VOLUME 1

DAVENPORT GO

a multi-modal enhancement plan

March 2019

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DAVENPORTGO

VOLUME 1

INTRODUCTION

We spend a large amount of our lives going places – commuting to work or school, traveling to the destinations that mark our lives in cities, and generally going about our lives. How we move can affect many things, including our own health and that of our communities.

As humans, we have been blessed with the ability to travel effectively under our own power. Many of us can walk or run for great periods of time and cover substantial distances, all the while thinking and taking delight in the things and people around us. We can travel even farther and faster by bicycle, a remarkable vehicle that we can easily lift, travels at half the speed of a contemporary car in city traffic, does not use fossil fuels, produces no emissions, makes almost no noise, can be parked outside the door of our destinations or even inside our homes or offices, and makes us healthier. The introduction of new technologies, like the e-bike with small electric motors that provide pedal assists, can bring bicycling as an efficient form of transportation, within the capability of even more number of people. Our ability and efficiency to transport ourselves is indeed a gift.

It is also a gift that makes economic sense. Infrastructure for people on foot or bike costs much less per mile than for motor vehicles. People traveling on-foot or by bike put very little stress on sidewalks, streets, and trails. And human-powered transportation is inherently enjoyable, encouraging us to see each other as people and the gardens, houses, streets, yards, schools, and centers of our cities as a delight.

So now let's consider Davenport, the largest city of Iowa's unique Quad Cities region. The city has enormous physical and urban assets – the Mississippi Riverfront, a lively and revitalizing downtown, great neighborhoods, the Village of East Davenport, dramatic topography and views, a generally well connected street grid, and a superb park system that includes Credit Island and the Duck Creek Greenway. Not least among these assets is the urban region itself, with four connected cities, each with their own personality, and interesting surrounding towns. Travel distances to most community destinations are relatively short and many key features have reasonably good trail access. The city's two major trails, the Duck Creek Trail and Riverfront Trail, rank among America's great urban pathways. These features create a very friendly environment for active transportation – travel by foot and bike, for people of all preferences and capabilities.

Davenport in particular and the Quad Cities in general recognize these possibilities and have acted on this understanding by:

- Developing and maintaining two great and interconnected urban pathways in the Riverfront and Duck Creek Trails, and beginning the development of new trails like the Goose Creek system that connect neighborhoods to these facilities.
- Establishing a strong organizational infrastructure of bicycle, trail, and active transportation groups. These groups are advocates for multi-modal improvements and helped identify many of the recommendations in this plan. These groups will continue to be crucial in helping execute a comprehensive active transportation program.
- A strong planning and policy framework that establishes balanced transportation as an important community priority.
- With Ride Illinois and the Quad Cities Bicycle Club, publishing and updating an excellent metropolitan area bicycle map, that has been an enormous aid in identifying popular routes for this plan.
- Including bicycle and pedestrian facilities in the planning of new community parks and open spaces.

This *Pedestrian and Bicycle Master Plan* is dedicated to encouraging its citizens to make healthy, low-impact, and intrinsically pleasant transportation a greater part of their routine lives. While we know that most trips will continue to be made by car, the region's transportation system should offer choices, including the option to feel safe and comfortable using the healthy, sustainable, and socially satisfying means of mobility that the bicycle and walking offer.

GOALS OF THIS PLAN

This plan is designed to help Davenport achieve the following goals:

1. ***Increase the number of people who use walking and biking for transportation as well as recreation.*** Davenport's two primary trails are heavily used and have a significant transportation function. However, the overwhelming majority of users are recreational cyclists and pedestrians. A measurement of the success of this plan will be significantly increasing the percentage of trips for a variety of purposes. Chapter Five includes estimates of current and future utilization of a bikeway system.

2. ***Improve bicycle and pedestrian access to key community destinations.*** An active transportation network should get people comfortably and safely to where they want to go. Therefore, Davenport's system should serve destinations, providing clear and direct connections to key community features.

3. ***Removing or improving barriers that discourage people from walking or biking for transportation.*** Davenport's river city topography can create physical challenges for some people. Arterial roadways such as Kimberly Road and the Brady/Welcome Way corridors can also be discouraging because of their width and volume of traffic. Some aspects of Davenport's street pattern, such as intersection offsets, also create conditions that people find difficult to cross safely. Creating more comfortable routes and barrier crossings is an important objective of this plan.

4. ***Improve access to the city's trail system by providing connecting links from neighborhoods to trails.*** Davenport's principal trails are the main lines of its active transportation system, and will continue to serve many of its bicycle and pedestrian trips. Good connections to these trails, and implementing cost-effective extensions that improve service to major destinations and employment centers can create major benefits and help direct new development.

5. ***Use walking and bicycling as part of an effort to make Davenport healthier for the community, and for the individual.*** Trips made by active transportation promote health at two levels:

   - **Community health.** Reducing emissions also helps ensure that Davenport will maintain its status as a healthy environment for its citizens. On a social level, bicycling builds community by enhancing the quality of civic life, helping us interact with each other as people. Places that lead in bicycle transportation also tend to attract people because of their community quality.

   - **Individual health.** This is a very important objective which promotes community health through better individual health. Incorporating physical activity into the normal routine of daily life for everyone from kids to seniors makes all of us healthier, reduces overweight and obesity rates, improves wellness, and lowers overall health care costs.

6. ***Increase safety on the road for motorists, bicyclists, and pedestrians.*** Improved safety is a critical goal for any transportation improvement, and is fundamental to efforts to increase the number of people who walk and bike in the region. Physical safety improvements must also be supported by education, enforcement, and encouragement programs, and its effectiveness measured by evaluation.

7. ***Capitalize on the development benefits of a destination-based active transportation system.*** Better active transportation facilities can have a significant and desirable effect on urban design and development patterns. Walkable and bikeable neighborhoods and projects are highly valued by a new generation of homeowners and investors.

ACTIVE TRANSPORTATION ADVOCACY GROUPS IN DAVENPORT

- Bi-State Regional Trail Committee
- Quad Cities Bicycle Club
- Friends of Off Road Cycling
- Let's Move Quad Cities
- Quad Cities Chamber
- Davenport Community School District
- Quad City Trails: qctrails.org

METHODOLOGY AND STAKEHOLDER ENGAGEMENT

It was extremely important to structure a planning process that maximized both public involvement and our understanding of the physical structure and community character of Davenport. A Plan Steering Committee and city staff met throughout the planning process, beginning with initial meetings and a kickoff event in July, 2017. The policy framework was based off of previous planned documents, which are summarized below.

Major public involvement events included:

- Project website
- Community survey
- Community Kick-off event
- Focus groups
- Design studio
- Open house event

Policy Framework: Active Transportation highlighted in current planning documents.

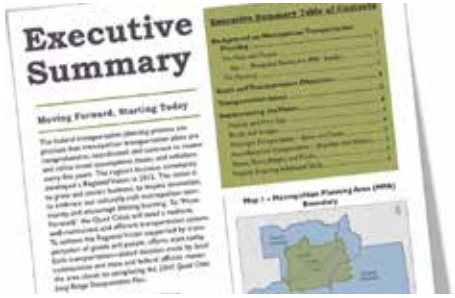
Davenport +2035: Comprehensive Plan

The update to the Comprehensive Plan adopted in 2016 built on existing goals for the future of Davenport. Specifically, Goal 4 of the Plan states: "

"Create a Transportation System that Provides Improved Physical Connections and Access within the Community for Citizens and Visitors."

Davenport in Motion

A multi-modal transportation plan completed in 2009 was an initial step to a multi-modal network in Davenport. Davenport will build on the ideas in Davenport in Motion and provide further detail for implementation.



Quad Cities Long Range Transportation Plan

The Bi-State Regional Commission produces a long range transportation plan for the region to guide future projects and coordination between communities. The plan includes bicycle and pedestrian projects to create a regionally connected system.

Quad Cities Metro Transportation Improvement Program (TIP)

The Bi-State Regional Commission produces the TIP for roadway, trail, and transit projects. The document helps identify future funding sources for priority projects and their impact on the proposed multi-modal network.

ORGANIZATION OF THE PLAN

The Davenport GO Plan presents its analysis and recommendations in the following chapters:

Volume 1

1. **Chapter One:** The Network. Chapter One establishes over-all principles that guide design and performance evaluation of the proposed network. It also elaborates on the measurement criteria presented to help guide the system's components. Finally, it presents a complete conceptual system of pedestrian and bicycle facilities.
2. **Chapter Two:** Route Details. Chapter Two includes a detailed, route-by-route facility program, showing proposed conceptual design solutions for each segment of the system. It discusses criteria for determining the sequence of development and presents a three-phase implementation program, along with probable costs for different infrastructure types.
3. **Chapter Three:** Support Systems and Policies. The League of American Bicyclists describes six "E's" as components of a bicycle-friendly community (BFC) program and judges BFC applications accordingly. These program categories are Engineering, Education, Encouragement, Enforcement, Evaluation and Equity. Chapter Three recommends initiatives that support infrastructure investments to achieve bicycle transportation's full potential as part of Grand Island's access environment.

Volume 2

4. **Chapter Four:** Active Transportation Environment. Chapter Four examines existing conditions in the city pertinent to walking and bicycling, including determinants of a future bikeway system such as destinations, existing facilities, and opportunities. It includes an atlas of key determinants of the area's active transportation network. It also examines comfort indicators such as pedestrian level of service and bicycle traffic stress.
5. **Chapter Five:** The Market for Active Transportation. Chapter Five estimates current pedestrian and bicycle demand and the potential future market. It also reviews the Davenport GO Bicycle and Pedestrian Survey, which provides extensive information about people interested in urban bicycling and walking in the city and their needs, concerns, and preferences.
6. **Chapter Six:** Crossing Barriers. Chapter Six locates and classifies various types of physical barriers to active transportation in the city and identifies different types of solutions that can be adapted to these contexts.

Volume 3

7. **Design Guidelines (Appendix).** The plan features an extensive appendix that presents design guidelines for all aspects of the Davenport network and an analysis of crash data and safety criteria in the city.

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THE NETWORK

This chapter presents the performance principles and framework of Davenport's proposed transportation network. These principles, derived from the analysis of existing conditions and opportunities, the community engagement process, and market preferences generate the overall system concept. The chapter describes the framework of the system and its individual components.

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BUILDING THE NETWORK

An effective network of bicycle and pedestrian facilities for Davenport is based largely on its geography and characteristics and the nature and preferences of potential users. But its design and operation should also be guided by specific principles and performance measurements. Some of the world's best work in identifying design principles was done by the Netherlands Centre for Research and Contract Standardization in Civil and Traffic Engineering. This plan adapts the Netherlands concepts to Davenport's context, identifying six guiding requirements for an effective active transportation network:

- **Integrity.** The ability of a system to link starting points continuously to destinations, and to be easily and clearly understood by users.
- **Directness.** The capacity to provide direct routes with minimum misdirection or unnecessary distance.
- **Safety.** The ability to minimize hazards and improve safety for users of all transportation modes.
- **Comfort.** Consistency with the capacities of users and avoidance of mental or physical stress.
- **Experience.** The quality of offering users a pleasant and positive experience.
- **Feasibility.** The ability to maximize benefits and minimize costs, including financial cost, inconvenience, and potential political opposition.

These six requirements express the general attributes of a good system, but must have specific criteria and even measurements that both guide the system's design and evaluate how well it works.

Figures 1.1 through 1.6 present criteria for each of the six more abstract requirements, and design guides and methods to manage ultimate performance. Each table includes:

- The **performance factors** relevant to each requirement. For example, the INTEGRITY requirement addresses the ability of users to understand the system and use it to get to their destinations. Examples of performance factors that help satisfy this requirement include clear wayfinding and directional information and continuity, ensuring that users do not confront dead-ends as they move along the route.

Pine Street north of Kimberly. Extending the current segment with bike lanes into a major continuous westside route meets the principles of both integrity and directness.

3rd Street bike lane

Jersey Ridge Road bike lane

- The **measurements** that can be used to evaluate the success of the system and its ultimate design. For example, we can measure the effectiveness of a wayfinding system by its ability to guide users intuitively without either creating too many signs.
- The **performance criteria** that establish the design objectives and guidelines for each of these factors. For example, a wayfinding system should avoid ambiguities that confuse users and follow graphic standards that are immediately and clearly understood.

Attributes of the Network

Based on this development of the six requirements presented in the tables, the Davenport area network design follows the following major attributes:

- **Tailored to User Groups.** Planning a bicycle network for Davenport requires us to understand the specific market groups for the system. These groups include:
  - › **Recreational users**, including people traveling to parks and recreational features, especially the trail system, from their homes. It is important to understand that travel to recreational destinations are in fact transportation trips that substitute for trips by car.
  - › **Students** walking or biking to school.
  - › **Residents** who are actively interested in walking or biking for transportation, but are discouraged by barriers, including major streets, highways, and railroad crossings.
  - › **Workers** at major industries and employment concentrations who may either need alternatives to cars or find biking, walking, and using public transportation to work to be attractive and affordable transportation options.
- **Destination-Based.** The Davenport network should direct people of all ages to destinations, including parks, trails, schools, Downtown, other business districts and activity centers, jobs, museums, the riverfront, or even other parts of the Quad Cities region. Destinations identified by the community as important help generate the structure of the network. The proposed network is more than a map of streets and trails. It is in fact part of a transportation system that takes people to specific places.
- **Functional Model.** Several reasonable models for network planning exist, with choices dependent on the nature of the city. In planning the Davenport system, a grid of routes was identified to help users "read" the system with a minimum of supporting materials, This approach embraces a "transit model," identifying major destination-based lines that connect points and destinations, almost as if they were bus routes.

  This model adapts well to Davenport's street network and geography. Both major trails run in a relatively direct, east-west direction, and the street network has both major and secondary corridors that offer fairly good east-west connectivity. Most users find north-south corridors to be relatively more challenging, more because of the steep grades rising out of the Mississippi Valley. As a result, continuous north-south streets tend to have higher traffic volumes (Jersey Ridge, Eastern, Brady/Harrison, and Division, for example), but lower traffic and more negotiable opportunities do exist.
- **Incremental Integrity.** As shown in Figure 3.6 (Feasibility), incremental integrity – the ability of the network to provide a system of value at each step of completion – is an important attribute. The first step in completion should be valuable and increase bicycle access even if nothing else is done. Each subsequent phase of completion follows the same principle of leaving something of clear value and integrity, even if no further phases were developed.
- **Evolution**. As part of the concept of incremental integrity, the system is designed to evolve and improve over time. For example, a relatively low-cost project or design element can establish a pattern of use that supports something better in the future. To use a cliché, the perfect should not be the enemy of the good.

An emerging urban district like Hilltop becomes both a destination and point of origin in the network. Addressing issues in this area like offset intersections helps fulfill the directness and safety principles.

Credit Island bridge

- **Conflict Avoidance.** Few important actions are completely without controversy, but successful development of a complete active transportation system in Davenport can and should avoid unnecessary controversy. On many streets, shared streets and signage can provide satisfactory facilities that focus on the positive and minimize divisive conflicts. Projects should demonstrate the multiple benefits of street adaptations. For example, street modifications that create better walking and biking environments can slow motorists, keep unwanted through traffic out of neighborhoods, and reduce the barriers presented by major arterial streets.

- **Use of Existing Facilities.** Great existing features like the Duck Creek park system and trail, Credit Island, the Mississippi Riverfront, urban districts like the Village of East Davenport and Hilltop District, major institutions like Palmer College and St. Ambrose University, and others are integral contributors to the active transportation system.

- **Fill Gaps.** In some cases, the most important parts of a network involve short projects that make connections rather than long distance components. Often, these short links knit longer street or trail segments together into longer routes or provide access to important destinations. These gaps may include a relatively short trail segment that connects two continuous streets or trails together, or an intersection improvement that bridges a barrier. The development of the overall network is strategic, using manageable initiatives to create a comprehensive system. Unfortunately, short gap-fillers are not always inexpensive when they involve major construction such as bridges.

- **Routes of Least Resistance.** Survey results showed that much of the city's potential urban cycling market prefers quiet streets or corridors with some separation from motor traffic. It is not necessary to try to force bicycle access on major streets when more comfortable, lower cost options exist. For example, bicycle boulevards – lower volume streets that parallel major arterials – satisfy the comfort requirement successfully. However, some important destinations, including major employers and shopping facilities are served by major arterials. Here, complete street standards should include bicycle and pedestrian accommodations in new major street projects.

- **Barriers.** In many cases, reducing the dividing impact of barriers such as major highways and streets, can be highly effective in improving connectivity. Most people involved in this process view Kimberly Road as an especially difficult barrier to north-south movement. The Forest Road intersection has demonstrated a way to cross this barrier more comfortably.

- **Regional Connectivity.** One of the distinctive attributes of Davenport is the Quad Cities region itself, with four distinctive cities and four downtown districts all linked by shared use paths. On the Iowa side alone, Davenport is linked to Bettendorf by the Duck Creek and Riverfront Trails and opportunities for other regional connections exist. The existing Arsenal Bridge and new I-74 bridge under construction reinforce bi-state connectivity. Substantial efforts are being made to connect Eldridge to Davenport along a lightly used Canadian Pacific Railway line. The regionalism of the Quad Cities should be strongly reinforced by the metropolitan framework of active facilities.

Table 1.1: Development of the INTEGRITY Principle

PERFORMANCE FACTOR	MEASURES	PERFORMANCE STANDARDS
Comprehensiveness	Number of connected destinations on system	Major destination types identified by survey and presented in destinations analysis should all be accessible by the network. 100 percent of top destination types, 80 percent of all destinations should be served. New destinations as developed should be developed along the network or served by extensions.
Continuity	Number of discontinuities along individual routes	Users headed on a route to a destination must not be dropped at a terminus without route or directional information. Even at incremental levels, route endings must make functional sense. Transitions between facility types must be clear to users and well-defined. Transitions from one type of infrastructure to another along the same route should avoid leading cyclists of different capabilities into uncomfortable settings or beyond their capacities. Infrastructure should be recognizable and its features (pavement markings, design conventions) consistent throughout the system
Wayfinding/directional information	Completeness and clarity of signage Economy and efficiency of graphics Complaints from users	Signs must keep users informed and oriented at all points. Sign system should avoid ambiguities that cause users to feel lost or require them to carry unnecessary support materials. Signs should be clear, simple, consistent, and readable, and should be consistent with the Manual on Uniform Traffic Control Devices (MUTCD). Use of the Clearview font is recommended.
Route choice	Number of alternative routes of approximately equal distance	Ultimate system provides most users with a minimum of two alternatives of approximately equal distance. Maximum distance between alternative routes should be about1 /2 mile.
Consistency	Percentage of typical reported trips accommodated by the ultimate network.	Typically, a minimum of 50-70 percent of most trips to identified destinations should be accommodated by the bikeways network.

Adapted from Centre for Research and Contract Standardization in Civil and Traffic Engineering – The Netherlands (C.R.O.W.), *Sign Up for the Bike*, 1996

Integrity Issues

Far right: Wayfinding signage is provided to guide suers to the connection between the Duck Creek and Riverfront Trails. However, these signs direct trail users to roadways without supporting infrastructure, limiting their use to experienced bicyclists.

Right: Marquette Street provides bike lanes north from the riverfront, providing a comfortable path up the bluff. However, these lanes end at 14th Street without further guidance.

Table 1.2: Development of the DIRECTNESS Principle

PERFORMANCE FACTOR	MEASURES	PERFORMANCE STANDARDS
Access	Coverage Access to all parts of the city	The network should provide convenient access to all parts of the city. As a standard, all urban residential areas should be within one-half mile from one of the system's routes, and should be connected to those routes by a relatively direct local street connection.
Bicycling speed	Design and average speed of system	The network should permit relatively consistent operation at a steady speed without excessive delays. System should be able to deliver an average point to point speed between 10 and 15 mph for users.
Diversions and misdirections	Maximum range of detours or diversions from a straight line between destinations. "Detour ratio:" Ratio of actual versus direct distance between two points.	Routes should connect points with a minimum amount of misdirections. Users should perceive that the route is always taking them in the desired direction, without making them reverse themselves or go out of their way to an unreasonable degree. Maximum diversion of a straight line connecting two key points on a route should not exceed 0.25 miles on either side of the line. Detour ratio (distance between two points/shortest possible distance) should not exceed 1:2 over long distances and 1:4 over short distances.
Delays	Amount of time spent not moving per mile	Routes should minimize unnecessary or frustrating delays, including excessive numbers of stop signs, and delays at uncontrolled intersections waiting for gaps in cross traffic. Routes should maximize use of existing signalized crossings. Target design should limit maximum delays to about 30 seconds per mile over long distances and 45 seconds per mile over short distances.
Intersections	Bicycle direction through intersections	Bicyclists should have a clear and safe path through intersections. Two-stage crossings are sometimes necessary but should avoid conflicts between bicycles and pedestrians.

Adapted from Centre for Research and Contract Standardization in Civil and Traffic Engineering – The Netherlands (C.R.O.W.), *Sign Up for the Bike*, 1996

Directness Issues

Far right: Railroads through the center of the city are often built in cuts or embankments, constituting significant barriers. Here, however, a pedestrian tunnel near Smart School provides a safe route under the rail line.

Right: A potential north-south through line along Pine Street is interrupted by Duck Creek. This requires north-south cyclists or pedestrians to travel along the trail about 1/4 mile to the next creek crossing.

Table 1.3: Development of the SAFETY Principle

PERFORMANCE FACTOR	MEASURES	PERFORMANCE STANDARDS
Reduced number and fear of crash incidents	Number of incidents Reactions/perceptions of users	The network should reduce the rate of bicycle-related crashes over ten year periods. Data collection should be sufficient to trace baseline data and measure the impact of improvements. Users should feel that the system offers reasonable safety, as measured by both use of routes and survey instruments.
Appropriate routing: mixing versus separation of traffic	Average daily traffic (ADT)criteria for mixed traffic Traffic speed criteria for mixed traffic	System design should avoid encounters between bicyclists and incompatible motor traffic streams (high volumes and/or high speeds). Separation and protection of vulnerable users should increase as incompatibilities increase.
Infrastructure, visibility, signage	Pairing of context and infrastructure solutions Mutual visibility and awareness of bicycle and motor vehicles	Infrastructure should be designed for use by at least 80 percent of the potential market. The Davenport bikeways survey indicates that a relatively large number of people are relatively uncomfortable with higher volume streets and prefer higher levels of separation. Infrastructure applications should be matched with appropriate contexts. Warning signage directed to motorists should be sufficient to alert them to the presence of cyclists along the travel route. Surfaces and markings should be clearly visible to all users. Obstructions, such as landscaping, road geometry, and vertical elements, should not block routine visibility of cyclists and motorists. Trail and pathway geometries should avoid sharp turns and alignments that hide cyclists operating in opposing directions. Where these conditions are unavoidable, devices such as mirrors and advisory signs should be used to reduce hazards.
Door hazards and parking conflicts	Number of incidents Parking configurations Location of bicycle tracking guides	Component design should track bicycles outside of the door hazard zone. Back-out hazards of head-in parking should be avoided or mitigated when diagonal parking is used along streets. Bike lanes should not be provided against head-in diagonal parking.
Intersection conflicts	Location and types of pavement markings Number of intersections or crossings per mile	Intersections should provide a clearly defined and visible track through them for cyclists. Sidepaths are safest on continuous segments with a minimum number of interruptions. However, sidepaths crossings should be clearly demarcated and signage used to increase motorist awareness of the path.
Complaints	Number of complaints per facility type	Complaints should be recorded by type of infrastructure and location of facility, to set priorities for remedial action.

Adapted from Centre for Research and Contract Standardization in Civil and Traffic Engineering – The Netherlands (C.R.O.W.), *Sign Up for the Bike*, 1996

Safety Issues

Far right: Kimberly Road. Concerns about safely crossing this major arterial make it a significant barrier to north-south connectivity.

Right: Northwest Boulevard crossing at Ridgeview. Pedestrians are challenged by this long and not highly visible crosswalk.

Table 1.4: Development of the COMFORT Principle

PERFORMANCE FACTOR	MEASURES	PERFORMANCE STANDARDS
Road surface	Quality and type of road surface Materials Incidence of longitudinal cracking and expansion joints	The network's components should provide a reasonably smooth surface with a minimum of potholes and areas of paving deterioration. Roads should be free of hazardous conditions such as settlement and longitudinal cracks and pavement separation. All routes in the urban system should be hard-surfaced, unless specifically designated for limited use.
Hills	Number and length of hills and inclines Maximum grades on segments for both long and short distances	Grades are a significant issue in Davenport. Route grades generally should not exceed 7 percent over a length not exceeding 400 feet in length; or 5 percent over the course of a mile. Off-road climbing facilities or bike lanes should be provided where slow-moving bike traffic can obstruct motor vehicles and increase motorist conflict.
Traffic stress	Average daily traffic (ADT) Average traffic speed Volume of truck traffic	Generally, the network should choose paths of lower resistance/incompatibility wherever possible and when DIRECTNESS standards can be reasonably complied with. The network should avoid mixed traffic situations over 5,000 vehicles per day (vpd) without separated facilities, or should use alternative routes where possible.
Stops that interrupt rhythm and continuity	Number of stop signs/segment	Network routes should avoid or redirect frequent stop sign controls. The number of stops between endpoints should not exceed three (1 per quarter mile average) per mile segment.

Adapted from Centre for Research and Contract Standardization in Civil and Traffic Engineering – The Netherlands (C.R.O.W.), *Sign Up for the Bike*, 1996

Comfort Issues

Main Street, a popular bike route identified as a priority during the planning process nevertheless displays several comfort issues. Far right: The steep climb out of downtown exceeds 10% in certain places. Right: The road surface has deteriorated significantly. However, resurfacing provides an opportunity to incorporate bicycle improvements at relatively low marginal cost.

Table 1.5: Development of the EXPERIENCE Principle

PERFORMANCE FACTOR	MEASURES	PERFORMANCE STANDARDS
Surrounding land use	Neighborhood setting Adjacent residential or open space use, including institutional campuses Adjacent street-oriented commercial	Surrounding land use should provide the network user with an attractive adjacent urban environment. As a design target, a minimum of 75 percent of the length of the route should pass through residential, open space, or street-oriented (main street) commercial environments. This is not always possible. Routes should provide access to commercial and personal support services, such as food places, convenience stores, and restrooms.
Landscape	Location and extent of parks or maintained open space	Network should maximize exposure or use right-of-ways along or through public parks and open spaces. Environmental contexts to be maximized include parks, waterways and lakes, and landscaped settings.
Social safety	Residential development patterns Observability: Presence of windows or visible uses along the route Population density or number of users	The network should provide routes with a high degree of observability – street oriented uses, residential frontages, buildings that provide vantage points that provide security to system users. Areas that seem insecure, including industrial precincts, areas with few street-oriented businesses, or areas with little use or visible maintenance should generally be avoided, except where necessary to make connections.
Furnishings and design	On-trail landscaping, supporting furnishings	Network routes should include landscaping, street furnishings, lighting, rest stops, graphics, and other elements that promote the overall experience. These features are particularly important along trails.

Adapted from Centre for Research and Contract Standardization in Civil and Traffic Engineering – The Netherlands (C.R.O.W.), *Sign Up for the Bike*, 1996

Experience Assets

Far right: Washington Avenue business district provides interest, services, and economic development possibilities.

Right: Tree-lined residential boulevards like Grand Court and Kirkwood Boulevard offer an appealing experience for active commuters.

Table 1.6: Development of the FEASIBILITY Principle

PERFORMANCE FACTOR	MEASURES	PERFORMANCE STANDARDS
Cost effectiveness	Route cost Maximum use of low-cost components Population/destination density	The network should generate maximum benefit at minimum cost. Where possible, selected routes should favor segments that can be adapted to bicycle use with economical features rather than requiring major capital investments. Initial routes should be located in areas with a high probability of use intensity: substantial population density and/or incidence of destinations. Initial investments should integrate existing assets, extending their reach into other neighborhoods and increasing access to them. Major off-street investments should concentrate on closing gaps in an on-street system.
Phasing and incremental integrity	Self-contained value Ability to evolve	The network should provide value and integrity at all stages of completion. A first stage should increase bicycle access and use in ways that make future phases logical. The network should be incremental, capable of building on an initial foundation in gradual phases. Phases should be affordable, fitting within a modest annual allocation by the city, and complemented by major capital investments incorporating other sources.
Neighborhood relationships and friction	Parking patterns Development and circulation patterns	The network should avoid conflict situations, where a route is likely to encounter intense local opposition. Initial design should avoid impact on potentially controversial areas, such as parking, without neighborhood assent. Involuntary acquisition of right-of-way should be avoided wherever possible. Detailed planning processes to implement specific routes should include local area or stakeholder participation.

Source: RDG Planning & Design

Feasibility Issues

Far right: Lane reallocation from four to three lanes with bike lanes has been highly controversial in the past. Where alternatives exist, network design should avoid or minimize these controversies.

Right: Removing on-street parking from one or both sides of streets that have high parking demand is likely to generate opposition.

ACTIVE TRANSPORTATION NETWORK

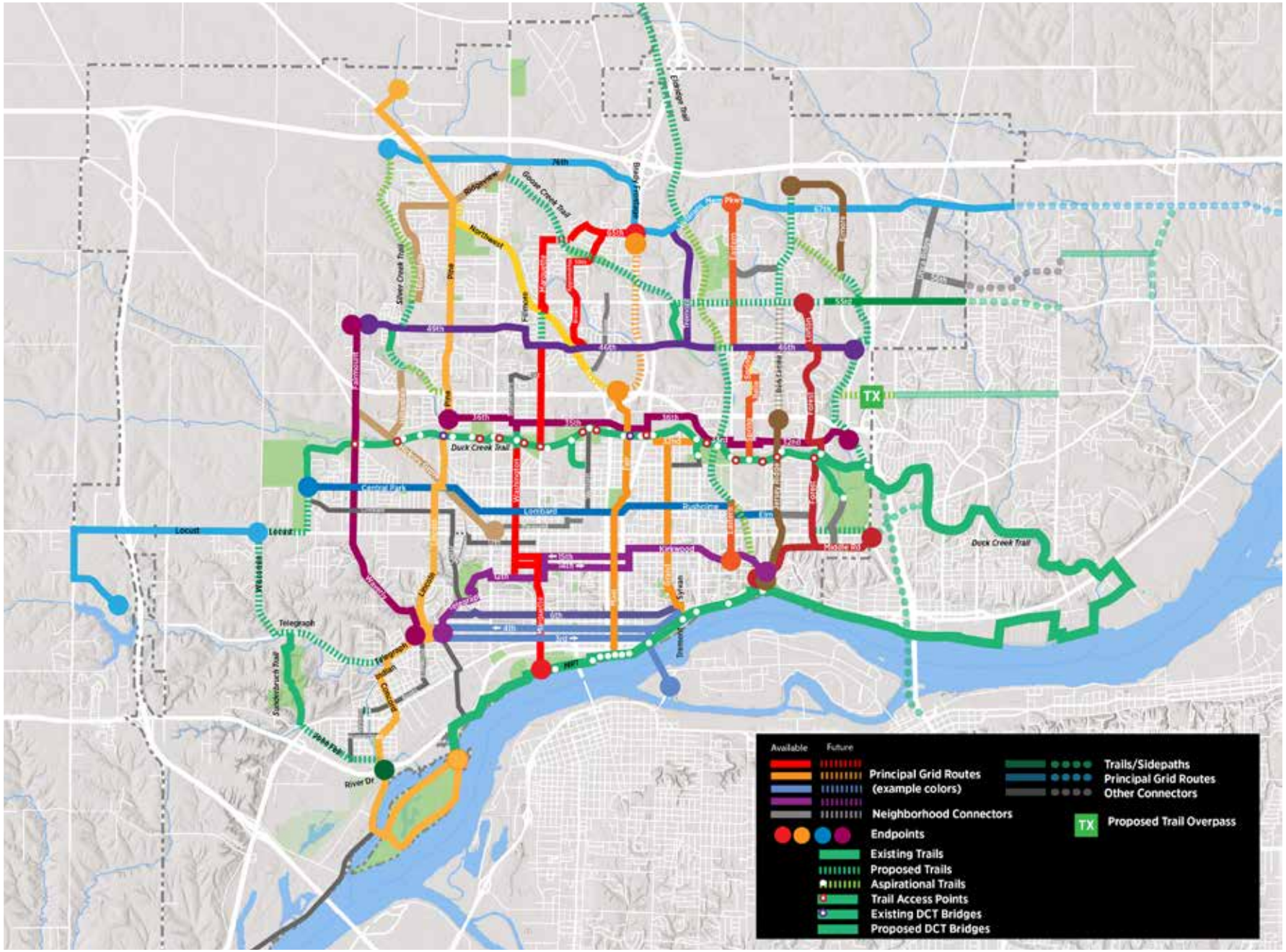
Map 1.1 and the accompanying tables present the proposed Davenport GO network, based on the findings of the community engagement process, analysis of existing conditions and patterns of use, principles of network design, and field observation. This map shows the ultimate build-out by component type, and includes route designations that are used to describe infrastructure details in Table 1.7. The components of the system include:

- **Principal Grid Routes.** These corridors make up the primary on-street route grid. They form the bike and pedestrian arterials that link Davenport's destinations and neighborhoods together. They complement the trail system, and in many ways connect neighborhoods and destinations to the regional pathway system. These routes use a variety of facility types, including shared lanes, bicycle boulevards (quiet streets), advisory bike lanes, multi-use shoulders, protected bike lanes, and in some cases sidepaths and short trail connections.

  Quiet streets (sometimes referred to as "bicycle boulevards" or "neighborhood greenways") are a significant and cost-efficient part of the on-street network. They are typically local or collector streets with low volumes that have good continuity and in many cases parallel higher order streets. They are far more comfortable for most cyclists and pedestrians than the busy corridors they parallel. Relatively minor adaptations, such as pavement markings, special graphics, and wayfinding can make these streets even more comfortable for a broad range of users. Bicycle boulevards are also fundamental to the community pedestrian network, and should contain continuous, barrier-free sidewalk access along them.
- **Neighborhood Connectors.** The principal grid serves many but not all of Davenport's destinations. Neighborhood connectors are short, on-street routes that link the primary network to destination that are not directly served. Sometimes, they provide short alternatives to major street corridors where safe bicycle infrastructure is not feasible. An example of such a situation is Pleasant Street adjacent to the Locust Street commercial corridor.
- **Shared-Use Trails.** Davenport's two major trails, the Riverfront and Duck Creek systems, are the foundation for active transportation and recreation in the city. But other opportunities are emerging that can extend the reach of these major resources. Examples are the Goose Creek corridor, that has already begun development into northwest Davenport; the Eldridge Trail, paralleling a lightly traveled rail line into the heart of the city, and other creek systems like Pheasant and Goose Creeks. In other areas, closing a short pathway gap can dramatically increase options for active travel. But of all potential projects, the one that engenders the greatest public interest is a westside link between the Duck Creek and Riverfront Trails, linking Emeis and Credit Island Parks.

  Shared-use trails are further split into two categories for the purpose of implementation timing. "Proposed trails" are important for connecting the entire network and are either major stand-alone facilities (like the Duck Creek Trail), critical connectors of these major trails (like the West Loop linking the Duck Creek and Riverfront Trails), or key links that complete major corridors in combination with comfortable on-street routes or shared-use sidepaths (like the Eldridge Trail in combination with Eastern Avenue or the Pheasant Creek Trail in combination Elmore Avenue). "Aspirational" trails are not specifically necessary for network continuity, but upgrade or complement parallel on-street routes (like a Silver Creek Trail along Hillandale Avenue.
- **Special Corridors**. Some elements of the on-street system have the space and importance to become major signature corridors. These include Main Street, the quiet but historic route between the heavy traffic of Brady and Harrison, lined by or connecting to major educational and cultural features; and the 3rd/4th Street corridors, parallel to the riverfront but as street environments have the ability to both move people and catalyze development. This one-way pair leads to the new YMCA site and proposed First Bridge, both of which are likely to generate substantial growth in the area between Downtown and the Village of East Davenport. Finally, a cycletrack circulator loop can be an extremely functional and strong image feature for the Downtown core itself. The current proposal for such as facility, using 2nd and 3rd between Iowa and Scott, is integrated into this plan. Facilities for these

Map 1.1: The Active Transportation Network



Map 1.2: Downtown Inset

important corridors include protected bike lanes, providing a sense of separation and buffering from motor vehicles that makes trails preferred facilities.

- **Barriers and intersections.** Complex intersections, railroads, and highway barriers like the interstates and Kimberly, all can break the continuity of an active network. Although many of the intersections used in this network are signalized, others are not, and many present safety concerns for present and prospective users. Intersection concepts and standards are discussed later in this chapter and in the design guidelines.

- **Connections Outside Davenport.** Multi-city regionalism is a unique asset of the Quad Cities and adds another dimension to the Davenport Go network. Bettendorf, Rock Island, and Moline all have significant trail, sidepath, and on-street facilities and both existing and proposed routes are designed to connect with them. The existing Duck Creek and Riverfront Trails continue into Bettendorf, while sidepaths continue east into existing of planned facilities along 53rd Street and Veterans Memorial Parkway (65th Street, becoming Forest Grove Avenue in Bettendorf). The network plan proposes a new bike/pedestrian crossing of I-74 that would link the 46th Street bikeway in Davenport to Bettendorf's complete street treatment of Tanglefoot Road. It also anticipates coordination with Bettendorf with trail development along I-74 to the new I-74 bridge, which will have specific space on the structure for bicycles and pedestrians that link the Iowa and Illinois sides of the river. The Arsenal Bridge will remain the other primary link from Davenport to Illinois cities. The network recommends an improved connection from the 3rd/4th Street line to the bridge.

Specific infrastructure types are described later in this chapter, and presented in more complete detail in the design guidelines.

Traffic calming chicane on 46th Street east of Eastern Avenue. This project would become part of the 46th Street bikeway.

Table 1.7: North-South Principal Grid Routes

MAP LINE	NAME	ENDPOINTS AND ROUTE	MAJOR DESTINATIONS SERVED	HIGHLIGHTS	INFRASTRUCTURE APPROACH
	Forest Bicycle Boulevard	53-Lorton (N) to Middle Rd-Forest (S) Route: Lorton/46th/ Forest	Duck Creek Trail and Park	Low traffic, low-cost north-south route with low traffic and attractive neighborhoods. Good intersection crossing at Kimberly and connection to Duck Creek Trail. With Jersey Ridge north of 53rd, an available east-side route in advance of trail development along Pheasant Creek/Elmore corridor	Shared route or advisory bike lane on Lorton segment. Bicycle Boulevard on Forest.
	Jersey Ridge	Elmore (N) to 53rd (S); Kimberly (N) to Riverfront Route: Jersey Ridge/11th/Mound	Elmore Corners, Kimberly commercial node, Duck Creek Trail, Eisenhower ES, Village of East Davenport, Riverfront	Discontinuous route with north segment serving adjacent neighborhoods and south segment using existing bike lanes. North route links to 58th Street connector to library and Prairie Heights Park. Possible 4- to 3-lane conversion of Jersey Ridge with bike lanes is deferred for further study, with the Forest and Eastern routes providing less controversial options.	Sidepath on north segment. Existing bike lanes and marked shared route on south.
	Eastern	Veterans Memorial Pkwy (N) to Kirkwood (S) Route: Eastern/ Eldridge Trail (CP Rail line)/Eastern	Prairie Heights Park, Public Library Eastern Ave branch, 53rd St node, Kimberly commercial, Duck Creek Trail, Garfield Park, Junior Theater, Oakdale Cemetery, Sudlow School; link to St. Luke's Hospital and Village of E. Davenport	Major north-south route with high demand and major destinations. Difficult central section is addressed by developing parallel trail with rail along adjacent CP branch line. Spring and Belle offer a short-term but less direct alternative.	Sidepath from Veterans to 46th, trail with rail from 46th to Eastern north of Rusholme, advisory bike lane or shared route on Eastern to Kirkwood. Short-term alternative is bicycle boulevard on Spring and Belle.
	Tremont	Veterans Memorial Pkwy (N) to 46th (S) Route: Tremont	Von Maur headquarters, industrial district, Public Works complex	Secondary north-south link using existing facilities that parallels proposed Eldridge Trail with rail. Provides an available route for trail continuity between Veterans Parkway and 46th Street.	Existing bike lanes
	Grand	Duck Creek Trail (N) to Riverfront Trail (S) Route: Farnam and Valle Vista/ Tremont/32nd/ Grand/Sylvan/6th/ Tremont/River Dr/ Carey	Duck Creek Trail, Garfield Park, Garfield ES via 29th, Tyler Park, Cork Hill Park, Riverfront Trail	Central north-south route with moderate grades, serving neighborhood parks and providing an improved connection to the riverfront that replaces cut-through at concrete yard.	Shared lanes with bike lanes on Tremont south of Charlotte. Use of existing signalized crossing at Tremont, sidepath between Tremont and Carey on south side of River Drive, using Carey as access to Riverfront Trail

Table 1.7: North-South Principal Grid Routes					
MAP LINE	**NAME**	**ENDPOINTS AND ROUTE**	**MAJOR DESTINATIONS SERVED**	**HIGHLIGHTS**	**INFRASTRUCTURE APPROACH**
	Main	Veterans Parkway (N) to Riverfront (S) Route: Welcome Way/Fair/Main	North Brady commercial and hotels, Goose Creek Trail, NorthPark Mall, Duck Creek Trail, Vander Veer Park, St Ambrose University, Hilltop District, JB Young Intermediate School, Central High, Palmer College, Downtown core, Riverfront	High priority central corridor and bike/ped route, serving destinations along the Brady/Harrison corridor. Quiet, potentially multi-modal street between the two heavy volume arterials. One of the key focuses of the active transportation network. Highest priority between Riverfront and NorthPark.	Diverse solutions because of varying street conditions. Sidepath or trail between Veterans and Kimberly, probably on east side north of Goose Creek and west side south; bike lanes on Main to Fair; Fair Avenue bicycle boulevard to Vander Veer Park; advisory bike lanes on park roads; bicycle boulevard south of Park to Palmer Dr; northbound (uphill) bike lane/southbound shared lane from Palmer to 7th; protected bike lanes from 7th to Riverfront. New Duck Creek crossing at Fair Avenue. In advance of a new bridge, bike lanes on 35th and sidepath on west side of Brady, returning to Fair Ave on Duck Creek Trail
	Marquette/ Washington	65th and Brady (N) to Riverfront (S) Initial North Segment: 65th/Scott/Goose Creek Footbridge/ Appomattox/ Brown/46th Future North Segment: 65th/ Appomattox/61st/ Marquette South Segment: Marquette/ Duck Creek Trail/ Washington/15th-14th pair/Marquette	North Brady commercial and hotels, Goose Creek Trail, North High, Harrison Elementary, Slattery Park, Duck Creek Trail, Northwest park, Junge Park, Genesis/ Central Park campus, Locust commercial, Washington Street neighborhood business district, Jefferson Elementary, Jefferson Park, Centennial Park, Riverfront Trail	Major north-south corridor through central westside of Davenport, with access to a variety of parks, schools, and the riverfront. Very important cross connection between east-west routes, with a moderate grade up from the riverfront that uses existing bike lanes.	Initial route: Multi-use shoulder on 65th Street section; Bicycle boulevard on initial route to 46th. Requires upgraded intersection crossing at 53rd Future route: Shared lanes, multi-use shoulder on future route to 46th. New trail segment on Marquette alignment between Northwest and 46th. Requires Goose Creek bridge or continuation of 61st Street, improved crossing at Northwest Blvd, and trail to fill gap between Northwest and 46th. Conventional bike lanes on Marquette from 46th to Duck Creek Trail. Duck Creek Trail between Marquette and Washington. Bicycle boulevard on Washington from trail to Pleasant, with multi-use shoulders through business district to 12th. Existing bike lanes on Marquette south of 15th to Riverfront Trail.

Table 1.7: North-South Principal Grid Routes

MAP LINE	NAME	ENDPOINTS AND ROUTE	MAJOR DESTINATIONS SERVED	HIGHLIGHTS	INFRASTRUCTURE APPROACH
	Pine/ Concord Bikeway	76-Hillandale (N) to Credit Island (S) Route: Northwest Blvd/Pine/Central Park/Lincoln/ Telegraph/Clark/ Indian/Concord/ South Concord/Credit Island Rd	Research Park, Fillmore Elementary and Ridgeview Park via Ridgeview link, Harry Truman School, Green Acres Park, Kimberly commercial node, Duck Creek Trail, Northwest Park, Scott County Fairgrounds, Locust commercial, Children's Village, Rockingham node, Roosevelt School, Harbor Road Park, Credit Island Trail Bridge and Park	Key north-south continuous corridor connecting northwest employment centers with neighborhoods and ultimately Credit Island and the Riverfront Trail. Serves West End neighborhood and destinations, and connects to the Duck Creek greenway. In-town route that can complete the Duck Creek/Riverfront loop. Major active transportation network component. Utilizes and extends the existing Pine Street bike lanes into a critical network element.	Short-term paved shoulders, ultimately sidepath with possible separated crossing of I-80 on Northwest Blvd segment. Extension of existing bike lanes with four to three-lane reallocation between Northwest/ Ridgeview and Kimberly. Bicycle boulevard from Kimberly to Central Park with new Duck Creek parking on Pine St alignment. Sidepath transition to Lincoln via Hickory Grove and Central Park. Conventional bike lanes on Lincoln from Central Park to Iroquois with shared lanes to Telegraph, conventional bike lanes (Telegraph), bicycle boulevard in West End segments, advisory bike lanes on South Concord and Credit Island.
	Fairmount/ Waverly	49th (N) to 3rd (S); Route: Fairmount/ Waverly	Buchanan Elementary, Dugout Sports Complex, Public Library branch, Wilson Elementary, West High, Schuetzen Park,	North-south connection through probable future growth area, connecting at south to the Pine/Concord Bikeway and its route to Credit Island	Paved shoulders or bike lanes from 49th to Duck Creek Trail; shared lanes to Locust; paved shoulder to Lincoln
	Ridgeview/ Silver Creek Bikeway	76th-Ridgeview (N) to Five Points (S) Route: Ridgeview/67th/ Hillandale/Silver Creek Trail/ Hillandale/Hickory Grove	Ridgeview Park, Fillmore Elementary, Pine Street node, Silver Creek Park, Kimberly commercial, Five Points	Northwest route that links residential areas with major regional and neighborhood commercial assets. Connects to and extends Goose Creek Trail.	Bicycle boulevard on Ridgeview and Hillandale segments. Requires new trail link along Silver Creek between the two ends of Hillandale. Four to three lane reallocation on Hickory Grove with bike lanes.
	Northwest Boulevard	Ridgeview and Pine (N) to NorthPark Mall (S) Route: Pine/ Northwest Blvd	Pine commercial node, Wood Intermediate Sch, Slattery Park, NorthPark and surrounding area	Diagonal connector route, using a frequently used but not fully developed bike route. Together with the Fair/Main Bikeway, links NW Davenport directly to Downtown and the Riverfront	Sidepath on short Pine segment, paved shoulders (including paving of some existing gravel) from Pine to Ripley; sidepath to Main intersection.

Table 1.8: East-West Principal Grid Routes

MAP LINE	NAME	ENDPOINTS AND ROUTE	MAJOR DESTINATIONS SERVED	HIGHLIGHTS	INFRASTRUCTURE APPROACH
	North Crosstown/ Veterans Parkway	76-Northwest Blvd (W) to Forest Grove in Bettendorf (E) Route: 76th/Brady frontage/Veterans Memorial Parkway/67th	Northwest Blvd commercial, industrial corridor, Brady hotels and commercial, Von Maur, Casino, Elmore Corners development area, Bettendorf	Continuous route cross the north tier of the city, incorporating Veterans Memorial Parkway, the city's new multi-modal arterial. Veterans, combined with its eastward extensions 67th Street and Forest Grove are likely to be the corridors of significant future mixed use and residential growth. On its west edge, this northern corridor serves areas of substantial employment growth.	Conventional bike lanes and sidepath along the 76th Street segment, Sidepath along the Brady frontage road, and continuous sidepath along Veterans Memorial and 67th Street
	53rd St Sidepath	Goose Creek Trail (W) to Davenport city limits (E) Route: Fairmount/ Waverly	Eastern Ave node, Jersey Ridge node, major regional commercial around I-74 interchange from Elmore to Utica Ridge	Corridor linking major regional commercial destinations, tying into three future north-south trail corridors	Sidepath, developed to Veterans Parkway standard
	46th St Bikeway	49th-Fairmount (W) to Elmore (E) Route: 49th/ Fillmore/46th	Slattery Park, NorthPark Mall, Public Works complex, Elmore hotels and commercial	Heavily favored and high priority crosstown route, a more moderately traveled collector corridor that complements the 53rd Street and Kimberly Road arterials. Connects several major north-south routes as well as Goose Creek and proposed Eldridge Trails.	Conventional bike lanes from Fairmount to Pine with no parking; advisory bike lanes in rural section from Pine to Division; shared lanes from Division to Northwest Blvd via Fillmore; bike lanes or multi-use shoulder with shared lane markings from Northwest to Brady; conventional bike lanes from Brady east with new trail filling gap between Public Works complex and Eastern Ave. Existing chicane/quiet street from Eastern to Jersey Ridge, conventional or advisory bike lanes from Jersey Ridge to Elmore.
	35th St Bikeway	Pine (W) to Elmore (E) Route: 36th/ Sturdevant/35th/ Brady/36th/Kimberly Downs/Eastern/32nd	Northwest Park, Junge Park, Harrison commercial, Duck Creek Trail cross-connections, Brady Street Stadium, Garfield Park, regional commercial at Kimberly/I-74 interchange	On-street route parallel to Duck Creek Trail, providing feeder to trail access points. Significant traffic calming benefits.	Bicycle boulevard from Pine to Marquette; four to lane land reallocation, Marquette to Brady; short sidepath on east side of Brady to 36th; bike lanes to Kimberly Downs, with bicycle boulevard east to Elmore

Table 1.8: East-West Principal Grid Routes					
MAP LINE	**NAME**	**ENDPOINTS AND ROUTE**	**MAJOR DESTINATIONS SERVED**	**HIGHLIGHTS**	**INFRASTRUCTURE APPROACH**
	Central Park/ Lombard	Emeis Park Rd (W) to Forest Ave (E) Route: Central Park/ Hickory Grove/ Lombard/Rusholme/ Eastern/Elm	Emeis Park, Wilson Elementary via Birchwood connection, Genesis-Central Park campus, Glen Armil Park, St. Ambrose University, Vander Veer Park, Genesis-St Lukes campus	Crosstown route through central corridor, serving both major Genesis campuses, and two signature parks. East-west Lombard is a true bicycle boulevard.	Four to three lane conversion of Central Park from Emeis Park to Hickory Grove, with possibility of two-way buffered bike lane; bike lanes on Hickory Grove; bicycle boulevard on balance of route. Lombard between Lincoln and Emeis Park with connection through High St cul-de-sac as a bicycle boulevard may complement or replace Central Park as a lower impact alternative.
	Kirkwood/ Hilltop Bicycle Boulevard	3rd-Pine (W) to Village of East Davenport (E) Route: Pine/ Telegraph/Fejervary Park Road/12th/ Marquette/14th-15th pair/Kirkwood/Jersey Ridge/11th/Mound Possible extension on Pine and Schmidt to Riverfront Trail	West End, Fejervary Park, Koenig Park, Children's Village West, Putnam Museum, Jefferson Park and School, Taylor School, Hilltop, Village of East Davenport, Riverfront Trail	East-west corridor north of Downtown to midtown area, with the most gentle possible rise out of the river valley to Hilltop. Connects West End to museums, Hilltop, and East Davenport	Shared lanes on Pine and Telegraph; advisory bike lane on park road. Bicycle boulevard on 12th, conversion of the 14th/15th pair to one wide one-way lane in the appropriate direction with bike lane, retaining two-sided parking. Bicycle boulevard on Kirkwood to Jersey Ridge. Enhanced ped/bike crossing needed at 12th-Division; 14th/15th and Marquette; 14th and Harrison; and Brady offsets.
	6th St Bicycle Boulevard	6th-Telegraph (W) to Riverfront Trail at Carey (E) Route: 6th/Tunnel/ Pacific/6th	Smart Intermediate School, Palmer Museum, North Downtown, Future YMCA, First Bridge via Farnam and Federal St, Riverfront	East-west quiet street corridor connecting West End eastward, and serving area north of Downtown with substantial redevelopment potential. Connection to future First Bridge.	Bicycle boulevard.

Table 1.8: East-West Principal Grid Routes

MAP LINE	NAME	ENDPOINTS AND ROUTE	MAJOR DESTINATIONS SERVED	HIGHLIGHTS	INFRASTRUCTURE APPROACH
	3rd/4th Bikeway	3rd-Telegraph to Arsenal Bridge and future First Bridge Route: 3rd/4th one-way pair/Iowa/Bechtel Park/ Arsenal Bridge steps/ Federal/First Bridge	Smart Intermediate School, Children's Village, Monroe Park, Downtown core, Arsenal Bridge and Rock Island, YMCA site, First Bridge, Riverfront Trail	Well-established east-west bike route, with bike lanes west of Marquette. Enhanced bike lanes can create a signature on-street facility. Route extended to the east serves new YMCA site and planned First Bridge	Upgrade and extension of existing bike lanes to parking protected bike lanes in the direction of traffic. Some discussion of converting both streets to two way travel. In that event, recommendation is to channel major traffic to 4th Street, focus 3rd Street on lower speed and volume traffic and active transportation, creating a stronger walking business environment. Probable infrastructure would be a two-way parking protected bike lane, one travel lane in each direction, and parking on both sides.
	Downtown Cycle Track	Western Ave (W) to Iowa St (E) Route: 3rd St, potential loop using 3rd, 2nd, Scott. and Iowa.	Downtown, YMCA, First Bridge, Harborview redevelopment	Cycletrack circulator through Downtown core to First Bridge and Riverfront	Protected cycle track with raised separation. The 3rd Street protected bike lane proposed above would be upgraded as a two-way facility, possibly in tandem with 2nd Street
	Middle Road	Jersey Ridge (W) to city limits (E)	Village of East Davenport, Duck Creek Park and Trail, commercial at I-74 interchange, Lincoln Road crossing of I-74, Bettendorf including 18th Street corridor	Important route across I-74 and linkage between the Bettendorf and Davenport networks. Connection to Duck Creek Park on Marlo Ave and Duck Creek Road	Conventional bike lanes
	West Lake	West Lake Park (W) to Emeis Park	West Lake and Emeis Parks	Connection of the city to unique county park	Advisory bike lanes on park road, paved shoulders on 110th Ave and Locust

Table 1.9: Proposed Trail Projects			
NAME	**ENDPOINTS AND ROUTE**	**HIGHLIGHTS**	**INFRASTRUCTURE APPROACH**
West Loop	Duck Creek Trail terminus at Emeis Park to Concord and River Drive	Completes the Duck Creek/Riverfront Trail loop. Route is currently signed with wayfinders. This project would upgrade this mostly on-road route with trails and path, expanding its utility for a variety of users	Sidepath on Locust, Wisconsin and Telegraph to Sunderbruch Trail. Existing Sunderbruch Trail to John Fell. Conversion of John Fell Dr, not necessary or used for industrial access to a trail facility. Conversion of alley behind Sears Distribution Center to pedestrian and bicycle use.
Silver Creek Trail	76th St (N) to Pine and Kimberly (S)	Major westside trail possibility in developing neighborhoods.	Initial stage is extension of a short segment of existing trail south of 49th St. Extension north from this point to 53rd and Hillandale and south to Cresthill and Hillandale, creating a continuous connection to Hickory Grove with a signalized crossing of Kimberly.
Goose Creek Trail	Ridgeview (NW) to 46th-Tremont (SE)	Strategic connection of Northwest Davenport to active transportation network. Extends current initial segment that extend from 46th to 53rd.	Initial development stage should extend trail from current terminus at 53rd Street across Brady to Goose Creek Footbridge and North High campus. This could be supplemented by a gap-filling path between the ends of 61st Street, providing quiet street access from neighborhoods that will eventually be served by the western segment of the trail. Grade separation under Brady is highly desirable. However, if this is prohibitively expensive, an interim route could cross Brady at an enhanced surface crossing at 61st. Removal or redesign of the right turn slip lane may be considered.
Marquette Gap	Northwest and Marquette (N) to 46th and Marquette (S)	Provides pedestrian and bicycle continuity north to south on the Marquette corridor	Road extension is not necessary for active transportation purposes, but pathway link should be implemented in advance of or in conjunction with eventual development of this site.
Eldridge Trail	City of Eldridge to Village of East Davenport	Major north-south trail opportunity along lightly traveled rail line, providing a level, direct route through and beyond Davenport. A major opportunity that depends on negotiating a rail-with-trail agreement with Canadian Pacific Railroad.	Initial priority phase for City is segment between the line of 46th Street and the Eastern Ave crossing near Rusholme (or, if necessary, Duck Creek Trail). Currently, more detailed consideration has occurred on the north end, south of Eldridge. If an agreement can be reached, extending the trail to Veterans Parkway could then use the existing Tremont bike lanes, 46th, and the segment south of 46th to provide excellent connections to the rest of the network.
46th Street Gap	Public Works complex (W) to Eastern (E)	Should be planned with connection to future Eldridge Trail. Critical to completing a primary east-west active transportation route	Trail and probable pre-fabricated bridge over railroad corridor in cut.

Table 1.9: Proposed Trail Projects			
NAME	**ENDPOINTS AND ROUTE**	**HIGHLIGHTS**	**INFRASTRUCTURE APPROACH**
Pheasant Creek Trail	Jersey Ridge (N) to Duck Creek Trail (S)	Trail along Elmore, major visitor lodging and retail corridor with regional implications.	Initial phase would be segment from Elmore to 46th, serving major retail and lodging facilities. Some commitments have been made for providing a trail in this stretch. Planning along Pheasant Creek should be coordinated with Bettendorf concept for trail development south along I-74 and over the new Mississippi River Bridge.
Locust Sidepath at Duck Creek Park	Fernwood and Pleasant (W) to Kimberly and Lincoln (E)	Path along Locust frontage of Duck Creek Park, with connections at ends to the Forest bicycle boulevard at Pleasant Street and the 32nd Street bicycle boulevard between Lincoln and Locust.	Path along Locust and one block of Fernwood. At west end, one block use of Pleasant for connection to Forest. At east end, crossing at Locust at existing crosswalk, with sidepath segment to 32nd Street route.
I-74 Crossing/Tanglefoot	39th-Elmore/Pheasant Creek Trail (W) to Utica Ridge and Tanglefoot Ln in Bettendorf	Integration of networks in Davenport and Bettendorf with a grade-separation for bicyclists and pedestrians over the interstate and connecting to the east-west Tanglefoot bikeway	Trail and sidepath along 39th Street from future Pheasant Creek Trail, with pedestrian bridge over I-74. Crosses Elmore at signalized 39th Street intersection.

INFRASTRUCTURE TYPES

This section describes the various types of bicycle infrastructure appropriate to Davenports streets, trails, and other active transportation opportunities. These specific facility types are divided into off-street and on-street categories as follows:

Off-Street

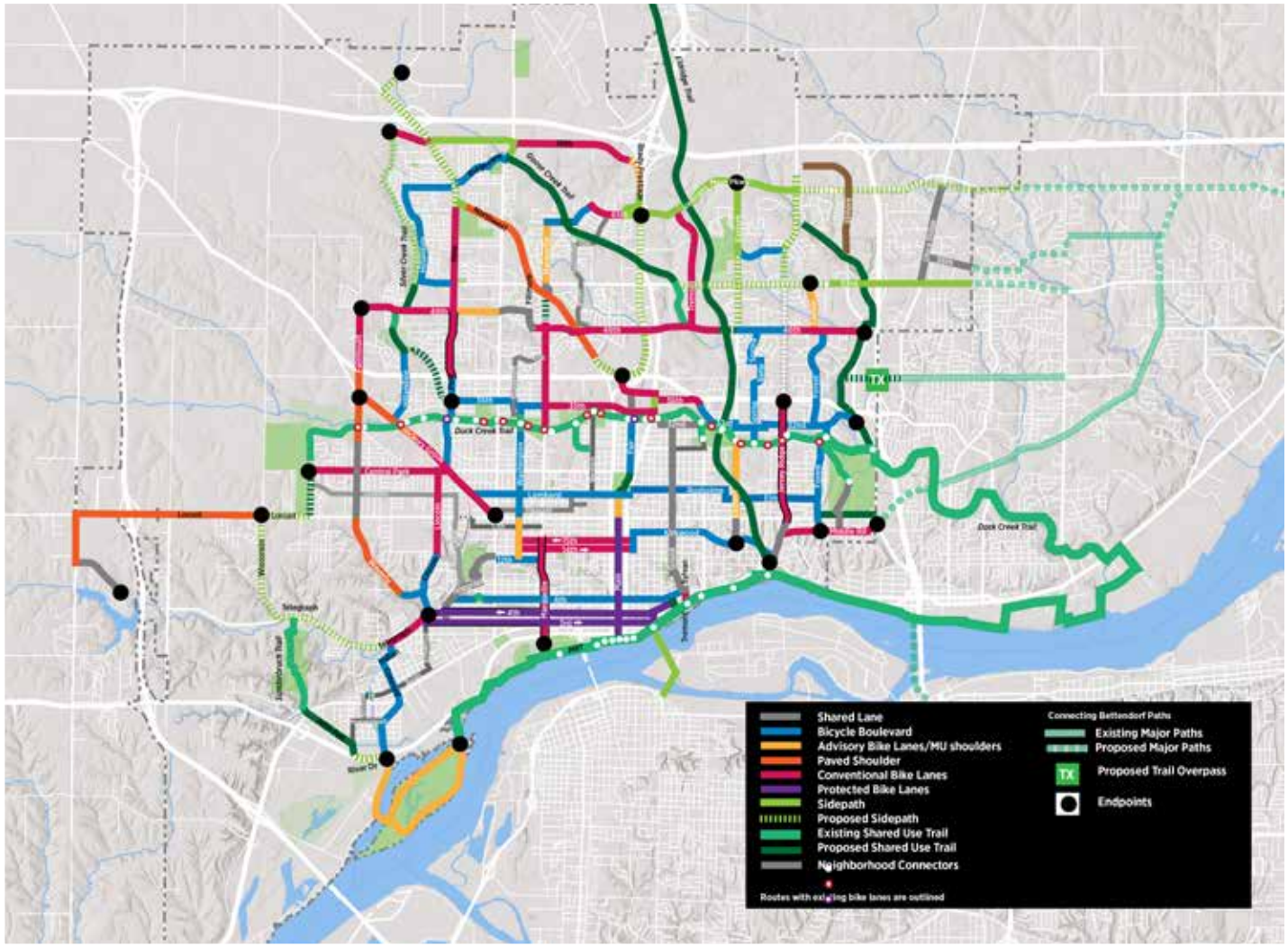
- Shared-use Trails
- Shared-use Sidepaths

On-Street

- Shared Lanes
- Bicycle Boulevards (or quiet streets)
- Multi-use Shoulders
- Paved Shoulders
- Advisory Bike Lanes
- Conventional Bike Lanes
- Protected Bike Lanes

Infrastructure types in the Davenport network are summarized on the following pages. A full description of infrastructure types and design guidelines are presented in the appendix of this plan. Table 1.10 summarizes these types and the Network Infrastructure Types map applies them to the network routes.

Map 1.2: Network Infrastructure Types



Shared-Use Trails

The Davenport bike and pedestrian network will continue to make extensive use of shared-use trails on separated rights-of-way. These trails display the highest level of user comfort in the survey and provide a highly desirable environment for the widest range of users, including walkers, runners, bicyclists, and in-line skaters. Trails are also viewed as friendly environments for people of all ages. Trails should comply with American Association of Street and Highway Transportation Officials (AASHTO) standards and Uniform Federal Accessibility Standards and the Americans with Disabilities Act Accessibility Guidelines. Existing shared-use trails on fully separated right-of-way include

Shared-use trails are most frequently used in the following urban contexts:

- In abandoned rail corridors (commonly referred to as Rails-to-Trails or Rail-Trails). Rail-trails are common in Iowa. The proposed Eldridge Trail would fall into this category if the Canadian Pacific ended existing operations The Clinton, Davenport & Muscatine interurban ran for around 28 years along the riverfront, 3rd Street, and a portion of Telegraph Road. But conventional rail-trails are not a significant part of the Davenport network.
- In active rail corridors, trails can be built adjacent to active railroads (referred to as Rails-with-Trails. The proposed Eldridge Trail falls into this category.
- In utility corridors, such as powerline and sewer corridors.
- In waterway corridors, such as along canals, drainage ditches, rives and beaches. These represent the city's key trails and trail opportunities, which include Goose, Pheasant, and Silver Creeks as well as the existing Duck Creek and Riverfront Trails.
- Along roadways. In some cases, trails on road right-of-way are separated or insulated sufficiently from the adjacent road to function as independent trails. A trail along I-74 would be an example of such a trail,
- In parks or through other easements or public properties. The Sunderbruch Trail is an example of this setting.

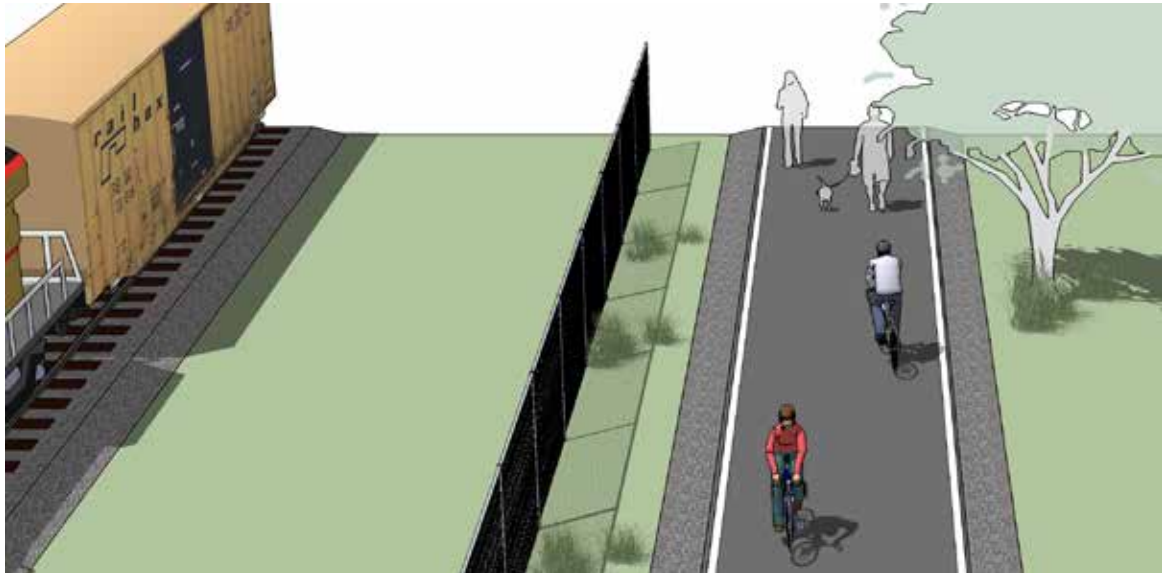
Shared-use trail diagram

Duck Creek Trail

Rails-With-Trails

Rails-with-Trails projects typically consist of paths adjacent to active railroads. In Davenport, the Canadian Pacific Railway (former Dakota, Minnesota & Eastern) operates a lightly traveled north-south branch line from Eldridge to its Mississippi River line between Clinton and Muscatine. Despite some challenges, this line presents an important regional trail opportunity.

In rail-with-trail settings, separation (between path and railroad corridor) greater than 20' will result in a more pleasant trail user experience and should be pursued where possible. The railroad may require fencing with rail-with-trail projects to allay concerns about trespassing and security.



Rail-with-Trail diagram

Veterans Memorial Parkway overpass

CP Eldridge branch at 33rd Street.

Sidepaths

Sidepaths are typically two-way paths located adjacent to roadways and are separated from the stream of traffic by curbs. The sidepath accommodates pedestrians well and responds to potential cyclists who are uncomfortable riding in mixed traffic. In new projects, the added cost of these facilities is relatively small, since sidewalks are already required in most urban street projects. Sidepath widths are similar to those of multi-use trails. The actual riding or walking surface should be separated from the back of the curb by landscaping or a contrasting pavement material. Research indicates that, to maximize safety, separation of the sidepath from a roadway should increase as road speeds increase.

Challenges to sidepath safety include driveway and street intersections, including visibility, motorist awareness, ambiguities about who has the right of way, and cars that block the path. As a result, experienced cyclists usually prefer on-road facilities to roadside facilities. Yet, sidepaths, despite their shortcomings, are used frequently and remain popular with many users.

Conventional multi-use sidepaths should ideally be used in corridors with few driveway or street interruptions, and should not exclude use of on-road facilities when bike lanes and shoulders are feasible. They work best along arterial streets that have long stretches of relatively uninterrupted frontage. Sidepath crossings should be clearly defined by high visibility crosswalks and advisory signage to make motorists aware of the presence of the path.

Sidepath diagram

Sidepath with high visibility crosswalks and advisory trail crossing signs (Clayton Road, Saint Louis County, MO)

Sidepath with high visibility crosswalks and advisory trail crossing signs (Clayton Road, Saint Louis County, MO)

Tanglefoot Lane in Bettendorf offers both a sidepath and bike lanes in a complete street.

Veterans Memorial Parkway, Davenport

Eastern Avenue, Davenport

Shared and Marked Streets and Roads

The Davenport network uses two basic types of on-street shared lane routes: “signed and marked streets” and “bicycle boulevards,” sometimes referred to as quiet streets or neighborhood greenways.

Signed and marked shared streets and roads are shared with motor vehicles. They typically have relatively low speeds and traffic volumes, commonly at or below 30 mph and 3,000 vehicles per day. These on-street bikeways may incorporate shared lane markings in a general purpose travel lane, D11-1 bike route signs to identify the street as a bikeway and alert motorists to be aware of bicycle traffic. These facilities typically require no additional construction or physical changes other than signage and, where employed, shared lane pavement markings. The R4-11 Bicycles May Use Full Lane sign has also become increasingly popular, replacing the previous “Share the Road” sign and sometimes shared lane markings.

The shared lane markings (SLM or “sharrows”) encourage bicycle travel, assist with wayfinding, and may help cyclists position themselves properly within lanes. Motor vehicle drivers usually must cross over into the adjacent travel lane to pass a bicyclist safely, unless a wide outside lane or shoulder is provided.

In the Davenport network, shared and marked streets are used as neighborhood connectors, linking the major grid to other destinations; relatively short connections to provide continuity for trails and higher order facilities; where space or funding is inadequate or more extensive infrastructure techniques, or where such techniques are not necessary. An example is 58th Street, a neighborhood street that links the Jersey Ridge Road and the adjacent neighborhood to Prairie Heights Park, the public library’s Eastern Avenue branch, and the Eastern Avenue sidepath.

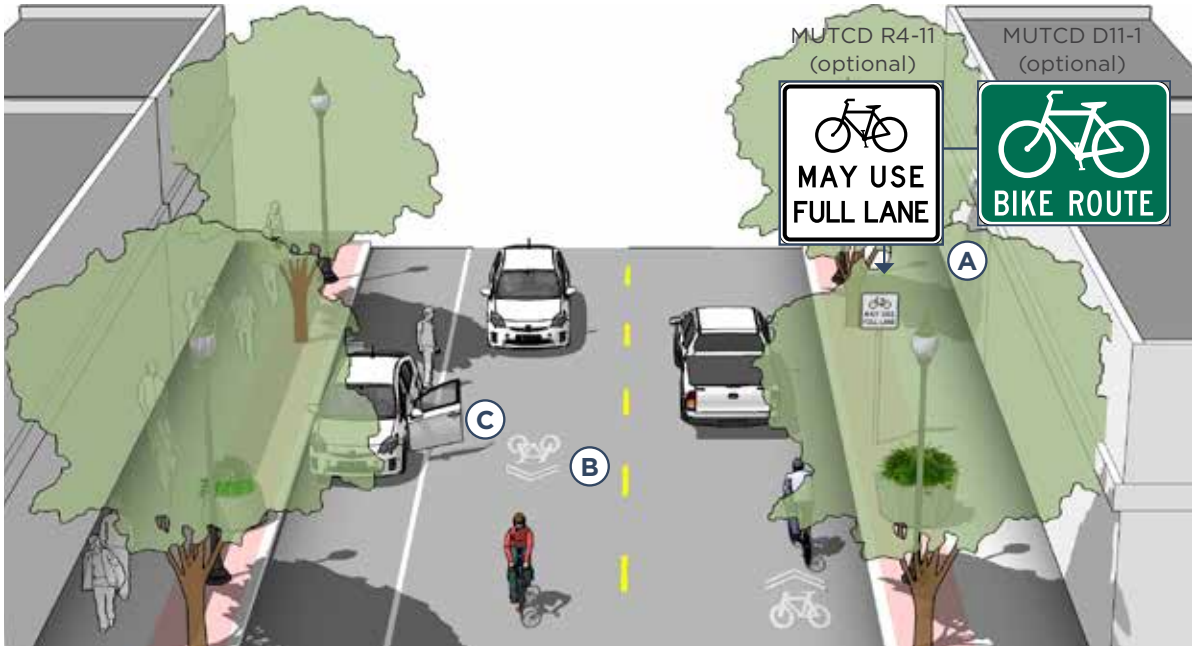


Diagram of shared and marked street.

58th Street between Jersey Ridge and Eastern Avenue.

Shared lane markings on a low-volume street.

Enhanced sharrow with symbol in green box to increase visibility.

Bicycle Boulevards (Quiet Streets)

Bicycle boulevards, sometimes called “quiet streets” or “neighborhood greenways” are something of a misnomer, because they are shared by pedestrians, bicyclists, and motor vehicles. They are low-volume, low-speed streets, modified to create greater comfort for both pedestrians and bicyclists, using treatments such as special signage, pavement markings (like shared lane markings), traffic calming devices such as bump-outs, and intersection modifications. Crossings of bicycle boulevards and major streets require special attention. Bicycle boulevards should have reasonable stop priority to provide continuity for bicyclists, but not so much to become through routes for motor vehicles. The ideal bicycle boulevard provides both a direct route and good continuity, has traffic speeds at or below 25 mph, and average daily traffic below 3,000 vehicle per day. Bicycle boulevards should have excellent pedestrian facilities, including continuous sidewalks and properly designed crosswalks and ramps for people with disabilities.

Bicycle boulevards often provide alternative and more comfortable routes to major trafficways while providing access to the same destinations. They are often parallel and relatively close to major streets. Excellent examples in Davenport are Rusholme betyween Eastern Avenue and VanderVeer Park and Lombard, parallel to but with much lower traffic than nearby Locust Street or Central Park Avenue. Good bicycle boulevards follow long and direct continuous travel routes, avoiding misdirection or circuitous routes. Characteristics of Davenport’s street grid make bicycle boulevards an important part of the proposed network. 46th Street between Eastern and Jersey Ridge displays the traffic calming techniques that are sometimes found in the most elaborate bicycle boulevards, but most of these facilities function well with the relatively low-cost features to manage speeds.

One significant problem that bicycle boulevards face is intersections with major streets. Because they are secondary or even local streets, some of these intersections lack traffic signals or stop controls for the major street. In most cases, bicycle boulevards in the Davenport network are designed to cross major streets at signalized intersections, but this is not always the case.

Bicycle boulevard diagram using curb extensions for speed control

Grand Avenue is a proposed bicycle boulevard for Davenport.

Bicycle boulevard techniques: From top; mini-roundabout & SLM’s in Seattle; chicane segment of 46th Street in Davenport.

Paved and Multi-Use Shoulders

Paved shoulders typically are found along rural section roads, including highways, in low-density settings. However, some urban section streets with curb and gutter do provide striped shoulders as well. These shoulders can serve as bikeways with striped separation from travel lanes and adequate width (4'+) for bicycle travel. They prohibit routine use by motorists but are often not exclusively designated for bicyclists. However, they often include signage alerting motorists to expect bicycle travel along the roadway and sometimes include bike lane pavement markings. Rumble strips, if used, must provide a minimum 4 foot clear path and 12 foot gaps every 40-60 feet to allow access as needed.

Several corridors in the Davenport network have existing paved shoulders that are serve as bicycle facilities, including Northwest Boulevard and parts of Hickory Grove Avenue. Other streets in the network have existing gravel shoulders that should be paved both for multi-modal travel and maintenance purposes. These include segments of Fairmount Street and West Locust.

Shoulders not explicitly reserved for bicycle use also have significant applications in more urban areas. Some strategic streets (including potential bicycle boulevards) have moderate daily traffic and are relatively wide at 32-feet and over. In most cases, these streets permit parking on at least one side. Traffic volumes may not be sufficient to require exclusive bike lanes or parking restrictions for bicycle travel purposes would create unnecessary controversy.

On these streets, a painted white line for a multi-use shoulder provides territory for multiple uses, including occasional parking, bicycle travel, and other purposes. These painted shoulders may be used along with shared lane markings in the travel lane. Typically, the minimum pavement width of a two lane street with multi-use shoulders and no parking is 32 feet; 34-36 feet with single-sided parking, and 38-40 feet with two-sided parking. The plan recommends multi-use shoulders in such settings as Marquette Street north of 53rd and the Washington Street neighborhood business district. They can also be used in combination with advisory bike lanes (see following section).

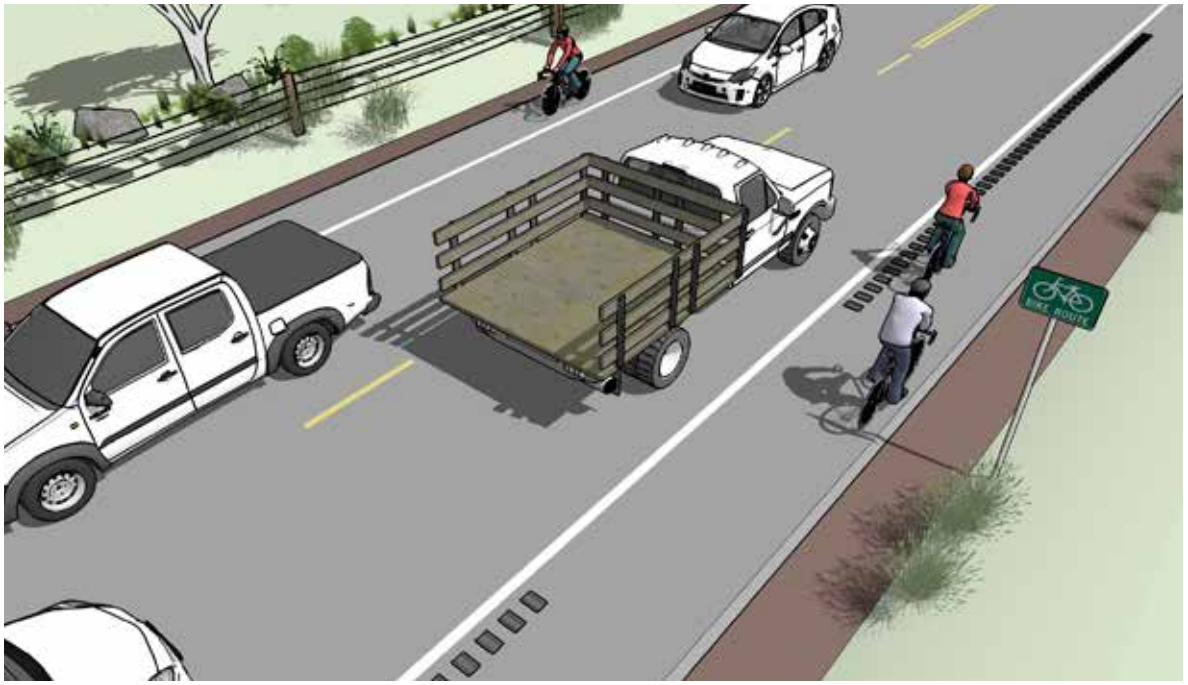


Diagram of paved shoulder use as a bike network component.

Paved shoulders on Northwest Boulevard

Multi-use shoulder in a semi-rural setting (Lake City, MN).

Wide parking shoulder that buffers on-street parking (Oklahoma City).

Advisory Bike Lanes

Advisory bike lanes are a type of shared roadway that clarify operating positions for bicyclists and motorists to minimize conflicts and increase comfort. Similar in appearance to bike lanes, advisory bike lanes are distinct in that they are temporarily shared with motor vehicles during turning, approaching, and passing. This experimental treatment is most appropriate where traffic volumes are low to moderate (500 to 3,000 vehicles per day) and where there is insufficient room for bike lanes or credible multi-use shoulders. If on-street parking is present, parking lanes should be highly utilized or occupied with curb extensions to separate the parking lane from the advisory bike lane.

Applications for advisory bike lanes in the Davenport network include relatively narrow, lightly traveled streets with limited traffic or slow recreational use; or in combination with parking or multi-use shoulders to provide a distinct area that motorists and bicyclists can expect to share. Examples are South Concord, Credit Island park roads, or roads with rural sections such as Lorton Street north of 46th.

Short-term engineering evaluation studies have been performed on five US ABL installations. All of them have found the facilities to be safe and operating as intended.

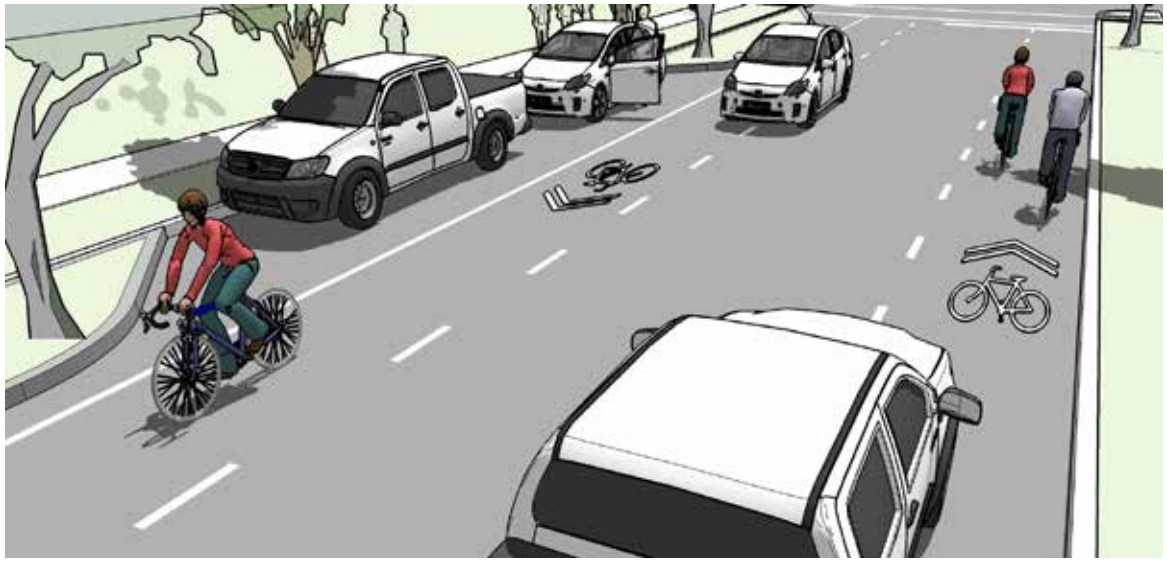


Diagram of advisory bike lanes

Contrasting pavement color in a downtown setting.

Advisory bike lanes in practice. From top: Used in combination with a defined parking lane; along a narrow rural road (both photo credits: Alta Planning + Design).

Conventional Bike Lanes

Conventional bike lanes are already familiar and in use in Davenport and other Quad Cities communities, including along the 3rd and 4th Street one-way pair west of Marquette Street, on Marquette south of 14th Street, on Jersey Ridge Road and Pine Street north of Kimberly Road, and along sections of Tremont and 46th Streets. On-street bike lanes designate an exclusive space for bicyclists through the use of pavement markings and signs. The bike lane is located directly 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.

Conventional bike lanes may be used wherever there is sufficient width for them, but are most advisable on streets with average daily traffic at or above 3,000 vehicles per day. (NACTO *Urban Bikeway Design Guide*). On streets like Main Street, with a steep climb and inadequate width for bike lanes and parking on both sides of the street, a bike lane may be used in the uphill direction, with SLM's used on the downhill. On higher volume streets, painted buffers can be used where possible to provide a greater degree of user comfort.

Increasingly user preferences and comfort call for a greater degree of separation from moving traffic than offered by conventional bike lanes. However, many streets do not offer the space required for buffering. The visibility and user comfort of conventional bike lanes can be significantly by locating the bike lane pavement marking in a green background and marking conflict zones with green paint or transverse striping.

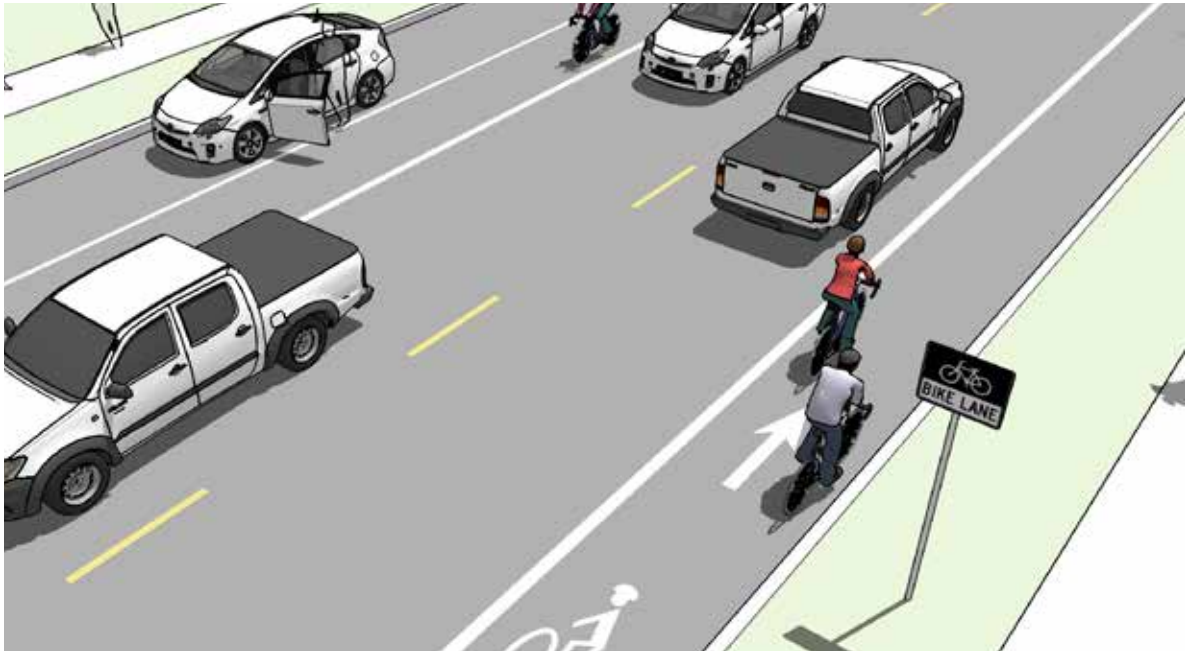


Diagram of a conventional bike lane

Enhancements of conventional bike lanes. Two images from left: Existing standard bike lane on Marquette Street; Green paint behind the bike lane pavement parking and in conflict zones and a "bike box" at intersections greatly increase visibility and motorist awareness. (Wauwatosa, WI)

Bike lane opportunities in Davenport. From left: Main Street, too narrow to permit bike lanes in both directions and parking. Here, a climbing bike lane and shared lane markings in the downhill direction will improve the environment of this high priority route. Tick marks define the door zone while a narrow cross hatched separation helps define the safe path for bicyclists.

Separated Bike Lanes

Many bicyclists want a higher degree of physical separation from moving traffic and parked cars.Bike lanes that provide various types of buffers are increasingly preferred over conventional bike lanes on streets with substantial traffic volume. There are several different ways of providing this separation, depending on cost, street width, parking conditions and roadway characteristics and operations. These include:

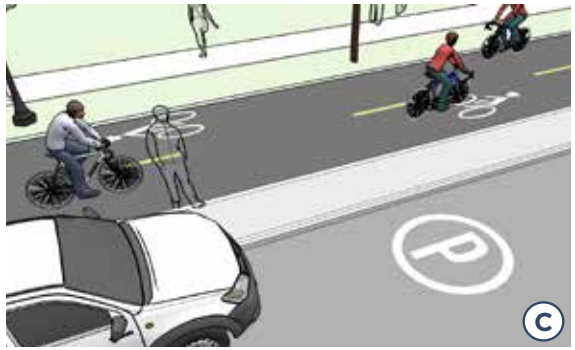
Buffered bike lanes. These are conventional bicycle lanes paired with a designated buffer, separating the bicycle lane from the adjacent motor vehicle travel lane and/or parking lane. Minimum buffer space is 2 feet. Opinions differ over whether the buffer is more effective against parking lanes or travel lanes. Buffered bike lanes generally do not have a vertical separation and are recommended where space permits. Buffered bike lanes may be used on parts of the Main Street corridor.

One-way protected bike lanes. When retrofitting separated bike lanes onto existing streets, a one-way street-level design may be most appropriate. This design provides protection through physical barriers and can include flexible delineators, curbs, on-street parking, etc. Frequently, parking is adjacent to the travel lanes, and the protected bike lane lines the curb. These parking protected bike lanes provide a high level of separation from both moving traffic and parked cars. As a retrofit, these bike lanes have a relatively low implementation cost because of the use of existing pavement, drainage, and the parking lane as a barrier. They apply well to the 3rd and 4th Street one-way pair, where space is adequate for parking protected one-way lanes.

Two-Way Separated Bicycle Lanes. These facilities allow two-way movement on one side of the road. Two-way separated bicycle lanes share some of the same design characteristics as one-way separated bicycle lanes, but may require additional considerations at driveway and side-street crossings. These bike lanes may be configured at street level or with vertical separation from the adjacent travel lane. Two-way separated bike lanes should ideally be placed along streets with long blocks and few driveways or mid-block motor vehicle access points. Central Park Avenue between Emeis Park and Lincoln Street provides a possible opportunity in combination with a lane reduction to manage speeds. Another possibility is the proposed Downtown Cycle Track Loop.

Buffered bike lane

One-way protected bike lane



Two-way protected bike lane

Buffered bike lane along a major arterial corridor in San Diego. Green paint is used to clarify bicycle traffic across access ramps effectively on even this limited access road.

Top: One-way parking protected bike lane (Venice Blvd in Los Angeles' Mar Vista neighborhood) Above: Two-way protected bike lane with planter separation in Lincoln, NE.

Wider parts of Main are ideal for buffered lanes.

One-way protected bike lanes would provide a good east-west facility for users along 3rd and 4th Street.

Low traffic, width, and relatively few interruptions may make a two-way protected bike lane feasible on Central Park Avenue's western leg.

Table 1.10: Summary of Infrastructure Types

FACILITY TYPE	DESCRIPTION	EXAMPLES IN NETWORK
Multi-use trails	Separated trails on exclusive right-of-way. Some segments may be sidepaths adjacent to roadways.	Duck Creek Trail, Riverfront Trail, Goose Creek Trail
Sidepath	Paths separated from but generally parallel to roadways and on public right-of-way	Veterans Memorial Parkway, 53rd Street
Signed or marked shared routes	Low-volume, low-speed streets identified by signage, wayfinding, shared use lane pavement markings, but no major infrastructure changes. Often used to connect network to specific destinations.	12th Street, segments of 46th Street, Western
Bicycle boulevards	Low-volume, mixed traffic streets or groups of streets with direct continuity. May use special identification and wayfinding signage, traffic calming devices, controlled major intersections, continuous sidewalks.	Forest Ave, Lombard St
Multi-use shoulders	Area within a street channel explicitly defined (usually by a white painted line) from travel lanes. May be used for parking, breakdowns, bicycle access.	Segments of Marquette, Eastern, 46th
Advisory bike lanes	Shared roadway that clarify operating positions for bicyclists within shared travel lanes, typically used on segments that need definition of territory for bikes but are not wide enough for conventional bike lanes or multi-use shoulders.	Low-volume park roads, Lorton, South Concord
Paved shoulders	Generally on rural section roads (without curb and guttered) an area striped adjacent to but outside of travel lanes, usable by bikes and pedestrians, but more normally used for temporarily stopped motor vehicles.	Northwest Boulevard, segments of Fairmount
Conventional bike lanes	Lanes on a street that are specifically striped and designated for the exclusive use of bicycles.	Marquette, 15th/14th, segments of 46th
Protected bike lanes	Roadways with specific one- or two-way lanes for exclusive use by bicycles, separated by a buffer from moving travel lanes. Separation is accomplished by painted buffers often with vertical definition or a raised curb.	3rd/4th, Main Street in Downtown

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VOLUME 1

ROUTE DETAILS

This chapter considers each of the potential routes in the proposed Davenport network in detail and also presents a development plan for the trail system. It provides guidance on the specific design of each significant segment of each route. Finally, it presents methods for staging the system over time.

2

ROUTE DETAILS

This chapter divides the Davenport network grid into north-south and east-west components. Each route displays a strip map that illustrates each street or pathway segment, key destinations along the way, intersecting routes, and in some cases of special note, more detailed maps and character renderings. These maps are divided into key segments, corresponding to key dividing points, milestones, or changes in infrastructure treatment. The number key for each segment corresponds to a row in the accompanying table. The tables display:

- The endpoints and length of each segment.
- The nature of the existing facility. Information also includes number of lanes and approximate width of the street channel, based on aerial photography.
- General sidewalk coverage While this plan does not present a detailed sidewalk inventory, the tables display general aspects of sidewalk coverage by segment. Streets included in the active network should provide sidewalk continuity on at least one side.
- Recommended infrastructure. This presents the recommended infrastructure treatment and other ideas for adapting a segment for safer and more comfortable bicycle and pedestrian use. On-street treatments like marked routes and bicycle boulevards typically use pavement markings and signage. In some cases, path or trail segments fill gaps in continuity.
- Planning level opinions of probable costs. While these are not based on detailed design, they give an idea of relative costs for planning purposes. Cost factors used for these estimates are shown in Table 2.1. These costs do not include contingencies, design and engineering fees, major drainage structures, or extraordinary grading expenses.

These recommendations should be refined further as individual projects are implemented. However, they provide a starting point for the more detailed design process, and provide guidance in determining priorities and costs of various improvements.

The chapter continues with a phasing and capital implementation program that includes:

- Criteria for determining priorities.
- An initial network that serves all parts of the city with strategic routes and path segments. This program includes statements of probable cost, based on current (2018) construction costs. The initial network is further divided into two phases, which may be developed as resources are available, but probably over a ten-year period.
- An ultimate network, which may be realized within an additional five to ten year period.

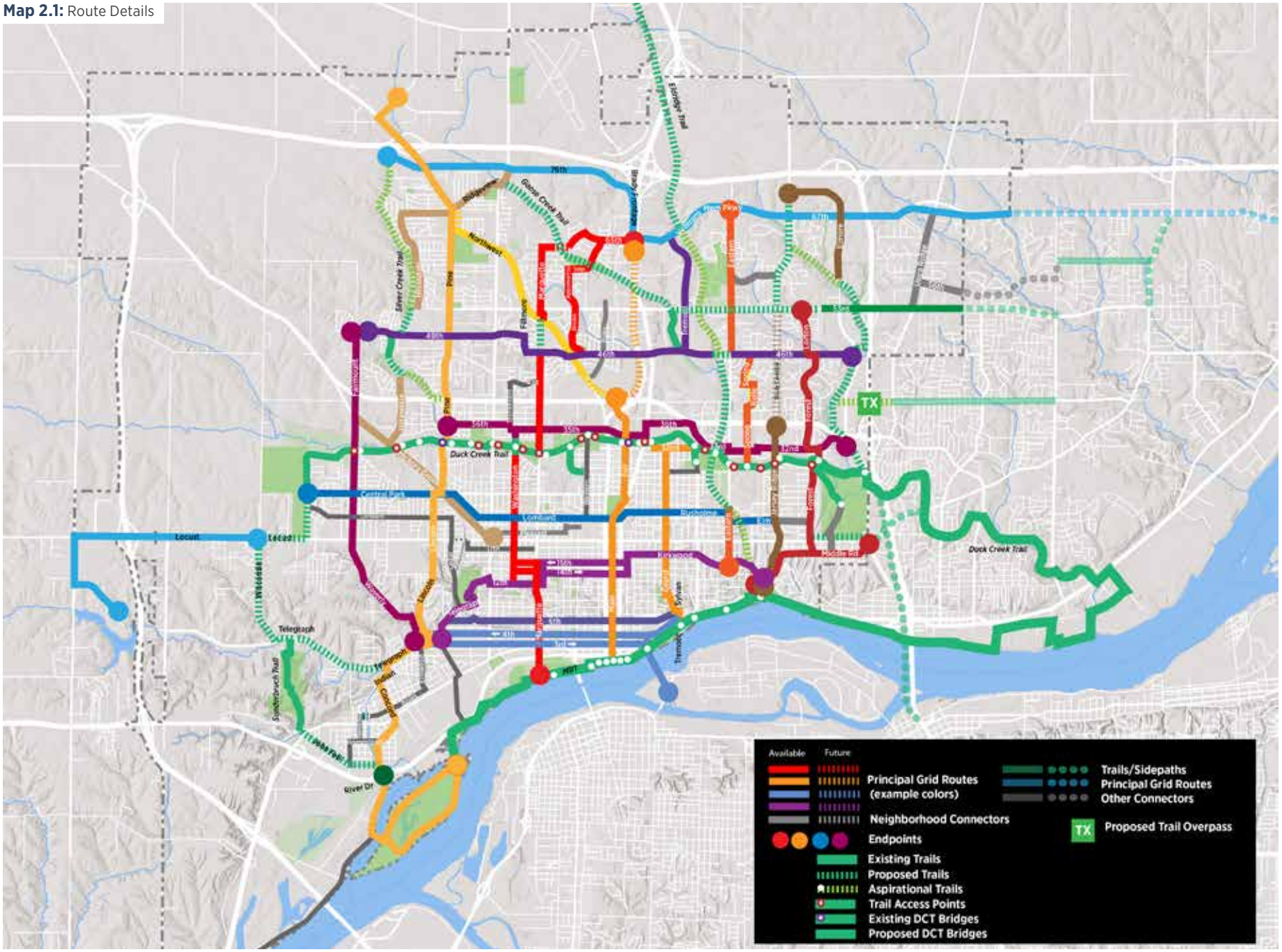
Duck Creek Trail

Table 2.1: Estimated Cost Factors by Infrastructure Type

INFRASTRUCTURE TYPE	COST/MILE	TYPICAL FEATURES
Marked and signed route	$17,000	Signage, shared lane markings
Bicycle boulevard	$25,000 for basic $60,000 for enhanced	Basic: Signage, shared lane markings, routine crosswalks, stop sign modifications Enhanced: Traffic calming features, enhanced crossings
Multi-use shoulders or virtual bike lanes	$60,000	Signage, single white line dividing shoulder or parking lane from travel lane or single dashed line in from pavement edge
Bicycle boulevard with multi-use shoulders.	$75,000	Bicycle boulevards that also include multi-use shoulders or advisory bike lanes, appropriate on wider streets
Conventional bike lanes	$102,000	Lanes defined by white lines in both directions on a street
Protected bike lanes	$64,000 one-way $115,200 two way	Painted bike lanes with cross-hatched buffer area between bike lane and travel lane.
Sidepath	$350,000	10 foot paved roadside shared use path without major earthwork or modifications
Trails (or shared use paths)	Type 1: $450,000 Type 2: $550,000 Type 3: $750,000	10-foot paved path on right-of-way separate from roadways. Range reflects various levels of construction complexity.
Trails (gravel)	$200,000	Gravel on separated right-of-way or parallel to a roadway
INTERSECTIONS OR BARRIERS (GENERIC COST POINTS)		
Type A: Major Intersection Construction	$500,000	Major projects such as protected intersections. If used in the Davenport system, these would typically address bicycle/pedestrian facilities on one side of the street only to accommodate a sidepath or single-sided shared use path
Type B: Arterial Crossing	$200,000	Major intersections but requiring less capital work than protected intersections. May include improved signalization, improved crosswalks, bump=outs, minor construction
Type C: Median with HAWK	$150,000	Crossing refuge median with hybrid beacon
Type D: Median with flashing beacon	$75,000	Crossing refuge median with flashing warning beacons in place of positive red stop signal
Type E: Enhanced	$50,000	High visibility crosswalks, minor construction but normally without signalization

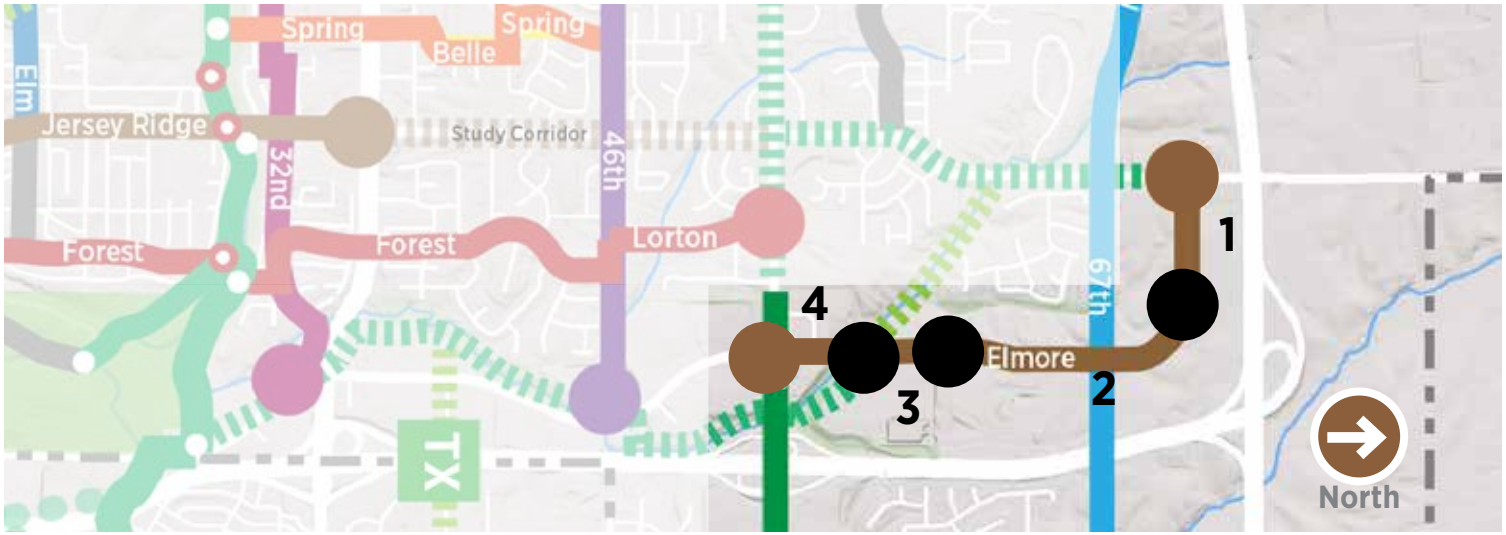
14th Street

Map 2.1: Route Details



NORTH-SOUTH

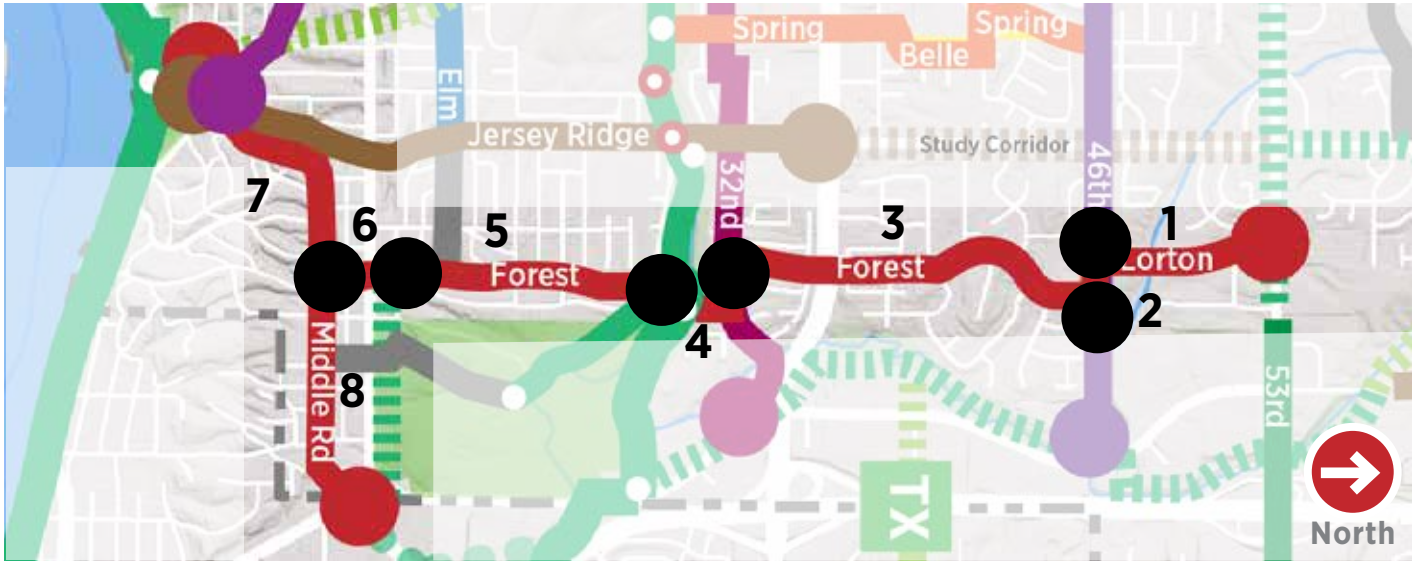
ELMORE/PHEASANT CREEK



SEGMENT KEY	SEGMENT	LENGTH (MILES)	STREET TYPE /WIDTH	SIDEWALK CONDITION	INFRASTRUCTURE	PROBABLE COST
1	Elmore, Jersey Ridge to Rhythm City entrance	0.41	4-lane divided arterial/75 feet including median	Both sides	Widen sidewalk to sidepath standards on south side	$71,750
2	Elmore, Rhythm City to Cross Creek Apts	0.80	5-lane arterial/60 feet	Both sides; existing sidepath on south/west side	Existing sidepath	$0
3	Elmore, Cross Creek to Pheasant Creek	0.32	5-lane arterial/60 feet	Sidewalk east side	Sidepath on west side with connection to future Pheasant Creek Trail	$112,000
4	Elmore, Pheasant Creek to 53rd Street	0.40	5-lane arterial/60 feet	Both sides	Widen west side sidewalk to sidepath standards	$70,000
Total		**1.93**				**$253,750**

NORTH-SOUTH

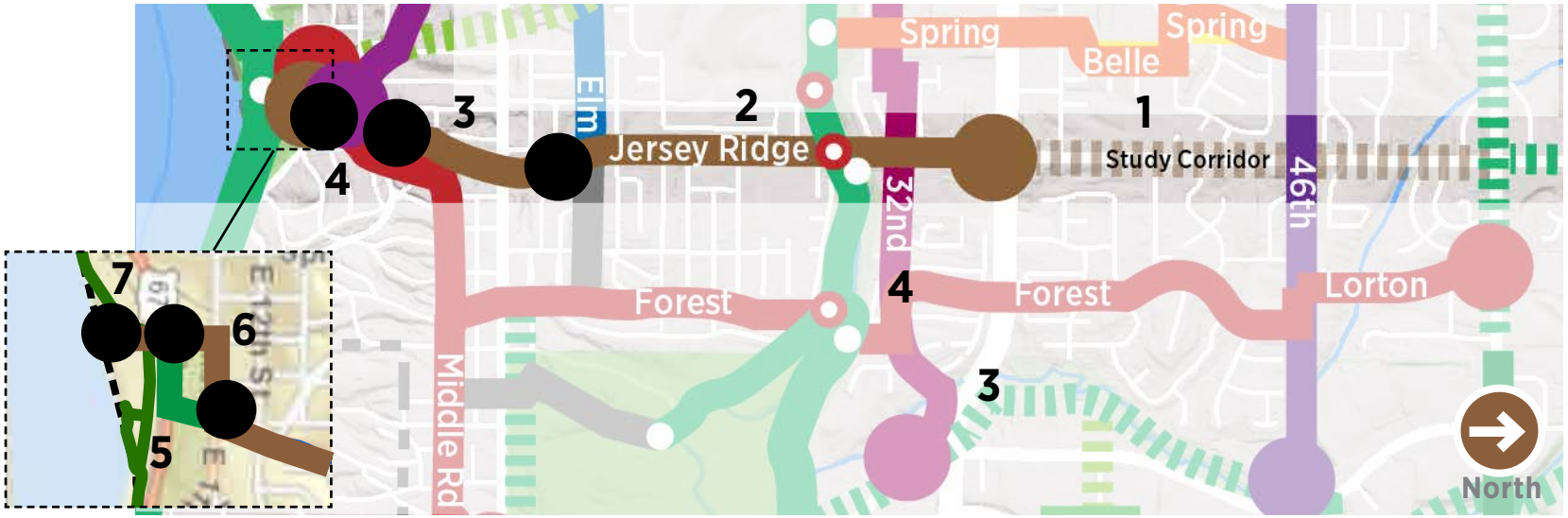
FOREST BICYCLE BOULEVARD



SEGMENT KEY	SEGMENT	LENGTH (MILES)	STREET TYPE / WIDTH	SIDEWALK CONDITION	INFRASTRUCTURE	PROBABLE COST
1	Lorton, 53rd to 46th	0.41	2-lane rural section neighborhood collector/22-28 feet	No sidewalks	Signed and marked roadway or advisory bike lanes	$24,600
2	46th jog, Lorton to Forest	0.10	3-lane collector/40 feet (46th Street)	Both sides	Upgrade south side walk to short segment ofsidepath to negotiate jog, with enhanced crosswalk markings at Lorton	$30,000
3	Forest, 46th to 32nd	1.10	2-lane collector/40 feet, 28 feet south of Kimberly	Both sides	Bicycle boulevard with signage and SLM's. Well-designed Kimberly intersection may be enhanced with bike crossing markings.	$27,500
4	32nd/Fernwood to Duck Creek Trail	0,23	2-lane local streets/28-30 feet	Both sides	Bicycle boulevard with signage and SLM's. Connection to Duck Creek Trail at south terminus of Fernwood. Connection back to Forest Rd south via path from trail	$13,800
5	Forest, Duck Creek to Locust, with Locust jog	0.80	2-lane local/28 feet	Both sides, with gaps in continuity on west side south of Central Park	Bicycle boulevard with signage and SLM's. Crossing markings, and short sidepath segment to negotiate jog. Warning advisories for motorists of crossing	$48,000
6	Forest, Locust to Middle Rd	0.14	2-lane local/25 feet	Both sides	Bicycle boulevard with signage and SLM's.	$3,500
7	Middle Rd, Forest to Jersey Ridge	0.54	2-lane collector/36-38 feet	Both sides	Bike lane in uphill (EB) direction, multi-use shoulder in WB with SLM's	$29,700
8	Middle Rd, Forest to Kimberly/Lincoln	0.70	2-lane collector/36-38 feet	Both sides	Bike lane in uphill (EB) direction, multi-use shoulder in WB with SLM's. Sidepath (0.1 mi) on Kimberly to Lincoln intersection	$38,500
Total		**4.02**				**$215,600**

NORTH-SOUTH

JERSEY RIDGE

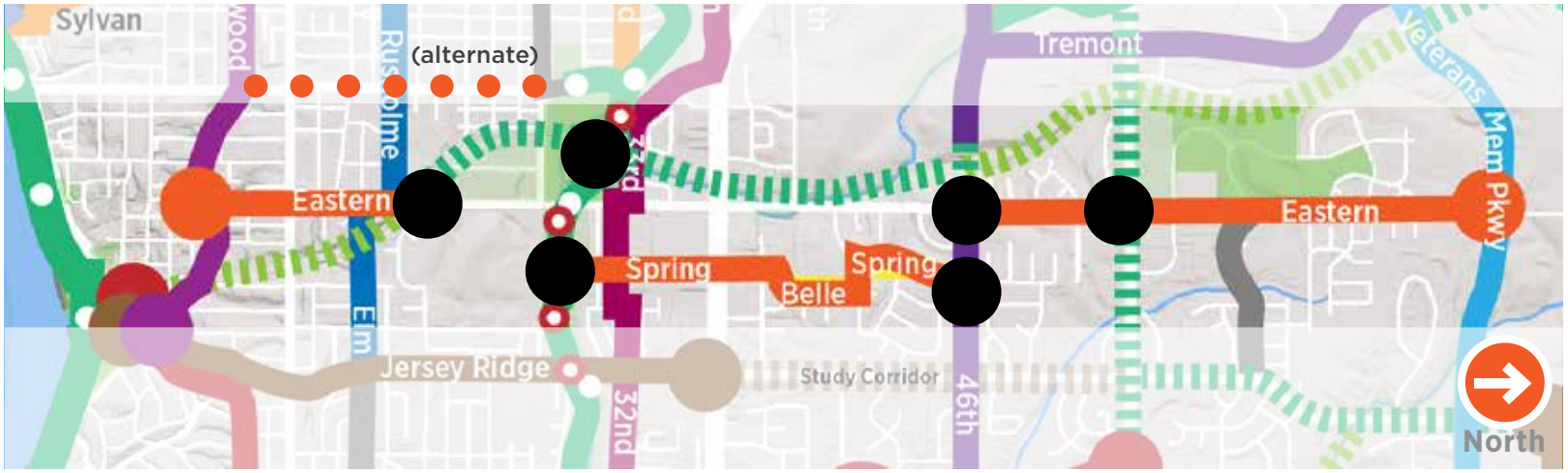


SEGMENT KEY	SEGMENT	LENGTH (MILES)	STREET TYPE /WIDTH	SIDEWALK CONDITION	INFRASTRUCTURE	PROBABLE COST
1	Jersey Ridge, 53rd to Kimberly	1.25	4-lane arterial/48 feet	Both sides between 46th and 53rd except for westside from 46th to 46th Pl. No sidewalks from 38th to 46th	Study area for future adaptation for active modes. Sidewalk continuity should be provided on one side. Major intersection redesign for ped access necessary at Kimberly intersection, adapting Forest Road model with directional crosswalks	$0
2	Jersey Ridge, Kimberly to High	1.1	3-lane arterial/42-44 feet, tapering to 2-lanes/32 feet south of Central Park, both with bike lanes,	Both sides except no westside walk between Kimberly and 32nd	Existing bike lanes	$0
3	Jersey Ridge, High to Middle Rd	0.60	2-lane arterial/30 feet with SLM's	Both sides	Multi-use shoulder on one side (currently west but shift to east would allow use for climbing), maintain and enhance SLM's with green background	$33,000
4	Jersey Ridge, Middle to 11th	0.20	2-lane arterial/36 feet with NB bike lane north of Kirkwood, widening to 45 feet with bike lanes in both directions	Both sides	Maintain existing with enhanced SLM's using green background.	$5,000
5	Path, 11th-Jersey Ridge to River Dr and Mound	0.17	Shared use path	NA	Existing path, with clearer definition of bike transition across 11th Street	$0
6	11th/Mound to River Drive	0.20	2-lane collector/36 feet on 11th to 40-feet on Mound	Both sides	Signed and marked roadway with enhanced SLM's through Village of East Davenport	$5,000
7	River Dr intersection to Riverfront Trail (Figure 2.1)	0.04	2-lane access road/40 feet at intersection to 32 feet at railroad crossing	None south of River Drive intersection	Extend shared use path on east quadrant of River Drive intersection. Provide bike directional markings across River Drive, with bike lanes to trail	$50,000
Total		**3.32**				**$93,000**

Figure 2.1: *River Drive to Riverfront Trail Intersection*

NORTH-SOUTH

EASTERN



SEGMENT KEY	SEGMENT	LENGTH (MILES)	STREET TYPE /WIDTH	SIDEWALK CONDITION	INFRASTRUCTURE	PROBABLE COST
1	Eastern, Veterans to 53rd	1.10	2-lane rural section arterial with gravel shoulders/28 feet	Sidepath on west side; segments of sidewalk with many gaps on east side	Existing sidepath with enhanced crosswalk at 53rd Street intersection, leading to sidepath continuation	Existing
2	Eastern, 53rd to 46th	0.50	2-lane rural section arterial with gravel shoulders/24 feet	One-side (west) to Shady Glen Dr	Shared use sidepath	$175,000
3	Spring/Winding Hill/ Belle/38th Pl/Spring, 46th to Duck Creek Trail access	1.40	2-lane local streets/30-32 feet	Both sides only south of Dorchester Dr along Belle, 38th Pl and Spring to trail; mostly absent on north side	Shared and marked roadway. Short-term route that would be replaced or complemented by Eldridge Trail between the same endpoints	$23,800
4	Eldridge Trail, 46th to Duck Creek Trail	1.15	Existing Canadian Pacific Eldridge branch	NA	Shared use trail. Trail link along 46th Street necessary to connect to Eastern Ave sidepath	Included in trail funding
5	Eldridge Trail, Duck Creek to Eastern at Rusholme	0.75	Existing Canadian Pacific Eldridge branch	NA	Shared use trail. Bridge Avenue presents a short-term alternative to the trail and Eastern Ave	Included in trail funding
6	Eastern, Rusholme to Kirkwood	0.62	2-lane minor arterial/32 feet to Locust; local to Kirkwood	Both sides	Signed and marked roadway with multi-use shoulder on one side. ADT may be too high for comfortable bike environment. Jersey Ridge bike lanes are an alternate to Village of East Davenport	$27,900
7	Bridge Ave, Duck Creek to Kirkwood	0.94	2-lane collector to Locust, minor arterial to Kirkwood/32-36 feet	Both sides	Alternative to higher traffic Eastern Avenue environment. Bicycle boulevard	$23,500
Total (Long-term excluding trail cost)		**4.12**				**$226,700**
Total (short-term complete)		**3.94**				**$222,300**

NORTH-SOUTH

TREMONT

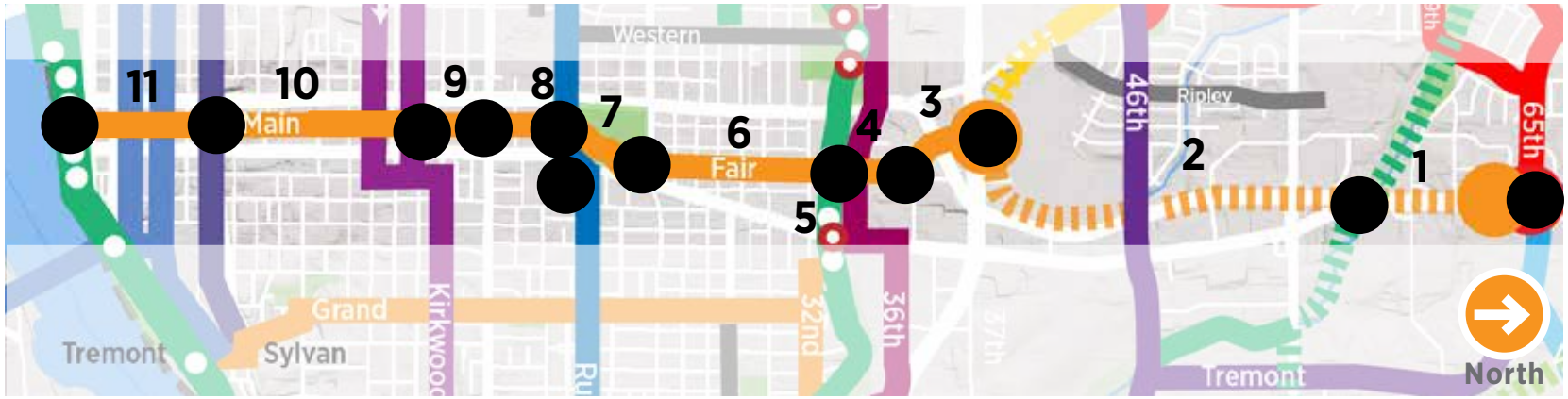
GRAND

SEGMENT KEY	SEGMENT	LENGTH (MILES)	STREET TYPE / WIDTH	SIDEWALK CONDITION	INFRASTRUCTURE	PROBABLE COST
1	Tremont, Veterans to 46th	0.41	3-lane collector with bike lanes/40 feet	No sidewalks	Existing bike lanes	
SEGMENT KEY	**SEGMENT**	**LENGTH (MILES)**	**STREET TYPE / WIDTH**	**SIDEWALK CONDITION**	**INFRASTRUCTURE**	**PROBABLE COST**
2	32nd, Farnam to Valle Vista	0.50	2-lane local/31 feet	Both sides	Bicycle boulevard, includes local street access on Farnam and Tremont/Valle Vista to Duck Creek Trail	$12,500
3	Grand, 32nd to 10th	1.60	2-lane local/30-36 feet	Both sides	Bicycle boulevard. Enhanced crosswalks and bike crossing markings at signalized Locust intersection	$40,000
4	10th/Sylvan/6th, Grand to Tremont	0.30	2-lane local streets/28-30 feet	Both sides	Bicycle boulevard	$15,000
5	Tremont, 6th to River Drive	0.16	2-lane local/30-40 feet	Both sides	Bike lanes with high visibility crosswalks and bike crossing markings at River Drive	$16,320
6	River Drive and marina access, Tremont to Riverfront Trail (Figure 2.2)	0.05	4-lane major arterial/48 feet and access drive	Both sides	Sidepath on south side of River Drive to marina access. Advisory bike lane on access drive to trail	$17,500
Total		**2.61**				**$101,320**

Figure 2.2: *River Drive and Marina Access, Tremont to Riverfront Trail*

NORTH-SOUTH

MAIN STREET BIKEWAY



SEGMENT KEY	SEGMENT	LENGTH (MILES)	STREET TYPE /WIDTH	SIDEWALK CONDITION	INFRASTRUCTURE	PROBABLE COST
1	Brady, Veterans Pkwy to Goose Creek Trail	0.52	6-lane divided major arterial with additional frontage roads, probably on east side /90 feet	No sidewalks	Sidepath probably on east side with undercrossing at Goose Creek Trail to west side. Involves probable redesign of 59th Street intersection	$182,000
2	Brady/Welcome Way, Goose Creek to Main	1.50	3-lane one-way major arterial/38 feet	West side south of 53rd	Sidepath on west side with enhanced crossing at 55th, 53rd, and Fair Ave	$525,000
3	Main, Kimberly to Fair	0.25	4-lane local/50 feet south to Welcome Way; 2-lane local to Fair/32 feet	West side from Kimberly to Welcome Way; intermittent only elsewhere	Conventional bike lanes. 4- to 3 lane reallocation on Kimberly to Welcome Way block. Sidewalk continuity desirable on west/south side.	$25,500
4	Fair, Main(37th) to 35th	0.20	2-lane local streets/30 feet	No sidewalk	Shared and marked roadway	$3,400
5	Duck Creek Greenway, 35th to 32nd	0.14 by bridge; 0.28 by 35th	Duck Creek greenway	NA	Preferred solution is new creek bridge with new path from Fair Ave stub to Duck Creek Trail, continuing on existing path to 32nd Street. Interim option is bike lanes on 35th to Brady sidewalk, upgrading sidewalk to sidepath standards along west side of Brady, and returning via Duck Creek Trail to Fair Ave alignment.	$28,560 for interim $205,000 for bridge option*
6	Fair, 32nd to Central Park	0.50	2-lane local/30 feet	Both sides	Bicycle boulevard with enhanced crosswalks and warning signage or beacon at Central Park crossing	$12,500
7	Vander Veer Park, Central; Park to Lombard	0.32	2-lane park road/26-30 feet	Park paths only	Advisory bike lane on park road with short path segment aligned with Main St; and/or shared-use path	$19,200
8	Main, Lombard to Locust	0.25	2-lane local/40-42 feet	Both sides	Advisory bike lanes	$12,500

* Assumes grant of easement for public use easement on private drive aligning with Fair Avenue north of 35th Street.

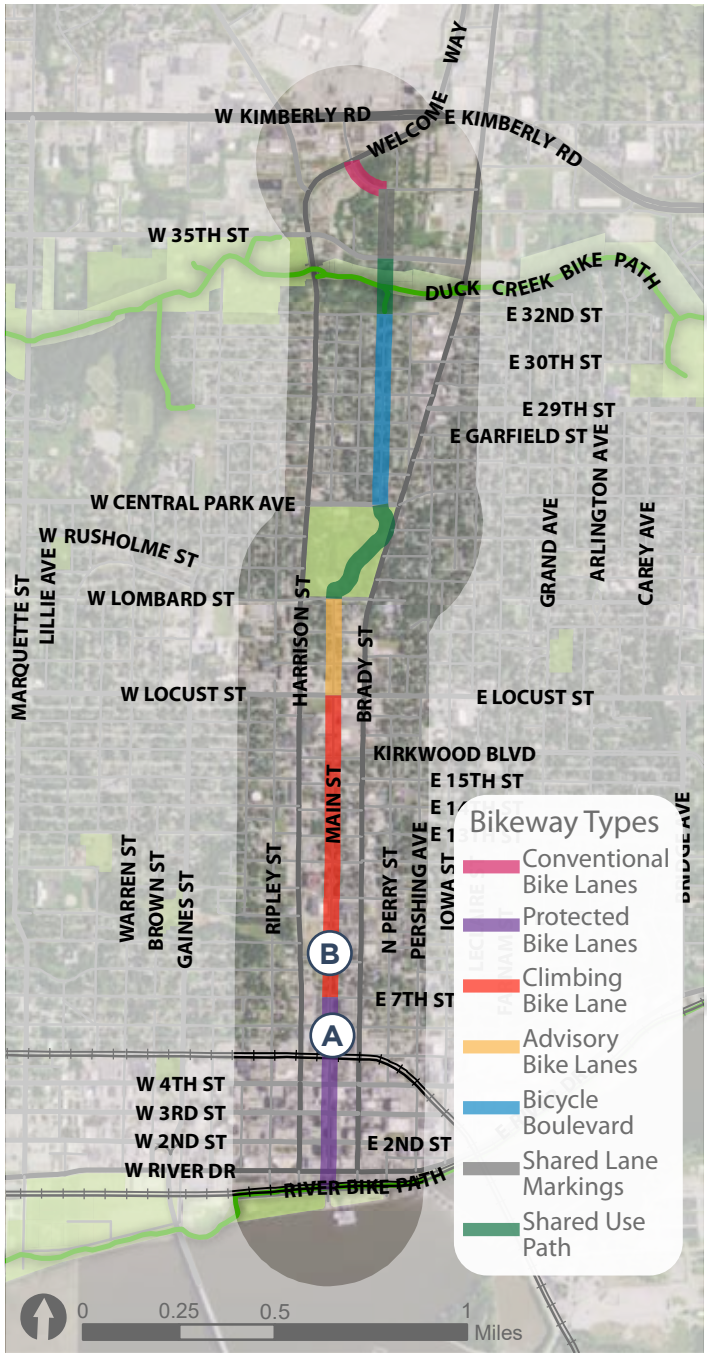
Main Street: A Central Corridor

Main Street and Fair Avenue function as a key north-south corridor providing access to Downtown Davenport and numerous destinations in the heart of the city. It is especially important because of its location between the arterial highway pair of Brady and Harrison, providing a classical quiet street alternative that serves the community destinations along this spine. This principal bikeway provides direct connections to Northpark Mall, the Duck Creek Parkway Trail, Vander Veer Botanical Park, Central High School, Palmer College of Chiropractic, Downtown Davenport, LeClaire Park, and the Riverfront Trail. The bikeway types proposed for this corridor adapt to roadway conditions to provide a continuous, comfortable bicycling experience that will support most bicyclist types. Bicycle boulevard treatments along Fair Avenue utilize shared lane markings, wayfinding signage, and traffic calming techniques, while dedicated bike lanes and protected bike lanes along Main Street provide separation from motor vehicle traffic.

SEGMENT KEY	SEGMENT	LENGTH (MILES)	STREET TYPE /WIDTH	SIDEWALK CONDITION	INFRASTRUCTURE	PROBABLE COST
9	Main, Locust to 16th	0.17	3-lane minor arterial/40-42 feet	Both sides	Lane reallocation to two lanes with bike lanes; or lane restriping to provide northbound (climbing) bike lane and enhanced SLM's southbound	$9,350
10	Main, 16th to 7th	0.63	2-lane minor arterial/40-42 feet	Both sides	Northbound (climbing) bike lane and enhanced SLM's southbound. Bike lanes in both directions on 12th to Palmer Dr block	$34,650
11	Main, 7th to River Dr	0.46	3-lane minor arterial/54-56 feet	Both sides	Parking protected bike lanes with lane reduction to two-lanes.	$52,992
Total		**5.08**				**$905,652***

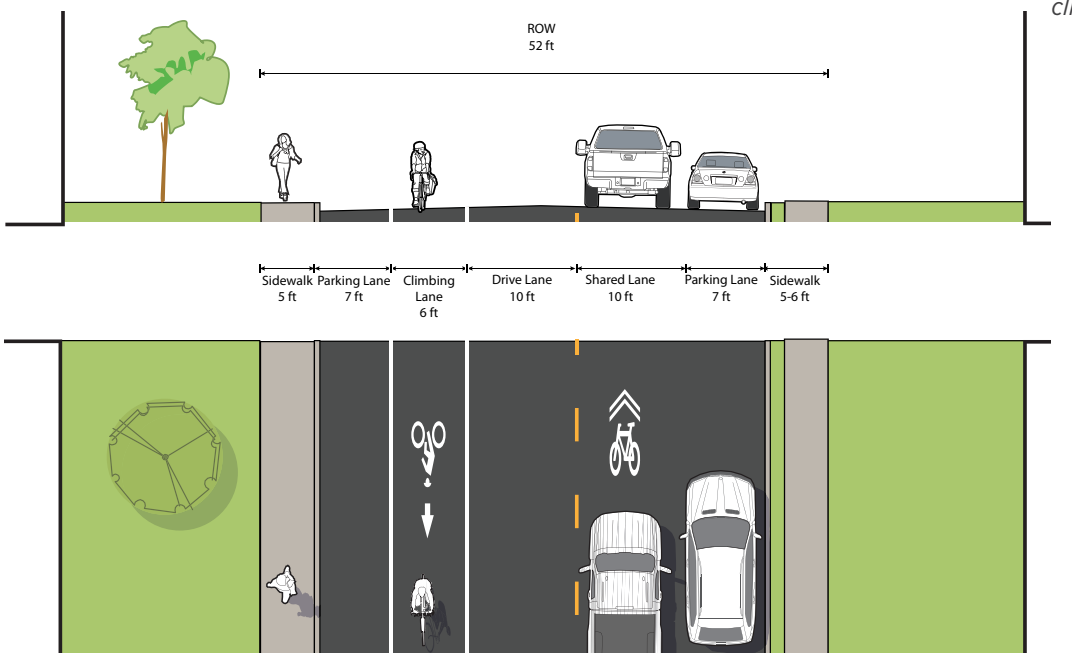
* Assumes "interim" option for Duck Creek crossing. Bridge option total is $1,082,092

Main Street at 12th Street: Current conditions.



Parking protected bike lane looking north from toward the railroad viaduct.

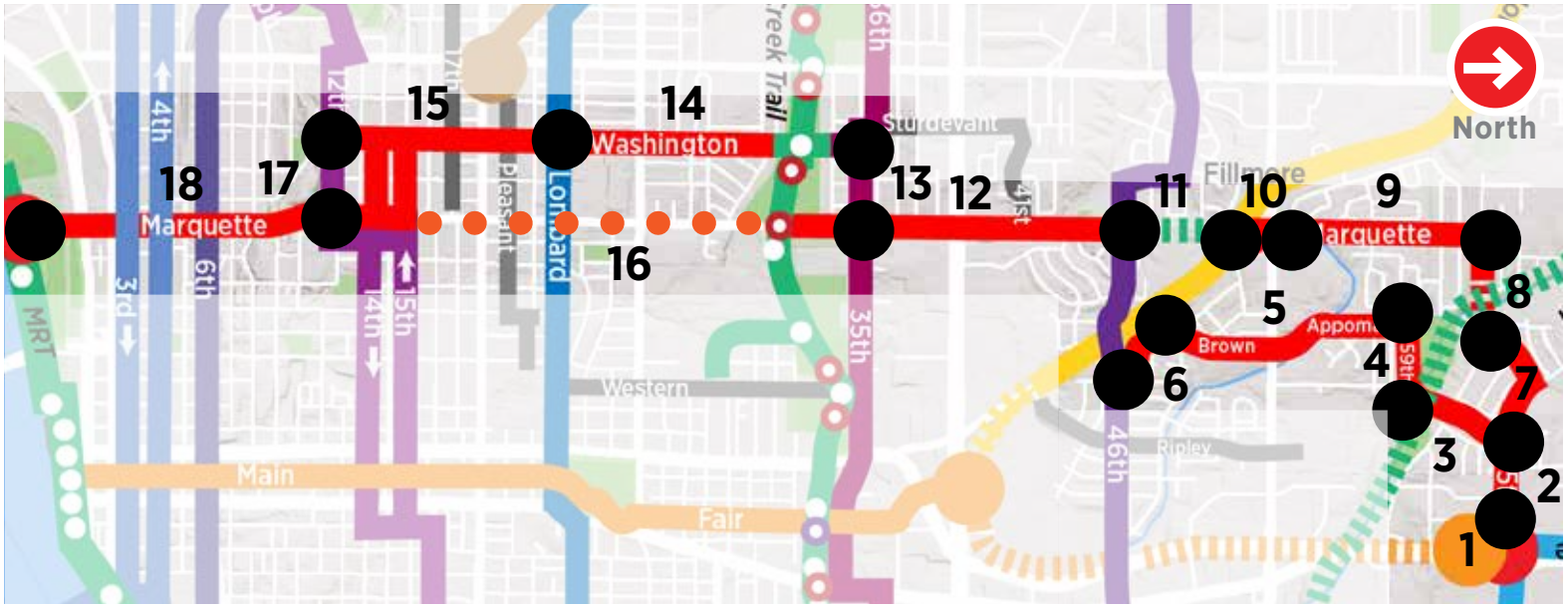
Main Street at 3rd Street: Current conditions. Source: Google Maps.



Counterclockwise from above: Existing Main Street looking south; cross sections of climbing lane; rendering or concept

NORTH-SOUTH

MARQUETTE/ WASHINGTON BIKEWAY



SEGMENT KEY	SEGMENT	LENGTH (MILES)	STREET TYPE /WIDTH	SIDEWALK CONDITION	INFRASTRUCTURE	PROBABLE COST
1	65th, Brady mainline to Brady frontage road	0.19	4-lane collector/50-70 feet widening at Brady mainline intersection	No sidewalks within 250 feet of main Brady intersection, both sides west of that point to frontage intersection	Sidepath on south side continuing Veterans Memorial Parkway sidepath	$66,500
2	65th, Brady frontage to Scott	0.21	2-lane local/40 feet	Continuity on south side; north side to Ripley only	Short-term route. Bicycle boulevard	$5,250
3	Scott, 65th to 59th, including Goose Creek Bridge	0.37	4-lane local/50 feet south to Welcome Way; 2-lane local to Fair/32 feet	Both sides	Bicycle boulevard. Ultimate replacement of creek footbridge by standard width crossing	$9,250
4	59th, Goose Creek to Appomattox	0.20	2-lane local streets/28 feet	Both sides	Bicycle boulevard	$5,000
5	Appomattox/Brown to Slattery Park	0.92	2-lane local street/ 28-31 feet	Both sides	Bicycle boulevard	$23,000
6	Slattery Park	0.19	Existing paths	Park paths	Park paths connecting foot of Brown to 46th, interim Marquette/Washington route continues along 46th Street to Marquette, continuing south on permanent route.	$66,500
7	65th/Hoover/ Appomattox, Scott to 61st	0.65	2-lane local/40 feet on 65th and Hoover, 30 feet on Appomattox	South side only on 65th and Hoover; both sides on Appomattox	Bicycle boulevard; 65th and Hoover capable of supporting conventional bike lanes with siongle-side parking	$16,250
8	61st, Appomattox to Marquette.	0.10	Street gap	NA	Future connection of 61st Street or separate path in advance of or instead of street. Path construction could be coordinated with Goose Creek Trail.	$70,000

Marquette/Washington Bikeway

The Marquette/Washington route is a major north-south connection through the western half of Davenport, but has significant gaps that require a staged approach. A good continuous but somewhat circuitous route is currently available from the north endpoint at 65th and Brady (connecting to Veterans Memorial Parkway), using Scott, 59th, Appomattox, Brown, and 46th to 46th and Marquette Street. A more direct route requires gap filling at 61st at Goose Creek and Marquette

Appomattox Ave intersection at 53rd Street. This street provides a currently available phase for the Marquette/Washington route

SEGMENT KEY	SEGMENT	LENGTH (MILES)	STREET TYPE /WIDTH	SIDEWALK CONDITION	INFRASTRUCTURE	PROBABLE COST
9	Marquette, 61st to 53rd	0.67	2-lane collector/42 feet	Continuity to 53rd Street on west side; intermittent coverage on east side	Multi-use shoulders with striped parking lane/ advisory bike lanes.	$66,500
10	Marquette, 53rd to Northwest Blvd	0.15	2-lane future collector/24-30 feet current width	No sidewalks	Shared and marked roadway with a short path section to a new Northwest Blvd crossing at or near the existing 51st Street intersection. If Marquette is connected as a through collector between 46th and Northwest Boulevard, a new street alignment is likely between 53rd and Northwest. This new street should include bike lanes and sidewalks.	$5,250
11	Marquette alignment, Northwest Blvd to 46th	0.31	No existing street	NA	Future street connection, if built, should include bike lanes. Shared use path without a through collector street, on an alignment developed with property owners or future developer.	$9,250
12	Marquette, 46th to 35th	0.85	2- to 4-lane collector/variable widths from 42 to 46 feet. Four lane sections are south of Kimberly	Intermittent sidewalks only between 42nd and 46th. Continuity on west side only between 42nd and 35th; intermittent on east side	Conventional bike lanes between Kimberly and 46th. Standardize on three-lane section between Kimberly and 35th with conventional bike lanes.	$5,000
13	35th, Marquette to Washington	0.28	2-lane local/30 feet	Both sides	Bicycle boulevard. Part of 35th Street crosstown route.	$23,000
14	Washington, 35th to Lombard	0.80	2-lane local/30 feet	Both sides	Bicycle boulevard. Trail connection across Duck Creek corridor to Duck Creek Trail and two ends of Washington Street.	$66,500
15	Washington, Lombard to 12th	0.71	2-lane local/38-40 feet	Both sides	Bicycle boulevard. Striped parking lane in business district between 17th and 14th	$16,250
16	Marquette, Duck Creek Trail to 15th Street	1.11	2-lane collector/40 feet typical	Both sides	Alternate to Washington route with two travel lanes, conventional bike lanes, and single-sided parking	$113,220
17	12th, Washington to Marquette	0.28	2-lane local/32-38 feet	Both sides	Bicycle boulevard. Signalized pedestrian crossing of Marquette 60 feet south of 12th Street intersection.	$70,000
18	Marquette, 12th to Riverfront Trail	1.00	3-lane collector with bike lanes/45 feet	Both sides	Existing bike lanes	Existing
Total Short-term		**3.93**			Note: Washington and Marquette options are approximately equal in cost	**$262,200**
Additional Ultimate		**1.88**			Additional Cost	**$160,620**

NORTH-SOUTH

WESTSIDE BIKEWAY (NORTH)

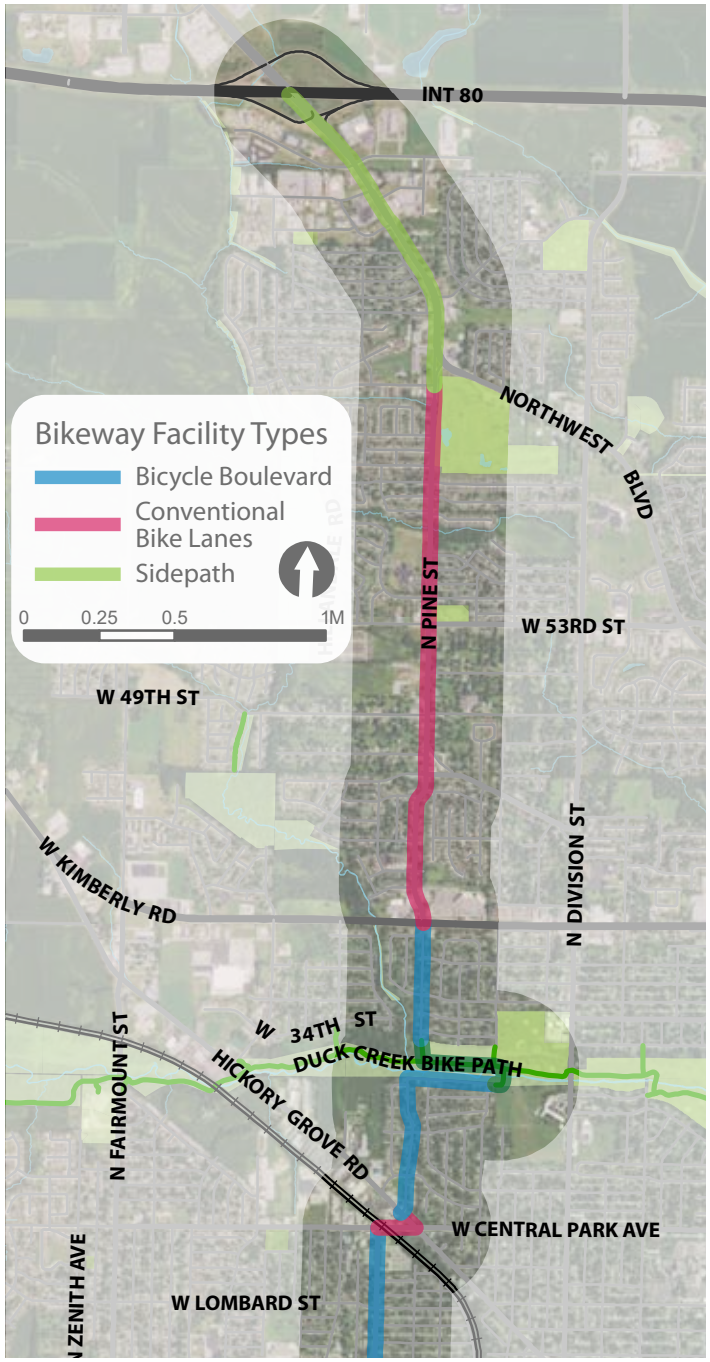
SEGMENT KEY	SEGMENT	LENGTH (MILES)	STREET TYPE /WIDTH	SIDEWALK CONDITION	INFRASTRUCTURE	PROBABLE COST
1	Hillandale Rd, Research Pkwy to Northwest Highway	0.31	4-lane divided collector/68 feet including median	No sidewalks	Shared and marked roadway, connection into research park. Ultimate sidepath to provide pedestrian and bike access into development area.	$5,270
2	Northwest Blvd, Hillandale to 76th	0.75	4-lane arterial with median or left-turn lane/pavement width varies from 90 to 140 feet depending on median condition	None	Existing paved shoulders	$0
3	Northwest Boulevard, 76th to 63rd	0.82	5-lane arterial/67 feet	Both sides	Shared-use sidepath on west side, following Pine Street slip lane south north of 63rd Street. Defined bike crossing to bike lanes south of 63rd	$287,000
4	Pine, 63rd to 49th	1.10	4-lane collector/45 feet	Both sides	4 to 3-lane reallocation with conventional bike lanes	$112,200
5	Pine, 49th to Kimberly	0.71	2-3 collector with bike lanes/41 feet. Taper from three to two lanes south of 46th	Both sides	Existing bike lanes	$0
6	Pine, Kimberly to Duck Creek greenway	0.38	E2-lane local/30 feet	Both sides with short gap immediately south of Kimberly	Bicycle boulevard	$9,500
7	Duck Creek Trail and G. Washington Blvd between ends of Pine	0.20	Trail and connecting path. On G. Washington, 15-17 feet paved surface with gravel parking shoulder	Paths; on GW Blvd, south side sidewalk	Current route using Duck Creek Trail and connecting paths, with shared and marked roadway on G. Washington requires 1/2 mile misdirection. New trail bridge over Duck Creek to connect Pine terminus at GW to Duck Creek Trail maintains directness.	$5,000 for interim $160,000 for bridge option
8	Pine, Duck Creek to Hickory Grove	0.47	2-lane local/31 to 36 feet	Both sides to Columbia; segments only between Columbia and Hickory Grove	Bicycle boulevard	$11,750
Total		**4.74**				**$430,720 $585,720 with Duck Creek Bridge**

Corridor Overview

The Westside Bikeway is a principal bicycle corridor spanning nearly nine miles from Credit Island to the northern city limits near the intersection of Northwest Boulevard and Interstate 80. The corridor includes multiple bicycle facility types to maximize user experience and comfort across a variety of roadway classifications and characteristics.

The bikeway begins with a connection to the Credit Island bicycle and pedestrian bridge adjacent to the Davenport Waste Water Treatment Facility and travels north on Concord Street as advisory bike lanes. At West River Drive, the bikeway transitions to a bicycle boulevard north on Concord Street, Indian Road, and Clark Street to Telegraph Road. Conventional bike lanes on Telegraph Road connect to Waverly Road, at which point the bikeway transitions back to a bicycle boulevard and continues north along Waverly Road and Lincoln Avenue to Central Park Avenue. Conventional bike lanes on Central Park Avenue and Hickory Grove Road will provide guidance for bicyclists through these major intersections. At Pine Street, a bicycle boulevard continues north, transitioning to conventional bike lanes Kimberly Avenue. Just south of Northwest Boulevard, the bikeway transitions to a sidepath and continues northwest along the south side of Northwest Boulevard towards Interstate 80.

In addition to Credit Island, a major destination for recreational activity, there are numerous destinations along the corridor, including Nahant Marsh Education Center (via a trail connection at Concord Street south of West River Drive), Harbor Road Park, Dohse Pool, Hayes Elementary School, Duck Creek Greenway, Green Acres Park, Harry S. Truman Elementary School, and numerous supermarkets, shops, restaurants, and employers.

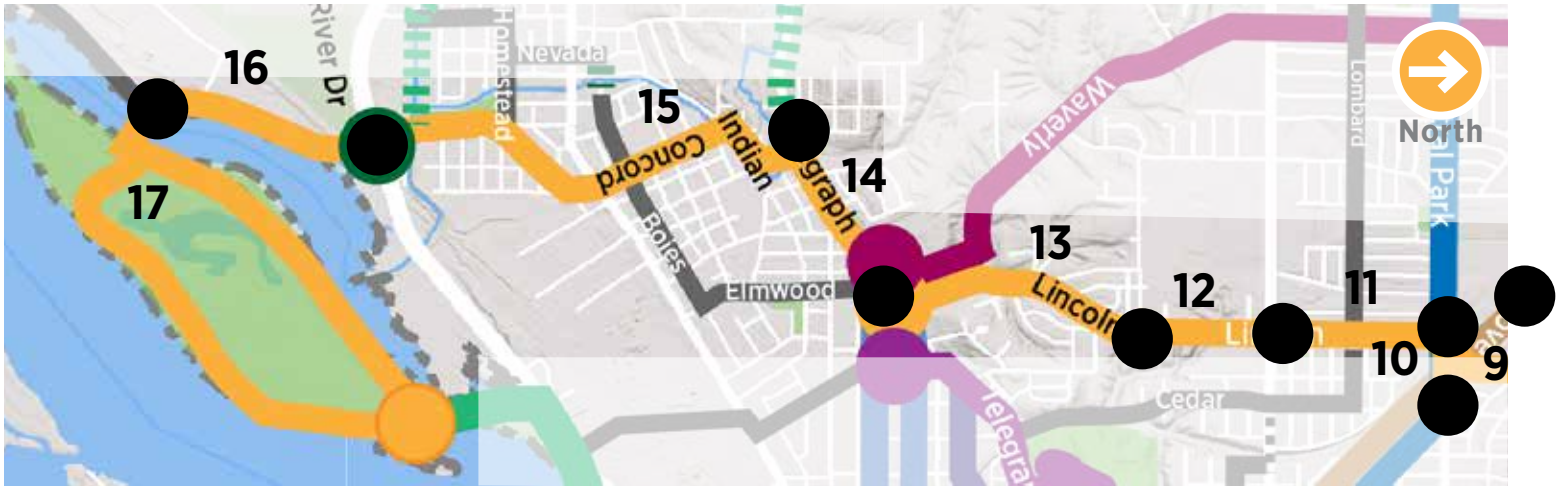


Pine Street at Duck Creek Greenway Connection: Current conditions.

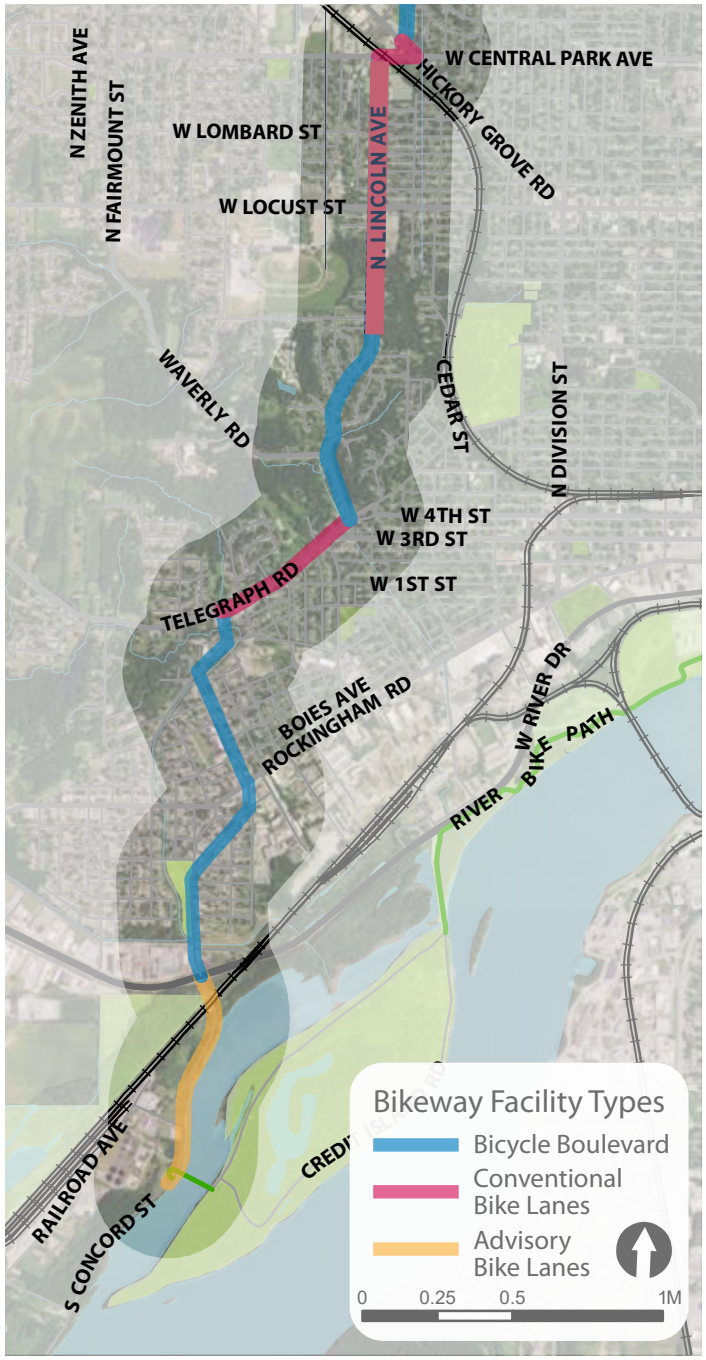
Lincoln Avenue: Current conditions.

NORTH-SOUTH

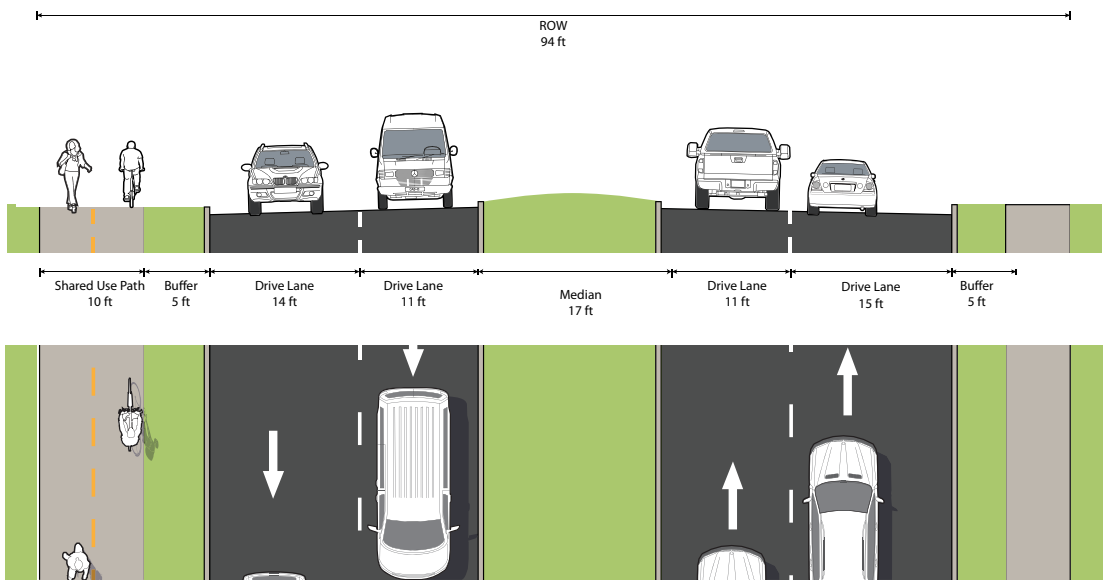
WESTSIDE BIKEWAY (SOUTH)



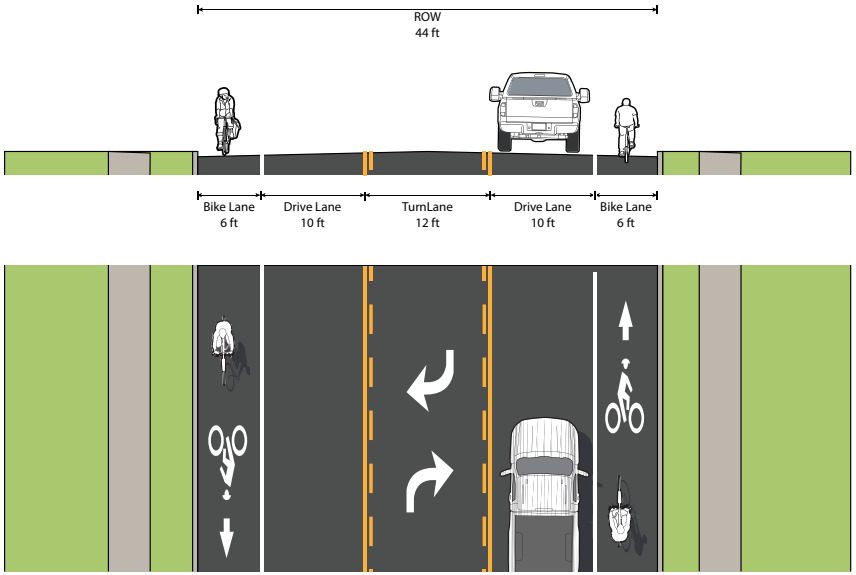
SEGMENT KEY	SEGMENT	LENGTH (MILES)	STREET TYPE /WIDTH	SIDEWALK CONDITION	INFRASTRUCTURE	PROBABLE COST
9	Hickory Grove, Pine to Central Park	0.08	4-lane minor arterial/42 feet widening to 56 feet with left turn lane at Central Park	No sidewalks	4 to 3 lane reallocation with bike lanes proposed in Hickory Grove route. Transition is more successful with sidepath segment from Pine to Central Park	$8,160
10	Central Park, Hickory Grove to Lincoln	0.13	4-lane collector with left turn lanes/55 feet	Both sides	Conventional bike lanes, with continuation of bikeway using signalized crossing at Lincoln	$13,260
11	Lincoln, Central Park to Locust	0.50	2-lane collector/ 36 feet	Both sides	2 lanes with conventional bike lanes and no parking; or conventional bike lane in a single direction, advisory bike lane in opposite direction, and single-side parking	$50,500
12	Lincoln, Locust to Iroquois	0.47	4-lane minor arterial, 36-38 feet	Both sides	4 to 3-lane reallocation with conventional bike lanes	$47,940
13	Lincoln, Iroquois to Telegraph	0.63	2-lane/minor arterial/32 feet	Both sides	Bicycle boulevard. Intersection of 3rd/4th and Fairmount routes. SB uses one-way segment of Telegraph to 3td Street. NB uses 3rd Street eastbound bike lane to Waverly and one-way NB bike lane on Waverly to Lincoln	$15,750
14	Telegraph, Lincoln to Clark	0.53	2-lane collector/45 feet	Both sides	Conventional bike lanes	$54,060
15	Clark/Indian/Concord, Telegraph to River Dr	1.38	2-lane collectors/variable width, generally from 30 to 36 feet	Both sides	Bicycle boulevard. Enhanced crosswalks and defined bicycle track across Rockingham Rd intersection	$34,500
16	South Concord, River Dr to Credit Island Bridge	0.68	2-lane rural section local/30 feet	No sidewalks	Advisory bike lanes	$40,800
17	Credit Island park road loop	2.43	2-lane low-speed park road/22 feet	No sidewalks along road; park trails	Advisory bike lanes	$145,800
Total		**11.57**				**$841,490**



Pine Street 4-Lane to 3-Lane Travel Lane Conversion with Bike Lanes



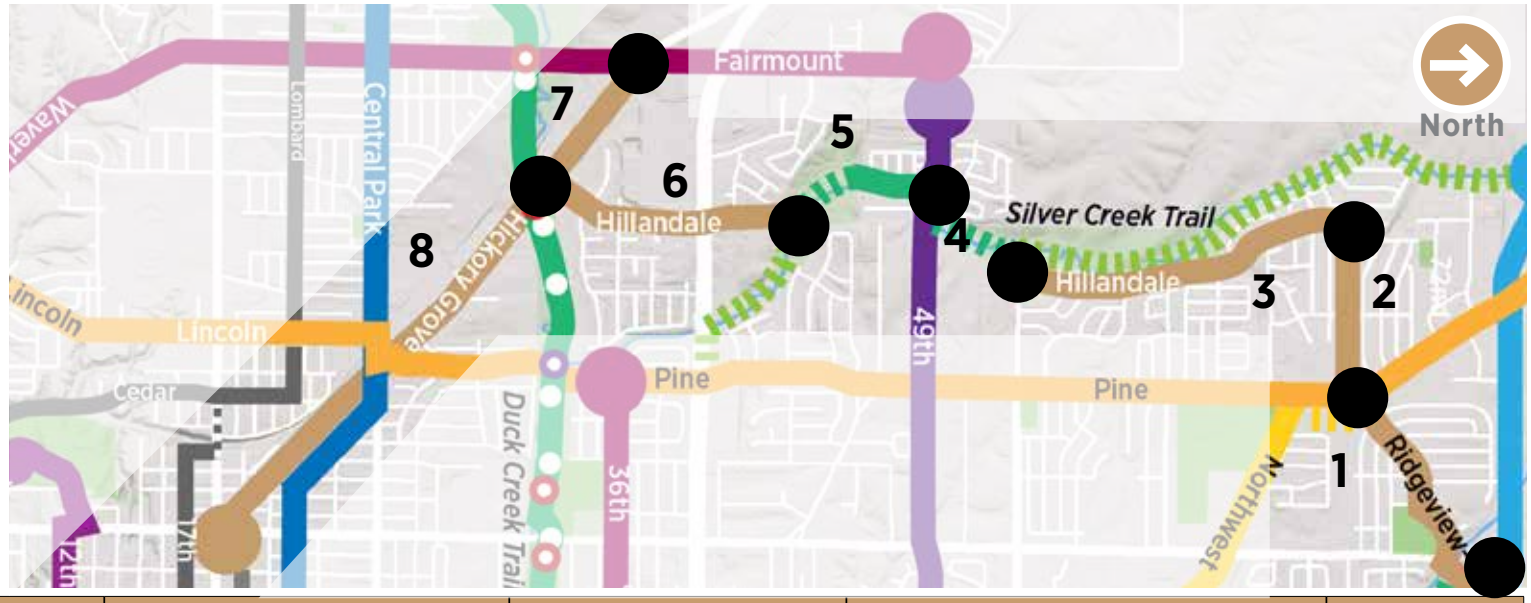
Northwest Boulevard Sidepath Cross Section



Pine Street 4-Lane to 3-Lane Travel Lane Conversion with Bike Lanes

NORTH-SOUTH

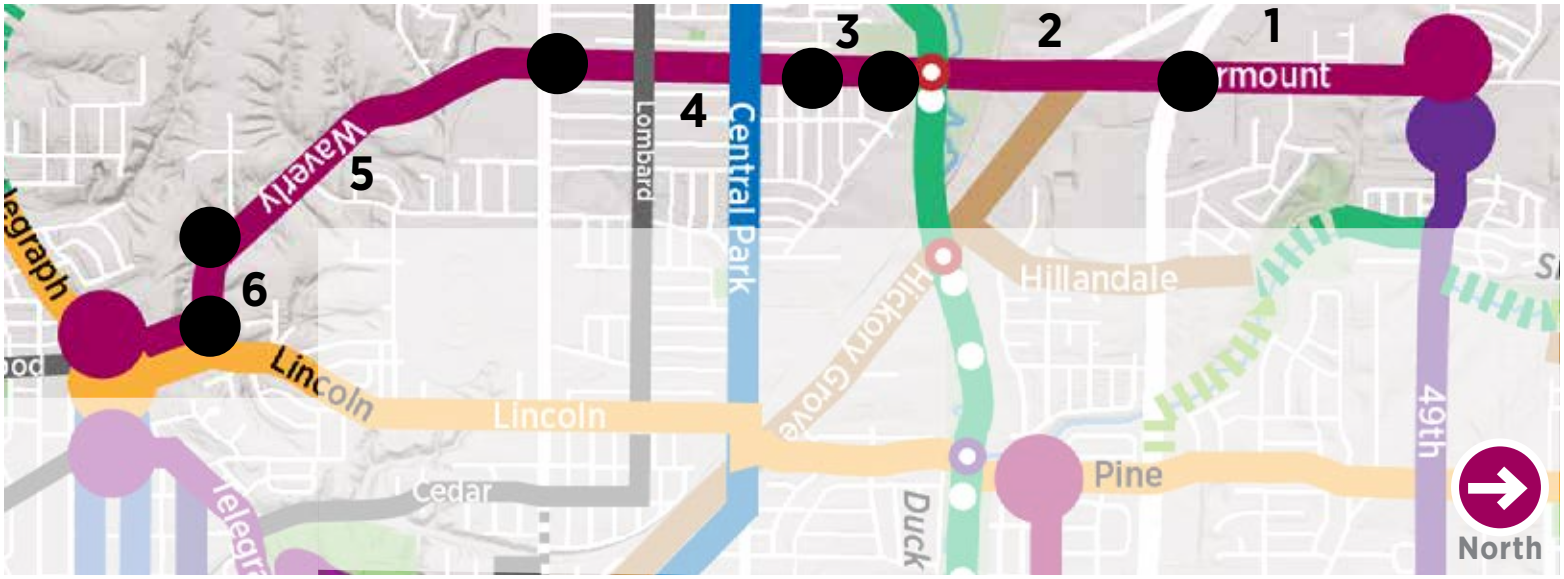
SILVER CREEK



SEGMENT KEY	SEGMENT	LENGTH (MILES)	STREET TYPE /WIDTH	SIDEWALK CONDITION	INFRASTRUCTURE	PROBABLE COST
1	Ridgeview, 76th to Northwest Blvd	0.65	2-lane local collector/31 feet	Sidewalks only at school	Bicycle boulevard with sidewalk continuity on at least one side, probably north to use existing walk segments and crossing to Ridgeview Park. Enhanced crosswalk and bike markings at Northwest Blvd crossing.	$16,250
2	67th, Northwest Blvd to Hillandale	0.53	2-lane local/25 feet	One short segment only at Hillandale	Bicycle boulevard with sidewalk continuity on north side	$13,250
3	Hillandale, 67th to terminus at 53rd	1.08	2-lane local collector/40 feet	Both sides	Bicycle boulevard	$27,000
4	Trail segment, 53rd to 49th	0.45	Creek corridor	NA	New shared use trail	$315,000
5	Trail segment, 49th to Hillandale terminus north of Cresthill Dr	0.2 existing, 0.3 new	Creek corridor	NA	Existing and new shared use trail	$210,000
6	Hillandale, terminus to Hickory Grove	0.78	2-lane local collector/430 feet	Continuity on west side, intermittent on east to Kimberly. Gaps with better east side continuity to Hickory Grove	Bicycle boulevard	$19,500
7	Hickory Grove, Fairmount to Duck Creek	0.50	2-lane rural section minor arterial to Hillandale/24 feet plus gravel shoulders; 3-lane with shoulders south of Hillandale	No sidewalks	Paved shoulders or upgrade to urban section with one-side continuous sidewalk and bike lanes	$337,500
8	Hickory Grove, Duck Creek to Locust	1.50	4-lane minor arterial/40 feet	Both sides south of Central Park only	4- to 3-lane reallocation with bike lanes	$153,000
Total		**5.99**				**$1,091,500**

NORTH-SOUTH

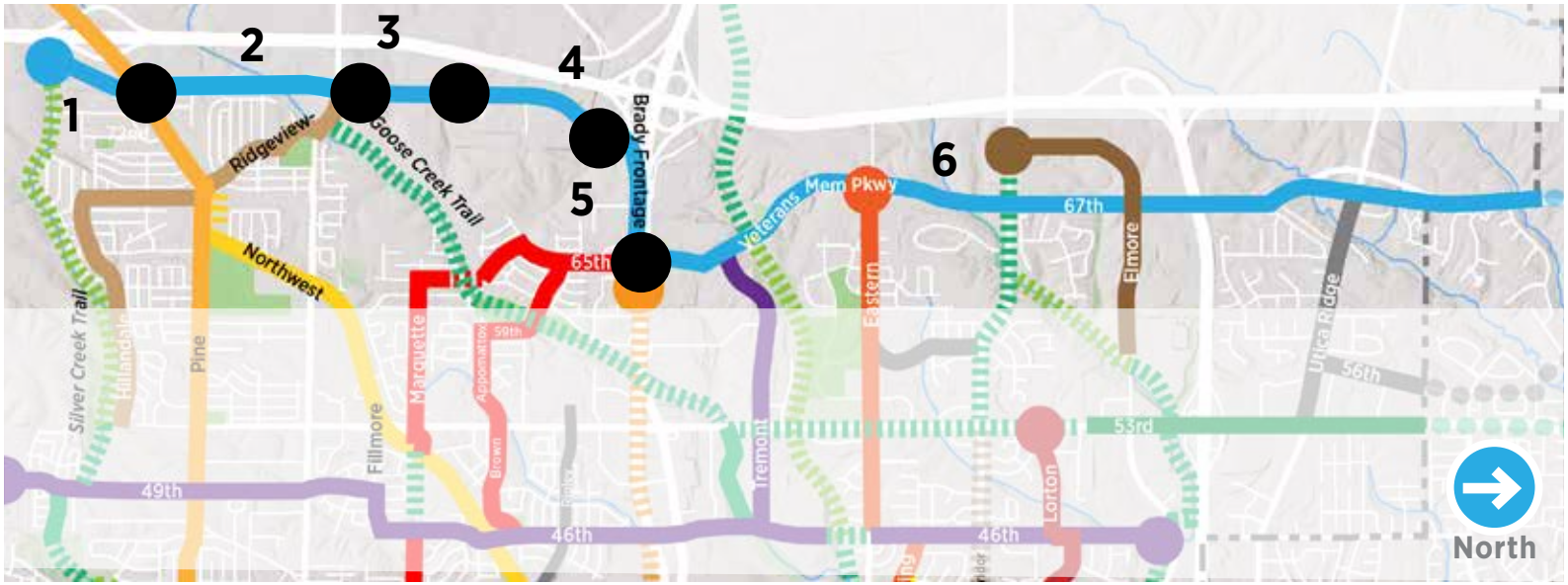
FAIRMOUNT



SEGMENT KEY	SEGMENT	LENGTH (MILES)	STREET TYPE /WIDTH	SIDEWALK CONDITION	INFRASTRUCTURE	PROBABLE COST
1	Fairmount, 49th to Kimberly	0.70	2-lane rural section collector/ variable width from 32 to 45 feet with irregular shoulders	Sidewalk continuity on alternate sides with ped crossing north of 42nd. No sidewalks between 42nd and Kimberly	Paved shoulders or conventional bike lane with no parking. Extension of east side walk to Kimberly	$71,400
2	Fairmount, Kimberly to Heatherton	0.65	2-lane rural section collector/25 feet in travel lanes, 50 feet including gravel shoulders	East side	Paved shoulders	$438,750
3	Fairmount, Heatherton to Garfield	0.26	2-lane collector with curb and gutter on east side, gravel shoulder on west/27 feet paved plus 12 foot gravel shoulder on west side.	Both sides	Bike lane northbound, paved shoulder southbound	$104,260
4	Fairmount, Garfield to Locust	0.70	2-lane collect with curb and gutter/29 feet	Both sides	Signed and marked street or advisory bike lanes	$11,900
5	Fairmount/Waverly, Locust to bend south of Schuetzen Lane	1.00	2-lane rural section local/25 feet edge of pavement with 12 foot gravel shoulders	No sidewalks	Paved shoulders	$675,000
6	Waverly, bend to Lincoln	0.25	2-lane local/40 feet	Discontinuous segments on alternate sides	Advisory bike lane for continuity to Westside Bikeway.	$15,000
Total		**3.56**				**$1,316,310**

EAST-WEST

76TH/ VETERANS BIKEWAY

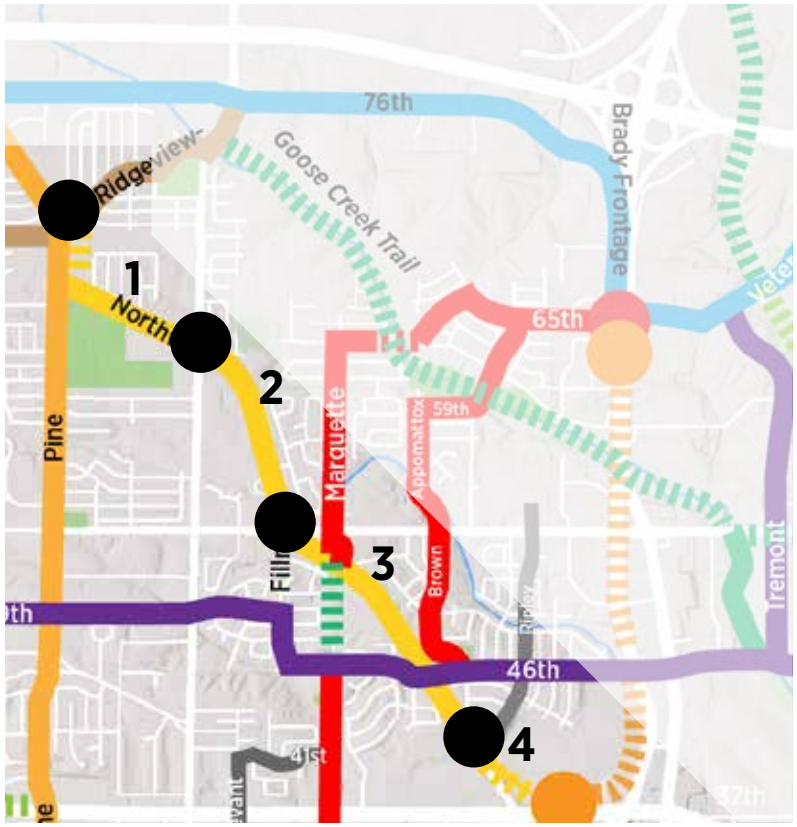


SEGMENT KEY	SEGMENT	LENGTH (MILES)	STREET TYPE /WIDTH	SIDEWALK CONDITION	INFRASTRUCTURE	PROBABLE COST
1	76th, Silver Creek to Northwest Blvd	0.47	2-lane local/30 feet	No sidewalks	Shared marked roadway	$7,990
2	76th Pl, Northwest Blvd to Division	0.86	2-lane collector and street gap/40 feet	Sidepath	Recently completed sidepath	NA
3	76th, Division to 1/2 section line of Marquette	0.40	2-lane rural section collector/23 feet to pavement edge, 42 feet including gravel shoulders	No sidewalks	Paved shoulders as conventional bike lanes	$270,000
4	76th, Marquette 1/2-section to Brady frontage	1.00	3-lane collector/44 feet	No sidewalks	Conventional bike lanes	$102,000
5	Brady frontage road, 76th to 65th	0.70	2-lane collector/24 feet	Sidewalks adjacent to Menards to 65th	Sidepath; 65th Street segment to Brady includes as part of Marquette/Washington Bikeway	$245,000
6	Veterans Memorial Pkwy, 65-Brady to Davenport-Bettendorf city line	3.85	4-lane divided minor arterial/48 feet, transitioning to 4-lane divided/65 feet including median	Sidepath south side, sidewalk north side except 0.3 mile gap immediately east of Brady	Existing shared use sidepath with completion of gap east of Brady. Improved pedestrian and bicycle crossing markings at Brady.	Existing
Total		**7.28**				**$624,990**

EAST-WEST

NORTHWEST BOULEVARD

North



SEGMENT KEY	SEGMENT	LENGTH (MILES)	STREET TYPE /WIDTH	SIDEWALK CONDITION	INFRASTRUCTURE	PROBABLE COST
1	Northwest Blvd, Pine to Division	0.60	2-lane minor arterial/22 feet for travel lanes with 12 foot paved shoulders, 46 feet total	No sidewalks	Existing paved shoulders. Short shared use sidepath segment from Pine intersection to Ridgeview	Existing
2	Northwest Blvd, Division to 53rd	0.75	2-lane minor arterial/22 feet for travel lanes with 12 foot shoulders both paved and gravel, 46 feet total	Intermittent, with best connectivity on west side linking 53rd to school	Existing paved shoulders and paving of unpaved segments (about 0.4 miles)	$270,000
3	Northwest Blvd, 53rd to Northpark entrance	1.07	2-lane minor arterial/22 feet for travel lanes with 12 foot gravel shoulders, 46 feet total	No sidewalks	Paved shoulders, extended to mall entrance with bike crossing markings to new sidepath (see below) along Northpark frontage	Existing
4	Northwest/Kimberly, mall entrance to Main	0.37	4-lane (Northwest) to 6-lane (Kimberly) arterials widening to include protected left turns at intersection /44 feet	Sidewalks on Kimberly, with north sidewalk terminating short of the intersection	Shared use sidepath	$129,500
Total		**2.79**				**$399,500**

EAST-WEST

46TH STREET BIKEWAY (WEST)

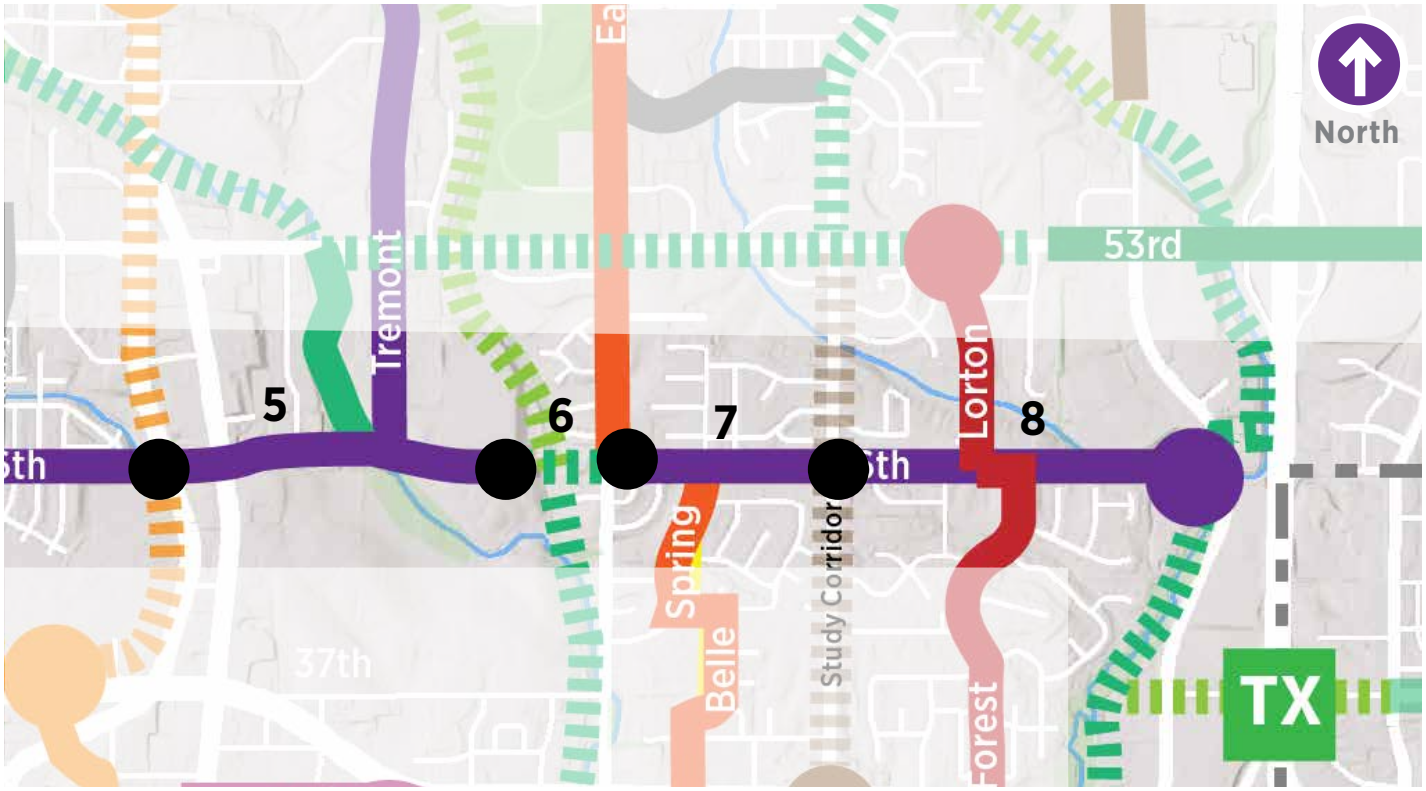
SEGMENT KEY	SEGMENT	LENGTH (MILES)	STREET TYPE /WIDTH	SIDEWALK CONDITION	INFRASTRUCTURE	PROBABLE COST
1	49th, Fairmount to Pine	1.00	2-lane collector/30 feet	Both sides	Conventional bike lanes, assuming no on-street parking on street	$102,000
2	49th, Pine to Division	0.50	2-lane rural section local/22-26 feet	No sidewalks	Advisory bike lanes. If upgraded or rebuilt in future, incorporate conventional bike lanes	$30,000
3	49th/Fillmore/46th, Division to Northwest Blvd	1.05	2-lane local residential collector/28-30 feet	Both sides	Bicycle boulevard with traffic calming characteristics on 46th	$52,500
4	46th, Northwest to Welcome Way	0.73	2-lane collector/40 feet	Both sides	Bicycle boulevard with traffic calming characteristics or conventional bike lanes	$36,500
5	46th, Welcome Way to Public Works Center east of Tremont	0.82	2- to 3-lane collector/44-56 feet	Major gaps, with better continuity on north side east of Brady	Conventional bike lanes, with intersection crossing enhancements at Welcome Way and Brady	Existing
6	46th gap, Public Works Center to Eastern	0.20	No street	NA	Without a street connection, shared use trail with necessary bridge and access to a future Eldridge Trail as shown. Bike/ped track orbike lanes and bridge would be incorporated into future street connection project	$380,000 includes bridge allowance
7	46th, Eastern to Jersey Ridge	0.50	2-lane collector, traffic calming chicane/28 to 40 feet	Very scattered	Bicycle boulevard. Existing street design is completely compatible with that function. Sidewalk continuity required	$8,500
8	46th, Jersey Ridge to Elmore	0.90	2- to 3-lane collector/28- to 40-feet	Both sides except near Elmore	Conventional or Advisory Bike Lane. Future connection to Pheasant Creek Trail and possible I-74 crossing	$91,800
Total		**5.70**				**$700,800**

EAST-WEST

46TH STREET BIKEWAY (EAST)

46th Street Bikeway Overview

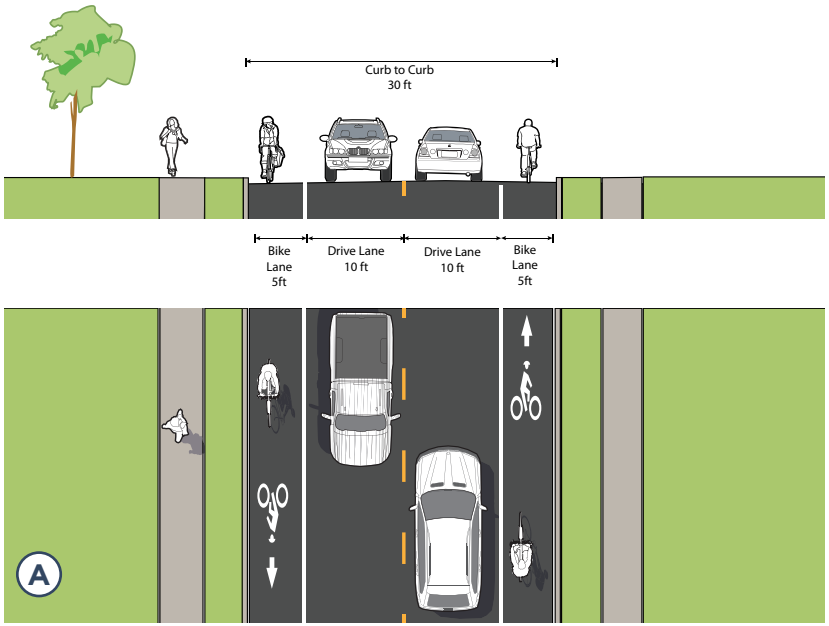
The 46th Street/49th Street Bikeway functions as a vital east-west principal route through northern Davenport, stretching nearly the entire length of the city from North Fairmount Street eastward to Elmore Avenue. Because of the varying roadway contexts and characteristics throughout the corridor, multiple bikeway types will be utilized to provide a comfortable, welcoming environment for bicyclists of all ages and abilities, from conventional bike lanes to advisory bike lanes to a bicycle boulevard.

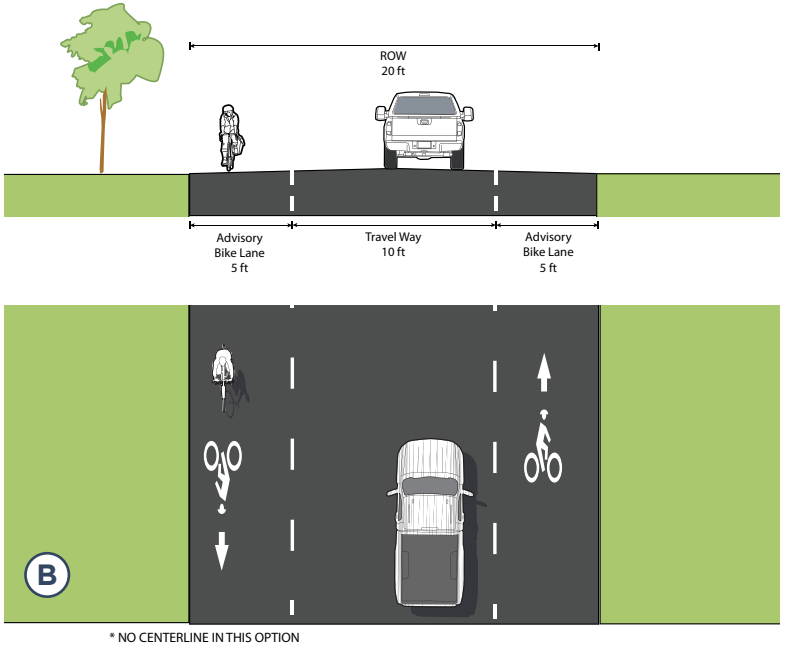


49th Street east of Pine Street: Current conditions.

46th Street at Brady Street: Current conditions. Source: Google Maps.

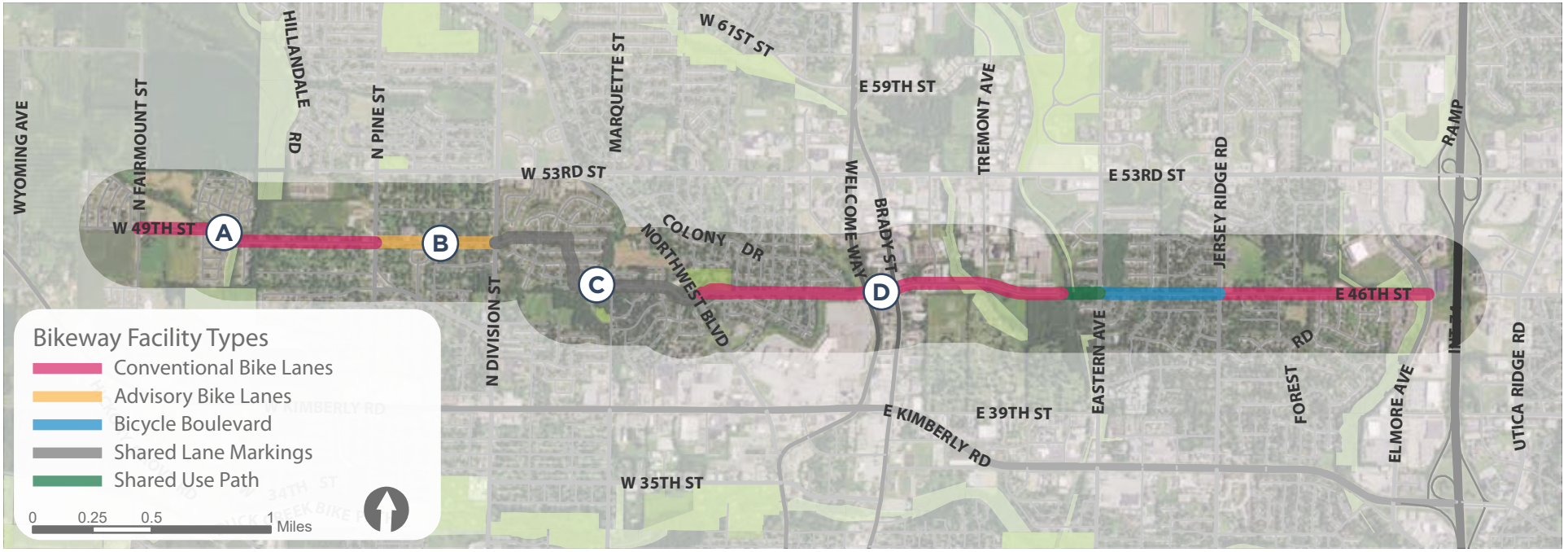
49th Street west of Pine

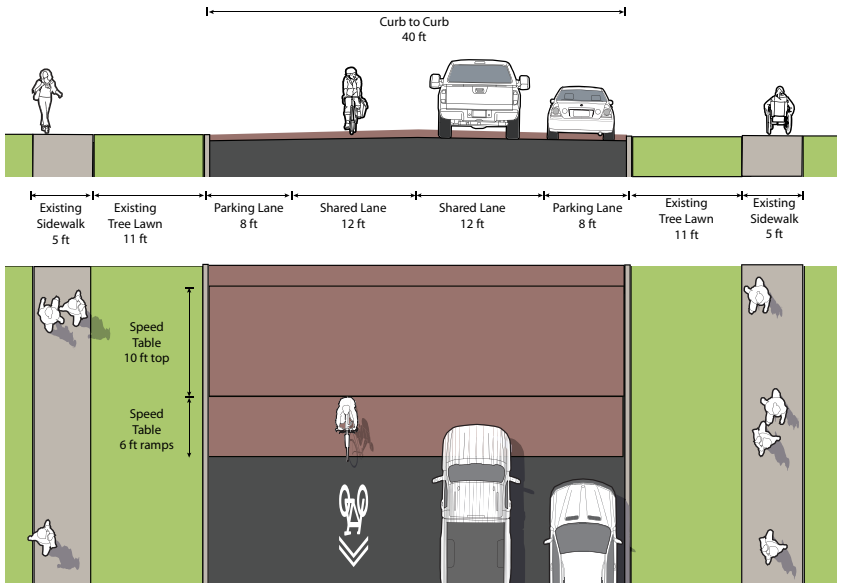




Left: 49th Street bike lane cross section west of Pine;

Right: 49th Street advisory bike lane section.



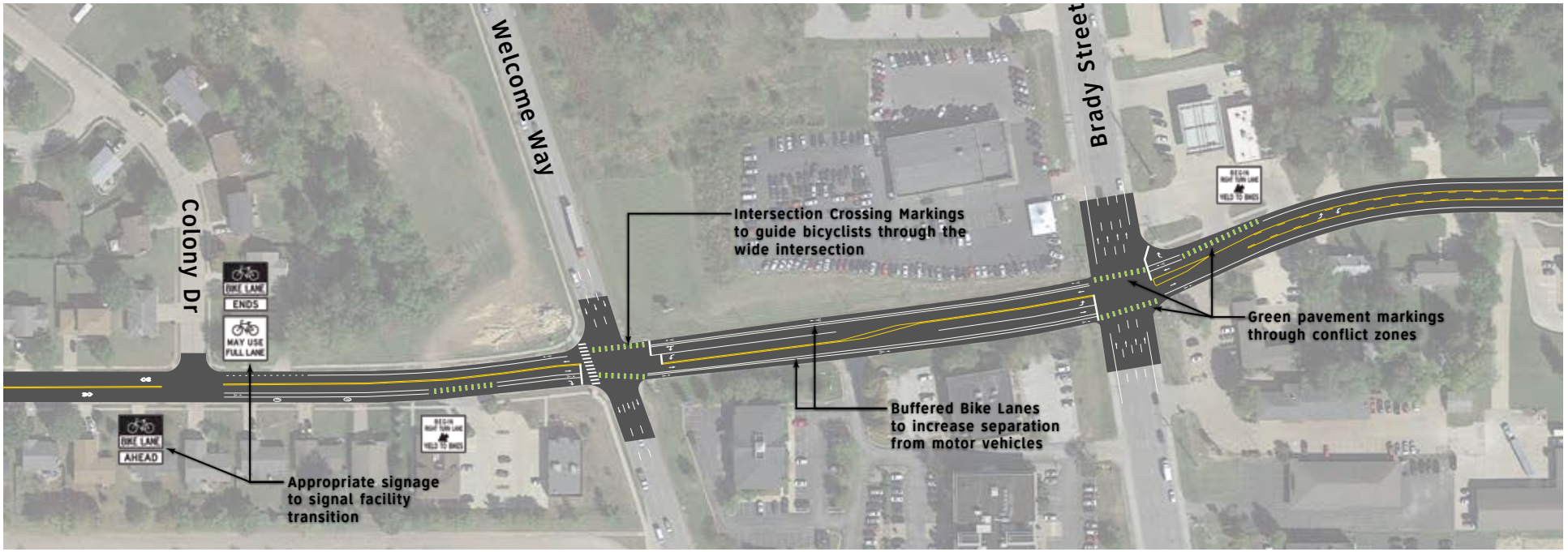


* Speed tables are reccommended to calm vehicular traffic

Left: 46th Street shared lane markings with traffic calming cross section

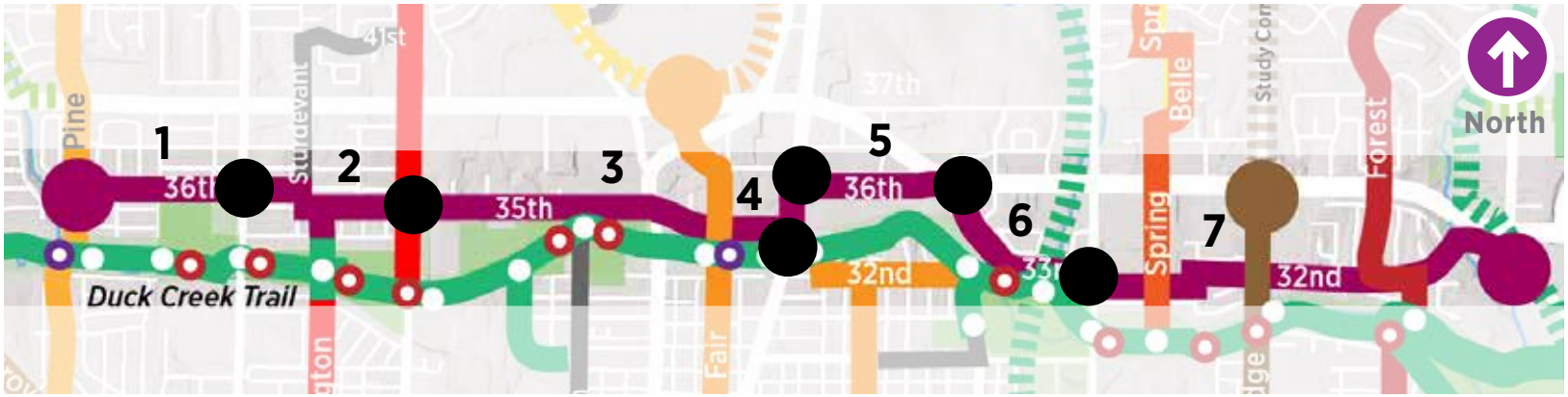
Below: Welcome Way and Brady Street intersection marking concept

Right: Existing chicane between Jersey Ridge and Eastern



EAST-WEST

35TH STREET BICYCLE BOULEVARD



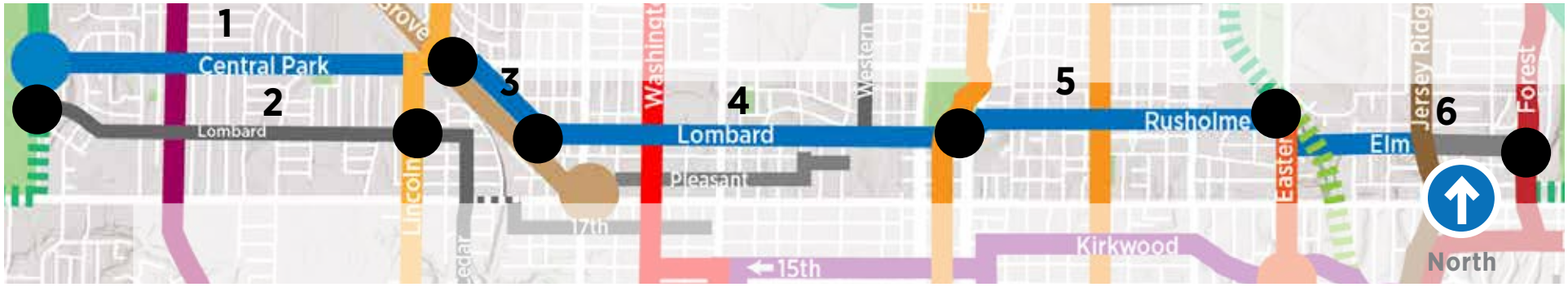
SEGMENT KEY	SEGMENT	LENGTH (MILES)	STREET TYPE /WIDTH	SIDEWALK CONDITION	INFRASTRUCTURE	PROBABLE COST
1	36th, Pine to Division	0.50	2-lane local/30 feet	Both sides	Bicycle boulevard	$12,500
2	36th/Sturdevant/35th, Division to Marquette	0.56	2-lane local/ 30 feet	Both sides	Bicycle boulevard. Signed connection to Duck Creek Trail via Washington Street	$14,000
3	35th, Marquette to Brady	1.15	4-lane collector/40 feet	Intermittent, with no continuity and major lengths with no sidewalk	Lane reallocation to 2 or 3 lanes and bike lanes, Sidewalk continuity should be provided on north side; south side would duplicate Duck Creek Trail. Brady crossing with existing signals and improved crossing markings.	$117,300
4	Brady, 35th to 36th	0.14	4-lane 1-way NB major arterial, 48 feet	Short segment from Brady to parking lot adjacent to stadium	Sidepath	$49,000
5	36th, Brady to Kimberly Downs	0.52	2-lane local/30 feet	Major gaps, with better continuity on north side east of Brady	Conventional bike lanes, with intersection crossing enhancements at Kimberly Downs and Brady	$53,040
6	Kimberly Downs/33rd, 36th to Eastern	0.53	2-lane local/28-30 feet	Both sides	Bicycle boulevard. Access to Eldridge Trail. Sidepath transition on west side of Eastern to 32nd Street, with upgraded pedestrian and bicycle crossing markings	$13,250
7	32nd, Eastern to Kimberly	1.40	2-lane local/28 feet	Very scattered	Bicycle boulevard. Future links on Kimberly north to Pheasant Creek Trail to south to Duck Creek Trail. Connection to Duck Creek Trail existing at Spring St	$35,000
Total		**4.8**				**$294,090**

EAST-WEST

LOMBARD BICYCLE BOULEVARD

Lombard Bicycle Boulevard Overview

From Emeis Park to Duck Creek Park, this principal bikeway corridor provides a vital east-west thoroughfare for bicycle transportation. The 5.7-mile corridor begins at Emeis Park Drive in the form of conventional bike lanes on West Central Park Avenue. It then continues southeast along Hickory Grove Road, transitioning to a bicycle boulevard on Lombard Street. The bicycle boulevard continues eastward with several short jogs to Rusholme Street and Elm Street before connecting to the proposed principal bikeway on Forest Road, which connects to Duck Creek Park and the Duck Creek Greenway. At the west end of the corridor, shared lane markings along Lombard Street and a bicycle boulevard on Lincoln Avenue provide an alternative connection to West Central Park Avenue and destinations to the south. Lincoln Avenue is part of the Westside Bikeway north-south principal corridor. Destinations along the corridor include Genesis Medical Center (West Central Park), St. Ambrose University, Vander Veer Botanical Park, Genesis Medical Center (East Rusholme Street) and neighborhood parks like Glen Armil Park and Peterson Park. There are also numerous planned and existing bikeways traversing the corridor, which add to the importance of this corridor as a key component in the citywide bicycle transportation network.



SEGMENT KEY	SEGMENT	LENGTH (MILES)	STREET TYPE /WIDTH	SIDEWALK CONDITION	INFRASTRUCTURE	PROBABLE COST
1	Central Park, Emeis Park to Hickory Grove	1.50	4-lane collector/40 feet	North side only, Emeis park to Zenith, both sides east of Zenith	4- to 3-lane reallocation with conventional bike lanes; Lombard/Lincoln quiet street alternative	$153,000
2	Lombard, Emeis Park Road to Lincoln	1.40	2-lane local/30 feet	Both sides from 500 feet west of Zenith Ave to Hickory Grove	Bicycle boulevard alternative to Central Park Ave. Connection to Emeis Park using Blanchard and path out of High Court, Connection back to Central Park via Lincoln Ave.	$35,000
3	Hickory Grove, Central Park to Lombard	0.37	4-lane collector/40 feet	Both sides	4- to 3-lane reallocation as part of Hickory Grove route. Include pedestrian refuge median in TWTL	$37,740
4	Lombard, Hickory Grove to Brady	1.56	2-lane local/25-28 feet west of Washington, 30-36 feet east	Both sides	Bicycle boulevard. Transition to Rusholme across Brady includes short path segment along Vander Veer Park to Rusholme and ped/bike signalized crossing across Brady.	$78,000
5	Rusholme, Brady to Mississippi	1.05	2-lane local/28-37 feet	Both sides	Bicycle boulevard. Traffic calming in place through Genesis campus	$26,250
6	Mississippi/Elm to Forest	1.09	2-lane local/25-28 feet west of Eastern Ave, 31 feet east	Both sides	Bicycle boulevard. Enhanced crossings of Eastern and Jersey Ridge	$27,250
Total		**6.97**				**$357,240**

EAST-WEST

LOMBARD BICYCLE BOULEVARD

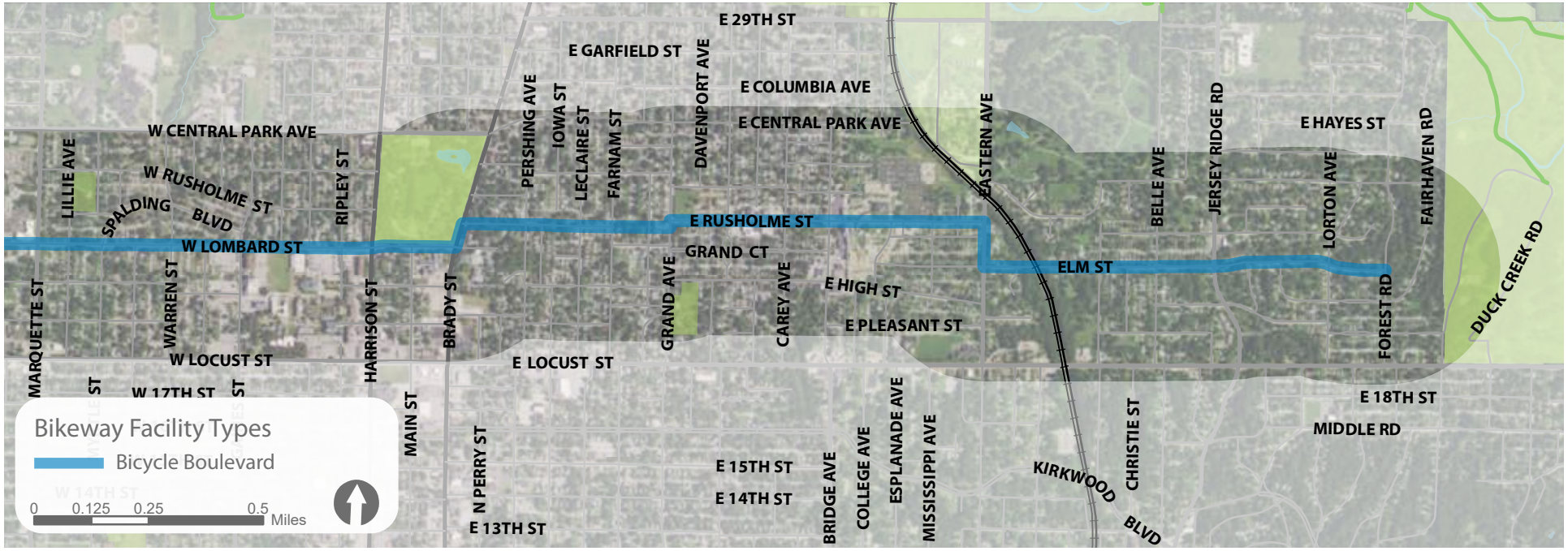
4-lane section of Central Park Avenue between Emeis Park and Hickory Grove

Lombard Street at Washington

Lombard Street at Harrison Street: Current conditions. Source: Google Maps.

Rusholme at St. Paul's

Range of bicycle boulevard design elements



EAST-WEST

KIRKWOOD BIKEWAY

Corridor Overview

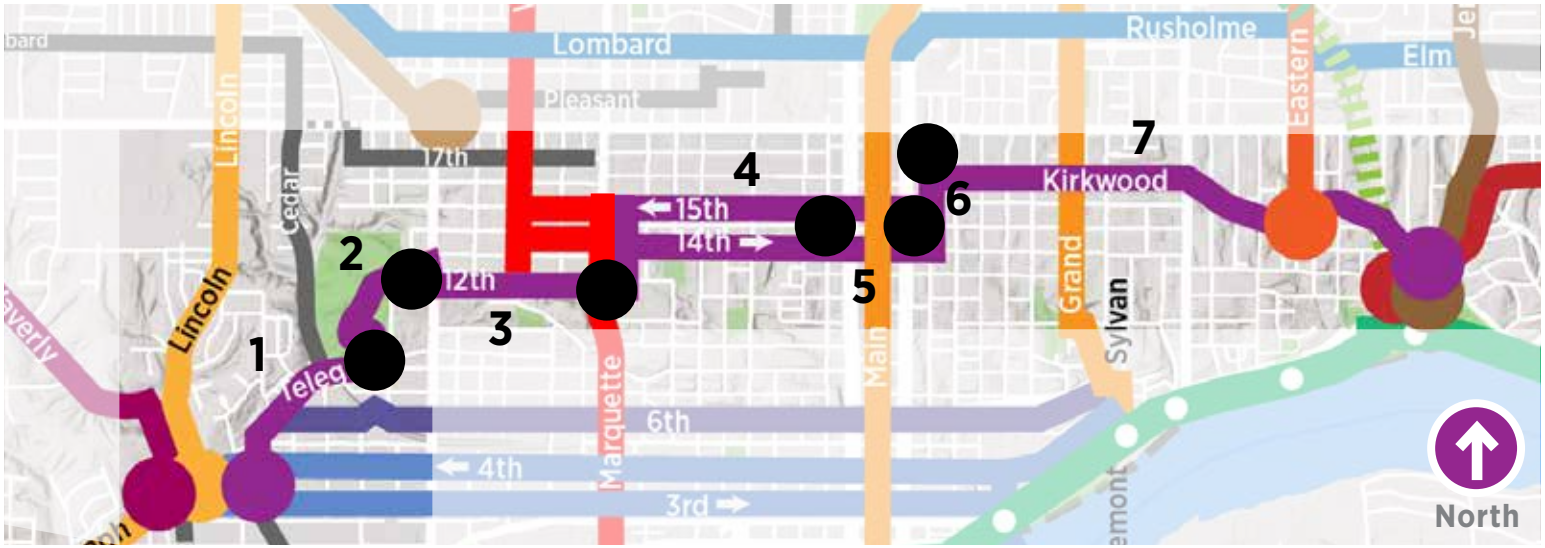
Extending from the intersection of several routes at Waverly and Telegraph Road to the Village of East Davenport, this principal bikeway corridor combines conventional bike lanes and bicycle boulevard treatments to provide a comfortable, high quality bicycling experience for people of all ages and abilities. The western section of this corridor includes a pair of one-way bike lanes on 14th and 15th Streets between Washington Street and Perry Street, one block east of Brady Street. From Perry Street, the bikeway travels eastward along Kirkwood Boulevard in the form of a bicycle boulevard. Kirkwood Boulevard, with its wide medians, on-street parking, and single lanes of traffic in each direction, will receive minor improvements to create a more comfortable experience for bicyclists. These improvements include a combination of wayfinding signage, shared lane markings, traffic calming elements, and intersection improvements.

To assist with implementation, a conceptual striping plans for the offset intersections at Brady and Harrison Streets are provided on the following page. These striping plans provide detailed guidance for safely directing bicyclists through these challenging intersections through clear striping and pavement markings and green paint to highlight the appropriate positioning of both bicyclists and motor vehicles.

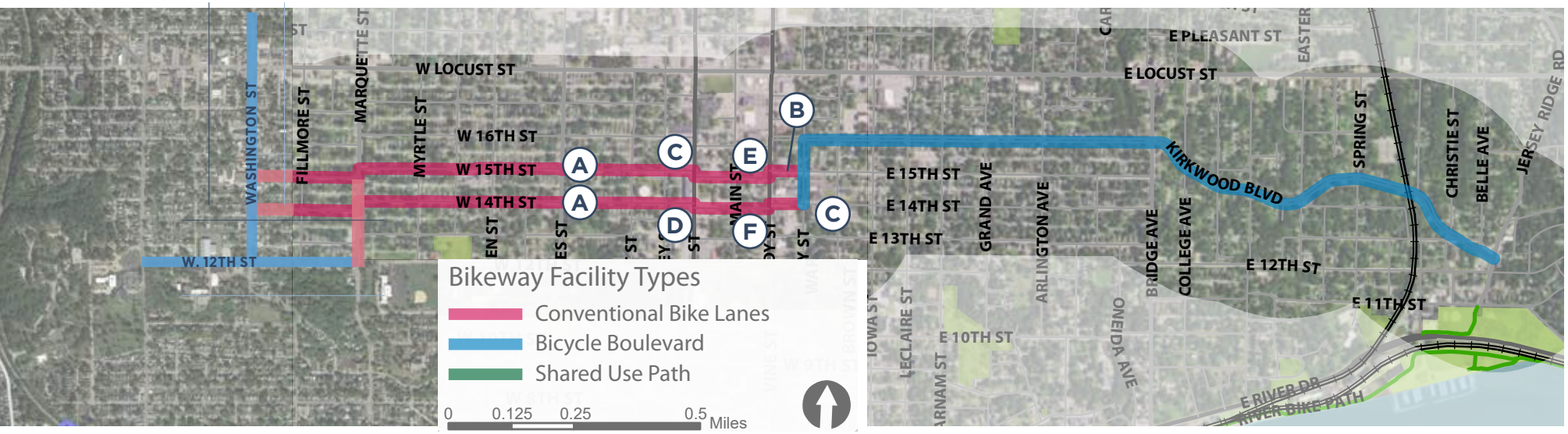
Left: Divided boulevard section of Kirkwood Boulevard.
Above: 14th Street

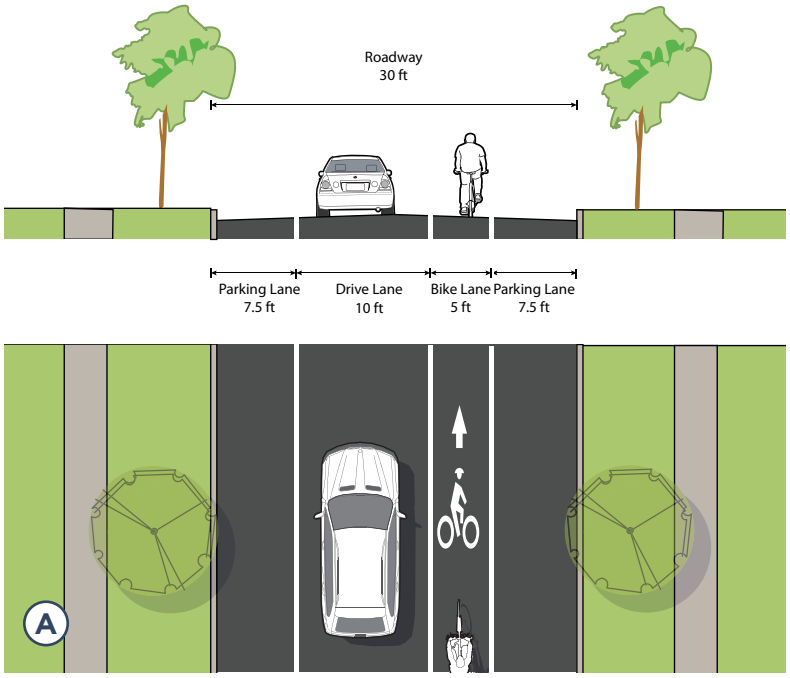
EAST-WEST

KIRKWOOD BIKEWAY

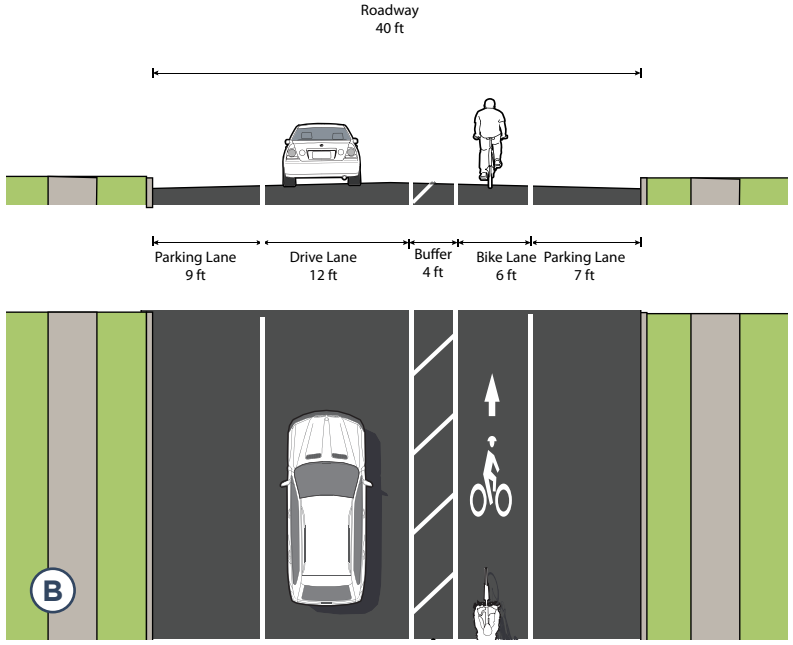


SEGMENT KEY	SEGMENT	LENGTH (MILES)	STREET TYPE /WIDTH	SIDEWALK CONDITION	INFRASTRUCTURE	PROBABLE COST
1	Telegraph Rd, Waverly to Fejervary Park Road	0.68	2-lane collector/26 feet	Both sides Lincoln to Cedar, south side only east of Cedar	Signed and marked shared roadway	$11,560
2	Fejervary Park Road to Division	0.67	Park road/20-24 feet	No sidewalks. Some paths within park	Advisory bike lanes. Short sidepath segment along west side of Division to line up with 12th St	$40,200
3	12th, Division to Marquette	0.50	2-lane local/31-36 feet	Both sides	Signed and marked shared roadway. Crossing markings and potential pedestrian HAWK signal at Division crossing. A crossing refuge median could be provided on the north quadrant of the intersection by restriping Division to 11 foot lanes. Transition to 14th/15th pair uses Marquette bike lanes.	$8,500
4	14th/15th one-way pair, Marquette to Harrison	1.50	Paired 1-way streets with 1 unobstructed lane because of 2-sided parking use/30 feet	Both sides	Restriping to provide conventional bike lane and striped parking lanes on both sides of street	$153,000
5	14th/15th, Harrison to Perry	0.50	2-lane 1-way pair/30 feet. Block on 15th from Brady to Perry increases to 40 feet	Both sides	Restriping to provide 1 through lane and bike lane, with two lanes where required for turning movements. Intersection markings to guide bicycle movement across offset intersection. (See detail)	$51,000
6	Perry, 14th to Kirkwood	0.14	2-lane local/30 feet	Both sides	Bicycle boulevard	$3,500
7	Kirkwood, Perry to Jersey Ridge	1.70	2-lane divided residential boulevard/60 feet with 20-foot channels and median	Both sides	Bicycle boulevard.	$42,500
Total		**5.69**				**$310,260**

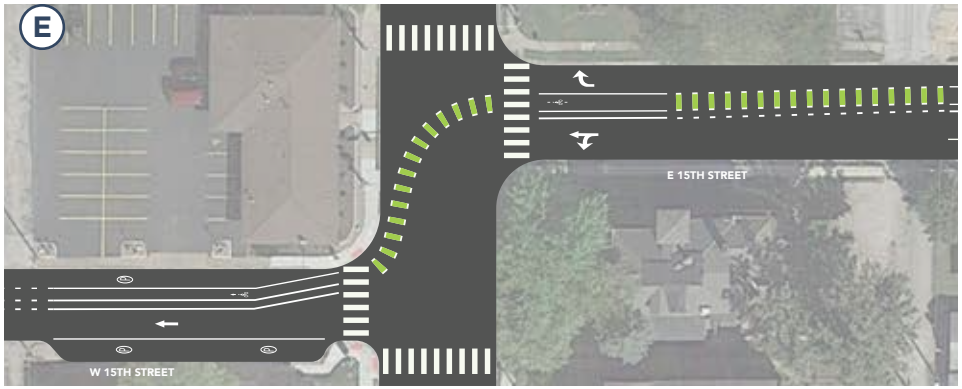


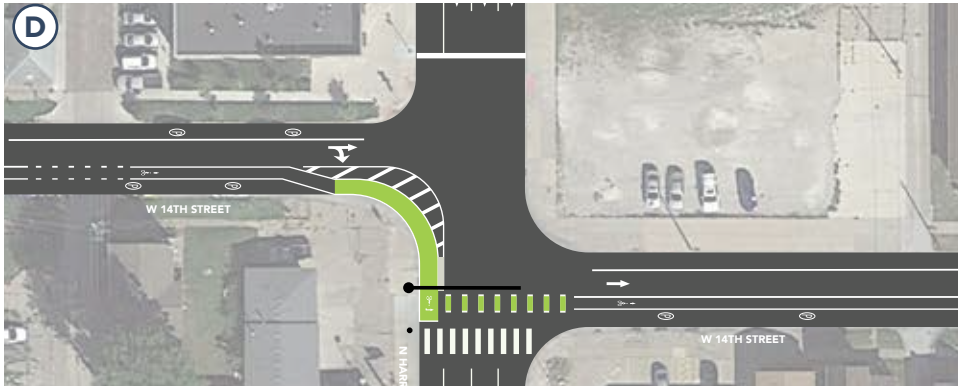


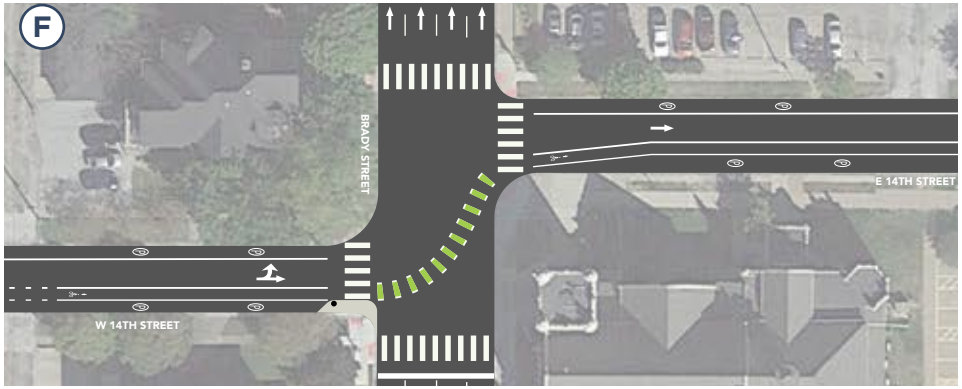
14th & 15th Streets One-way Bike Lane Cross Section (30' Curb-to-Curb)



14th & 15th Streets One-way Bike Lane Cross Section (40' Curb-to-Curb)



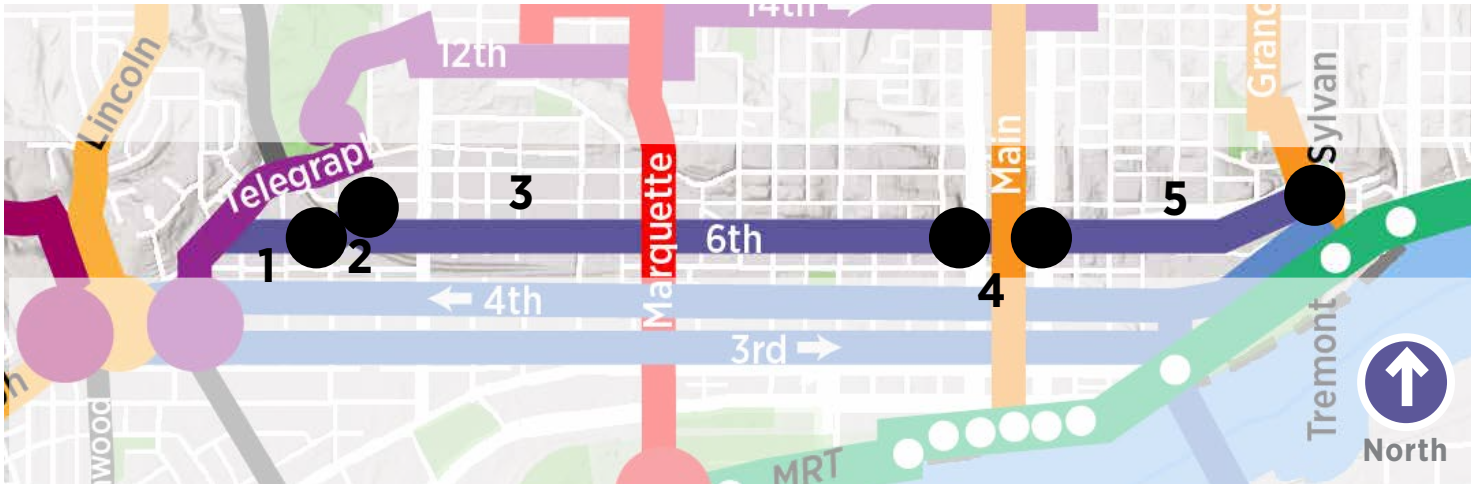




Pavement marking concepts at offset Harrison and Brady intersections.

EAST-WEST

6TH STREET BICYCLE BOULEVARD



SEGMENT KEY	SEGMENT	LENGTH (MILES)	STREET TYPE /WIDTH	SIDEWALK CONDITION	INFRASTRUCTURE	PROBABLE COST
1	6th, Telegraph Rd, Waverly to Howell	0.25	2-lane local/32 feet	Both sides	Bicycle boulevard	$6,250
2	Tunnel and path, Howell to 6th and Wilkes	0.13	Existing pedestrian width path/5-6 feet	NA	Upgrade of path width to 8 feet where possible	$45,500
3	6th, Wilkes to Harrison	1.40	2-lane local/31 feet	Both sides	Bicycle boulevard with improved crossing markings at Division, Marquette, and Gaines	$35,000
4	6th, Harrison to Brady	0.15	2-lane local/36 feet	Both sides	Bicycle boulevard with improved crossing markings at Harrison and Brady intersections	$7,500
5	6th, Brady to Tremont	0.70	2-lane local/31 feet	Both sides	Bicycle boulevard. Access to Riverfront Trail on Tremont with Grand Route.	$17,500
Total		**2.63**				**$111,750**

6th Street tunnel near Smart School and approach sidewalk from the east

EAST-WEST

3RD/4TH STREET BIKEWAY

3rd/4th Street Bikeway Overview

3rd and 4th Streets serve as a principal east-west corridor for bicycle transportation, providing access to Downtown Davenport and connecting with multiple existing and planned bikeways. The corridor begins at Telegraph Road and extends eastward through Downtown Davenport, continuing to the Arsenal Bridge through Bechtel Park and continuing on in the future to First Bridge, the surrounding development area and the new Davenport YMCA. Directional bike lanes will be provided on each of the one-way streets. In most cases, the streets are sufficiently wide to maintain three travel lanes, parking, and protected bike lanes. The separation of bike lanes from travel lanes, in most cases by both a buffer and parking, provide a high level of comfort to users. In many cases around the country, these facilities have increased the appeal of corridors and generated significant commercial and residential growth.

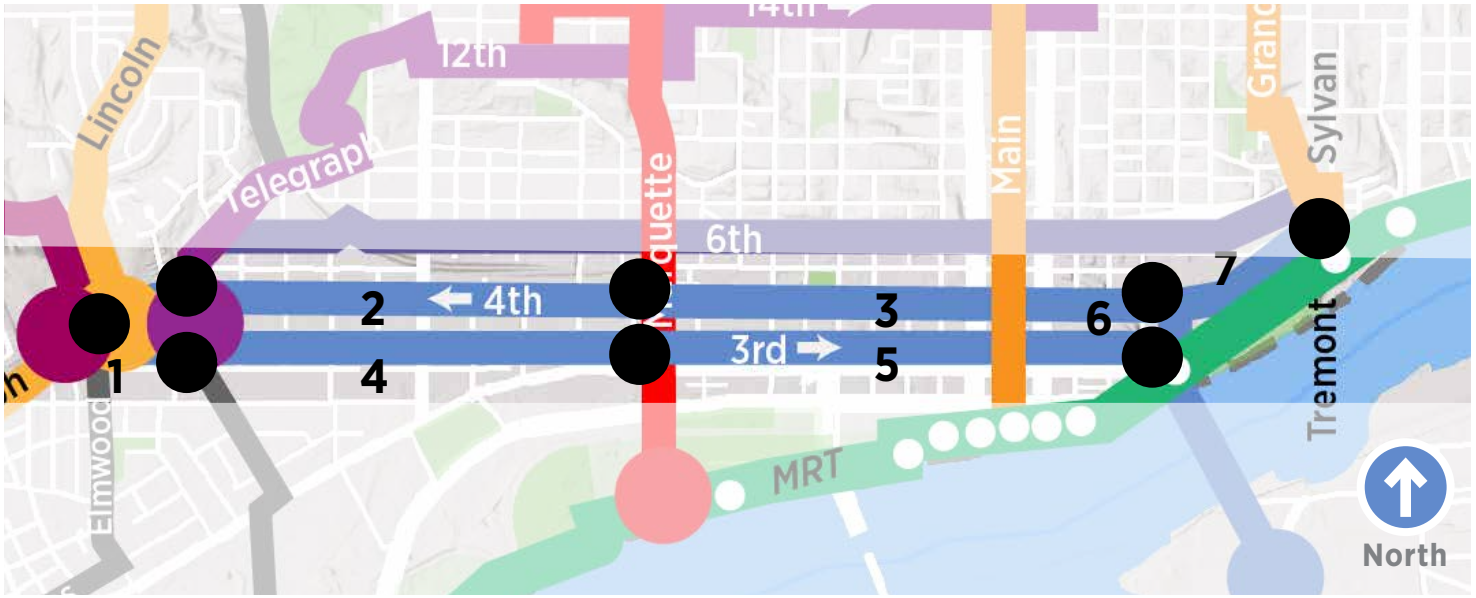
On the east side of the corridor, several options exist for connecting the route to First Bridge. These include a new cycle track (or two-way protected bike lane) along 4th Street to the bridge. Alternatively, a shared use path adjacent to River Drive could connect the two directional bike lanes and connect to First Bridge. The preferred concept will depend on the final design of the bridge and the design of the YMCA site and surrounding area.

Some discussion has centered around converting 3rd and 4th Streets to two-way circulation. If that occurs, the character of 4th Street is more conducive to arterial traffic movement, with 3rd Street becoming more appropriate for alternative transportation. This would include a two-way separated bike lane on 3rd Street rather than one-way pairs on 3rd and 4th Streets. An additional possibility is development of a downtown circulator cycle track loop that would include 2nd and 3rd as its east-west legs.

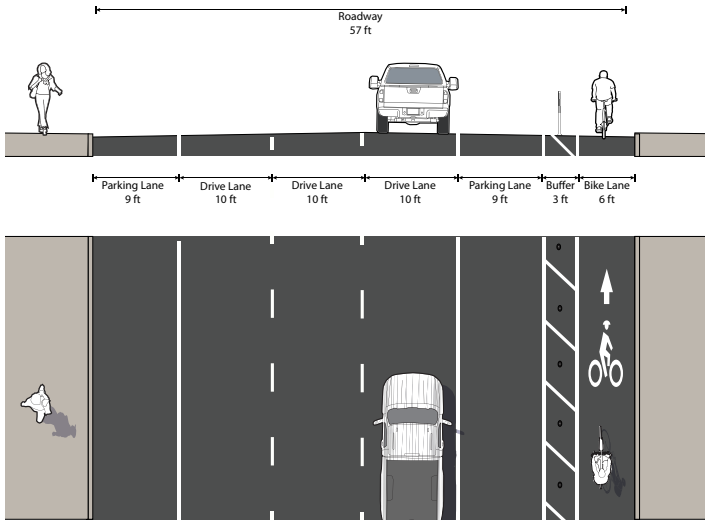
Parking protected bike lane concept for 3rd Street.

EAST-WEST

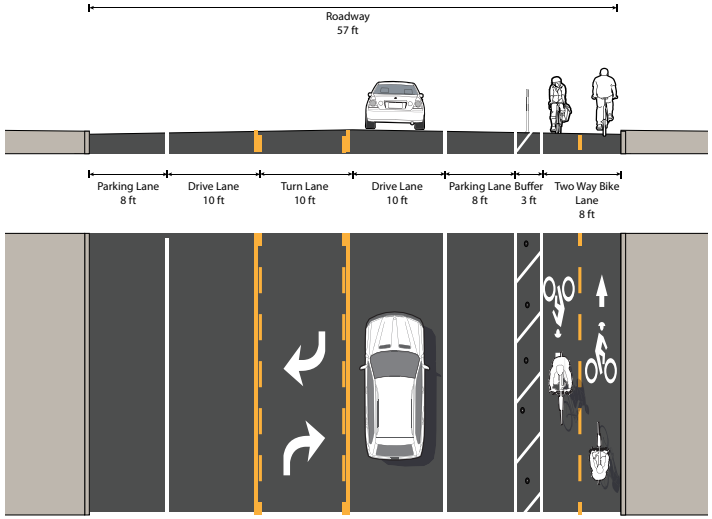
3RD/4TH STREET BIKEWAY



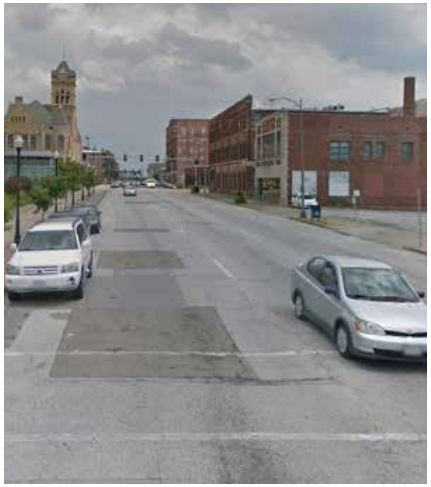
SEGMENT KEY	SEGMENT	LENGTH (MILES)	STREET TYPE /WIDTH	SIDEWALK CONDITION	INFRASTRUCTURE	PROBABLE COST
1	Telegraph/3rd/Waverly Triangle	0.33	Telegraph: 2-lane one-way minor arterial/25 feet Waverly: 2-lane minor arterial/44 feet 3rd: 3-lane one-way minor arterial with EB bike lane/44 feet	Both sides	New protected bike lane and travel lane markings on three legs of triangle (see detail page). Parking protected bike lane on 3rd Street leg	$21,120
2	3rd Street, Waverly to Marquette	1.22	3-lane one-way EB minor arterial with EB bike lane/55 feet	Both sides	Upgrade to parking protected EB bike lane.	$78,080
3	3rd Street, Marquette to Iowa	1.10	3-lane one-way EB minor arterial with EB bike lane/55-60 feet	Both sides	Upgrade to parking protected EB bike lane.	$70,400
4	4th Street, Lincoln to Marquette	1.15	3-lane one-way WB minor arterial with EB bike lane/55 feet	Both sides	Upgrade to parking protected WB bike lane.	$73,600
5	4th Street, Marquette to Iowa	1.10	3-lane one-way EB minor arterial with EB bike lane/55-60 feet	Both sides	Upgrade to parking protected WB bike lane.	$70,400
6	Iowa, Bechtel Park to 4th Street	0.23	2-lane local with some turn lanes/56 feet	Both sides	Protected bike lanes	$26,496
7	4th Street, Iowa to future First Bridge	0.30	3-lane one-way minor arterial/55 feet	Both sides	Protected two-way bike lane, coordinated with First Bridge development and new YMCA construction; or shared use sidepath along River Drive	$34,560
Total		**5.43**				**$374,656**



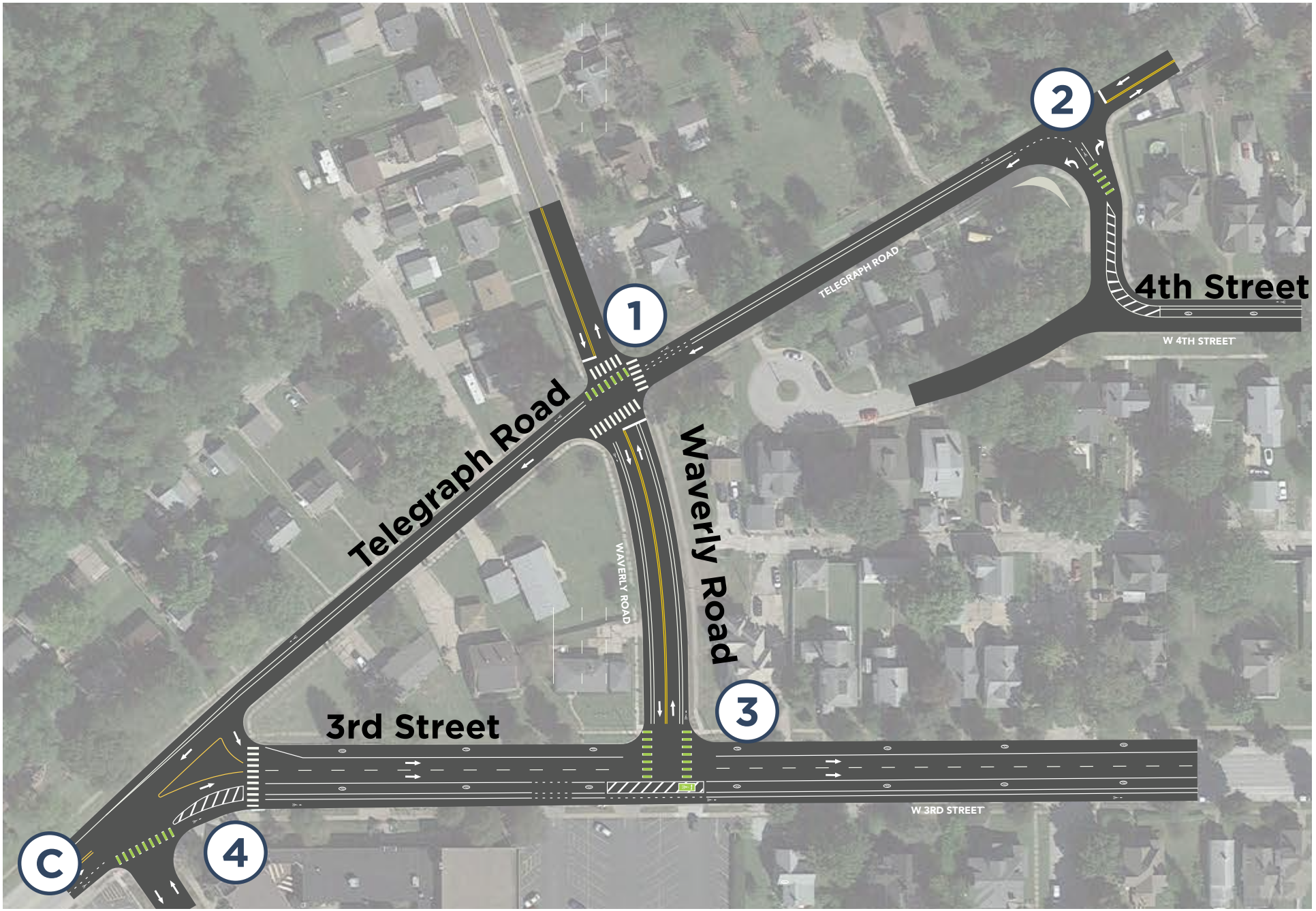
3rd Street One-way Separated Bike Lane Cross Section



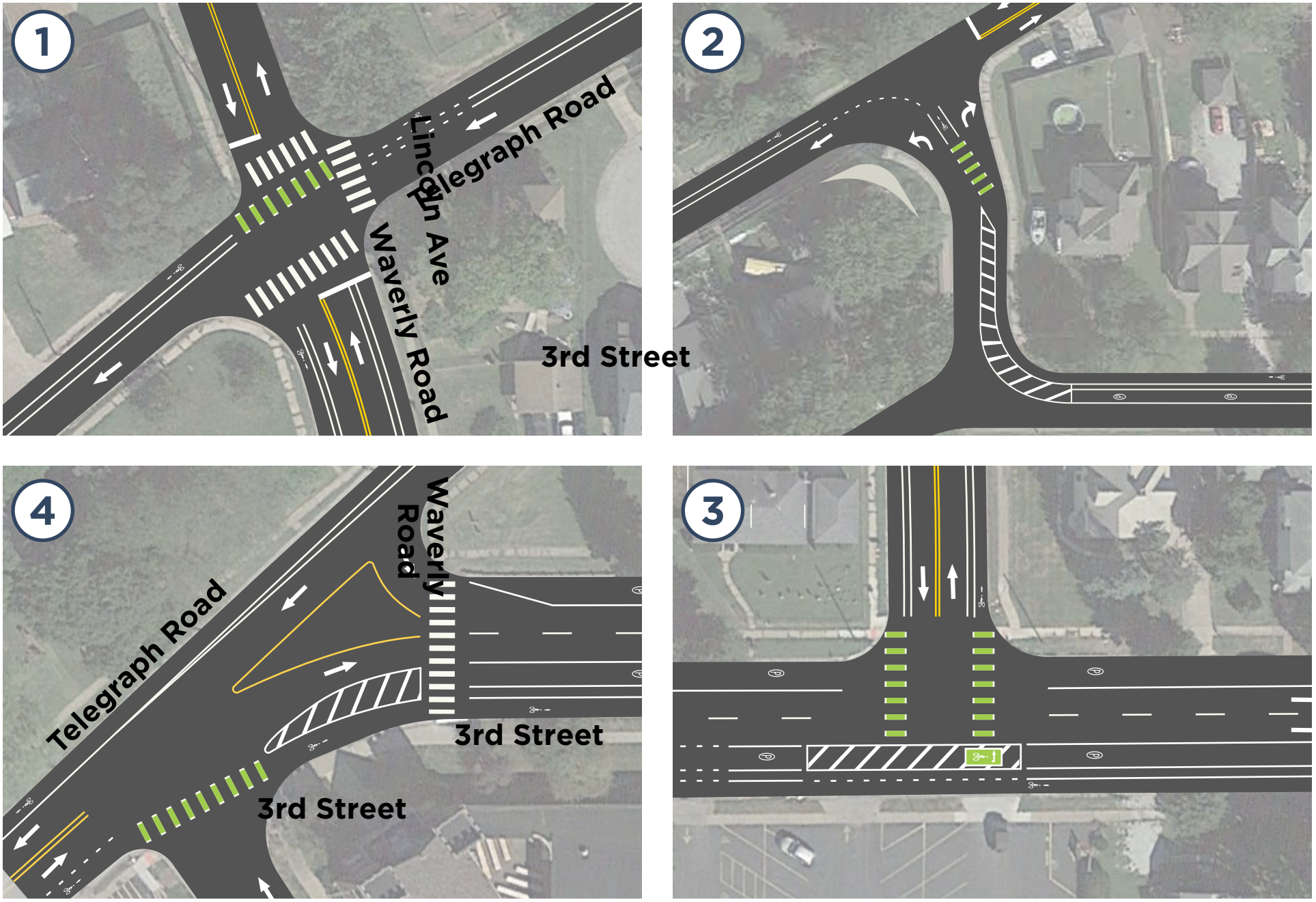
3rd street two-way separated bike lane alternative cross section



4th Street at Ripley Street: Current conditions. Source: Google Maps.



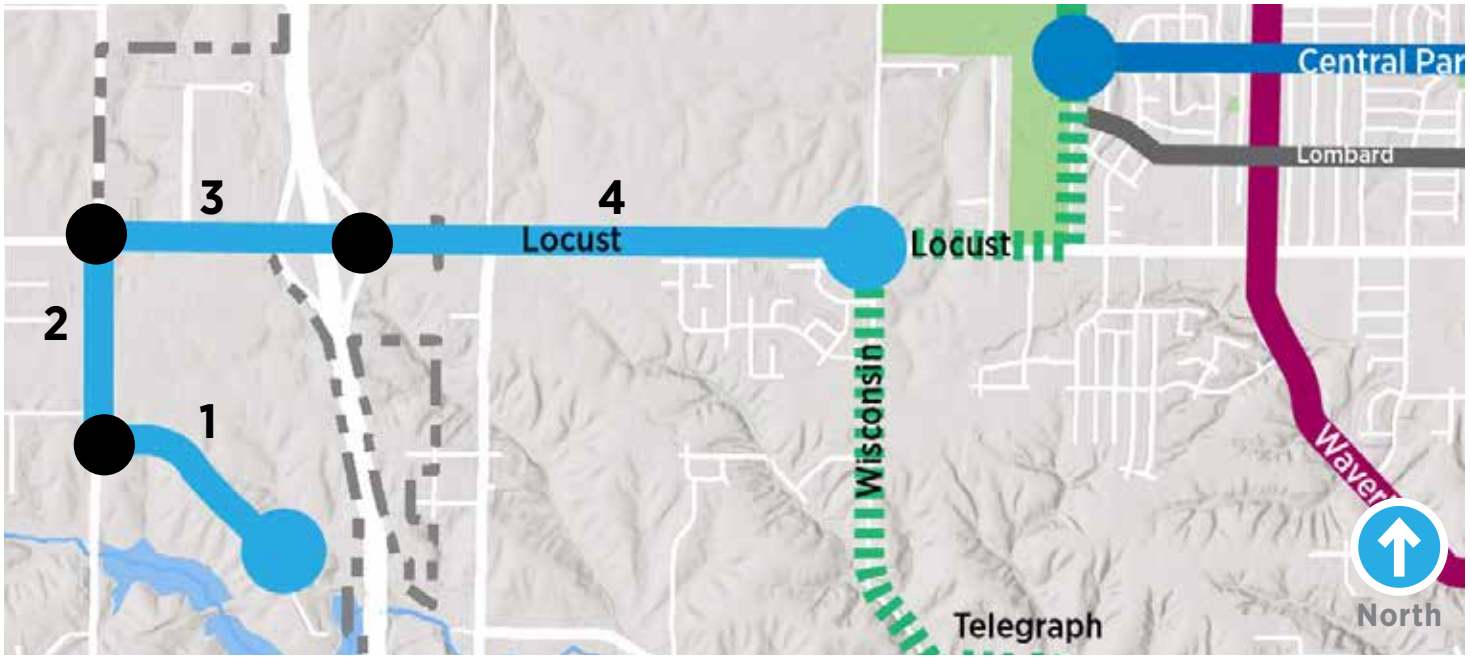
Bike Lane Striping Concept for 3rd & 4th Streets at the Telegraph/Waverly/3rd Triangle



Triangle details

EAST-WEST

WEST LAKE



SEGMENT KEY	SEGMENT	LENGTH (MILES)	STREET TYPE /WIDTH	SIDEWALK CONDITION	INFRASTRUCTURE	PROBABLE COST
1	West Lake Park Road, Y48 to Beach Area	0.90	2-lane park road/23 feet	No sidewalks	Advisory bike lanes	$54,000
2	Y48, park entrance to Locust	0.50	2-lane collector with both paved and gravel shoulders/32 feet to pavement edge, 48 feet to edge of gravel shoulders	No sidewalks	Existing shoulders. Possible future consideration to widening paved shoulders within roadway	Existing
3	Locust, Y48 to I-280	0.68	2-lane minor arterial/24 feet to pavement edge, 48 feet to edge of gravel shoulders	No sidewalks	Paved shoulders	$459,000
4	Locust, I-280 to Wisconsin	1.31	2-lane minor arterial with central median/48 feet to pavement edge, including median; 72 feet to edge of gravel shoulders	No sidewalks	Paved shoulders	$884,250
Total		**3.39**				**$1,397,250**

COMMUNITY WAYFINDING

Installation of a wayfinding system is a relatively inexpensive way to implement a major part of the bike network ahead of major capital expenditures, especially on streets like shared and marked routes or bicycle boulevards that do not require extensive infrastructure. Davenport has already installed MUTCD compliant wayfinding signs to guide bicyclists between Emeis Park and Credit Island.

While signs and sign clutter should always be minimized, a carefully designed identification and directional graphics system can greatly increase users' comfort and ease of navigating the street system. The graphic system may have individual features, but should generally follow the guidelines of the Manual of Uniform Traffic Control Devices (MUTCD). Types of signs in the system include:

- The D11-1c Bike Route Guide Sign, identifying a street or trail as a bike route and describing the route's end point or a landmark destination along the way. These are sometimes used in conjunction with arrows (M6-1 through M6-7) that indicate changes in direction of the route. These are located periodically along the route to both reassure cyclists and advise motorists.
- A version of the D1 family of destination signs (D1-1c, D1-2c, or D1-3c), identifying the direction and distance to specific destinations. Sometimes these signs include a time to destination, based on a standard speed, typically 9 miles per hour). These are typically located at intersections of routes or at a short directional connection to a nearby destination.
- On bicycle boulevards, a special street sign can be used to help provide additional notification to motorists and wayfinding information to bicyclists.
- Motorist advisory signs. The R4-11 Bicycles May Use Full Lane is usually the preferred sign on shared routes.

The graphic system should be modular to provide maximum flexibility and efficiency in fabrication. Signs should also use reflective material for night visibility.

Wayfinding concepts for Davenport. D11-1c (above) and D1-3c (top right) basic wayfinding signs
Middle right: Bicycle boulevard street sign in Topeka, KS.
Bottom right: Bismarck, ND trail gateway sign.

PRIORITIES AND IMPLEMENTATION

The proposed Davenport active network will be implemented in phases, and will almost certainly evolve over time. However, this plan establishes a basic system to be completed in two phases that range from 7 to 10 years each, depending on availability of funding, and a concept for how the network emerges more comprehensively from that foundation. The sequencing of phases and specific trails and routes proposed here follows these criteria and principles:

- **Response to demands.** In every phase, high priority routes should address existing demand patterns, and serve destinations that are valuable to users and appropriate endpoints for bicycle transportation. The survey results summarized in Chapter 5 provide valuable information on the importance of various destinations.
- **Route integrity.** High priority routes and projects should provide continuity between valid endpoints, like destinations and trails. When developed incrementally, routes should not leave users at loose ends.
- **Extensions of existing facilities.** Projects that make use of and extend the reach of key existing facilities that need attention.
- **Gaps.** Small projects that fill gaps in current facilities or tie relatively remote neighborhoods to the overall system can be especially useful at early stages n the system's development.
- **Opportunities.** The implementation sequence should take advantage of street projects, resurfacing and street rehabilitation projects, and other infrastructure projects.
- **Safety enhancement.** High priority projects should increase safety and reduce user discomfort for people of all ages.
- **Demographic equity.** Projects should provide bicycle and pedestrian access to underserved populations and connect people and households without access to a motor vehicle to destinations important to their lives and livelihood.
- **Service to key destinations.** These include parks, schools, libraries, recreation centers, and similar destinations.
- **Relative ease of development.** It is important that the a useful system be established relatively quickly and at comparatively low cost. Routes that require major capital cost or lead to neighborhood controversy should be deferred to later phases, when precedents are established and the network becomes part of Davenport's urban landscape. Developability helps determine priorities. The initial system should serve major destinations and provide good connectivity while minimizing large scale projects.

Table 2.2: Probable Cost for Proposed Trails

NAME : PRIORITY	LENGTH	TRAIL TYPE	OPINION OF PROBABLE COST
WEST LOOP			
Locust	0.5	Sidepath	$175,000
Wisconsin	1.39	Trail Type 1	$695,000
Sunderbruch Trail	1.2	Existing	$0
Ricker Hill	0.11	Sidepath	$38,500
John Fell	0.91	Street conversion to bikeway	$54,600
Total	**4.11**		**$963,100**
SILVER CREEK			
76th-53rd	1.76	Trail Type 2	$1,232,000
53rd-49th	0.45	Trail Type 2	$315,000
End of existing trail to Hillandale	0.3	Trail Type 2	$210,000
Total	**2.51**		**$1,757,000**
GOOSE CREEK			
Ridgeview to Goose Creek Park	1.15	Trail 1	$805,000
Park to Brady Underpass	0.83	Current estimate	$1,000,000
Brady to end of existing trail	0.5	Current estimate	$1,400,000
Total	**2.48**		**$3,205,000**
MARQUETTE GAP			
Northwest Blvd to 46th	**0.31**	**Trail Type 2**	**$217,000**
ELDRIDGE TRAIL			
US 61-Veterans memorial Pkwy	1.5	Trail Type 2	$1,050,000
Veterans to 46th	1.5	Trail Type 3	$1,350,000
46th to Duck Creek	1.2	Trail Type 3	$1,080,000
Duck Creek to Rusholme	0.62	Trail Type 3	$558,000
Rusholme to Kirkwood	0.68	Trail Type 2	$612,000
Total	**5.5**		**$4,650,000**

Clearly economics and available resources are extremely important and facilities that meet user demands and preferences are relatively expensive because they require a greater degree of separation from motor vehicles. Figure 5.1 identified typical costs per mile for the different types of on-street facilities anticipated for the Davenport network. The subsequent detailed route tables apply these cost factors to the individual on-street components of the active network. Figures 5.2 and 5.3 display opinions of probable cost the other two key components of the network: trails and barrier removal projects. Figure 5.3 should not be taken to prescribe a specific solution but rather is designed to establish a, optimal budget for project types that could substantially reduce the impact of these barrier conditions.

Table 2.2: Probable Cost for Proposed Trails

NAME : PRIORITY	LENGTH	TRAIL TYPE	OPINION OF PROBABLE COST
PHEASANT CREEK			
Elmore to 46th	0.91	Trail Type 2	$637,000
46th to 32nd	1.16	Trail Type 2	$812,000
32nd to Duck Creek	0.41	Sidepath	$143,500
Total	**2.48**		**$1,592,500**
LOCUST SIDEPATH			
Pleasant to Kimberly	**0.65**	**Sidepath**	**$227,500**
53RD STREET SIDEPATH			
Goose Creek to Eastern	0.67	Sidepath	$234,500
Eastern to Jersey Ridge	0.5	Sidepath	$175,000
Jersey Ridge to Fairhaven	0.45	Sidepath	$157,500
Total	**1.62**		**$567,000**
JERSEY RIDGE SIDEPATH			
Elmore to 58th	0.95	SP	$332,500
58th to 53rd	0.37	SP	$129,500
Total	**1.32**		**$462,000**

Table 2.3: Probable Budgets for Barrier Removal Projects

NAME	ASSOCIATED ROUTE	BARRIER TYPE	OPINION OF PROBABLE COST	BASIC PH 1	BASIC PH 2	ULT PH 3
Ridgeview-Pine	Silver Creek, 76th	Enhanced crossing markings	$20,000	$20,000		
Ridgeview-Division	Silver Creek, 76th	Enhanced crossing markings	$20,000			$20,000
65th-Brady	Veterans, Marquette	Major Construction	$350,000	$350,000		
Northwest-Pine	Westside, Northwest	Arterial	$200,000	$20,000	$180,000	
Northwest-Marquette	Northwest, Marquette	Future signal	In future street project			
58th-Eastern	Connector to Park	HAWK	$100,000	$100,000		
46th-Northwest	Northwest, 46th	Enhanced crossing markings	$20,000	$20,000		
46th-Welcome Way/Brady	46th	Enhanced crossing markings	$40,000		$40,000	
46th-Forest	46th, Forest	Median/Beacon	$20,000	$20,000		
Kimberly-Fairmount	Fairmount	Enhanced crossing markings	$20,000	$20,000		
Hillandale-Kimberly	Silver Creek	Enhanced crossing markings	$20,000		$20,000	
Marquette-Kimberly	Marquette	Enhanced crossing markings	$20,000	$20,000		
Main-Kimberly	Main	Arterial	$200,000		$200,000	
Hillandale-Hickory Grove	Silver Creek	Enhanced crossing markings	$20,000		$20,000	
35th-Brady	35th	Enhanced crossing markings	$20,000			$20,000
33-Eastern	35th	Enhanced crossing markings	$20,000			$20,000
32-Jersey Ridge	35th	Enhanced crossing markings	$20,000			$20,000
Central Park-Lincoln	Central Park/Lombard	Enhanced crossing markings	$20,000	$20,000		$20,000
Lombard-Brady	Lombard	HAWK	$100,000	$100,000		
Elm-Eastern	Lombard	Enhanced crossing markings	$20,000		$20,000	
Elm-Jersey Ridge	Lombard	Enhanced crossing/beacon	$50,000		$50,000	
Fairmount-Locust	Fairmount	Enhanced crossing markings	$20,000			$20,000
Locust-Main	Main	Enhanced crossing markings	$20,000	$20,000		
Marlo-Locust	Forest	HAWK with sidepath	$130,000	$130,000		
14th/15th Marquette	Kirkwood, Marquette	Offset	$70,000		$70,000	
14th/15th/Harrison	Kirkwood	Offset	$70,000		$70,000	
14th/15th/Brady	Kirkwood	Offset	$70,000	$70,000		
12th-Division	Kirkwood	Enhanced crossing/beacon	$50,000		$50,000	
6th-Division	6th	Enhanced crossing/beacon	$50,000			$50,000
6th-Marquette	6th	Enhanced crossing/beacon	$50,000			$50,000
6th-Harrison	6th	Enhanced crossing/beacon	$50,000			$50,000
6th-Brady	6th	Enhanced crossing/beacon	$50,000			$50,000
Tremont-River Dr	Grand, 6th	Enhanced crossing markings	$20,000	$20,000		
Mound-River Drive	Jersey Ridge	Enhanced crossing markings	$20,000	$20,000		

SEQUENCING

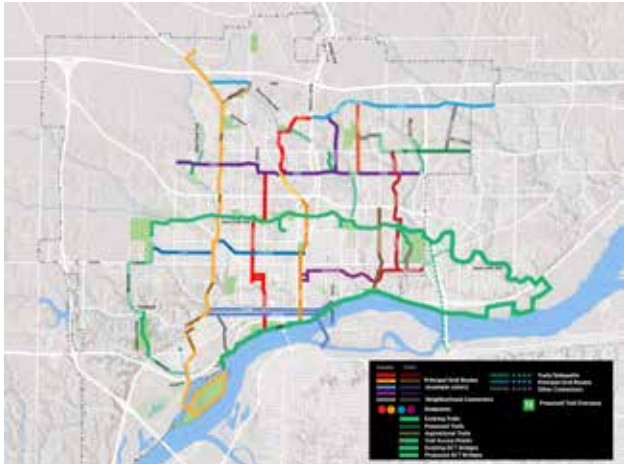
The Davenport GO program will not happen at once. The maps displayed in this section identify both a basic and ultimate buildout plan. The basic system establishes the foundation of the ultimate network, and is designed to:

- Provide maximum impact for the minimum initial investment
- Link all parts of the city and in one way or another serve most of its key destinations.
- Serve the most immediate user desire patterns.

Because many of these on-street routes involve adaptation of existing streets and wayfinding, much of the proposed mileage can be realized relatively quickly. However, they do not meet the comfort criteria of all users. On the other hand, off-street trails can be very expensive, but are also highly attractive to most types and capabilities of their users. The sequencing concept attempts to balance these conflicting pressures.

The Sequencing Diagrams apply the priority criteria to identify a basic network that would provide a high level of service to the community even if no further progress is made. It also illustrates an ultimate network that provides comprehensive coverage of the city and connects to other parts of the Quad Cities metropolitan area. The basic system is divided into two implementation phases, which may be viewed as ten year capital programs. The Basic Network, implemented over 20 years, translates into a proposed investment of about $14 million, or slightly over $700,000 annually in 2018 dollars from all sources, including federal, state, local, and private funds. Clearly implementation depends on availability of funding and some large projects or overall efforts could receive federal and state funds that could advance certain projects. This implementation sequence represents a suggested scenario that may change over time.

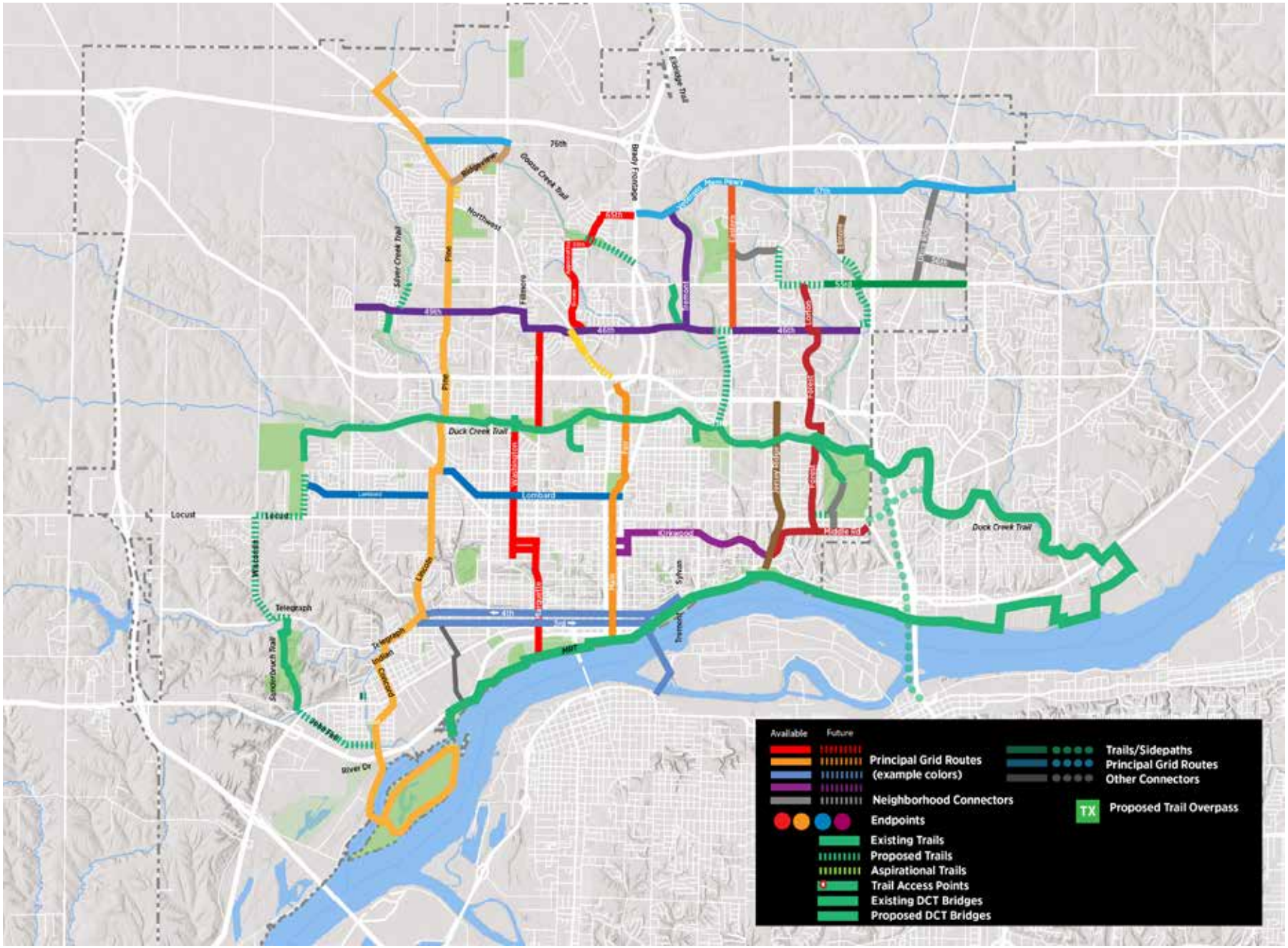
Network after Priority 1



Network after Priority 2

Ultimate Network

Map 2.2: Basic System: First Priority



BASIC SYSTEM: PRIORITIES

The first priorities of the basic system identifies four major north-south on-street corridors:

- An eastside corridor, largely using the existing Elmore sidepath, a segment of a Pheasant Creek Trail to 46th Street, and the low-cost Forest Avenue/Middle Road routes to the Village of East Davenport.
- The high demand Main corridor between the riverfront and NorthPark Mall.
- The Marquette-Washington corridor, using low-cost on-street routes to connect as far north as Veterans Parkway.
- The Pine/Concord corridor, also using relatively low cost bike lane and bicycle boulevard improvements.

The key east-west elements are:

- The 46th Street route, requiring a gap closing project to extend the route to Eastern Avenue.
- Combining Kirkwood Boulevard and Lombard Street into an east-west bicycle boulevard.
- Upgrading the 3rd and 4th bikeway pair with one-way protected bike lanes.

The most important trail focus is completing the Duck Creek/Riverfront Loop on the west side. Other important projects include:

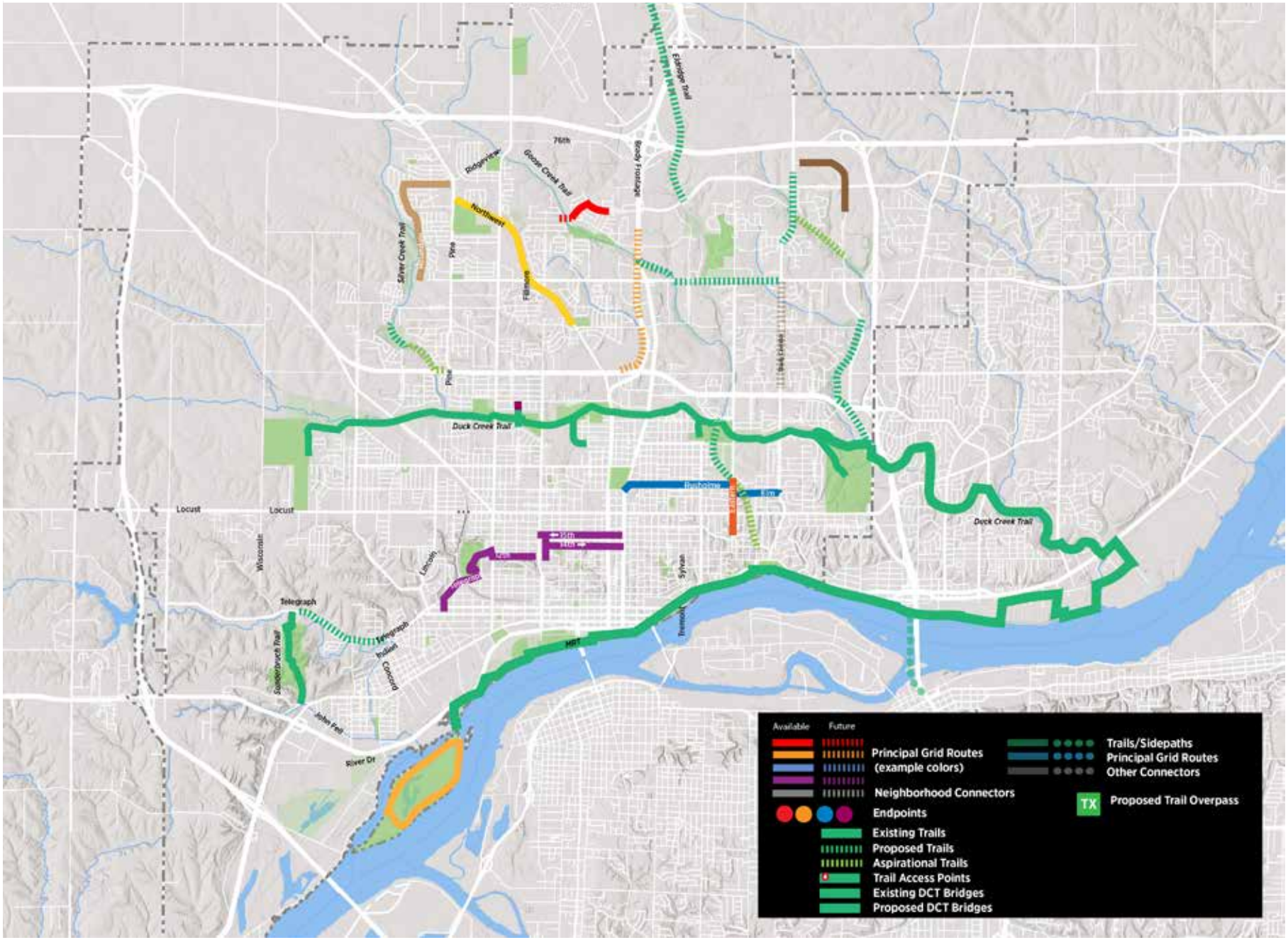
- Goose Creek Trail extension to North High School and the existing Scott Street footbridge.
- Closing the 46th Street gap east of the city public works complex.
- Developing the first phase of the Eldridge Trail from 46th to the Duck Creek Trail.
- Beginning the Pheasant Creek Trail from Elmore to 46th.

While these priority projects all meet important network needs, they may not have equal priorities or demand as Davenport moves forward. The cost opinions presented in the Route Details section should serve as a tool as Davenport constructs a capital development program that matches needs to available funding, grant and philanthropic opportunities, associated roadway projects, and overall community priorities.

Table 2.4: Basic System: Phase One Program

ROUTE	SEGMENTS
PRINCIPAL GRID	
Elmore	Cross Creek Apts to Pheasant Creek
Forest	Entire route, 53rd to Kimberly
Jersey Ridge	High to River Drive
Eastern	53rd to 46th, 46th to Duck Creek via Spring
Main	Kimberly to River Drive
Marquette/Washington	65th to River Drive via Appomattox
Westside	76th-Northwest to Credit Island Bridge
Silver Creek	Ridgeview/Division to Northwest
Northwest	Northpark entrance to Main
46th	Entire route Fairmount to Elmore
Lombard	Emeis Park to Brady
Kirkwood	Main to Jersey Ridge
3rd/4th	Entire route, Telegraph to First Bridge
TRAILS	
West Loop	Entire route, Emeis Park to Riverfront Trail
Silver Creek	53rd/Hillandale to 49th
Goose Creek	Goose Creek Park to Brady east side
Eldridge	46th to Duck Creek
Pheasant Creek	Elmore to 46th
Locust Sidepath	Pleasant to Marlo
53rd St Sidepath	Jersey Ridge to Fairhaven
Jersey Ridge	58th to 53rd
BARRIERS	
15 intersections	See Figure 5.3

Map 2.3: Basic System: {Phase 2 Increment)



BASIC SYSTEM: COMPLETE

This provides a sound system that strives to provide a reasonable level of service to most parts of the city. Major additions to the Basic Phase One system include:

The first phase of the basic system identifies four major north-south on-street corridors:

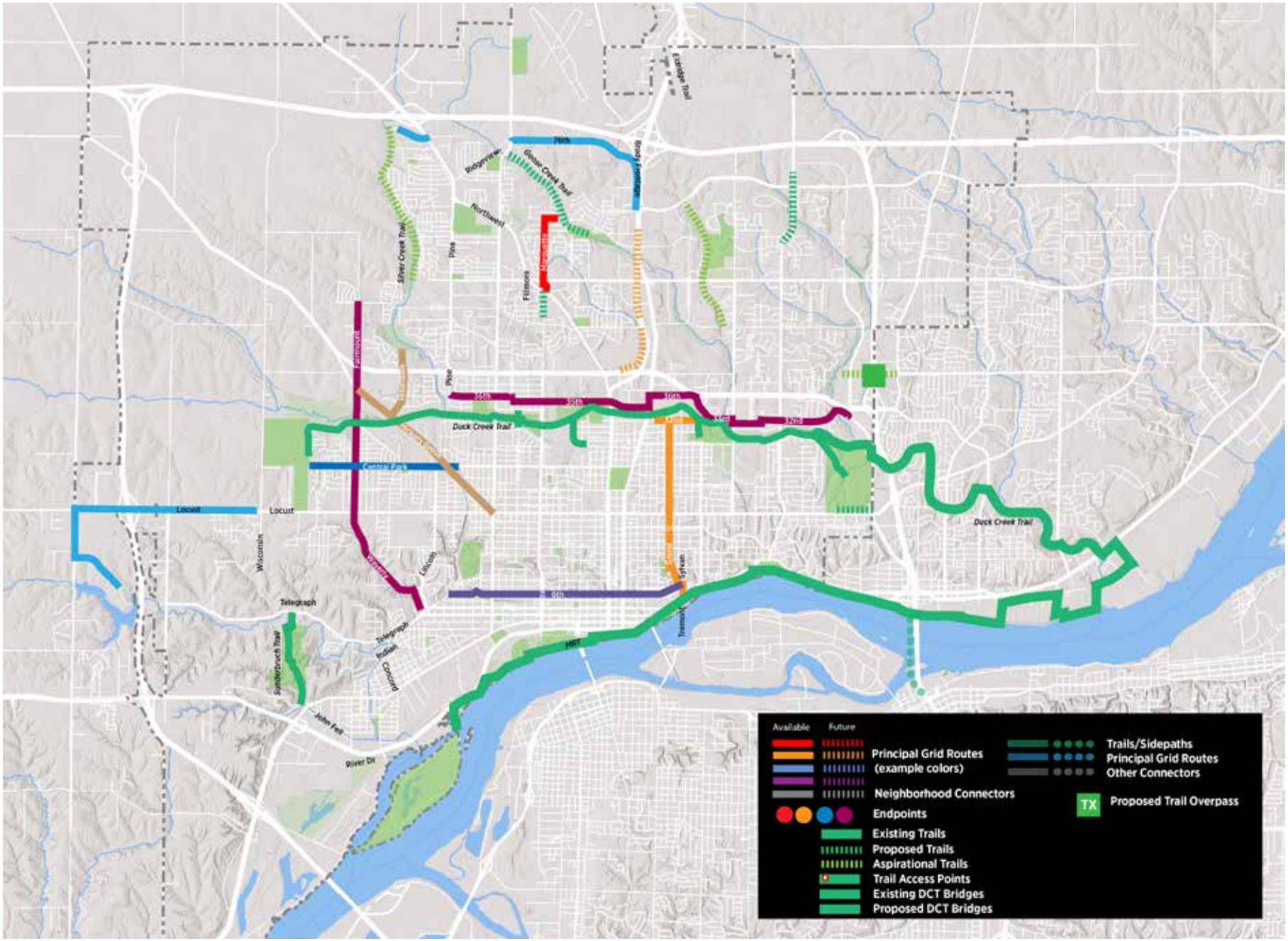
- Extension of the eastside Pheasant Creek Trail to the Duck Creek Trail and a possible connection to the possibility of an I-74 trail in Bettendorf.
- Development of the Eldridge Trail south from Eldridge to Veterans Parkway and from Duck Creek to Eastern Avenue, completing that route.
- In advance of completing the Goose Creek Trail, closing a gap at 61st Street to connect neighborhoods to the trail and the North High campus.
- Completing a crosstown route along 14th and 15th Street, with future extension west.
- Completing a new westside bicycle boulevard route along Ridgeview and Hillandale, incorporating a segment of the Silver Creek Trail.
- Providing paved shoulders to connect Emeis and West Lake Parks.

Table 2.5: Basic System: Phase Two Program

ROUTE	SEGMENTS
PRINCIPAL GRID	
Elmore	Jersey Ridge to Rhythm City; Pheasant Creek to 53rd
Eastern	Bridge or Eastern, Duck Creek to Kirkwood
Westside	Credit Island Park loop
Northwest	Pine to Northpark Mall entrance
Lombard	Brady to Forest via Rusholme/Elm
Kirkwood	Telegraph/Lincoln to 15/Perry
Silver Creek (Hillendale)	Northwest to 53rd
TRAILS	
Silver Creek	49th to Hillandale
Goose Creek	Brady to 46th, using exg trail
Eldridge	US 61 to Veterans; Duck Creek-Rusholme
Pheasant Creek	46th to Duck Creek
53rd St Sidepath	Goose Creek to Jersey Ridge
BARRIERS	
10 intersections	See Figure 2.3
2 bridges	Pine St, Fair Ave

BASIC PHASE 2

Map 2.4: Ultimate System Increment



ULTIMATE SYSTEM

The ultimate Davenport GO system provides a comprehensive network that provides active users with a wide variety of choices, but still primarily focusing on relatively low-cost street improvements. Major addition that evolve the basic into ultimate systems include:

- Completing the Pheasant Creek and Goose Creek Trail corridors.
- Completing the Eldridge Trail to the Village of East Davenport.
- Competing the Silver Creek corridor from 76th Street to the Pine Street bikeway.
- Adding bicycle boulevard/quiet streets through neighborhoods north of Duck Creek, roughly along 35th Street, extending the Lombard route east though the Genesis campus to Forest, continuing the 14th/15th route through Fejervary Park to the West End.
- Connecting Veterans Parkway to 76th Street for a north tier system.
- Creating a northwest through route with paved shoulders along Northwest Boulevard.
- Completing the north-south Marquette/Washing ton route.
- Modifying the section of Hickory Grove to include bike lanes, providing a continuous trail and bikeway route from Northwest Davenport to Five Points.
- Developing the Fairmount Avenue corridor as a complete corridor to accommodate new westward growth.

Table 2.6: Ultimate System: Phase Three Program

ROUTE	SEGMENTS
PRINCIPAL GRID	
Grand	Duck Creel to Riverfront
Main	65th/Brady to Main
Marquette	65th to 46th - direct route
Fairmount	49th to Telegraph
76th/Veterans	76th/Silver Creek to 65th/Brady
35th	Pine to Kimberly
Central Park	Emeis Park to Hickory Grove
6th	Telegraph to First Bridge
West Lake	West Lake Park to Locust/Wisconsin
Hickory Grove	Fairmont to Locust
Silver Creek (Hillendale)	Silver Creek Trail to Hickory Grove
TRAILS	
Silver Creek	76th to 49th
Goose Creek	Ridgeview to Goose Creek Park
Eldridge	Veterans to 46th; Rusholme to Kirkwood
Locust Sidepath	Completes Pleasant to Middle Road
Jersey Ridge	Elmore to 58th
I-74 Overpass	Elmore to Tanglefoot (Bettendorf)
BARRIERS	
10 intersections	See Figure 2.3

ULTIMATE PHASE 3

FUNDING DIRECTIONS

Given the multi-year nature of this active transportation program, identifying and sustaining funding sources is critical. Many projects involving on-street routes could be incorporated into normal maintenance activities - thus the marginal cost of activities such as painting and maintaining multi-use shoulders may be significantly lower than the cost factors incorporated here. Bicycle boulevards and routes could be implemented through relatively inexpensive wayfinding or street signs as well. But some projects involve substantial capital cost. Highest among these are those projects that users like best – those that offer separation from motor vehicles.

Many cities, including Davenport, set aside a certain annual allocation for alternative transportation projects. The basic network's cost of about $14 million would require about $700,000 annually from all sources over a twenty- year implementation period. But many financing programs exist that can fund specific projects and greatly accelerate realization of this network. Many of these programs involve Federal transportation and recreational funding assistance that may be uncertain in the future. The following discussion identifies sources available as of adoption.

Federal Transportation Act Programs

The federal government has numerous programs and funding mechanisms to support bicycle and pedestrian projects, most of which are allocated by the US DOT to state, regional, and local entities. In many cases, state and regional entities administer these funds to local agencies through competitive grant programs. In order to clearly convey the roles and responsibilities of all agencies in the administration and spending of federal transportation funds, The Iowa DOT has created the *Guide to Transportation Funding Programs of Interest to Local Governments and Others* (2017, revised edition). This guide is an invaluable resource for funding exploration, project development, and procedural compliance.

FAST ACT

The FAST (Fixing America's Surface Transportation) Act became law in 2015 and remains at present the primary source of transportation assistance.
FAST programs include:

- **The Transportation Alternatives Program (TAP).** The Transportation Alternatives Program (TAP) was authorized by MAP-21 in 2012 and has been continued by the FAST Act, through federal fiscal year 2020. Eligible project activities for TAP funding include a variety of smaller-scale transportation projects such as pedestrian and bicycle facilities, recreational trails, safe routes to school projects, and community improvements such as historic preservation, vegetation management, and some environmental mitigation related to storm water and habitat connectivity. The TAP program replaced multiple pre-MAP-21 programs, including the Transportation Enhancement Program, the Safe Routes to School Program, and the National Scenic Byways Program.
- **Surface Transportation Block Grant.** The STBG 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 (HSIP).** This program funds projects consistent with the state's Strategic Highway Safety Plan. Within the context of this plan, it is most useful for helping to fund specific safety infrastructure improvement projects.

TIGER DISCRETIONARY GRANTS

TIGER (Transportation Investment Generating Economic Recovery) originated as part of the American Recovery and Reinvestment Act and has focused on funding for innovative livability, sustainability, and safety projects. Davenport has applied for TIGER grant funding for the Downtown cycle track loop.

NATIONAL RECREATIONAL TRAILS

This venerable program, administered in Iowa by the DOT, was originally established in 1991 and provides funding assistance for recreational projects, such as park trails. This contrasts with TAP funds that must be used for projects with a significant transportation component. Trail projects can include hiking and walking, bicycling, cross-country skiing, snowmobiling, horseback riding, canoeing, and off- highway vehicles.

State and local Funding Sources

Given uncertainties over Federal funds, state and local funding emerges as the most reliable option for multi-year programs. Davenport's Capital Improvement Program can provide a local match for federal funds. The current national administration has proposed a match program that would provide a limited percent of federal funding (possibly 20% of project cost) as seed money for local or private funds.

STATE RECREATIONAL TRAILS

Similar in scope and purpose to the NRT Program, the State Recreational Trails Program uses funding collected within the State of Iowa to support local trail projects. In addition to land acquisition and actual trail construction, other eligible costs include bridge and culvert repair, intersection and crossing improvements, restrooms, trailheads, storm drainage, trail signs, landscaping, and even trail resurfacing and overlays.

REVITALIZE IOWA'S SOUND ECONOMY (RISE)

The RISE Program promotes economic development through the establishment, construction, improvement, and maintenance of roads and streets that inject money into the local and state economies and support economic growth. Bicycle projects associated with roadway resurfacing, rehabilitation, modernization, upgrading reconstruction, and initial construction are eligible for funding through the program. Bicycle trails, sidepaths, and wide sidewalks are not eligible for RISE funding except when replacing facilities already in service and affected by or as an integral part of a roadway project.

COMMUNITY ACTION & TOURISM

As part of the IEDA's Enhance Iowa Program, the Community Attraction & Tourism fund assists communities in the development and creation of attraction and tourism facilities, recreational trails, heritage attractions, museums, and recreational centers. Eligible projects include land acquisition, construction, major renovations, site development, and recreational trails.

DAVENPORT CAPITAL IMPROVEMENT PROGRAM

Establishing a dedicated set-aside in the Capital Improvement Program helps the City plan for implementing this plan for trails, on-street bikeways, and other projects that improve conditions for bicycling and walking. This set-aside may also be used as a local match for external funding sources, or as contributory towards bicycle elements of larger projects. The City should also consider a dedicated set-aside in the general fund budget for equity-related bicycle programs that target the city's underserved, minority, and low- income residents.

GENERAL OBLIGATION BONDS

General obligation bonds are a frequently used technique for long-term financing of capital improvements. GO Bonds may be used to fund a continuing set-aside for complete streets and active transportation improvements.

PRIVATE PHILANTHROPY

Private organizations and philanthropic giving can be a significant source of financing assistance. In some cases, communities have raised money for popular trail segments through foundations, avoiding the delays and processes that typically come attached to private grants. Health-related enterprises such as insurance organizations and hospitals have funded active transportation initiatives and are also involved in the organizational phases of the

Davenport program. Major industries may see the direct benefit to them in trail projects that improve health, advance recruitment programs, and expand access choices. Other significant trail and active projects have been funded by community contributors through fund-raising drives and even naming rights.

Foundations can also be a significant source of local support. The Community Foundation of the Great River Bend administers funds and channels resources into specific fields of interest, including health, and may be helpful in setting up a specific fund around active transportation implementation. State and national foundations with substantial local interest also have funded related improvements in the past.

DEVELOPMENT FOUNDATION

Active transportation may also be integrated into new development and redevelopment projects. The implementation phase maps and overall network plan identify future collector street corridors in potential growth areas. Integrating infrastructure to support active transportation, such as adequate width for bike lanes or multi-use shoulders, traffic calming features, proposed trail routes, and pedestrian paths and connectivity is extremely helpful and should be part of the financing package for the project.

MAINTENANCE FINANCING

Like any transportation improvement, active transportation projects need to be maintained through their life cycle and will have an impact on operating budgets. Paint must remain visible to continue to function as planned and capital improvements like paths and trails require repairs to continue to serve their users. Maintenance costs may also vary from year to year, depending on factor such as weather and level of use. Table 2.7 presents approximate costs for maintenance of different types of facilities, based on current experience. They can be used as a guide for allocation of resources and do not include staff time.

Table 2.7: Planning Level Maintenance Costs

FACILITY TYPE	ANNUALIZED COST/MILE	TYPICAL MAINTENANCE TASKS
Shared-Use Path	$10,000	Sweeping, trash removal, mowing, weed abatement, snow
Removal, crack seal, sign repair.	$2,500	Sweeping, trash removal, mowing, weed abatement, snow removal, crack seal, sign repair
Sidepath	$2,500	Sweeping, trash removal, mowing, weed abatement, snow
Removal, crack seal, sign repair.	$1,500	Sign and shared lane marking stencil replacement
Separated/Protected Bike Lanes	$4,000	Debris removal/sweeping, repainting stripes and stencils,sign replacement, replacing damaged barriers.
Bike Lanes/Advisory Bike Lanes	$2,500	Repainting stripes and stencils, debris removal/sweeping, snow removal, signage replacement as needed.
Bicycle Boulevard	$1,500	Sign and shared lane marking stencil replacement as needed.
Shared Connecting Route	$1,000	Sign and shared lane marking stencil replacement as needed.

Proposed Eldridge Trail near 33rd Street

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VOLUME 1

SUPPORT SYSTEMS AND POLICIES

To guide communities, the League of American Bicyclists (LAB), through its Bicycle Friendly Communities (BFC) program, establishes five components of design that are used to determine whether a city should be awarded BFC status – the 6 E's of Engineering, Education, Encouragement, Enforcement, Evaluation and Equity.

3

SUPPORT SYSTEMS

Overview

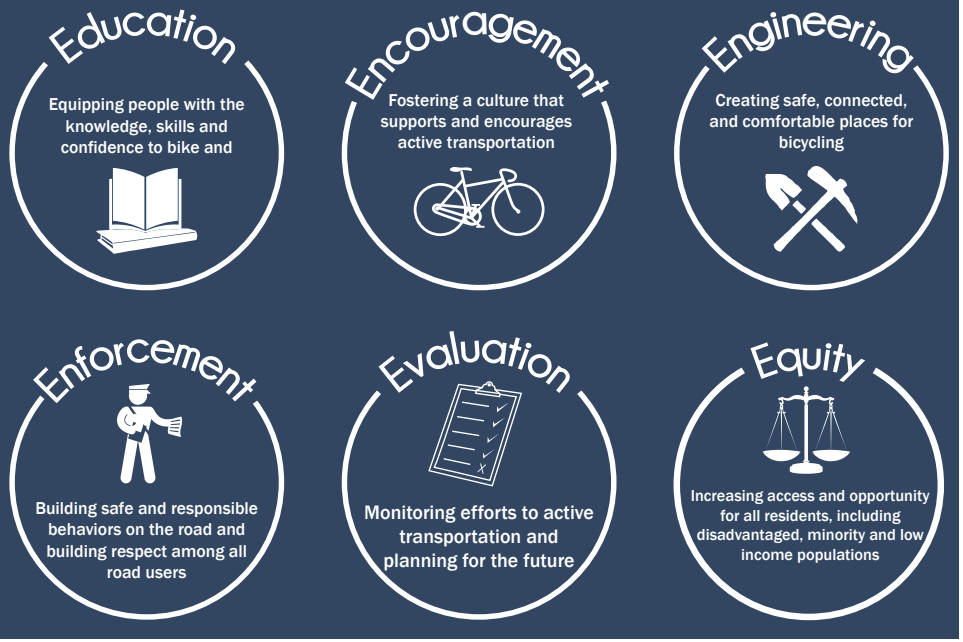
Transforming Davenport into a community in which people of all ages and abilities can comfortably and conveniently travel by bike will require more than just new bicycle infrastructure like bike lanes and trails. ***The City must employ a holistic, comprehensive approach that utilizes education, encouragement, and enforcement programs, as well as proactive policies and procedures, to create social, institutional, and physical changes as envisioned in this Plan.***

The program and policy recommendations included in this plan complement the proposed infrastructure improvements and create a balanced, well-rounded approach to increasing walking and bicycling in the community. Coordination with and assistance from local and regional partners will be essential to the successful delivery of these diverse programming opportunities. These recommended programs and policies follow the Six E's of a walkable and bicycle-friendly community: Engineering, Education, Encouragement, Enforcement, Evaluation (and Planning), and Equity.

Transforming Davenport so people of all ages and abilities can comfortably and conveniently travel by bike will require more than just new bicycle infrastructure.

THE SIX E'S: ESSENTIAL ELEMENTS OF A BICYCLE AND PEDESTRIAN FRIENDLY COMMUNITY

Pioneered by the National Safe Routes to School Coalition and the League of American Bicyclists, the Six E's provide a holistic framework through which people and agencies can plan for and create a bicycle and walk friendly community. The program and policy recommendations included in this chapter span the Six E's and offer Davenport a wide range of opportunities to impact transportation and recreation choices for village residents and visitors.



Media Campaign to Educate Motorists and Bicyclists

The City of Davenport should conduct a high-profile media campaign to normalize bicycling as a valid transportation option, encourage bicycling, discourage unsafe behaviors of road users, and promote the City's investment in improved and safe transportation infrastructure.

A broad public outreach and education campaign can help normalize bicycling as an accepted and welcomed way for people to travel in Davenport through compelling graphics and messages targeted to motorists, pedestrians and bicyclists. These campaigns utilize a variety of media to share their messages, from buses and bus stop shelters to websites, online ads, and social media outlets. Common topics for media campaigns include safety and awareness; sharing the road and travel etiquette; light and helmet use; and even humanization of bicyclists as fathers, mothers, sons, and daughters. Davenport should develop a public education and awareness campaign to further establish bicycling as a valued mode of travel for all community residents.

Resources

- We're All Drivers, Bike Cleveland (Cleveland, OH): http://www.bikecleveland.org/our-work/bike-safety-awareness/
- Drive with Care, Bike PGH (Pittsburgh, OH): http://www.bikepgh.org/care/
- Every Lane Is a Bike Lane, Los Angeles County Metropolitan Transportation Authority (Los Angeles, CA): http://thesource.metro.net/2013/04/11/every-lane-is-a-bike-lane/
- Every Day Is a Bike Day, Los Angeles County Metropolitan Transportation Authority (Los Angeles, CA): http://thesource.metro.net/2014/04/30/l-a-metro-launches-new-bike-ad-campaign-in-time-for-bike-week-l-a-may-12-18/

Demonstration Projects

Many bicycle facility types recommended in this Plan will be new to Davenport residents. Some bicyclists and motor vehicle drivers will be unfamiliar with how to operate their vehicles on, adjacent to, or across these new bikeways. By developing day-long or weekend-long pop-up demonstration projects, Davenport can introduce these new bikeways to the community in a low-cost and effective way.

Pop-up demonstrations and pilot projects are an effective strategy for building support for new bicycle facilities, gaining acceptance among skeptical residents, and generating community interest in the City's efforts to build a more bicycle friendly Davenport. The City should work with community partners and neighborhood groups to use pop-up demonstration and pilot projects to introduce new bikeways to the community and to build support for safe, comfortable, low-stress bicycle facilities as an accepted part of the street network.

Resources

- WALC Institute Pop-Up Demonstration Toolkit: http://www.walklive.org/popup-demonstration-tool-kit/
- Iowa City Bike Boulevard Demonstration Project: https://sustainability.uiowa.edu/news/student-group-tests-iowa-city-bike-boulevard/
- https://www.facebook.com/iowacitybikeboulevard

Drive With Care: Bike PGH's outreach campaign helps to humanize people that ride bicycles to encourage motor vehicle drivers to be more careful when driving (Source: http://www.bikepgh.org/our-work/education/drive-with-care/).

Demonstration Project: A pop-up protected bikeway in Minneapolis helps community residents learn about new bicycle infrastructure.

Maintenance Training: Bicycle maintenance courses can engage people of all ages and backgrounds, including kids.

Open Street Events: In Minneapolis, open street events draw thousands of people for bicycling, inline skating, jogging, yoga, and other activities.

Bicycle Safety and Maintenance Training Workshops

Classes and workshops provide education and skills training to bicyclists of varying confidence levels. Training classes and workshops offer many benefits: they enhance understanding, confidence, and independence related to bicycling for transportation and provide a supportive learning environment where participants can ask questions or express concerns. Furthermore, classes can be tailored to a variety of topics and demographics, such as:

General Classes:

- Basic bike maintenance
- How to change a tire
- Safe riding and traffic skills training
- Shopping by bike
- Commuting 101
- Bicycle legal clinic
- No car needed: how to get around without driving

Demographic Specific:

- Women's maintenance 101
- Youth safety and skills training
- Families on bike
- Foreign language classes

Location Specific:

- Employer-based workshops
- University-based classes

The City should partner with local bike shops and advocacy groups to host workshops and classes. The Quad Cities Bicycle Club, the Quad City Health Initiative, and Friends of Off Road Cycling may be potential partners. The presenter of the workshop should be confirmed a month or so in advance of the workshop to give adequate preparation time. Workshops should be held at lunch time, or in the evening or weekends to accommodate work and school schedules.

Resources

- League of American Bicyclists Smart Cycling Resources https://bikeleague.org/ridesmart

Open Street Events

Open Streets initiatives temporarily close streets to automobile traffic, so that people may use them for walking, bicycling, dancing, playing, and socializing. With more than 100 documented initiatives in North America, Open Streets are increasingly common in cities seeking innovative ways to achieve environmental, social, economic, and public health goals.

Open Streets events, or ciclovias, temporarily transform local roads into recreational corridors by prohibiting motor vehicle traffic and opening the street to people walking, bicycling, jogging, skateboarding, and rollerblading. These events have evolved over time to include dancing, yoga, food vendors, exercise classes, and other fun activities for children and adults of all ages. Typical Open Streets events have either linear or loop routes depending on the neighborhood destinations and other local characteristics. Open Streets events are often paired with other community events or festivals to capture a larger, more diverse audience.

The City of Davenport should explore opportunities to develop an Open Streets event in coordination with other community events or activities. Open Streets events present a good opportunity for the City to deliver information about new infrastructure and bicycle safety and maintenance, conduct pop-up demonstration projects, and publicize bicycle rides and programming.

Resources

- Open Streets Project: http://openstreetsproject.org/
- Open Streets Minneapolis: http://www.openstreetsmpls.org/
- CicLAvia (Los Angeles, CA): http://www.ciclavia.org/
- Ride The Drive (Madison, WI): http://www.cityofmadison.com/parks/ridethedrive/

Silver Sneakers Seniors Program

The City should partner with nonprofits, health departments and senior centers to develop an active lifestyles program for senior citizens utilizing the bicycle, pedestrian, and greenways network. Activities could include adult tricycle or bicycle rides, nature walks, walks to lunch, safety education, and engaging seniors in identifying barriers and infrastructure needs.

Resources

- Start a Walking Group Toolkit: http://createthegood.org/toolkit/start-walking-group
- City of Seattle Sound Steps Walking Program: http://www.seattle.gov/parks/find/sounds-steps-(50)
- Plymouth, MN Senior Program: http://www.plymouthmn.gov/departments/parks-recreation-/recreation-activities/seniors

Organized Bicycle Rides

Organized bicycle rides offer people a comfortable and fun way to explore Davenport's bicycle routes and trails in a group setting. For many, these types of events build participants' confidence and knowledge of the bicycle network, giving them the tools necessary to choose bicycling for short daily trips. Target audiences for these organized bicycle rides should reflect the diversity of the community and include children, seniors, low-income residents, people of color, and college-age young adults.

Smaller group rides with capped attendance can capitalize on cultural assets and amenities like historic monuments and buildings, city parks, business districts, and other unique locations. Larger group rides called cruiser rides that offer family-friendly environment have become mainstays in communities across the country. The Denver Cruiser Ride, the Slow Roll in Detroit, and Freewheel in Memphis attract hundreds to thousands of participants, move at a leisurely pace, and welcome people of all ages and abilities.

The City should coordinate with local advocacy organizations and other community partners to explore opportunities to diversify and strengthen organized bicycle ride offerings as an essential tool to encourage bicycling activity in Davenport.

Resources

- Trailnet (St Louis, MO) Community Rides: http://trailnet.org/tag/community-rides/
- Slow Roll (Detroit, MI): http://slowroll.bike/
- Denver Cruiser Ride: http://denvercruiserride.com/
- People for Bikes, How to Start a Cruiser Ride: http://pfb.peopleforbikes.org/take-a-brake/how-to-start-a-cruiser-ride/

Safe Routes to School

Safe Route to School Programs work towards making it safe, convenient, and fun for children to walk and bike to and from school. The key to a successful Safe Routes to School Program is teaching children about the broad range of transportation choices and instructing them in important lifelong safety skills. Nationwide, the Safe Routes to School (SRTS) program offers funding and event planning resources designed to encourage and assist K-8 students walking and bicycling to school.

The City of Davenport should partner with the Davenport Community School District and independent schools to deliver a Safe Routes to School program. The City's role could include assisting with funding, providing staff time to support program activities, coordinating city-wide walk and bike to school days, and more.

Resources

- National Center for Safe Routes to School http://www.saferoutesinfo.org/
- MnDOT Safe Routes to School: http://www.dot.state.mn.us/saferoutes/

Events for Seniors: Walking and bicycling clubs can help seniors maintain healthy and active lifestyles.

Organized Bike Rides: Group rides are a great way to unite the community through a shared value or asset, like parks, historic architecture, or other cultural amenities.

Safe Routes to School: Bike to school and walking school bus programs encourage children and their parents to incorporate physical activity into their daily routines.

Project Outreach: Seattle DOT uses flyers and door hangers, as well as traditional and social media, to raise awareness about roadway projects.

- League of American Bicyclists Bicycling Skills 123 Youth and Safe Routes to Schools courses: http://www.bikeleague.org/content/find-take-class
- SHAPE America (Society of Health and Physical Educators) Bicycle Safety Curriculum: http://www.shapeamerica.org/publications/resources/teachingtools/qualitype/bicycle_curriculum.cfm
- Safe Routes to School Policy Guide http://www.saferoutespartnership.org/sites/default/ files/pdf/Local_Policy_Guide_2011.pdf
- School District Policy Workbook Tool http://www.changelabsolutions.org/safe-routes/welcome
- 10 Tips for SRTS Programs and Liability http://www.saferoutesinfo.org/sites/default/files/liabilitytipsheet.pdf

Bicycle and Driver Education around New Infrastructure

When roads change, some road users may not be sure what behavior is expected of them. This can lead to mistakes and stress. The City can help make this transition smoother by proactively educating the public about why roads are changing, and how to use them safely and successfully. Door hangers, mailers, and other literature can be used to communicate changes.
A high-profile media campaign can help to promote the City's investment in improved transportation infrastructure. These campaign(s) should speak both to bicyclists and drivers (and pedestrians, if appropriate) with specific messages about what action/behavior is expected. Outreach methods should target both drivers and bicyclists. For example, to reach bicyclists, one might distribute a hang tag distributed with all new bike sales, place temporary chalk stencils in bike paths/lanes, or host a "breakfast in the bike lane" outreach event.
To reach drivers, digital outreach on mobile apps Waze and Pandora, radio PSAs, and/or street banners may be more effective.

The main goals of the campaign will be to increase awareness of road design changes and improving behaviors and compliance around new infrastructure. Campaign elements should use a variety of media types and outlets to ensure coverage, reach, and repetition. All media should be available in both English and Spanish. The campaign should include the following elements:

- Website and/or newspaper advertisements
- Press release to local newspapers and media outlets
- Social media posts by the City, other agencies, and partners
- Outreach to neighborhoods, individuals, and businesses near the infrastructure improvement site
- Educational information posted online with project updates
- Educational materials for partners to distribute and to use at local events
- Posters and banners along the affected corridor
- Variable reader boards and marquees along the corridor

One resource to communicate changes to the transportation system and educate road users to travel safely and responsibly is the City of Davenport's **A Driver's Guide to Active Transportation**, which is included in the design guidelines in this plan. The document clearly explains different types of on-street bikeways, signs, and markings and provides general rules of conduct to help keep all road users safe.

Resources

- Seattle Protected Bike Lanes Project Information: https://www.seattle.gov/transportation/projectsandprograms/programs/bikeprogram/protected-bike-lanes
- Chicago Complete Streets Active Projects: http://chicagocompletestreets.org/projects/active-projects/

Specialized Bicycle-Focused Training for Law Enforcement Officers

Law enforcement officers receive considerable training annually to effectively enforce local and state laws, but little of that training focuses specifically on bicycle laws and safety. To address this gap in education, the Davenport Police Department should invest in training opportunities targeting bicycle (and pedestrian) laws, law enforcement, travel behavior, and education tactics in order to better support active transportation. Funding support from local agencies, state departments of transportation, state highway patrols, and non-profit advocacy organizations have helped to bring training and resources to law enforcement agencies nationwide.

Resources

- Bike Cleveland Enforcement Education (Cleveland, OH): http://www.bikecleveland.org/enforcement/
- Continuum of Training. We Bike, etc: http://www.webike.org/services/enforcement/continuum-of-training

Safety-Focused Enforcement

Law enforcement can help support safer streets for all users by actively targeting dangerous motorist behaviors at high-crash locations and in areas with high volumes of bicycle and pedestrian activity, like schools, parks, and Downtown Davenport. Law enforcement officers should focus on dangerous behaviors such as distracted driving, motorist right-hook turns, motorists not yielding to pedestrians, and speeding. The Police Department should work with the City to promote bicycling as a safe activity for everyone. Some programs have a tiered system of enforcement. In Tucson, AZ, for example, when conducting bike light enforcement, the police officers prefer to start with education, warnings, and free lights, followed by citations if the issue persists.

Resources

- City of Chicago Targeted Enforcement (Chicago, IL): http://chicagocompletestreets.org/safety/targetedenforcement/

Bike Light Campaign

Bicycling at night without proper front and rear bike lights is dangerous, yet many people bicycling in Davenport lack the proper lighting to stay safe and visible at night. In order to increase bicycling safety and overcome cost barriers that prohibit many individuals from purchasing bike lights, the City of Davenport should coordinate with community partners to create a bike light giveaway campaign. Community organizations with a public health focus may be effective partners and see a need to sponsor such a program. Similar programs across the country combine catchy names like “Get Lit” or “Light Up” to garner public and media attention. The City should consider scheduling the program to coincide with back to school events for college students or the end of daylight savings.

Resources

- How to Do a Successful Bike Light Giveaway, League of American Bicyclists: http://www.bikeleague.org/content/how-do-successful-bike-light-giveaway
- Get Lit, Community Cycling Center (Portland, OR): http://www.communitycyclingcenter.org/get-lit/
- Pop-Up Bike Light Giveaway, BikePGH (Pittsburgh, PA): http://www.bikepgh.org/2013/09/30/pop-up-bike-light-giveaway/

Bike Rack Program

The City of Davenport should partner with businesses and neighborhood organizations to create a program to support bicycle rack installation at destinations throughout the city. City bike rack programs encourage businesses and organizations to apply for bike racks to be installed in the public right-of-way. Cities review applications for feasibility and install racks either free of charge or at a reduced cost. Some cities work with neighborhoods and business associations to develop custom bike racks that contribute to placemaking along strategic corridors.

Enforcement: Police presence and focused enforcement around schools, parks, and other areas with high levels of pedestrian activity can support safe driving behavior.

Bike Light Campaigns: Campaigns that provide free bike lights to cyclists can encourage compliance with state statutes and can be targeted to reach certain community groups.

Earn-A-Bike for Kids: Participants learn the basics of bicycle maintenance at one of the Bicycle Works earn-a-bike programs in St. Louis, Missouri. (Source: Bicycle Works)

Earn-A-Bike for Adults: The City of Albuquerque's Esperanza Bicycle Safety Education Center provides new bicycles to program participants.(Source: Esparanza Bicycle Safety Center, City of Albuquerque)

Resources

- Saint Paul, MN Neighborhood Bike Rack Program https://www.stpaul.gov/departments/public-works/bicycles/neighborhood-bike-rack-program
- Richfield, MN Bike Rack Cost Share Program http://www.richfieldmn.gov/departments/community-development/bike-rack-cost-share-program
- Association of Pedestrian and Bicycle Professionals Essentials of Bike Parking Guide www.apbp.org/resource/resmgr/Bicycle_Parking/EssentialsofBikeParking_FINA.pdf

Earn-A-Bike and Create-A-Commuter Programs

Many children and adults in the City of Davenport lack access to quality bicycles and bicycle maintenance training and tools. In order to address this lack of access, the City of Davenport should explore the feasibility of developing "earn-a-bike" and "create-a-commuter" programs designed to increase access to bicycles and bicycle training for children and adults with limited means.

Earn-a-bike programs focus on teaching elementary and middle school children basic bike maintenance and bicycling skills as well as route selection and mapping. Students who complete the program receive a refurbished bike along with a helmet, bike lock, and bike lights. Earn-a-bike programs have been implemented successfully across the country.

Similar in concept to the Earn-A-Bike program, Create-A-Commuter programs provide low-income adults with limited access to transportation choices a functioning bicycle, as well as bicycle maintenance and skills training. The program was first developed in Portland Oregon by the Community Cycling Center using federal Job Access and Reserve Commute (JARC) funding. Bicycles are outfitted with fenders, cargo racks, lights, and other equipment essential to safe bicycle commuting.

Resources

- Earn-A-Bike Program, St Louis Bicycle Works (St Louis, MO): http://www.bworks.org/bikeworks/earn-a-bike/
- Create-A-Commuter Program, Community Cycling Center (Portland, OR):
  - http://web1.ctaa.org/webmodules/webarticles/articlefiles/Portland_TriMet.pdf
  - http://www.communitycyclingcenter.org/?s=create+a+commuter
- City of Albuquerque, New Mexico Esparanza Bicycle Safety Education Center:
  - https://www.cabq.gov/parksandrecreation/recreation/bike/esperanza-bicycle-safety-education-center
  - https://www.riometro.org/rio-metro-news/473-new-transportation-option-for-low-income-individuals

Bicycle Counts Program

Bicycle count programs are valuable mechanisms for tracking bicycle facility usage over time and evaluating the success of infrastructure projects for their ability to increase ridership. The City of Davenport should develop an annual bicycle count program to document bicycle activity throughout the City.

The same locations should be counted in the same manner annually to help assess the growth of bicycle ridership and pedestrian usage of facilities and provide a dataset to accompany grant applications. The City should also consider additional counts along corridors slated for future bikeway development to evaluate before and after ridership. The installation of several permanent counters can also be used to calibrate annual extrapolations at other count locations to increase data reliability. The National Bicycle and Pedestrian Documentation Project has developed recommended methodology, survey and count forms, and reporting forms for local agency count programs.

Resources

- National Bicycle & Pedestrian Documentation Project: http://bikepeddocumentation.org/
- Innovations in Bicycle and Pedestrian Counts: A Review of Emerging Technologies:
- http://altaplanning.com/resources/innovative-counting-technologies/
- The National Cooperative Highway Research Program (NCHRP) Guidebook on Pedestrian and Bicycle Volume Data Collection: http://www.trb.org/Publications/Blurbs/171973.aspx
- Oregon Metro, Portland, OR Count Program: http://www.oregonmetro.gov/how-metro-works/volunteer-opportunities/trail-counts

Crash Monitoring and Evaluation

Crash reports from collisions involving bicyclists are invaluable resources for learning about street-user behavior, as well as roadway conditions and characteristics that may lead to collisions. Regular monitoring and evaluation of crash locations can help identify high-risk areas and develop solutions to minimize crash risk. The City of Davenport should conduct regular analysis of reported bicycle crashes, including a review of individual crash report narratives, every two years. The City should also provide a chance for cyclists to report close calls and other concerns that can help identify problems before a crash occurs.

Resources

- Denver Bicycle Crash Analysis: Understanding and Reducing Bicycle & Motor Vehicle Crashes (Denver, CO):
- https://www.denvergov.org/content/dam/denvergov/Portals/705/documents/denver-bicycle-motor-vehicle-crash-analysis_2016.pdf
- University of North Carolina Highway Safety Research Center Pedestrian and Bicycle Crash Analysis Tool (PBCAT): http://www.pedbikeinfo.org/pbcat_us/
- Cambridge Bicycle Crash Fact Sheet (Cambridge, MA): https://www.cambridgema.gov/~/media/Files/CDD/Transportation/Bike/Bicycle-Safety-Facts_FINAL_20140609.pdf

Bike Share System Development

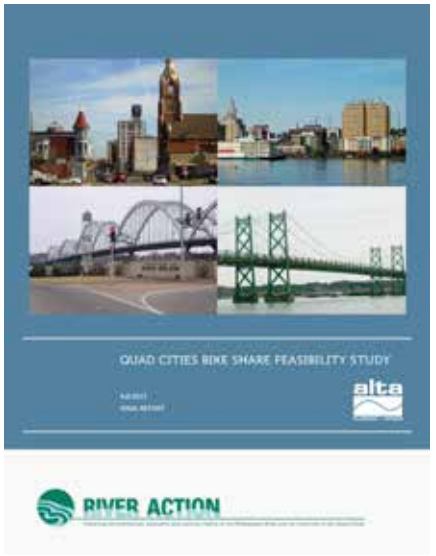
Bike share systems make bicycles available to the public for low-cost, short-term use. These systems are quickly becoming a mainstream form of travel in cities across the U.S. A bike share system typically consists of a fleet of user-friendly and durable bikes placed at conveniently-located stations. Most systems employ a pricing schedule that encourages short, frequent trips and discourages the use of bikes for lengthy trips. The goal is getting to nearby destinations quickly and easily.

The Quad Cities Bike Share Feasibility Study investigated the potential for bike share within the Quad Cities region. The study included a robust period of community outreach that engaged over 900 participants. The study's analysis resulted in a roadmap to future implementation of a bike share system. Like most bike share systems, A phased approach to bike share system development is recommended, beginning with key activity centers like Downtown Davenport, Downtown Rock Island, and Moline Centre. Subsequent expansion will link these activity centers and increase bike share system coverage to Bettendorf and other areas surrounding the initial phase of system development.

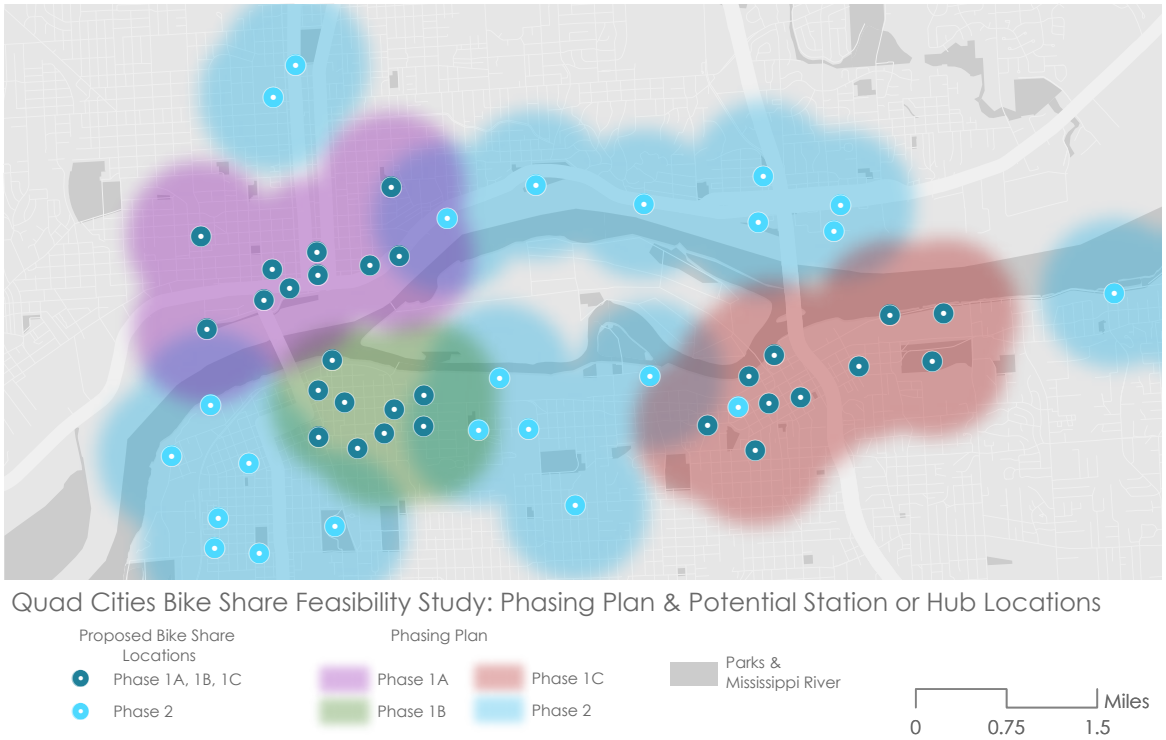
Key characteristics of a future bike share system in the Quad Cities include:

- Coverage area: Approximately four square miles around downtown Davenport, Rock Island, and Moline initially; Future expansion to Bettendorf and East Moline
- The first phase consists of 31 stations with 270 bikes, with potential to expand to a total of 55 stations and almost 500 bikes within five years
- Recommended ownership: non-profit organization
- Recommended operations: non-profit or private operator
- Estimated cost to launch the system: approximately $2.2 million

Bicycle Count Programs: Bicycle, pedestrian, and trail user counts can provide valuable information for investments in bicycle facilities.



Bike Share Feasibility Study: The Quad Cities Bike Share Feasibility was completed in Fall 2015.



Bike Share Phasing & Station Location: The purple shaded area covering Downtown Davenport represents Phase 1A of the planned bike share system. (Source: Quad Cities Bike Share Feasibility Study, 2015).

Dockless Bike Share: Dockless bike share systems do not require traditional docking stations. Instead, regular bicycle parking racks can support dockless bike share bikes.

- Estimated operations cost: approximately $750,000 annually for initial phase
- Estimated revenue from user fees: approximately $120,000 annually for initial phase
- Fundraising goal through public and private sources: approximately $2.8 million to begin system

Since the Bike Share Feasibility Study's completion in Fall 2015, there has been little progress on implementing the bike share system as recommended. Officials and community partners have explored potential service providers, including Zagster, but have not pursued anything further.

In recent years, dockless bike share systems have begun to emerge as a low-cost, low-investment alternative to station-based systems like that proposed for the Quad Cities. These dockless systems use smart bikes and do not require docks. Instead, "stations" are created through the use of very small geofences. Geofencing uses GPS technology to create a virtual geographic boundary for each station, enabling software to register when a bike enters or leaves a station area. The stations can utilize existing bike parking (such as U racks and bike corrals), but it is not required.

Most dockless bike share systems implemented in the United States are privately owned and operated and require no financial investment from local agencies. However, it is important that local agencies adopt policies to regulate the operation of dockless bike share systems within their jurisdiction. The City of Davenport and its Quad Cities partners should explore options for dockless bike share and draft legislation to regulate dockless bike share operations, should it be a viable alternative.

OPERATIONAL POLICIES AND MECHANISMS

The purpose of this section of the Plan is to provide recommendations to improve the City's operational policies and practices as they relate to the planning, design, implementation, and maintenance of bicycle facilities. This includes:

- **Establishing a bicycle and pedestrian coordinator position**
- **Project-specific outreach and education**
- **Transit coordination practices**
- **Year-round bicycle facility maintenance**

Bicycle and Pedestrian Coordinator

To enhance interdepartmental coordination, support interagency coordination, and streamline communications with community residents, stakeholders, and media, the City of Davenport should establish a Bicycle and Pedestrian Coordinator position responsible for overseeing the city's diverse range of bicycling activities. This staff person's job responsibilities may include:

- Monitoring facility planning, design, and construction of bicycle and bicycle-related projects
- Coordinating the implementation of recommended
- Projects and programs in this Plan with city staff and external agencies
- Provide regular updates to the City Council related to bicycle initiatives and projects
- Leading annual evaluation programs like bicycle counts, annual reporting, and crash evaluation
- Identifying new projects and programs to improve the bicycling environment
- Pursue funding sources for project and program development
- Research and oversee policy development
- Represent the City of Davenport for matters related to bicycle infrastructure projects and supporting programs

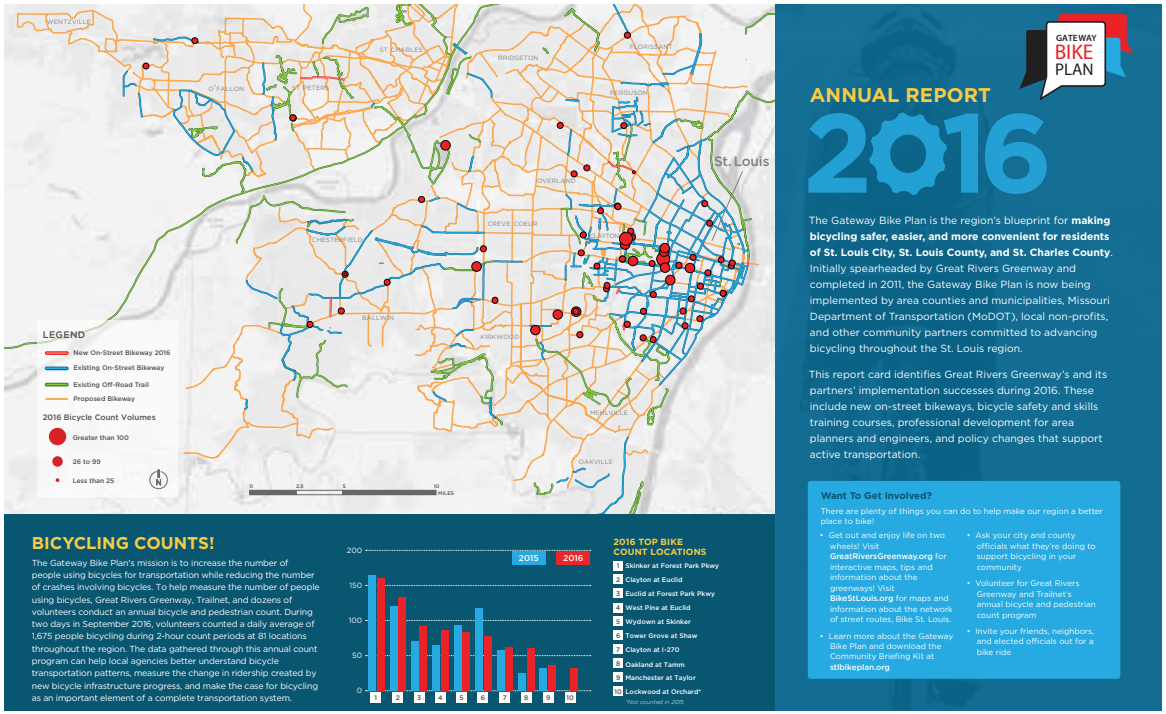
It may be beneficial to partner with the City of Bettendorf to share a single full time staff person. This could increase inter-agency cooperation on bicycle and pedestrian-related projects and could support regional bicycle and pedestrian facility development.

Project-Specific Outreach and Education

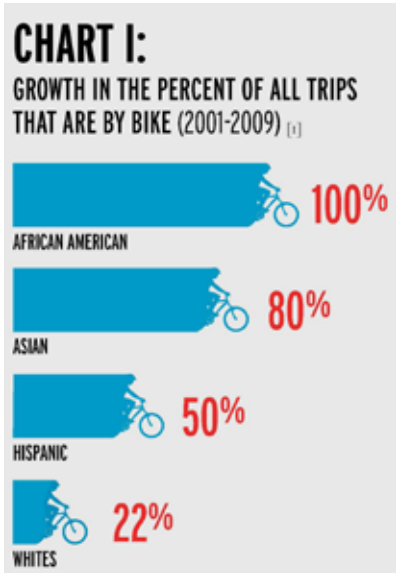
While the active transportation planning process and an active transportation plan provide for an overarching and comprehensive opportunity to engage stakeholders in the development of infrastructure recommendations, it is important to engage early and often during the design and implementation stages of a project, as well. New or novel facilities will attract interest and attention, and the following methods provide support for creating comprehensive outreach and engagement methods for use by the City.

RECURRING CITY COMMUNICATIONS

To keep bicycle and pedestrian projects current and to help maintain support for implementation of the plan, it is recommended that the City release regular information regarding projects that are under development, make updates to its website, and provide annual and seasonal information about bicycling and walking.



Annual Reporting: In St. Louis, Missouri, Great Rivers Greenway, the regional parks and recreation tax district, produces an annual report card to track implementation of the regional Gateway Bike Plan.



Equity: Minority populations are driving the growth in bicycle ridership.

This may include coordination with National Bike Month or National Bike to Work Week to help provide City website and newsletter content and direct residents and interested persons to external websites for more information. Hosting events of this nature also enables the City to showcase projects and provide for recurring seasonal or annual discussions. Lastly, an annual bicycling and walking progress report is a helpful way to provide a regular update on progress toward network implementation and identify future projects.

EARLY COORDINATION WITH PROJECT-SPECIFIC RESIDENTS AND BUSINESS OWNERS

The timing of engagement plays an important role in the success of a project, and it is important to conduct engagement activities at key stages of a project. This includes:

- **Prior project scoping.** Before a project is scheduled for inclusion in a future year budget, the City should engage business owners and residents along a project corridor, and use this opportunity to revisit the plan, its recommendation, and discuss the identified needs and benefits of the project.
- **During design.** As the project concept and designs are prepared, the City should make the plans available for review on the City website, at one or more public venues (e.g. City Hall), and where feasible, at venues or events near the project location.
- **Construction and completion.** As construction is underway, the City should provide status updates and photographs showing the project's progress. When the project nears completion, the City should observe the facility in operation, and coordinate with City departments such as Police, Fire to develop and release materials showing how the facility is intended to operate and a reminder on safe operating behaviors. This is less important when facility improvements are common or frequent in the case of curb ramp replacement or intersection signal improvements, but more common when a new bicycle facility is installed for the first time or is implemented as part of a roadway reconfiguration (road diet) or traffic pattern change.

EQUITY FOCUS

When implementing projects, it is important to clearly state objectives of improving safety, accessibility, and expanded transportation choice for residents and stakeholders within the area being served by the project. When phasing projects for implementation, it is important to identify these objectives and engaging all stakeholders, including residents who possess one or more equity indicators: residents living in areas with low vehicle ownership or low household income, neighborhoods with concentrations of residents under 18 or over 65 years of age, neighborhoods with concentrations residents for whom English is not the primary spoken language. Specific attention should be paid to how and when to engage these groups, and to

identify local community partners who can help share, contextualize, and relate project information. In The New Majority; Pedaling Towards Equity, growth in percent of trips may by bicycle for various American populations indicates that growth by people of color is growing at a rate faster than that of white residents.

BICYCLE ADVISORY COMMITTEE COORDINATION

The existence of the Bicycle Advisory Committee provides the City with a valued resource to conduct research and explore public-private partnership opportunities and to inquire about extra-jurisdictional initiatives. The City may consider requesting assistance from the Advisory committee to assist in the assembly and/or revision of Bicycle Friendly Communities application, helping the City to refine implementation priorities based on discussions and coordination with residents, and assist in sharing information regarding City progress on bicycle and pedestrian projects.

Transit Coordination Practices

NETWORK PLANNING

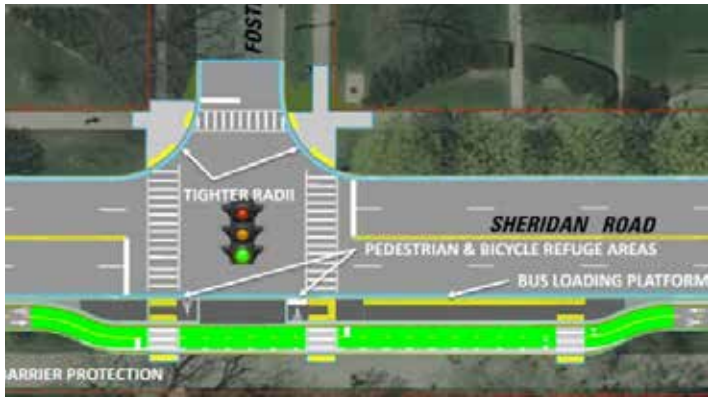
When planning a network of bicycle facilities, it is important to consider the potential conflicts that arise when mixing bicycle and transit facilities (or routes) on the same roadway or at intersections. Typically, bus transit runs on the right side of the roadway; the same location where bicycle facilities are located. Despite concerns over potential conflicts related to these different roadway users, it is possible for these modes to interact on the same roadway. However, despite a wealth of design guidance to mitigate potential conflicts, advance coordination is key. It is important for the City to review the bicycle infrastructure network plan with Davenport Citibus, and conversely, the transit route operator is encouraged to work with the City on route planning or service changes that may affect one or more of the following network considerations.

ON-STREET FACILITY CONSIDERATIONS

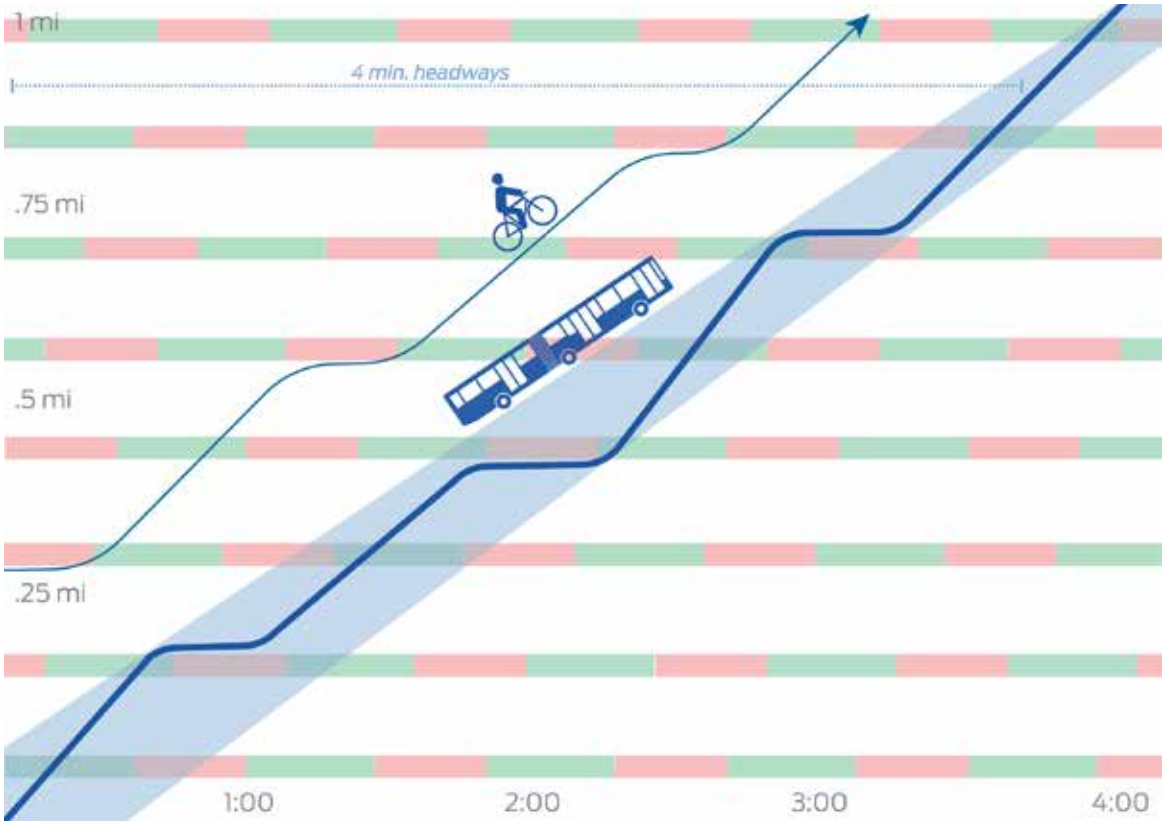
Design guidance for on-street bicycle facilities at bus stops is contained within NACTO and FHWA design guidance, which helps to address bus stop-specific visibility concerns and conflict mitigation through the use of taper lengths, pavement marking guidance, and the use of signs and traffic signals. This type of guidance is consistent with this plan's recommendations for shared lanes, bicycle boulevards, advisory bike lanes, paved shoulders, and conventional bike lanes.

SEPARATED BIKE LANE CONSIDERATIONS

Design guidance for separated bike lanes, whether one-way or two-way, highlight the need to isolate and mitigate conflicts at intersections and bus stops, where it is important to provide adequate visibility for all users traveling through these locations. This typically involves the use of bus boarding islands to separate boarding and alighting activity from bicycle movements. Separate signals or signal phases may also be used to separate these different users. These are typical considerations for this plan's recommendations for protected bike lanes. In the image below, the installation of a bus boarding island helps to separate users of the bike lane from the lane in which the bus is operating (regardless of whether the lane is shared or exclusive to buses).



Separated Bike Lane/Transit Stop Integration: Routing separated bike lanes behind transit boarding platforms reduces conflicts between bicyclists and transit riders. (Source: City of Evanston, Illinois)



Bicycle/Transit Suitability: On transit streets where buses and bikes operate in a shared lane at low speeds, conflicts are limited due to their similar average travel speeds. Low-speed signal progressions accommodate bicycle-friendly speeds. The X-axis shows time in minutes; Y-axis shows distance. Red and green bars indicate the phases of traffic signals that meter the flow of bicyclists and buses. (Note how both users progress through intersections during the green phases for each signal.) (Source: NACTO Transit Street Design Guide.)

SHARED BUS-BIKE LANE CONSIDERATIONS

The NACTO Transit Street Design Guide provides additional guidance for speed and volume thresholds for shared bus-and-bike lanes. Currently, the recommended network does not include bus-and-bike lanes that prohibit other motorized vehicles, but generally this guidance is helpful for all transit routes with existing or planned on-street bicycle facilities. Per NACTO, shared bus/bike facilities are best suited:

- On two-way roadways (one-way networks and contraflow lanes can work, but it is more desirable to place bikes on the left side of the roadway in these conditions)
- With on-street parking that is not restricted during peak periods
- Bus operating speeds are 20 miles per hour or less
- Bus headways are 4 minutes or greater

Year-Round Bicycle Facility Maintenance

To support bicycling as a year-round activity, it is important to consider practices maintenance practices to keep bicycle facilities clear of debris through regular sweeping activities as well as plowing and ice prevention/mitigation to keep bicycle facilities clear of snow and ice. Best practices were assembled from several North American cities that experience regular snowfall events during winter months (e.g. Chicago, Cambridge, Boston, Ottawa, Minneapolis) as well as guidance contained within the Federal Highway Administration (FHWA) Separated Bike Lane Planning and Design Guide and the National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide.

Generally, guidance for year-round maintenance can be grouped into three main categories: 1) how the network is planned, 2) how the facility is designed and installed, and 3) considerations that affect the size and operations of maintenance vehicles.

NETWORK PLANNING CONSIDERATIONS

As with planning bicycle networks to coordinate with transit operators, the network also should be planned with an understanding of how it will be swept during the year and cleared of snow and ice in winter months. To maximize efficiency, the City should build a network of similar facilities that connect to one another. This, when combined with clear zones and adequate snow storage in shoulders and parkways, can help City crews clear bicycle facilities with the same equipment across the

entire network. Shared lanes, paved shoulders intended for bicycling, advisory bike lanes, and conventional bike lanes should be swept with the same frequency as the road on which they are located, and the City of Davenport Public Works Request for Service should allow for requests to clear snow, debris, illegally parked vehicles, or other obstructions in these facilities.

DESIGN AND CONSTRUCTION CONSIDERATIONS

When designing and constructing bicycle and pedestrian facilities for year-round use, best practice guidelines emphasize the need for adequate shoulder and parkway width. This provides needed separation from faster moving traffic or obstructions year-round, and in winter months provides for snow storage.

On new roadways or in roadway reconstruction projects that include bike lanes, provide enough right of way for preferably a 6' bike lane and a 6' storage space on the side of the road or in the buffer space between the road and the sidewalk. This will allow typical truck-mounted snow plows to plow snow into the designated storage space rather than the bike lane. The 6' width of the bike lane will also allow for some narrowing of the bike lane due to snow while still maintaining its functionality.

Where it is possible to provide one, such as in some "road diet" projects, a wide protected or unprotected bike lane buffer can provide ample storage space for snow. A minimum 5' buffer is preferable to accommodate moderate snowfall with minimal encroachment on the bike lane.

A minimum clear zone is often included in best practices in design because it allows adequate width for plowing a facility for its full length, or to maneuver into corners. Snow plows can be relatively standard when part of the City fleet, so it is helpful to adopt a design guideline that is consistent with the minimum needed clear zone. For example, the City of Chicago Department of Transportation refers to the NACTO Urban Street Design Guide for general design guidance, and has adopted a local standard of two clear width requirements for bicycle facilities: a 6' clear zone in the central business district where hand sweeping or the use of smaller plows to clear debris or snow and a 7.5' clear zone outside of the central business district to plow with more traditional plows maintained as part of the City fleet.

Pavement marking materials and the method of installation can help to assist in supporting year-round bicycling. Updating pavement marking specifications for longer-lasting materials, such as switching from latex paint to thermoplastic, or by specifying recessed pavement markings to minimize wear degradation caused by snow plows can help to extend the life of a pavement marking and also help maintain its visibility. In 2017, the Illinois Department of Transportation updated its special provisions for grooving for recessed pavement markings.

OPERATIONAL CONSIDERATIONS

Street sweeping and snow clearance operating practices also can be adjusted to support bicycling. Whenever a roadway is swept, the same sweeping schedule should be kept for bicycle facilities and paved shoulders intended to be used by bicyclists.

For winter maintenance, the City may consider the use of a combination of clearance practices, de-icing, and parking restrictions to help keep bicycle facilities clear. Where a bike lane is located between on-street parking and the vehicular lane, parking along the roadway can be restricted during snow events to allow this space to become snow storage space. While parking restrictions aren't feasible on all roadways with bicycle facilities, it could be utilized along priority bicycle routes in the winter.

Snow clearance priority also can help support year-round bicycling. By locating bicycle facilities on roadways that are prioritized for snow clearance

Addressing Bike Facility Obstructions: In 2017, the City of Chicago 311 service was expanded to allow residents to report illegal parking or other obstructions in bike lanes. (Source: Active Transportation Alliance.)

Winter Maintenance: Buffered bike lane in Salt Lake City, UT provides snow storage in winter months. Source: Travis Johnson.

Maintenance Considerations: Seven and a half foot clear zone in Chicago, IL. Source: Chicago Department of Transportation

for automobile traffic, the bicycle network can be operational as quickly as all other modes on the roadway. If a bicycle facility is not located along priority snow clearance route, the City should consider elevating that roadway or facility in the snow clearance schedule or locate it parallel to (and within close proximity of) another facility of equal comfort until such time as it can be cleared.

Lastly, anti-icing methods will vary when keeping bicycle facilities clear in winter months. When anti-icing occurs concurrently with plowing, no additional operational changes are needed provided the clear width is maintained to allow vehicles to enter the bicycle facility. When anti-icing is conducted prior to snowfall events, it is desirable to expand the width of salt spray on roadways with buffered or protected bicycle lanes, which may be sufficient without having to make a second pass along the corridor.

A proactive or anti-icing approach applies the de-icing material to the roadway approximately two hours before the snow event. Following snowfall events, the roadway is cleared and additional de-icing material is added as necessary. The advantages of a proactive, anti-icing approach are that less plowing is needed. North Dakota DOT reports that in the department's experience, one-third of the de-icing material is needed with proactive strategies compared to reactive ones .

More information on de-icing can be found through FHWA: http://www. fhwa.dot.gov/reports/mopeap/eapcov.htm The removal of roadway grit resulting from winter roadway de-icing and traction improvement applications is an especially important consideration for bike lanes. Salt and sand tend to accumulate in bike lanes due to motor vehicle traffic, water and wind. Accumulation of this debris can cause discomfort and pose a safety threat to bicyclists along the roadway if not addressed. As with sweeping and snow removal, the City should develop a maintenance plan to remove debris from the roadway, prioritizing primary bicycling routes at the end of the winter season.

Salt is a the most conventional de-icing material. As salt is crushed by vehicles and dissolves into melting snow and ice, it creates a brine that prevents ice from bonding to the roadway. However, salt is a highly corrosive material and salt-infused stormwater runoff can cause vehicular and environmental damage. Additionally, salt loses its effectiveness below 15 degrees Fahrenheit. Bicycles with exposed gears are especially susceptible to corrosion caused by roadway salt.

Pre-wetted may be used as an alternative to rock salt, which is sprayed on the roadway as a brine solution. Pre-wetting facilitates the dissolution of the salt, allowing for quicker reaction times than dry salt, less material than dry salt and improved application accuracy.

Maintenance Considerations: Six foot clear zone in Chicago, IL. Source: Chicago Department of Transportation

ORDINANCE REVIEW FOR IMPROVED BICYCLING ACCOMMODATION

The purpose of this section of the Plan is to review ordinances that affect or could benefit bicycle transportation, including zoning and land development regulations. Specific areas of focus include project design and site planning, defined access from public sidewalks to the primary entrance, trail and pathway access, and bicycle parking standards.

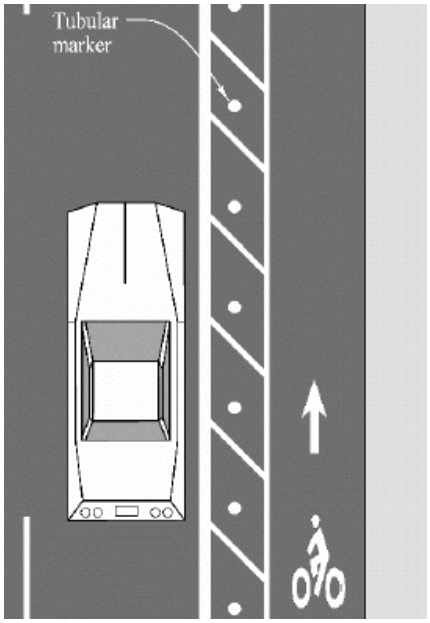
The City should consider making revisions in the following sections of the Municipal Code to clarify or further guide City actions, policies, and development practices to support improved access, consideration, and accommodation of bicycles and bicyclists. This includes revisions to definitions governing movement, behavior, and registration, as well as property development, subdivision, and site planning activities. Recommendations are organized by municipal code reference, with comments or recommendations listed in the column on the right.

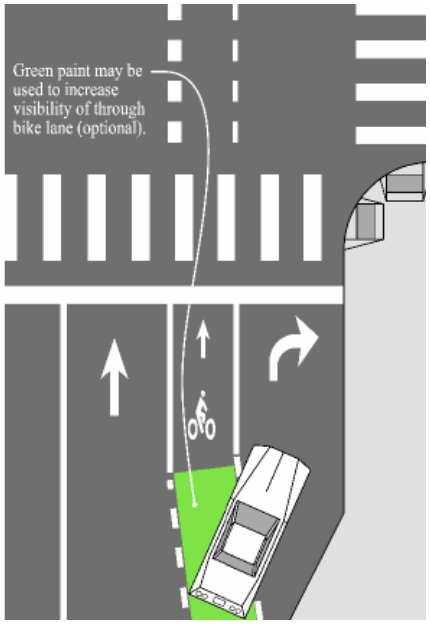
Table 3.1: City of Davenport Policy and Regulatory Review

TOPIC	EXISTING ORDINANCE OR POLICY	COMMENT OR RECOMMENDATION
Title 5 Business Licensing and Regulation	**5.19.050 F. General regulations for all mobile food units and pushcarts.** No mobile food unit or pushcart shall park or stand its pushcart or vehicle... (2) adjacent to a designated bicycle lane...	Consider amending to include, "designated bicycle lane, marked shared lane, or other designated bicycle facility type consistent with City of Davenport design guidelines."
Title 10 Vehicles and Traffic	**10.04.120 Roadway.** That portion of a street improved, designed, or ordinarily used for vehicular traffic. and **10.04.150 Street.** The entire width between property lines of every way or place of whatever nature when any part thereof is open to the use of the public, as a matter of right, for purposes of vehicular traffic.	Consider expanding definitions for purposes of vehicular traffic and bicycle traffic in accordance with Chapter 10.84 BICYCLES or Add "Vehicle" to Chapter 10.04 DEFINITIONS to include bicycles
Title 10 Vehicles and Traffic	**10.42.010 Driving on right side of roadway – exceptions.** Subsection C. A vehicle shall not be driven upon any roadway having four or more lanes for moving traffic and providing for two-way movement of traffic, to the left of the center line of the roadway, except when authorized by official traffic control devices designated certain lanes to the left side of the center of the roadway for use by traffic not otherwise permitted to use such lanes, or except as permitted under subsection A. paragraph 2.	While this generally accommodates the ability for a bicyclist to operate a bicycle on the left side of the roadway in a designated left-side bike lane or contraflow bike lane, consider adding subsection D. to specifically identify designated bicycle facilities that may be located on the left side of the roadway.
Title 10 Vehicles and Traffic	**10.84.050 Riding on sidewalks.** No person shall ride a bicycle upon the sidewalk or walkway in the commercial district within the city, unless signs authorized by the traffic engineer specifically designate a sidewalk or walkway for bicycle use.	Consider permitting "bicyclists under the age of 12" to use sidewalks in this district if an alternate facility cannot be provided or designated.

Table 3.1: City of Davenport Policy and Regulatory Review

TOPIC	EXISTING ORDINANCE OR POLICY	COMMENT OR RECOMMENDATION
Title 12 Streets Sidewalks and Public Places	**12.20.120 Restoration. Subsection A.** Unless governed contractually between the owner or operator and its customer, if an owner or operator of a facility disturbs a pavement, sidewalk, driveway or other surfacing, or landscaping, or other structure, either on private property or in public rights-of-way, the owner or operator shall, in a manner approved by the city engineer, replace and restore all pavement, sidewalk, driveway or other surfacing, or landscaping disturbed, in substantially the same condition and in a good, workmanlike, timely manner, in accordance with any standards for such work set by the city.	Include "designated bicycle facility" in this requirement to clarify intent of restoration of bicycle facility in addition to roadway surface.
Title 16 Subdivisions	**16.24.040 Streets.** The arrangement of street rights-of-way in new subdivisions shall make provisions for the extension of the existing system of street rights-of-way (or their proper protection where adjacent property is not subdivided) insofar as they may be necessary for public requirements… (Details in Subsections 1-2)	The City should consider adding a subsection that provides for the owner of a subdivision to provide a street network that incorporates the extension of the bicycle network consistent with the street rights-of-way OR The City should consider amending the Exception in subsection B to specifically addressed network facilities, modifications, and/or extensions of the bicycle network. This would elevate bicycle network planning to the same standard of care as roadway network planning.
Title 16 Subdivisions	**16.28.050 Sidewalks Subsection A.** All sidewalks shall be a minimum of four feet in width.	Revise to a minimum of five feet in width to be consistent with the Draft Public Rights of Way Access Guidelines and Americans with Disabilities Act Accessibility Guidelines.
Title 17 Zoning	**17.04.010.29-.31.** Definitions of "bicycle lane," "bicycle network," and "bicycle trail."	Consider amending definitions to be consistent with bicycle design guidelines designated by the City or by the City Traffic Engineer to include "and any other officially-designated bicycle facility in accordance with approved traffic control devices."
Title 17 Zoning	**17.44.010 Parking spaces – Designated.** In all districts there shall be provided at the time any building is erected or structurally altered (except as otherwise provided in this title) off-street parking spaces in accordance with the following requirements: (requirements detailed in subsections 1-28)	Bicycle parking should be incorporated into these requirements as a share of total parking at the designation of the City Traffic Engineer, Community Development Director, or Bicycle and Pedestrian Coordinator as desired in accordance with bicycle parking regulations. The City should encourage the designation of bicycle parking to be conveniently located within direct view of building entrances and located in sheltered locations where feasible.
Title 17 Zoning	**17.56.020 Basic information required on the site plan.** Subsection F paragraph 7. The limits and location of parking lots, driveways, parking bays, outside storage trash holding area, and loading area. The materials for paving should be identified. The direction of vehicular flow, and proposed traffic control signs and marking will be shown.	Include "internal circulation paths for pedestrian movement and location(s) of designated bicycle parking. Where applicable, connections to public rights-of-way including pedestrian sidewalks, bus and transit stops, shelters, pads, and designated bicycle facilities shall be identified."





SUDAS Manual: The 2018 updates include additional guidance on separated bikeways and bicycle facility intersection treatments.

STANDARDS AND SPECIFICATIONS REVIEW

The City of Davenport's standards and specifications play an important role in shaping the built environment as it relates to bicycle transportation. Like many cities across Iowa, Davenport has adopted the Iowa Department of Transportation's Statewide Urban Design and Specifications (SUDAS).

At the time of writing, the City had recently adopted the 2018 Statewide Urban Design and Specifications (SUDAS), which will go into effect for the 2018 construction season. The City intends to present the updated SUDAS manual to City Council for motion of adoption to replace the current design and specifications documents.

The 2018 SUDAS manual incorporates a number of changes pertaining to bicycle facilities, including additional design guidance for buffered bike lanes, separated bike lanes, and multiple intersection treatments. While the 2013 and 2018 SUDAS manuals both draw on the 2012 AASHTO Guide for the Development of Bicycle Facilities, 4th Ed., the 2018 SUDAS manual also incorporates design guidance from the NACTO Urban Bikeway Design Guide, particularly for the new material mentioned above.

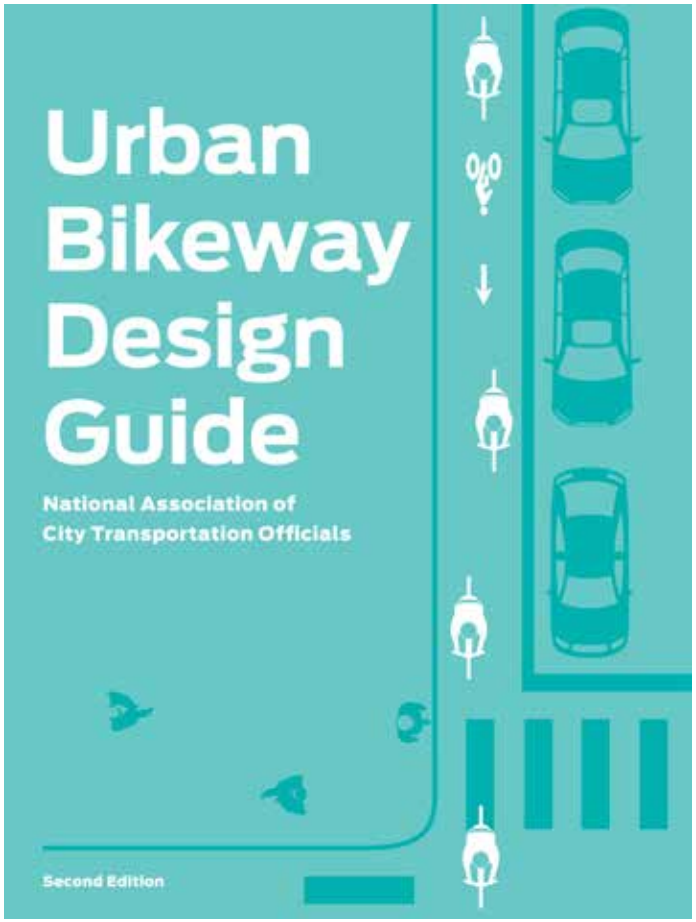
The guidance for bicycle transportation as presented in the 2018 SUDAS manual will provide a solid foundation on which to design future shared use paths and on-street bicycle facilities. Additional resources can provide the City of Davenport with supplemental design guidance, particularly for more nuanced facility elements and characteristics, such as facility transitions, intersections, street crossings, and transit integration.

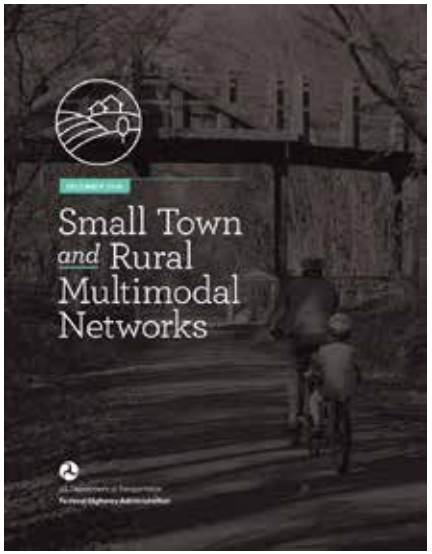
Rather than add to or revise the standards adopted from the SUDAS manual, the City of Davenport should employ a flexible approach to bicycle facility development that builds on the standards in SUDAS and utilizes the breadth of available design resources to address unique project characteristics, challenges and opportunities. These resources include the following:

- **Davenport Bicycle Master Plan Design Guidelines.** Included as an appendix to the plan document, the Design Guidelines supplement City of Davenport and Iowa DOT standards by providing additional guidance for bicycle facility selection, bicycle boulevards, separated bikeways, intersection treatments, and transit integration.
- **AASHTO Guide for the Development of Bicycle Facilities, 4th Edition (2012).** Commonly referred to as the AASHTO Bike Guide, this resource is the industry standard for bicycle facility planning and design and is the source for many state and local agencies' standards pertaining to bicycle facilities. The fifth edition of the bike guide is currently in the final stages of development and is expected to be released in 2018. The upcoming edition will incorporate many of the innovative design treatments that have proved successful across the country, like separated bikeways and separated intersections, reflecting the rapid evolution of bicycle facility development in the last two decades.
- **Designing Walkable Urban Thoroughfares: A Context Sensitive Approach (2010).** The ITE's Designing Walkable Urban Thoroughfares serves as a guidebook for planning and designing walkable, bikeable transportation networks and corridors. The document establishes design principles and guidance for a variety of contexts, focusing on flexible approaches that meet specific needs of each context. Design guidance covers all elements of a corridor, from adjacent land use and building envelopes to sidewalks, bicycle lanes, transit facilities, travelways, and intersections. This document has been endorsed by the Federal Highway Administration for its flexible, context-sensitive approach to roadway planning and design.
- **FHWA Separated Bike Lane Planning and Design Guide (2015).** The FHWA's Separated Bike Lane Planning and Design Guide compiles

best practices and design guidance from across the country to assist local agencies in planning for and designing separated bike lane networks and facilities.

- **FHWA Road Diet Information Guide (2014).** The FHWA's Road Diet Information Guide assists local agencies with determining if a road diet is an applicable design strategy for a particular corridor and designing the appropriate geometric and operational characteristics. The document also includes numerous case studies to highlight successful road diet projects.
- **FHWA Achieving Multimodal Networks: Applying Design Flexibility and Reducing Conflicts (2016).** Achieving Multimodal Networks was published in 2016 to serve as a resource for planners and designers to apply flexibility found in national design guidance to develop connected, multimodal transportation networks. The document focuses on specific design elements to which flexible approaches can be applied, such as intersection geometry, road diets, and traffic calming, and on countermeasures to common conflicts, like turning vehicles, bike lanes at intersections, and school access.
- **FHWA Small Town and Rural Multimodal Networks (2017).** The Small Town and Rural Multimodal Networks guide focuses specifically increasing bicycle and pedestrian safety and connectivity through planning and design guidance tailored to non-urban environments.
- **NACTO Urban Bikeway Design Guide, 2nd Edition (2014).** The Urban Bikeway Design Guide, now published in its second edition, became the industry standard as cities across the country started to explore new, innovative strategies for bikeway design, particularly bicycle boulevards, separated (protected) bike lanes, and cycle tracks. Based on AASHTO and MUTCD guidance, the Urban Bikeway Design Guide established the foundation and precedent for many cities to experiment with these newer facilities. The guide was endorsed by the FHWA and has led to the FHWA publishing incorporating many of the principles established in this guide into its own publications, and eventually publishing the Separated Bike Lane Planning and Design Guide in 2015.





Design Resources: These planning and design guides include best practices and examples of built projects from across the country.