKING SPACES REQUIRED
RESIDENTIAL	Multifamily without private garages for each unit	[.05-.1] per bedroom <i>or</i> [1] per [20] units	[.5] per bedroom <i>or</i> [1-4] per [4] units
COMMERCIAL	Office Building	[1] per each [20,000] sq. ft. of floor area	[1-1.5] per [10,000] sq. ft. of floor area
	General Retail	[1] per each [5,000] sq. ft. of floor area.	[1] per [10,000-12,000] sq. ft. of floor area
	Restaurant/Grocery	[1] per each [2,000] sq. ft. of floor area	[1] per [10,000-12,000] sq. ft. of floor area
	Indoor Parking Garage	None	[1] per [20] motor vehicle spaces (min. 6)
	Outdoor Parking Lot	[1] per [20] motor vehicle spaces (min. 6)	None
CIVIC	Non-assembly cultural (library, government buildings)	[1] per each [8,000-10,000] sq. ft. of floor area	[1-1.5] per each [10-20] employees
	Assembly (church, theater, stadiums, parks)	Spaces for [2-5] percent of maximum expected daily attendance	[1-1.5] per each [20] employees



	Schools	[1] per each [20] students of planned capacity	[1] per each [10–20] employees and [1] per each [20] students of planned capacity for grades 6–12
	Colleges and universities	[1] space per each [10] students of planned capacity	[1] per each [10–20] employees and [1] per each [10] students of planned capacity <i>or</i> [1] per each [20,000] sq. ft. of floor area, whichever is greater
<b>INDUSTRIAL</b>	Manufacturing and production, agriculture	Minimum [2] (can be increased at discretion of Planning Director/Zoning Administrator)	[1] per [12,000–15,000] sq. ft. of floor area

- B. Unless otherwise stated, there shall be a minimum of [2] Short-Term and [2] Long-Term Bicycle Parking Spaces for each specific use category above.
- C. Where the calculation of total required spaces results in a fractional number, the nearest whole number shall be used. If the fraction is one-half, the number shall be rounded up to the next whole number.
- D. Up to half of the required Short-Term Bicycle Parking Spaces may be substituted with Long-Term Bicycle Parking Spaces.
- E. If the new building or facility is for a use not listed in the above table, the number of Bicycle Parking Spaces required shall be calculated on the basis of a similar use, as determined by the [Planning Director/Zoning Administrator].

**Chapter [1-4]: MAJOR REMODELS OR RENOVATIONS:**

- A. **Major Remodels or Renovations over [\$1,000,000].** The requirements of this section shall apply to any proposed physical improvement of any existing structure that requires a building permit for which the proposed remodel or renovation has an estimated construction cost (excluding seismic or other structural safety retrofit costs) greater than [\$1,000,000].



- B. Major Remodels or Renovations between [\$250,000 and \$1,000,000].** The requirements of this section shall apply to any proposed physical improvement of any existing structure that requires a building permit for which the proposed remodel or renovation has an estimated construction cost (excluding seismic or other structural safety retrofit costs) greater than [\$250,000] but less than [\$1,000,000], except that the required minimum Bicycle Parking Spaces set forth in the table in [Chapter 1-3 (A)] shall be reduced by 50 percent.

**Chapter [1-5]: REQUIREMENTS APPLICABLE TO ALL SHORT-TERM AND LONG-TERM BICYCLE PARKING:**

- A.** All Bicycle Parking Spaces shall be:
1. Well lit if accessible to the public or bicyclists after dark;
  2. Sited to ensure significant visibility by the public or by building users, except in the case of Long-Term Bicycle Parking that is located in secure areas only accessible to employees, staff, or residents;
  3. Accessible without climbing stairs, going up or down a slope in excess of [12] percent, and via a route on the property that is designed to minimize conflicts with motor vehicles and pedestrians.
- B.** All In-Street Bicycle Parking and Bicycle Parking Spaces located in a parking facility shall be:
1. Clearly marked; and
  2. Separated from motor vehicles by some form of physical barrier (such as bollards, concrete or rubber curbing or pads, reflective wands, a wall, or a combination thereof) designed to adequately protect the safety of bicyclists and bicycles.
- C.** All Bike Racks shall be located at least [36] inches in all directions from any obstruction, including but not limited to other Bike Racks, walls, doors, posts, columns, or exterior or interior landscaping.
- D.** Unless clearly visible from the main entrance, a sign indicating the location of all Bicycle Parking Spaces shall be prominently displayed near the main entrance to





the building or facility, and additional signs shall be provided as necessary to ensure easy wayfinding. A “Bicycle Parking” sign shall also be displayed on or adjacent to any indoor room or area designated for bicycle parking.

**Chapter [1-6]: ADDITIONAL REQUIREMENTS APPLICABLE TO SHORT-TERM BICYCLE PARKING ONLY:** All Short-Term Bicycle Parking Spaces shall contain Bike Racks and shall meet the following requirements, in addition to the requirements in Chapter [1-3] above:

**A. Location:**

1. Short-Term Bicycle Parking must be located either (a) within [50] feet of the main public entrance of the building or facility or (b) no farther than the nearest motor vehicle parking space to the main public entrance (excluding disabled parking), whichever is closer. If the development contains multiple buildings or facilities, the required Short-Term Bicycle Parking shall be distributed so as to maximize convenience and use.
2. Short-Term Bicycle Parking Spaces may be located either (a) on-site or (b) in the public right-of-way (e.g., sidewalk or In-Street Bicycle Parking), provided that an encroachment permit is obtained for the installation and the installation meets all other requirements of the law. If Bike Racks are located on public sidewalks, they must provide at least [6] feet of pedestrian clearance and be at least [2] feet from the curb.

**B. Bike Rack Requirements:** Bike Racks used for Short-Term Bicycle Parking must be securely attached to concrete footings, and made to withstand severe weather and permanent exposure to the elements.

**Chapter [1-7]: ADDITIONAL REQUIREMENTS APPLICABLE TO LONG-TERM BICYCLE PARKING ONLY:** Long-Term Bicycle Parking shall be provided in either (1) Bike Lockers or (2) indoor rooms or indoor areas specifically designated for bicycle parking (including designated areas of an indoor parking facility), and shall satisfy the following requirements, in addition to those set forth in Chapter [1-3] above:

**A. Location:** Long-Term Bike Parking shall be located no more than [300–500] feet from the main public entrance.

**B. Requirements for Indoor Long-Term Bicycle Parking:** Long-Term Bike Parking located in indoor rooms or indoor designated areas shall contain Bike



Racks or a comparable device, and shall be designed to maximize visibility of all portions of the room or designated area from the entrance.

**Chapter [1-8]: MOTOR VEHICLE PARKING SPACE CREDITS:**

- A. For every [6] Bicycle Parking Spaces provided, the number of required off-street motor vehicle parking spaces (excluding handicapped parking spaces) on a site may be reduced by [1] space.
- B. To encourage installation of showers and clothing lockers, an off-street motor vehicle parking credit of [1] space will be provided for nonresidential uses for the first shower installed, with additional off-street motor vehicle parking credits available at a rate of [1] space per shower per [25] required Bicycle Parking Spaces. This credit shall be in addition to the bicycle parking credits provided for in subsection (A) of [Chapter 1-8].

**Chapter [1-9]: EXISTING BICYCLE PARKING AFFECTED BY CONSTRUCTION:**

In the event that the [NAME OF MUNICIPALITY] has authorized a permit holder to remove existing bicycle parking in the public way due to construction of a new development, remodel, or renovation, the permit holder shall replace such bicycle parking no later than the date of completion of the construction. If bicycle parking is likely to be removed for more than [120] days, it shall, to the extent possible, be temporarily re-sited, in coordination with [the municipality], to a location as close to the original site as practicable, pending completion of the construction. At least [7] days prior to removal of such bicycle parking, a weather-proof notice shall be posted conspicuously on or in the immediate vicinity of the bicycle parking, specifying the date of removal. In the event that any bicycles remain parked on the date of the removal, such bicycles shall be stored for a reasonable period, not less than [45] days, and a conspicuous, weather-proof notice shall be placed as close as practical to the site of the removed bicycle parking containing information as to how a removed bicycle can be retrieved.

**Chapter [1-10] (optional) MODIFICATION OF REQUIREMENTS:** In the event that satisfying all of the requirements of this Ordinance would be infeasible due to the unique nature of the site, or cause an unintended consequence that undermines the purpose of this Ordinance, a property owner (or designee) may submit a written request to the [Planning Director/Zoning Administrator/other City Administrator or designee] for a modification of the requirements of this Ordinance. The request shall state the specific reason(s) for the request, provide supporting documentation, and propose an alternative action that will allow the purposes of this Ordinance to be fulfilled as much as possible.



**SECTION 2: THAT [TITLE AND/OR CHAPTER OF CODE] IS AMENDED BY [AMENDING/ENACTING] A NEW CHAPTER [2] THEREOF, “BICYCLE PARKING REQUIREMENTS FOR PARKING FACILITIES” TO READ AS FOLLOWS:**

**Chapter [2-1]: PURPOSE:** The purpose of this [Title/Chapter] is to provide sufficient safe and convenient bicycle parking in parking facilities so as to encourage bicycling as a form of transportation, which in turn reduces traffic congestion, pollution, and wear and tear on roads, and fosters healthy physical activity.

**Chapter [2-2]: DEFINITIONS:** The definitions set forth in [Section 1, Chapter 1-2 of this Ordinance (*insert final code sections*)] shall apply to this Section [Section 2], unless the context clearly requires otherwise.

**Chapter [2-3]: LICENSING CONDITIONS:** As a condition of the issuance or renewal of a license required by [the City/Village/Township] for a parking facility, parking facilities shall provide [1] Bicycle Parking Space per each [20] vehicle parking spaces provided, with a minimum of [6]. Where the calculation of total required spaces results in a fractional number, the nearest whole number shall be used. If the fraction is one-half, the number shall be rounded up to the next whole number.

**Chapter [2-4]: LOCATION:** All Bicycle Parking Spaces shall be located in an area, preferably on the ground floor, that can be conveniently and safely accessed, is not isolated, and maximizes visibility by parking facility patrons and attendants. If the licensed parking facility has multiple entrances, the required Bicycle Parking Spaces may be spread out among the multiple entrances. Bicycle Parking Spaces shall be accessible without climbing stairs or going up or down a slope in excess of [12] percent.

**Chapter [2-5]: BIKE RACKS:** Bike Racks shall be provided in a sufficient number to accommodate the number of Bicycle Parking Spaces required in [Chapter 2-3] above, and shall be well lit if accessible to the public or bicyclists after dark or if in an interior or darkened location. All Bike Racks shall also provide a clearance of at least [36] inches in all directions from any obstruction (including but not limited to other bike racks, walls, doors, posts, columns, or landscaping), and shall be separated from vehicles by some form of physical barrier (such as bollards, concrete or rubber curbing or pads, reflective wands, a wall, or a combination thereof) designed to adequately protect the safety of bicyclists and bicycles. All Bike Racks located outdoors shall also be securely attached to concrete footings and made to withstand severe weather and permanent exposure to the elements.





**Chapter [2-6]: SIGNAGE:** Parking facilities that are required to install Bicycle Parking Spaces by this section shall provide prominent signs in or near the entrance that advertise the availability of bicycle parking, and the location, if it is not visible from the entrance.

**Chapter [2-7]: CONTRACTUAL LIMITS ON LIABILITY:** This section shall not interfere with the rights of a parking facility to enter into agreements with facility users or take other lawful measures to limit the parking facility's liability to bicycle users with respect to bicycle parking in the parking facility, provided that such agreements or measures are otherwise in accordance with the requirements of this Ordinance and the law.

**SECTION 3: THAT [TITLE AND/OR CHAPTER OF CODE] IS AMENDED BY [AMENDING/ENACTING] A NEW CHAPTER [3] THEREOF, "BICYCLE PARKING REQUIREMENTS FOR SPECIAL EVENTS INVOLVING STREET CLOSURES" TO READ AS FOLLOWS:**

**Chapter [3-1]: PURPOSE:** The purpose of this [Title/Chapter] is to provide sufficient safe and convenient bicycle parking at special events involving street closures so as to encourage bicycling as a form of transportation, which in turn reduces traffic congestion, pollution, and wear and tear on roads, and fosters healthy physical activity.

**Chapter [3-2]: CONDITIONS ON STREET CLOSURE PERMITS:** As a condition of a permit for the temporary closure of a street for an event in which the daily number of participants is projected to be [1,000] or more, monitored bicycle parking shall be provided by the event sponsor (or a designee) for at least [1] percent of expected daily participants beginning [½ hour] before and ending [½ hour] after the time of the event each day of the event.

**Chapter [3-3]: REQUIREMENTS FOR MONITORED PARKING:** Monitored bicycle parking requires the presence, at all times, of one or more attendants, as needed, to receive bicycles, dispense claim checks, return bicycles, and provide security for all bicycles.

**Chapter [3-4]: LOCATION:** All monitored bicycle parking shall be located within [500] feet of at least one regular entrance or access point to the event.

**Chapter [3-5]: PUBLICITY AND SIGNAGE:** All publicity, including signs, for the event shall state the availability of monitored bicycle parking, its location, and its cost. All event maps shall include the location of monitored bicycle parking. If monitored bicycle parking is not within eyesight of each entrance, signs shall be provided to ensure easy way finding.





**Chapter [3-6]: INSURANCE COVERAGE AND FEES:** The event sponsor or designee must provide insurance coverage for the monitored bicycle parking in case of damaged or stolen bicycles, and may charge a small fee to cover the cost of providing the monitored parking.

**SECTION 4: THAT [TITLE AND/OR CHAPTER OF CODE] IS AMENDED BY [AMENDING/ENACTING] A NEW CHAPTER [4] THEREOF, “REMOVAL OF ABANDONED BICYCLES” TO READ AS FOLLOWS:**

**Chapter [4-1]: PURPOSE:** The purpose of this [Title/Chapter] is to ensure the reasonably prompt removal of bicycles abandoned in Bicycle Parking Spaces so as to encourage bicycling as a form of transportation, which in turn reduces traffic congestion, pollution, and wear and tear on roads, and fosters healthy physical activity.

**Chapter [4-2]: DEFINITIONS:** The definitions set forth in [Section 1, Chapter 1-2] of this Ordinance (*insert final code sections*) shall apply to this Section [Section 4], unless the context clearly requires otherwise.

**Chapter [4-3]: REMOVAL REQUIREMENTS:** On [a quarterly basis], owners of property subject to Sections 1 or 2 of this Ordinance (or a designee) shall remove, from all Bicycle Parking Spaces associated with their property, including those located on the public right-of-way, bicycles that show clear signs of being abandoned. A bicycle shall be deemed to be abandoned if it has not been removed after a notice of removal has been posted on it or in its immediate vicinity for [2] weeks for Short-Term Bicycle Parking Spaces or [4] weeks for Long-Term Parking Spaces. Additional signs of an abandoned bicycle include rusted chains, flat tires, or missing major parts. However, a bicycle shall not be deemed to be abandoned if the bicyclist and owner have a written agreement regarding provision of seasonal storage covering the time period in question. Abandoned bicycles may be donated to nonprofits that reuse bicycles or disposed of in any lawful manner.

**SECTION 5: IMPLEMENTATION OF ORDINANCE:**

- A. Regulations:** The [Planning Director/Zoning Administrator and/or other relevant city administrator(s)] [is/are] authorized to promulgate new and amend existing rules, regulations, procedures, or forms as necessary or appropriate to implement the provisions of this Ordinance.



- B. Training:** [The City/Village/Township] shall periodically make training and/or training materials available to planners and other city employees involved in the implementation and enforcement of this Ordinance.
  
- C. Reporting:** The [Planning Director/Zoning Administrator] shall provide an annual report to the [Adopting Body, e.g., City Council/Board of Supervisors] regarding the implementation of this Ordinance which shall, at a minimum, include the following information relevant to the preceding year: (1) the number of Short-Term and Long-Term Bicycle Parking Spaces created pursuant to this Ordinance under Sections [1] and [2], and the number of events for which special event bicycle parking was provided under Section [3]; (2) *(if applicable)* a brief summary of each request for modification received and action taken in response thereto; and (3) any other information learned that would improve future implementation of this Ordinance.

**SECTION 6: STATUTORY CONSTRUCTION:**

- A.** All ordinances or parts thereof that conflict or are inconsistent herewith are repealed to the extent necessary to give this Ordinance full force and effect.
  
- B.** If any section or portion of this Ordinance is judicially invalidated for any reason, that portion shall be deemed a separate and independent provision, and such ruling shall not affect the validity of the remaining portions of this Ordinance.

**SECTION 7: EFFECTIVE DATE:** This Ordinance shall be in full force and effect after passage, approval, and publication in the manner provided by law, *except that:*

- A.** Section [1] [Bicycle Parking Requirements for New Development and Major Renovations] shall only apply to developments and renovations for which a building permit is issued on or after [120] days from the date that this Ordinance is in full force and effect.
  
- B.** Section [2] [Bicycle Parking Requirements for Parking Facilities] shall apply to parking facilities that were originally licensed prior to the effective date of this law as follows: [½] of the required number of Bicycle Parking Spaces shall be provided no later than [6] months after the effective date of this Ordinance, with full implementation required no later than [18] months after the date that this Ordinance is in full force and effect.



C. Section [3] [Bicycle Parking Requirements for Special Events Involving Street Closures] shall not apply to events for which the temporary street closure was authorized pursuant to an application submitted prior to the date that this Ordinance is in full force and effect.

<sup>1</sup> Centers for Disease Control and Prevention. "Overweight and Obesity: Health Consequences." Available at: [www.cdc.gov/obesity/causes/health.html](http://www.cdc.gov/obesity/causes/health.html).

<sup>2</sup> Centers for Disease Control and Prevention. "Overweight and Obesity: Causes and Consequences." Available at: [www.cdc.gov/obesity/causes/index.html](http://www.cdc.gov/obesity/causes/index.html).

<sup>3</sup> See Active Living Research. *Active Transportation: Making the Link from Transportation to Physical Activity and Obesity, Research Brief*. 2009. Available at: [www.activelivingresearch.org/files/ALR\\_Brief\\_ActiveTransportation.pdf](http://www.activelivingresearch.org/files/ALR_Brief_ActiveTransportation.pdf).

<sup>4</sup> U.S. Department of Transportation, Federal Highway Administration. *2009 Household Travel Survey*. 2011. Available at: <http://nhts.oml.gov/2009/pub/stt.pdf>. For relevant excerpts, see America Bikes, League of American Bicyclists. "Factsheet: National Household Travel Survey." Available at: [www.bikeleague.org/resources/reports/pdfs/nhts09.pdf](http://www.bikeleague.org/resources/reports/pdfs/nhts09.pdf).

<sup>5</sup> U.S. Department of Transportation, Federal Highway Administration. *2009 Household Travel Survey*. 2011. Available at: <http://nhts.oml.gov/2009/pub/stt.pdf>. For relevant excerpts, see America Bikes, League of American Bicyclists. "Factsheet: National Household Travel Survey." Available at: [www.bikeleague.org/resources/reports/pdfs/nhts09.pdf](http://www.bikeleague.org/resources/reports/pdfs/nhts09.pdf), see also Rails-to-Trails Conservancy. *Turning Potential into Practice: Walking and Biking as Mainstream Transportation Choices*. 2007. Available at: [www.railstotrails.org/resources/documents/wharwedo/TrailLink%2007%20Program\\_Mobility.pdf](http://www.railstotrails.org/resources/documents/wharwedo/TrailLink%2007%20Program_Mobility.pdf) (citing FHWA 2006).

<sup>6</sup> Research and Innovative Technology Administration, Bureau of Transportation Statistics. "Figure 2. On a typical day, how many miles one-way do you travel from home to work?" *Omnistats*, 3(4). 2003. Available at: [www.bts.gov/publications/omnistats/volume\\_03\\_issue\\_04/html/figure\\_02.html](http://www.bts.gov/publications/omnistats/volume_03_issue_04/html/figure_02.html).

<sup>7</sup> U.S. Department of Transportation, Federal Highway Administration. "The 'Carbon Footprint' of Daily Travel: NIITS Brief." 2009. Available at: <http://nhts.oml.gov/briefs/Carbon%20Footprint%20of%20Travel.pdf>.

<sup>8</sup> See, e.g., Vanderbilt T. "What Would Get Americans Biking to Work? Decent parking." *Slate*, Aug. 17, 2009, [www.slate.com/id/2225511/](http://www.slate.com/id/2225511/); see also, e.g., City of New York Department of City Planning, Transportation Division. *The New York City Bicycle Survey: A Report Based on the Online Public Opinion Questionnaire Conducted for Bike Month 2006*. 2007. Available at: [www.nyc.gov/html/dep/pdf/transportation/bike\\_survey.pdf](http://www.nyc.gov/html/dep/pdf/transportation/bike_survey.pdf) at p. 15 (NYC commuters report a lack of safe storage for bicycles as a leading reason for not commuting by bike).

<sup>9</sup> See, e.g., Marin County Bicycle Coalition. *Economic Benefits of Bicycling in Urban Environments*. Available at: <http://www.marinbike.org/Resources/EconomicBenefitsOfBicycling.pdf> (citing a 118%-125% increase in bicycle use in Marin County over the last 10 years due to improvements in infrastructure, including pathways, shared use lanes, intersection improvements, and bicycle parking; and pointing to increased revenue due to retail purchases by bicyclists with adequate access to infrastructure and parking). See also Dill J and Carr T. "If You Build Them, Commuters Will Use Them — Another Look." *Portland State University*, Portland, OR: 2003 (finding "higher levels of bicycle infrastructure . . . positively and significantly correlated with higher rates of bicycle commuting").



## A-5: Cost Estimates for Individual Trail and On-Street Bikeway Projects

**Table 1: Recommended High Priority Projects**

Facility Type	Corridor	From	To	Length (mi)	Cost Low	Cost High
<b>Paved Multi-use Trail</b>	Highway 13	Highway 100	Prairie Chapel Rd	6.18	\$3,090,000	\$12,360,000
<b>Paved Multi-use Trail</b>	Marion Railroad Trail Bridges	Lindale Trail	Cemar Trail	0.21	\$8,000,000	\$12,000,000
<b>Paved Multi-use Trail</b>	Squaw Creek Trail	Sac & Fox Trail	Squaw Creek County Park	4.92	\$2,460,000	\$9,840,000
<b>Paved Multi-use Trail</b>	Highway 100	Marion City Limit	Highway 13	3.66	\$1,830,000	\$7,320,000
<b>Paved Multi-use Trail</b>	Dry Creek Trail	Boyson Trail	Council St	2.43	\$1,215,000	\$4,860,000
<b>Paved Multi-use Trail</b>	Squaw Creek Trail	Grant Wood Trail	29th Ave	1.62	\$810,000	\$3,240,000
<b>Paved Multi-use Trail</b>	Indian Creek Trail	10th St	Tower Terrace Rd	1.16	\$580,000	\$2,320,000
<b>Paved Multi-use Trail</b>	Indian Creek Trail	Boyson Trail	Boyson Rd	0.95	\$475,000	\$1,900,000
<b>Paved Multi-use Trail</b>	Squaw Creek Trail	Grant Wood Trail	Squaw Creek County Park	0.81	\$405,000	\$1,620,000
<b>Paved Multi-use Trail</b>	Squaw Creek Village Connector	50th St	Highway 13	0.39	\$195,000	\$780,000
<b>Paved Multi-use Trail</b>	Marion Railroad Trail	31st St	35th St	0.25	\$125,000	\$500,000
<b>Sidepath</b>	Marion Central Corridor	7th St	31st St	1.22	\$488,000	\$640,500





**Table 2: Recommended Medium Term Projects**

Facility Type	Corridor	From	To	Length (mi)	Cost Low	Cost High
<b>Bike Boulevard</b>	12th St - 17th Ave - 27th St	1st Ave	29th Ave	2.37	\$118,500	\$237,000
<b>Bike Boulevard</b>	3rd Ave	1st St	31st St	1.64	\$82,000	\$164,000
<b>Paved Multi-use Trail</b>	Boyson Trail	Boyson Rd	Lowe Park	1.96	\$980,000	\$3,920,000
<b>Paved Multi-use Trail</b>	Squaw Creek/31 St Connector	Squaw Creek Trail	31st St	0.78	\$390,000	\$1,560,000
<b>Paved Multi-use Trail</b>	Hanna Park-11th St Connector	Boyson Trail	11th St	0.35	\$175,000	\$700,000
<b>Paved Multi-use Trail</b>	Highway 100 Connector	Highway 100	The Marketplace on 1st	0.29	\$145,000	\$580,000
<b>Paved Multi-use Trail</b>	Lindale - Dry Creek Connector	Lindale Trail	Dry Creek Trail	0.22	\$110,000	\$440,000
<b>Paved Multi-use Trail</b>	Parkview-Boyson Trail Connector	Boyson Trail	Parkview Dr	0.15	\$75,000	\$300,000
<b>Paved Multi-use Trail</b>	40th Street Connector	40th Street	Cemar Trail Spur	0.12	\$60,000	\$240,000
<b>Paved Multi-use Trail</b>	Indian Creek - 25th Ave Connector	Indian Creek Rd	Indian Creek Trail	0.11	\$55,000	\$220,000
<b>Paved Multi-use Trail</b>	Lindale Trail - 8th Ave Connector	8th Ave	Lindale Trail	0.04	\$20,000	\$80,000
<b>Sidepath</b>	10th St	Tower Terrace Rd	Outer Loop Trail	3.65	\$1,460,000	\$1,916,250
<b>Sidepath</b>	Lucore Rd	Indian Creek Rd	Outer Loop Trail	3.27	\$1,308,000	\$1,716,750
<b>Sidepath</b>	Tower Terrace Rd	Alburnett Rd	C Ave	1.76	\$704,000	\$924,000
<b>Sidepath</b>	Tower Terrace Rd	35th St	Highway 13	1.42	\$568,000	\$745,500
<b>Sidepath</b>	29th Ave	Highland St	Highway 13	1.06	\$424,000	\$556,500
<b>Sidepath</b>	7th Avenue	35th St	50th St	0.90	\$360,000	\$472,500
<b>Sidepath</b>	Alburnett Road Trail	Boyson Rd	7th Ave	0.82	\$328,000	\$430,500
<b>Sidepath</b>	10th St	6th Ave	McGowan Blvd	0.74	\$296,000	\$388,500
<b>Sidepath</b>	Tower Terrace Rd	10th Street	Lennon Lane	0.62	\$248,000	\$325,500
<b>Sidepath</b>	Lindale Dr	Twixt Town Rd	8th Ave	0.59	\$236,000	\$309,750
<b>Sidepath</b>	Highway 100	Twixt Town Rd	Western Marion City Limit	0.57	\$228,000	\$299,250
<b>Sidepath</b>	Irish Dr	Tower Terrace Rd	Williams Rd / Lowe	0.52	\$208,000	\$273,000



			Park			
<b>Sidepath</b>	31st St	8th Ave	1st Ave	0.45	\$180,000	\$236,250
<b>Sidepath</b>	Indian Creek Rd	Stone Creek Rd	Tower Terrace Rd	0.35	\$140,000	\$183,750
<b>Sidepath</b>	31st St	Grand Avenue	South of Hwy 100	0.25	\$100,000	\$131,250
<b>Sidepath</b>	Twixt Town Rd	Lindale Dr	Collins Rd	0.20	\$80,000	\$105,000
<b>Sidepath</b>	Irish Dr	Tower Terrace Rd	Existing Irish Dr / Gill Park	0.14	\$56,000	\$73,500
<b>Sidepath</b>	1st St - 6th Ave - CEMAR Connector	Future Cemar Trail / Marion Blvd	3rd Ave	0.13	\$52,000	\$68,250
<b>Sidepath</b>	10th St	McGowan Blvd	North of Indian Creek Rd	0.07	\$28,000	\$36,750
<b>Unpaved Multi-use Trail</b>	Dry Creek	Mentzer Rd	Outer Loop Trail / 10th St	4.55	\$227,500	\$1,137,500
<b>Unpaved Multi-use Trail</b>	Indian Creek Trail	South of Boyson Rd	East of 10th St	0.48	\$24,000	\$120,000



**Table 3: Recommended Medium Term Projects**

Facility Type	Corridor	From	To	Length (mi)	Cost Low	Cost High
<b>Bike Boulevard</b>	Windemere Way	Indian Creek Rd	Squaw Creek Trail	1.74	\$87,000	\$174,000
<b>Bike Boulevard</b>	3rd St - Geode St	Alburnett Rd Sidepath	Tower Terrace Rd	1.17	\$58,500	\$117,000
<b>Bike Boulevard</b>	50th St	7th Ave / 10th Ave	29th Ave	1.03	\$51,500	\$103,000
<b>Bike Boulevard</b>	22nd St	Grand Ave	3rd Ave	0.66	\$33,000	\$66,000
<b>Bike Boulevard</b>	Grand Ave	Western terminus	11th St	0.61	\$30,500	\$61,000
<b>Bike Boulevard</b>	Parkview	8th Ave	Boyson Trail	0.48	\$24,000	\$48,000
<b>Bike Boulevard</b>	40th Street	1st Ave	Charter Oak	0.46	\$23,000	\$46,000
<b>Bike Boulevard</b>	Krumboltz	Hannah Park / Boyson Trail	11th St	0.25	\$12,500	\$25,000
<b>Bike Boulevard</b>	6th St	Grand Ave	Hannah Park	0.14	\$7,000	\$14,000
<b>Bike Lane</b>	Alburnett Rd	Boyson Rd	County Home Rd	3.63	\$145,200	\$181,500
<b>Bike Lane</b>	East Post Rd	Sac & Fox Trail	Marion City Limit	1.43	\$57,200	\$71,500
<b>Bike Lane</b>	C Ave	Echo Hill Rd	County Home Rd	1.39	\$55,600	\$69,500
<b>Bike Lane</b>	35th St	Highway 100	7th Ave	1.25	\$50,000	\$62,500
<b>Bike Lane</b>	C Ave	Tower Terrace Rd	Echo Hill Rd	1.24	\$49,600	\$62,000
<b>Bike Lane</b>	8th Ave	Lindale Trail	12th St	1.18	\$47,200	\$59,000
<b>Bike Lane</b>	Grand Ave	15th St	35th St	1.00	\$40,000	\$50,000
<b>Bike Lane</b>	East Post Rd	Southern City Limit	Grand Ave	0.77	\$30,800	\$38,500
<b>Bike Lane</b>	22nd St	Grand Ave	Highway 100	0.36	\$14,400	\$18,000
<b>Paved Multi-use Trail</b>	Indian Creek Rd	Lucore Rd	Tower Terrace Rd	0.53	\$265,000	\$1,060,000
<b>Shared Lane Markings</b>	McGowan Blvd	10th St	Squaw Creek Trail	1.86	\$37,200	\$55,800
<b>Shared Lane Markings</b>	11th St	6th Ave	Grand Ave	0.81	\$16,200	\$24,300
<b>Shared Lane Markings</b>	29th Ave	Alburnett Rd	10th St	0.76	\$15,200	\$22,800
<b>Shared Lane Markings</b>	Banner Dr	Highway 13	Squaw Creek Trail	0.70	\$14,000	\$21,000
<b>Shared Lane Markings</b>	10th Ave	30th St	35th St	0.31	\$6,200	\$9,300
<b>Shared Lane</b>	15th St	6th Ave	1st Ave	0.29	\$5,800	\$8,700



<b>Markings</b>						
<b>Shared Lane Markings</b>	West 8th Ave	Lindale Trail Connector	Lindale Dr	0.27	\$5,400	\$8,100
<b>Shared Lane Markings</b>	1st Ave	11th St	15th St	0.22	\$4,400	\$6,600
<b>Shared Lane Markings</b>	30th St	8th Ave	10th Ave	0.13	\$2,600	\$3,900
<b>Shoulder Bikeway</b>	County Home Rd	Mentzer Rd	Jordans Grove	7.83	\$117,450	\$2,192,400
<b>Shoulder Bikeway</b>	Hindman Rd	Martin Creek Rd	County Home Rd	5.86	\$87,900	\$1,640,800
<b>Shoulder Bikeway</b>	62nd St	Martin Creek Rd	Hennessey	1.79	\$26,850	\$501,200
<b>Shoulder Bikeway</b>	Prairie Chapel Rd	Highway 13	Crabapple Creek Trail	1.76	\$26,400	\$492,800
<b>Shoulder Bikeway</b>	Martin Creek Rd	Highway 13	Hindman Rd	1.60	\$24,000	\$448,000
<b>Sidepath</b>	Echo Hill Rd	10th St	Highway 13	2.87	\$1,148,000	\$1,506,750
<b>Sidepath</b>	Winslow Road	County Home Rd	North of Tower Terrace Rd	2.28	\$912,000	\$1,197,000
<b>Sidepath</b>	Big Springs Rd	Highway 13	Crabapple Creek Trail	1.87	\$748,000	\$981,750
<b>Sidepath</b>	Indian Creek Rd	Lucore Rd	Highway 13	1.75	\$700,000	\$918,750
<b>Sidepath</b>	Fernow Rd	Hindman Rd	Highway 13	1.53	\$612,000	\$803,250
<b>Sidepath</b>	Echo Hill Rd	Alburnett Rd	Robins City Limit	1.26	\$504,000	\$661,500
<b>Sidepath</b>	35th Ave	35th St	Highway 13	1.23	\$492,000	\$645,750
<b>Sidepath</b>	Munier Rd	31st St	Highway 100	0.86	\$344,000	\$451,500
<b>Sidepath</b>	Echo Hill Rd	Echo Hill Elementary	10th St	0.68	\$272,000	\$357,000
<b>Sidepath</b>	Main St	C Ave	Robins City Limit	0.66	\$264,000	\$346,500
<b>Sidepath</b>	44th St Sidepath	Hastings	Tower Terrace Rd	0.63	\$252,000	\$330,750
<b>Sidepath</b>	44th Street	Indian Creek Rd	Tower Terrace Rd	0.41	\$164,000	\$215,250
<b>Unpaved Multi-use Trail</b>	Crabapple Creek Trail	Prairie Chapel Rd	Grant Wood Trail	7.84	\$392,000	\$1,960,000
<b>Unpaved Multi-use Trail</b>	Indian Creek Trail	Lucore Rd	Outer Loop Trail	4.00	\$200,000	\$1,000,000
<b>Unpaved Multi-use Trail</b>	Berry's Run Trail	Winslow Rd	Outer Loop Trail	3.02	\$151,000	\$755,000
<b>Unpaved Multi-use Trail</b>	Outer Loop Trail	10th St / Dry Creek Trail	Highway 13	2.85	\$142,500	\$712,500