

Verona Bike & Pedestrian Study

City of Verona
Dane County, Wisconsin

Prepared for:



City of Verona
111 Lincoln Street
Verona, WI 53593

Prepared by:



AECOM
1350 Deming Way, Suite 100
Middleton, WI 53562
Phone: (608) 836-9800

July 2016

AECOM Project I.D. 60439268





Table of Contents

Introduction & Project Description 1

Existing Facilities 1

Identifying Possible Improvements..... 1

Proposed Projects..... 1

- Project 1 – Bike Loops..... 2
- Project 2 – Downtown Intersection Improvements..... 2
- Project 3 – County M Intersection Improvements 2
- Project 4 – Bike Lanes..... 2
- Project 5 – Military Ridge State Trail Paving 2
- Project 6 – Ice Age Junction Path Extension 2
- Project 7 – Military Ridge Reserve Trail 3
- Project 8 – Locust Drive Sidewalk..... 3
- Project 9 – Reddan Park Trail 3
- Project 10 – County M Sidewalk 3
- Project 11 – Range Trail Intersection 4

Project Prioritization..... 4



Verona Bike & Pedestrian Study

List of Exhibits

- Exhibit 1 – Existing Paths/Routes
- Exhibit 2 – Bike/Ped Workshop Route & Itinerary
- Exhibit 3 – Existing Conditions Photographs
- Exhibit 4 – Possible Projects
- Exhibit 5 – Bike Loops
- Exhibit 6 – Downtown Intersection Improvements
- Exhibit 7 – County M Intersection Improvements
- Exhibit 8 – Bike Lanes
- Exhibit 9 – Military Ridge State Trail Paving
- Exhibit 10 – Ice Age Junction Path Extension
- Exhibit 11 – Ice Age Trail Paving
- Exhibit 12 – Locust Dr. Sidewalk
- Exhibit 13 – Reddan Park Trail
- Exhibit 14 – County M Sidewalk
- Exhibit 15 – Range Trail Intersection
- Exhibit 16 – Project Prioritization

List of Appendices

- Appendix A – Presentation and Research Findings, September 24, 2015 meeting



Verona Bike & Pedestrian Study

Introduction & Project Description

Bicycle and pedestrian facilities are an integral part of a complete and efficient transportation network. Bicycle and pedestrian accommodations enhance the quality of life, strengthen communities, increase safety, reduce congestion, offer recreational opportunities, and protect the environment. Developing and maintaining these facilities are a high priority for the City of Verona.

This project is a study of the existing and proposed bicycle and pedestrian facilities in the City of Verona. The purpose of the study is to identify existing bicycle and pedestrian facilities both on-street and off-street and to identify possible routes and improvements to connect neighborhoods, parks, schools and commercial areas. The objective of the study is to improve and identify new transportation facilities to accommodate bicyclists and pedestrians and encourage their use.

Existing Facilities

Existing paths and on-street routes have been built throughout the City. Some of these paths were developed after the adoption of the *Verona Long Range Transportation Plan* as well as the *2006 Park, Recreation and Open Space Plan*. Exhibit 1 shows the existing paths and routes in the City.

Identifying Possible Improvements

Identifying possible improvements involves upgrading/building the existing facilities, upgrading/building sidewalks, pavement markings and signage, and connecting the existing facilities with a citywide network.

Research on bicycle and pedestrian facilities was conducted which included desired path width, typical sections, pavement markings, and signage. A meeting was held on September 24th, 2015 with city officials to present research findings and also to provide possible projects pending a field review. Presentation details and research findings are shown in Appendix A.

The field review was conducted on October 15th, 2015 to determine constraints and possible cost incidences. Exhibit 2 shows the route taken and locations where information was collected. Information collected included the existing bicycle and pedestrian facilities conditions such as surface conditions, path width, marking and signage conditions and visibility. Other information collected include sidewalk availability and conditions, possible environmental constraints that could affect new paths, intersection configurations. Photographs of existing conditions are seen in Exhibit 3.

Proposed Projects

A total of 11 projects were developed in this study. Exhibit 4 shows these and other possible projects. Each project represents a different approach to provide a bicycle and pedestrian facility improvement. Project approaches include adding bike lanes, identifying bike routes, intersection improvements, paving existing paths, building new paths, building new sidewalks, and applying technologies such as the Rectangular Rapid Flash Beacon (RRFB) and the High-Intensity Activated crossWalk Beacon (HAWK).

The initial cost estimates were calculated based on Wisconsin Department of Transportation (WisDOT) Bid Tabs and experience with other cities. The estimates were adjusted according to past experience with similar projects in the City of Verona.



Verona Bike & Pedestrian Study

Project summary sheets were developed for each project including a map of the improvement, a description of the project, conceptual costs and benefits of the project.

- **Project 1 – Bike Loops**

This project identifies a total of 6 bike routes throughout the city connecting neighborhoods, parks, schools and businesses. The project involves installing signs to guide the bicyclist and to provide key information at decision points. The project would also improve the Hometown Junction which would serve as the hub where loops come together near the Military Ridge State Trail. Improvements at the Hometown Junction would include the installation of signs to identify loop names, direction, and key destinations along each loop as well as the installation of a citywide map identifying each loop. The total cost of this project (all 6 routes and Hometown Junction improvements) would be approximately \$74,400. Exhibit 5 shows the proposed bike routes.

- **Project 2 – Downtown Intersection Improvements**

This project involves the construction of curb bump-outs on Verona Avenue at the intersections of Marietta Street, Franklin Street, Westlawn Avenue, and Jefferson Street. The curb bump-outs would be built at each approach for both Marietta Street and Franklin Street intersection. The Jefferson Street intersection would only be for the EB approach, and for the Westlawn Avenue intersection for the WB approach. Various RRFB would be installed at each crosswalk on Verona Avenue. The total cost of this project (all 4 intersections) would be approximately \$349,700. Exhibit 6 shows the proposed improvements.

- **Project 3 – County M Intersection Improvements**

This project involves the improvement of the intersections of County M with Locust Drive, Whalen Road, and Prairie Heights Drive. The improvements include the construction of a median island for each intersection, as well as extending the existing sidewalk and providing crosswalk. Each of the crosswalks would also have the installation of RRFB. The total cost of the project (all 3 intersections) would be approximately \$114,600. Exhibit 7 shows the proposed improvements.

- **Project 4 – Bike Lanes**

This project involves the pavement marking of Basswood Road, Edward Street, Tamarack Way, and Hemlock Drive to accommodate bike lanes and parking on both sides of the road. Basswood Road is a 48' wide road and would have approximately 4,000' of pavement marking; Edward Street is a 39' wide road and would have approximately 5,100' of pavement marking; Tamarack Way is a 48' wide road and would have approximately 1,950' of pavement marking; and Hemlock Drive is a 39' wide road and would have approximately 1,150' of pavement marking. The total cost of this project (all 4 roads) would be approximately \$116,300. Exhibit 8 shows the project location, proposed improvements, and proposed typical cross sections of each road.

- **Project 5 – Military Ridge State Trail Paving**

This project involves paving the segment of the Military Ridge State Trail between Old County PB and Nine Mound Road. The total segment length would be approximately 7,550' and would remain as a 10' wide. The total cost of the project would be approximately \$288,600. Exhibit 9 shows the project location and proposed improvements.

- **Project 6 – Ice Age Junction Path Extension**

This project has two options: paved option and crushed limestone option. The paved option involves the widening and paving of the existing Ice Age National Scenic Trail segment from the



Verona Bike & Pedestrian Study

Military Ridge Reserve Trail Junction (Project #7) down to Bruce Street. This path would provide a 14' wide multi-use paved path connecting the southern neighborhoods, schools, parks, and businesses to the rest of the City with approximately 2 miles of paved path with minimal traffic interaction. This project would be divided into 4 different phases. The total cost for this option would be approximately \$1,774,700.

The crushed limestone option involves constructing the path with crushed limestone instead of asphalt. This option also includes the on-street segment along Holiday Court and Lincoln Street as well as the construction of the boardwalks. The total cost for this option would be approximately \$1,405,890.

Exhibit 10 shows the proposed improvements for this project.

- **Project 7 – Military Ridge Reserve Trail**

This project involves the paving of the existing Ice Age National Scenic Trail between the Military Ridge State Trail Junction (near the Hometown USA Community Park) and Glacier Ridge Trail. This project would have a 14' wide multi-use paved path of approximately 530' long until the bridge over the Badger Mill Creek (junction with Project #6). After the bridge, it would be a 10' wide multi-use paved path of approximately 1580' long until Glacier Ridge Trail. The segment between the Military State Ridge Trail and the bridge would be widening to accommodate the 14' wide path. The total cost of the project would be approximately \$155,500. Exhibit 11 shows the location and proposed improvements of the project.

- **Project 8 – Locust Drive Sidewalk**

This project involves the construction of a sidewalk from County M to Bruce Street which would get better access from the southern neighborhoods and businesses to the downtown area. The sidewalk length would be approximately 1,080'. The total cost of the project would be approximately \$132,300. Exhibit 12 shows the location and proposed improvements of the project.

- **Project 9 – Reddan Park Trail**

This project involves the construction of a new path between the end of Ineichen Drive and the Ice Age National Scenic Trail junction. This segment would be approximately 2,700' with a 14' wide multi-use paved path. This project would also extend the existing path of the Reddan Soccer Park to the junction of the proposed path. This path extension would be approximately 200' of a 14' wide multi-use paved path. The total cost of the project would be approximately \$228,100. Exhibit 13 shows the location and proposed improvements of the project.

- **Project 10 – County M Sidewalk**

This project involves the construction of a sidewalk/path from the US 151 bridge up to Carnes driveway. The section between the bridge and Prairie Heights Drive would be approximately 800'; the section between Prairie Heights Drive and Whalen Road would be approximately 680'; the section between Whalen Road and Locust Drive would have sidewalk length of approximately 1,300' and a 14' multi-use paved path of approximately 550'; section 5 would have a 14' wide multi-use paved path of approximately 600'; and the Carnes island would have a sidewalk length of approximately 260'. The construction of the 14' path would be to accommodate the proposed Project #6 (Ice Age Junction Path Extension). There would be bike lanes on section 3 between Whalen Road and Locust Drive to accommodate the high volume of bicyclists observed in this segment for the Iron Man Loop. This project would connect southern neighborhoods to the



Verona Bike & Pedestrian Study

downtown area. The total cost of this project would be approximately \$633,500. Exhibit 14 shows the location and proposed improvements for this project.

- **Project 11 – Range Trail Intersection**

This project involves the improvement of the County M & Range Trail intersection. Improvements would include the construction of a median island, a sidewalk, a crosswalk, and the installation of a HAWK beacon for a safer pedestrian/bicyclist crossing. The total cost of the project would be approximately \$161,100. Exhibit 15 shows the location and proposed improvements of the project.

Project Prioritization

A meeting was held on January 28th, 2016 to discuss the project prioritization and which projects (or parts of projects) would be constructed first based on available funding. Exhibit 16 shows the proposed project prioritization and budgeting per fiscal year.

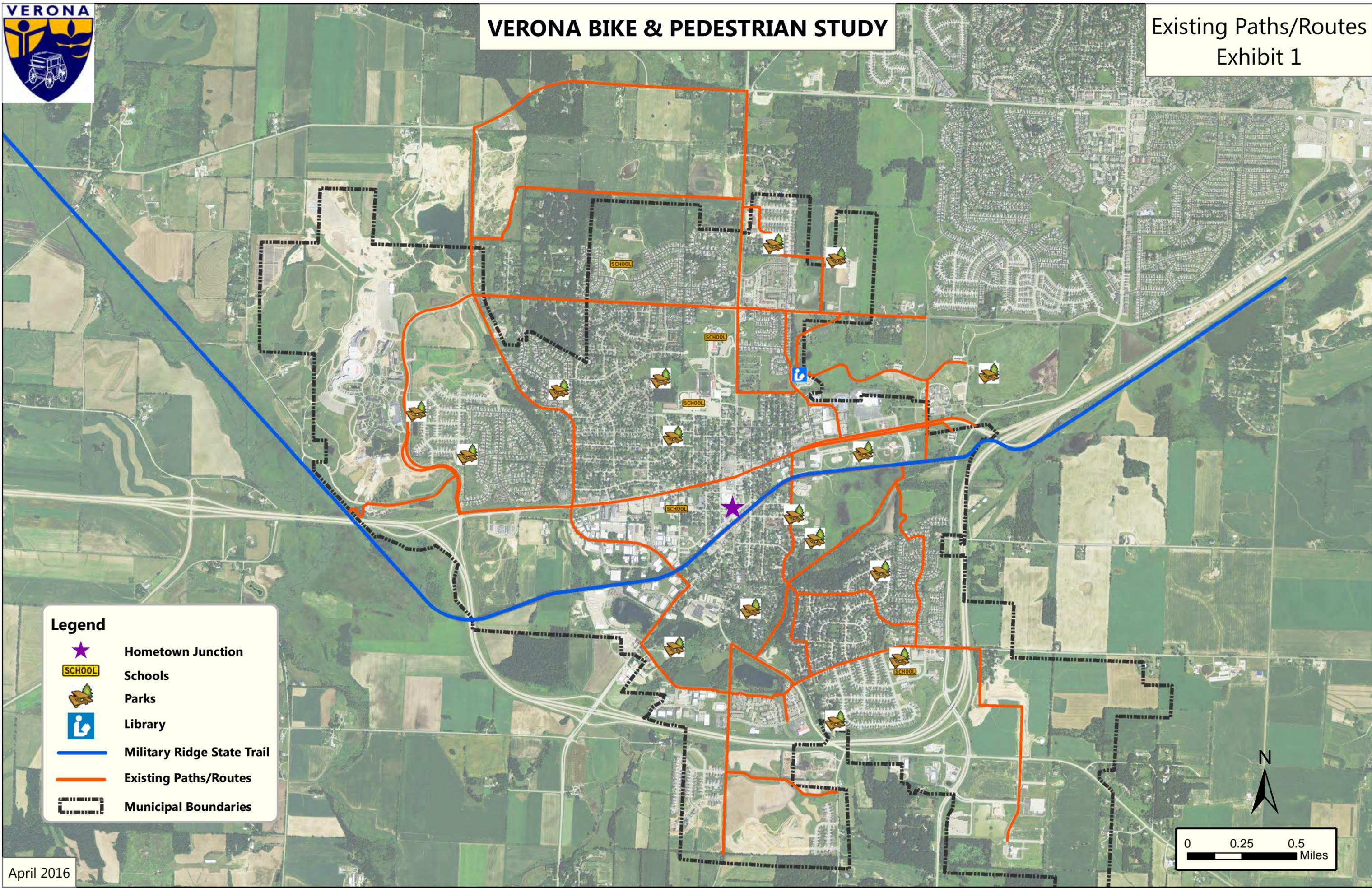


EXHIBITS



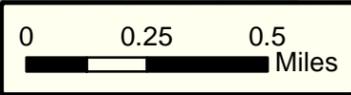
VERONA BIKE & PEDESTRIAN STUDY

Existing Paths/Routes
Exhibit 1



Legend

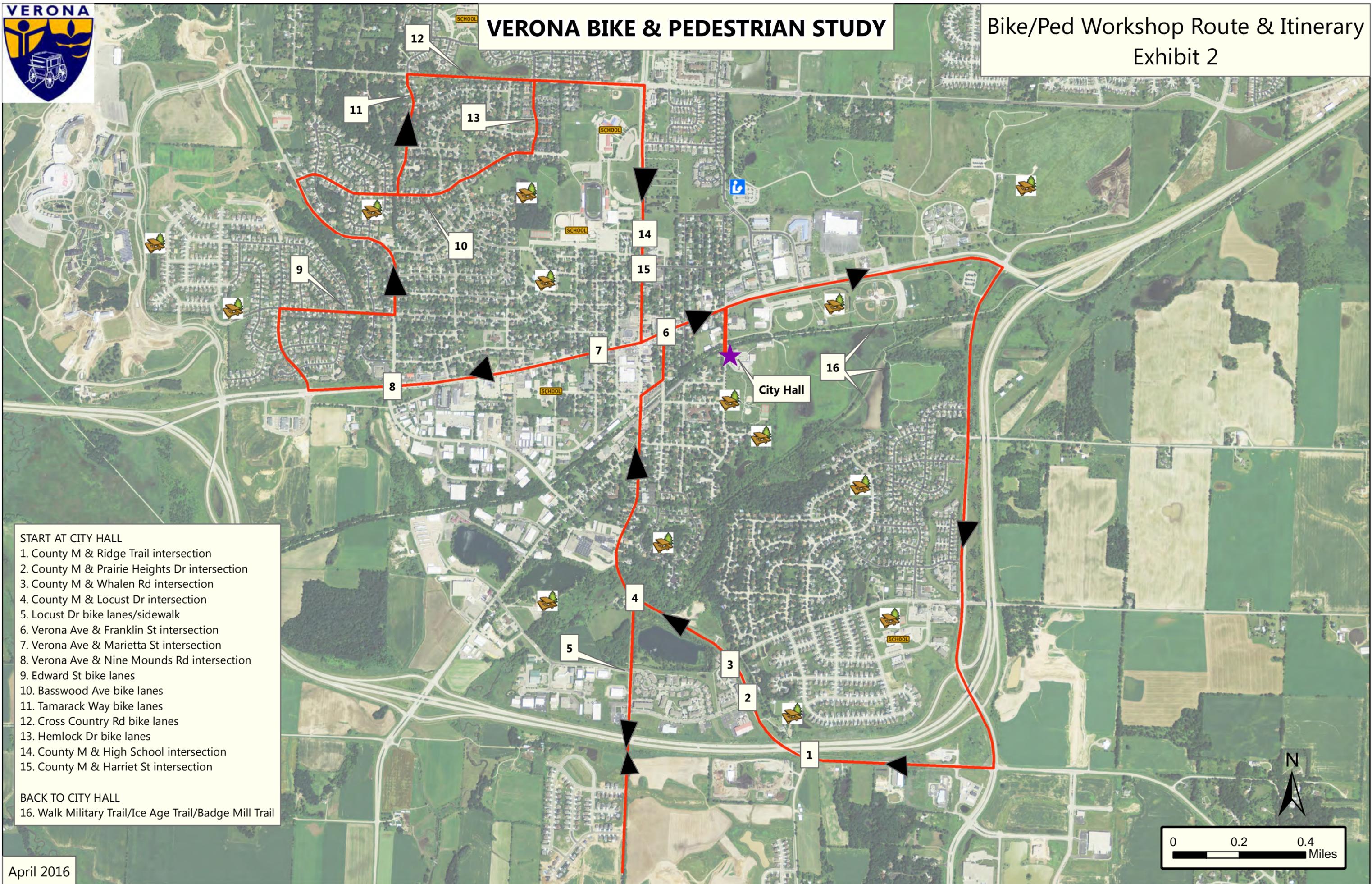
- ★ Hometown Junction
- SCHOOL Schools
- 🌳 Parks
- 👤 Library
- Military Ridge State Trail
- Existing Paths/Routes
- - - Municipal Boundaries



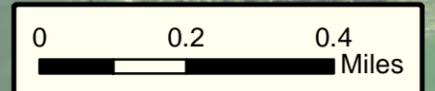


VERONA BIKE & PEDESTRIAN STUDY

Bike/Ped Workshop Route & Itinerary Exhibit 2



- START AT CITY HALL**
- 1. County M & Ridge Trail intersection
 - 2. County M & Prairie Heights Dr intersection
 - 3. County M & Whalen Rd intersection
 - 4. County M & Locust Dr intersection
 - 5. Locust Dr bike lanes/sidewalk
 - 6. Verona Ave & Franklin St intersection
 - 7. Verona Ave & Marietta St intersection
 - 8. Verona Ave & Nine Mounds Rd intersection
 - 9. Edward St bike lanes
 - 10. Basswood Ave bike lanes
 - 11. Tamarack Way bike lanes
 - 12. Cross Country Rd bike lanes
 - 13. Hemlock Dr bike lanes
 - 14. County M & High School intersection
 - 15. County M & Harriet St intersection
- BACK TO CITY HALL**
- 16. Walk Military Trail/Ice Age Trail/Badge Mill Trail



ICE AGE NATIONAL SCENIC TRAIL ALONG THE
BADGER MILL CREEK



MILITARY RIDGE STATE TRAIL



MILITARY RIDGE STATE TRAIL & ICE
AGE NATIONAL SCENIC TRAIL JUNCTION



ICE AGE NATIONAL SCENIC TRAIL AND MILITARY
RIDGE STATE TRAIL JUNCTION



ICE AGE NATIONAL SCENIC TRAIL
BRIDGE OVER THE BADGER MILL CREEK



REDDAN SOCCER PARK PATH END



ICE AGE NATIONAL SCENIC TRAIL
NORTH OF REDDAN SOCCER PARK



LOCUST DRIVE



LOCUST DRIVE & BRUCE ST/MEADOWSIDE DR
INTERSECTION



INFORMATION STATION ALONG MILITARY
RIDGE STATE TRAIL



COVERED BRIDGE OVER
BADGER MILL CREEK



VERONA BIKE & PEDESTRIAN STUDY

EXISTING CONDITIONS
PHOTOGRAPHS
EXHIBIT 3



VERONA BIKE & PEDESTRIAN STUDY

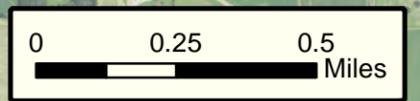
Possible Projects Exhibit 4



- 1 Verona Ave & Westlawn Ave
- 2 Verona Ave & Marietta St
- 3 Verona Ave & Franklin St
- 4 Verona Ave & Jefferson St
- 5 County M & Locust Dr
- 6 County M & Whalen Rd
- 7 County M & Prairie Heights Dr
- 8 County M & Range Trail

Legend

- Hometown Junction
- Schools
- Parks
- Library
- Intersection Improvements - Crossing Options
- Military Ridge State Trail
- Possible Bike/Ped Paths/Routes
- Possible Sidewalks
- Municipal Boundaries





VERONA BIKE & PEDESTRIAN STUDY

Project #1
Bike Loops - Citywide
Exhibit 5-1

This project identifies bike routes throughout the city in order to connect key locations such as schools, parks, and businesses. A total of 6 bike routes were identified. For this project several bike routes signs are proposed to be installed to identify the bike route direction, as well as distance to key locations around the city.

Legend

-  Hometown Junction
-  Schools
-  Parks
-  Library
-  Military Ridge State Trail
-  Verona Ave East Loop
-  South Neighborhood Loop
-  Southeast Neighborhood Loop
-  North Neighborhood Loop
-  Reddan Park Loop
-  Epic Loop
-  Municipal Boundaries



TOTAL PROJECT COST

(Cost includes each bike loop and Hometown Junction improvements)

\$74,400

PROJECT BENEFITS

- Identifies bike routes connecting schools, parks, and businesses.
- Completes a citywide bike loop network by installing bike route signs with information to bicyclist and pedestrians.
- Encourages people to bike.



VERONA BIKE & PEDESTRIAN STUDY

Project #1
Bike Loops - Verona East Loop
Exhibit 5-2

County M

LOOP SIGNAGE COST

\$13,700

PROJECT BENEFITS

- Identifies a bike route connecting schools, parks, and businesses.
- Connects with other proposed bike routes to complete a citywide network.
- Encourages people to bike.

Harriet St

E Verona Ave

Franklin St

Lincoln St

Schweitzer Dr

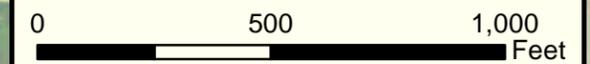
Legend

- ★ Hometown Junction
- SCHOOL Schools
- 🌳 Parks
- 📖 Library
- Confirmation Signs
- Decision Signs
- Verona Ave East Loop
- Verona Ave West Loop
- Southeast Neighborhood Loop
- Reddan Park Loop
- Military Ridge State Trail

DECISION SIGNS
Mark the junction of two or more bikeways.
Informs bicyclists of the designated bike route to access key destinations.



CONFIRMATION SIGNS
Indicate to bicyclists that they are on a designated bikeway.





VERONA BIKE & PEDESTRIAN STUDY

Project #1
Bike Loops -
Southeast Neighborhood Loop
Exhibit 5-3

LOOP SIGNAGE COST

\$11,300

PROJECT BENEFITS

- Identifies a bike route connecting schools, parks, and businesses.
- Connects with other proposed bike routes to complete a citywide network.
- Encourages people to bike.

CONFIRMATION SIGNS
Indicate to bicyclists that they are on a designated bikeway.



DECISION SIGNS
Mark the junction of two or more bikeways. Informs bicyclists of the designated bike route to access key destinations.



Hillcrest Dr

Military Ridge Dr

Fairview Terrace

Legend

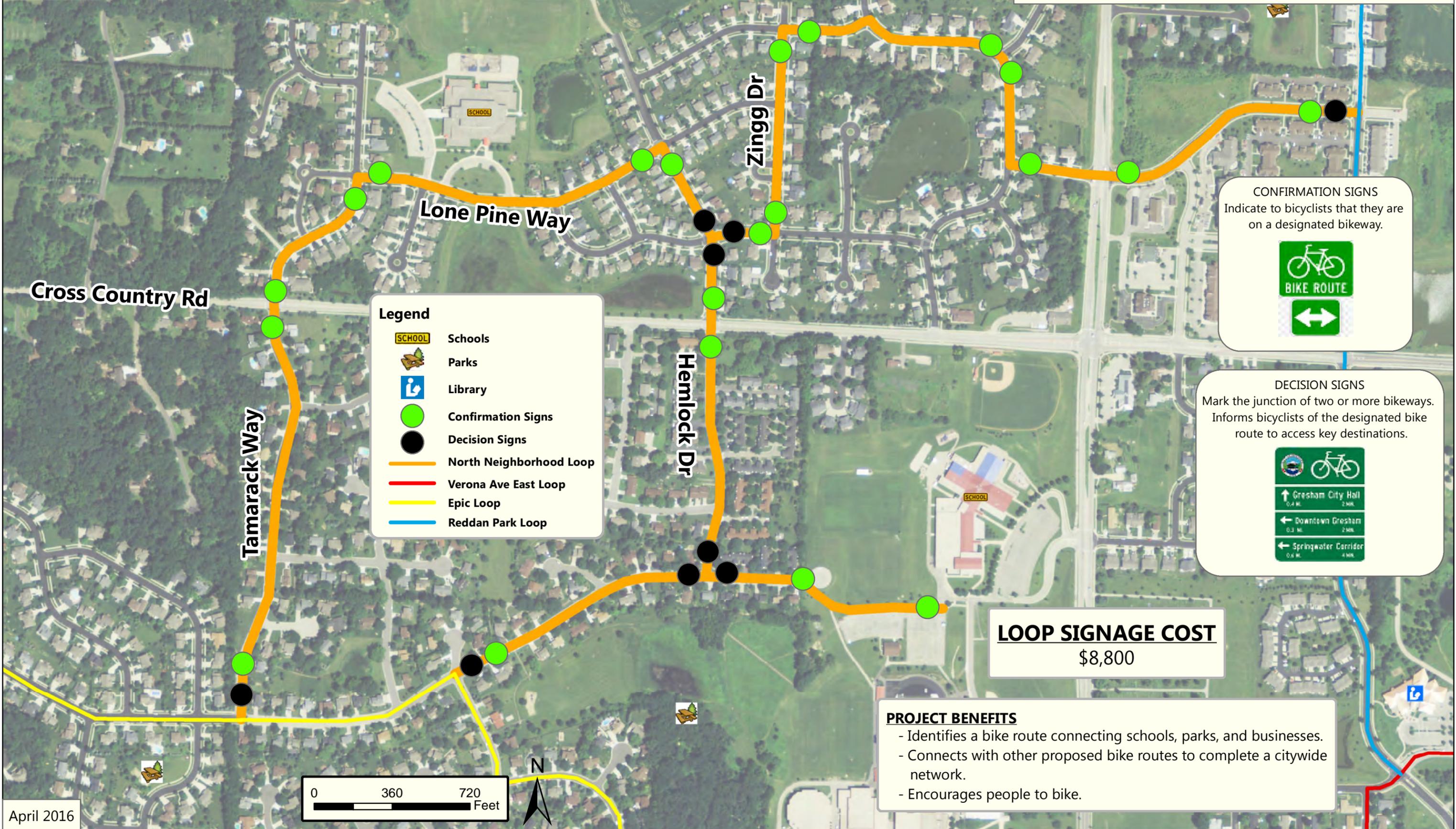
- SCHOOLS** Schools
- Parks
- Confirmation Signs
- Decision Signs
- Southeast Neighborhood Loop
- South Neighborhood Loop
- Verona Ave East Loop
- Military Ridge State Trail





VERONA BIKE & PEDESTRIAN STUDY

Project #1
Bike Loops - North Neighborhood Loop
Exhibit 5-4



Legend

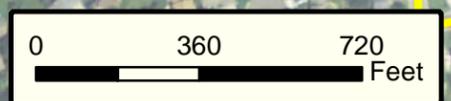
- Schools
- Parks
- Library
- Confirmation Signs
- Decision Signs
- North Neighborhood Loop
- Verona Ave East Loop
- Epic Loop
- Reddan Park Loop

CONFIRMATION SIGNS
Indicate to bicyclists that they are on a designated bikeway.

DECISION SIGNS
Mark the junction of two or more bikeways. Informs bicyclists of the designated bike route to access key destinations.

LOOP SIGNAGE COST
\$8,800

- PROJECT BENEFITS**
- Identifies a bike route connecting schools, parks, and businesses.
 - Connects with other proposed bike routes to complete a citywide network.
 - Encourages people to bike.





VERONA BIKE & PEDESTRIAN STUDY

Project #1
Bike Loops - South Neighborhood Loop
Exhibit 5-5

LOOP SIGNAGE COST
\$10,600

PROJECT BENEFITS

- Identifies a bike route connecting schools, parks, and businesses.
- Connects with other proposed bike routes to complete a citywide network.
- Encourages people to bike.

DECISION SIGNS

Mark the junction of two or more bikeways. Informs bicyclists of the designated bike route to access key destinations.



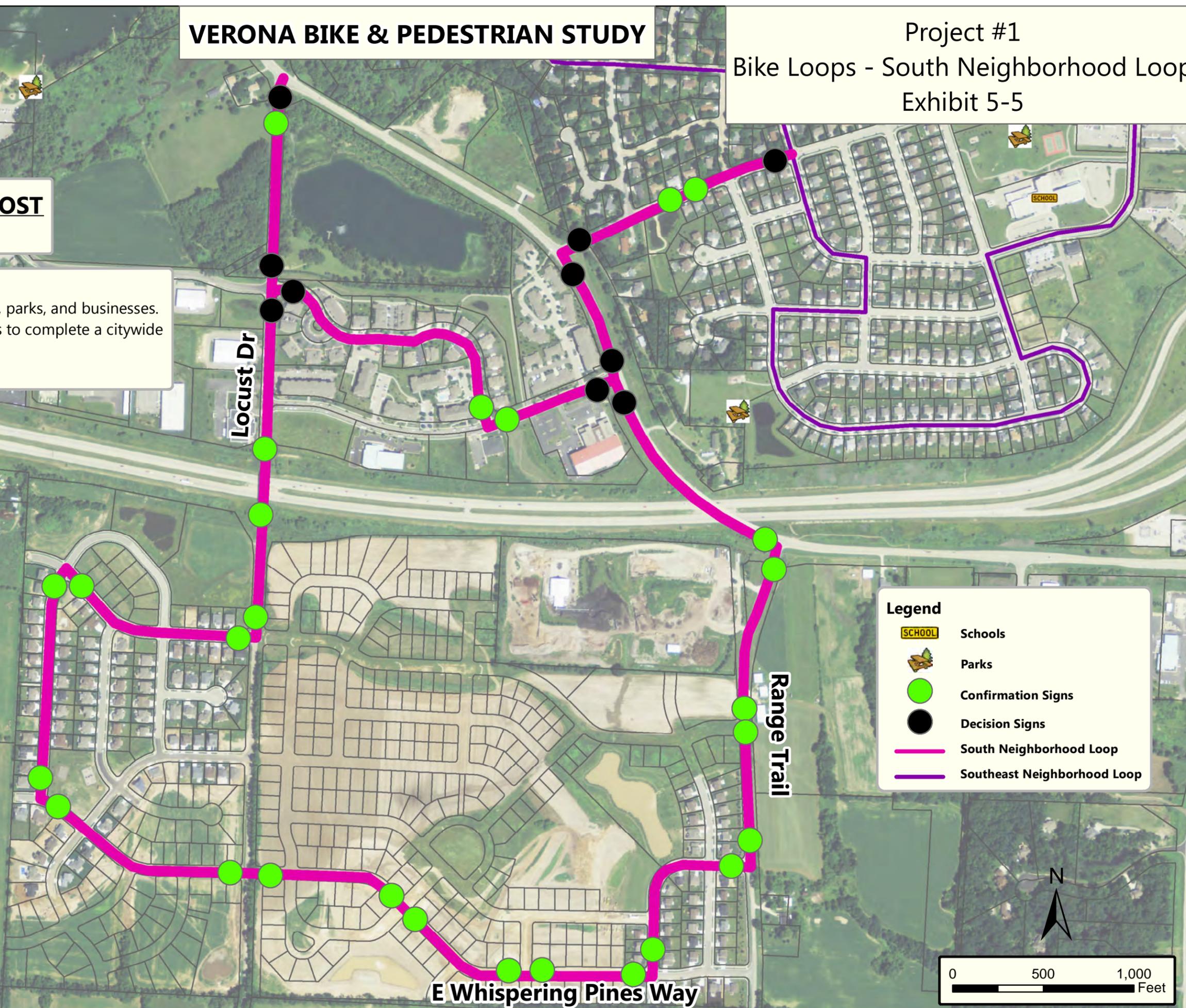
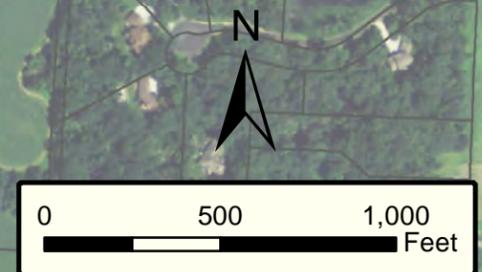
CONFIRMATION SIGNS

Indicate to bicyclists that they are on a designated bikeway.



Legend

- Schools
- Parks
- Confirmation Signs
- Decision Signs
- South Neighborhood Loop
- Southeast Neighborhood Loop





VERONA BIKE & PEDESTRIAN STUDY

Project #1
Bike Loops - Epic Loop
Exhibit 5-6

CONFIRMATION SIGNS
Indicate to bicyclists that they are on a designated bikeway.



DECISION SIGNS
Mark the junction of two or more bikeways. Informs bicyclists of the designated bike route to access key destinations.



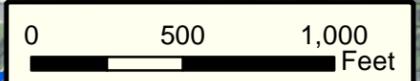
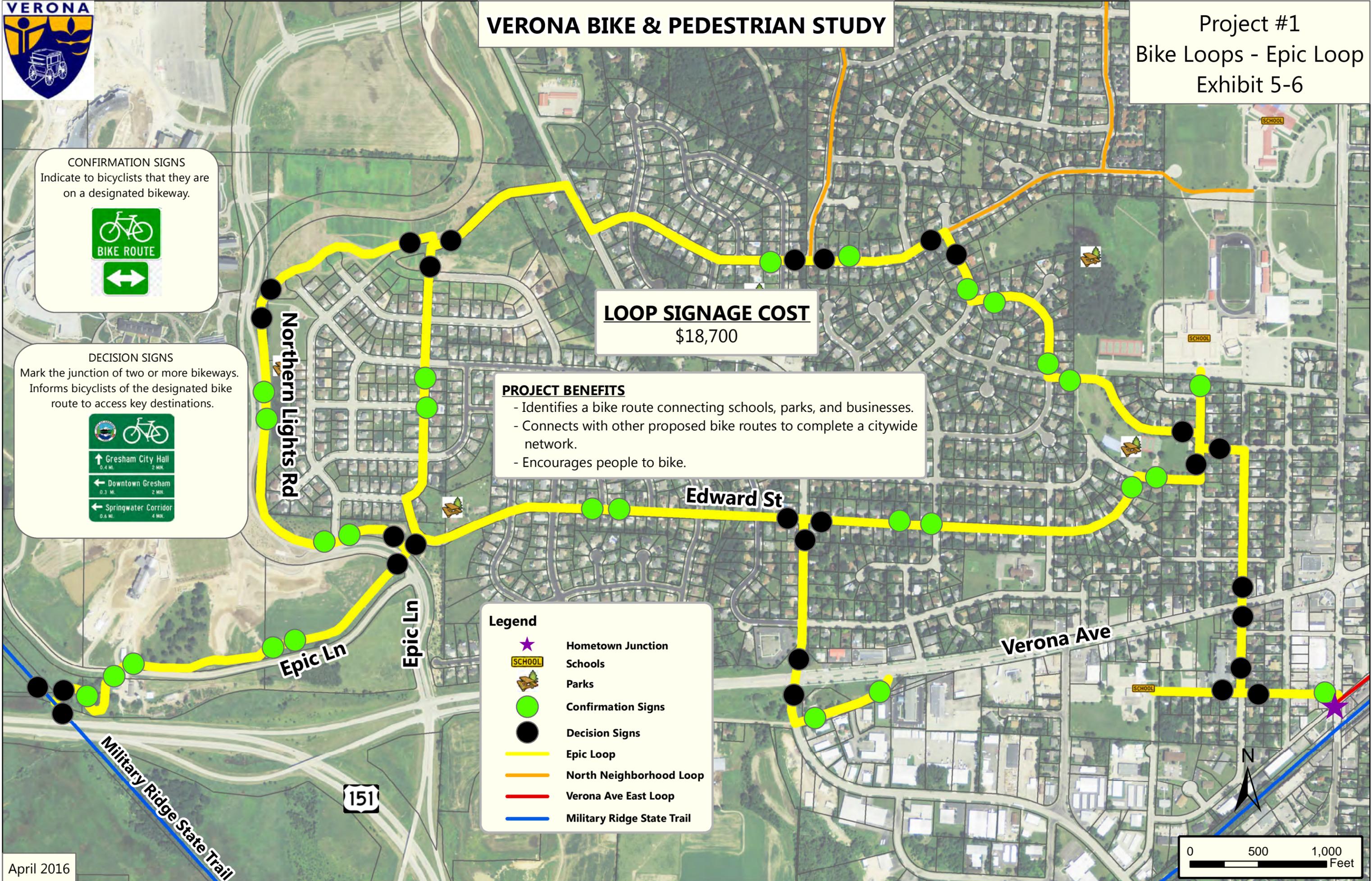
LOOP SIGNAGE COST
\$18,700

PROJECT BENEFITS

- Identifies a bike route connecting schools, parks, and businesses.
- Connects with other proposed bike routes to complete a citywide network.
- Encourages people to bike.

Legend

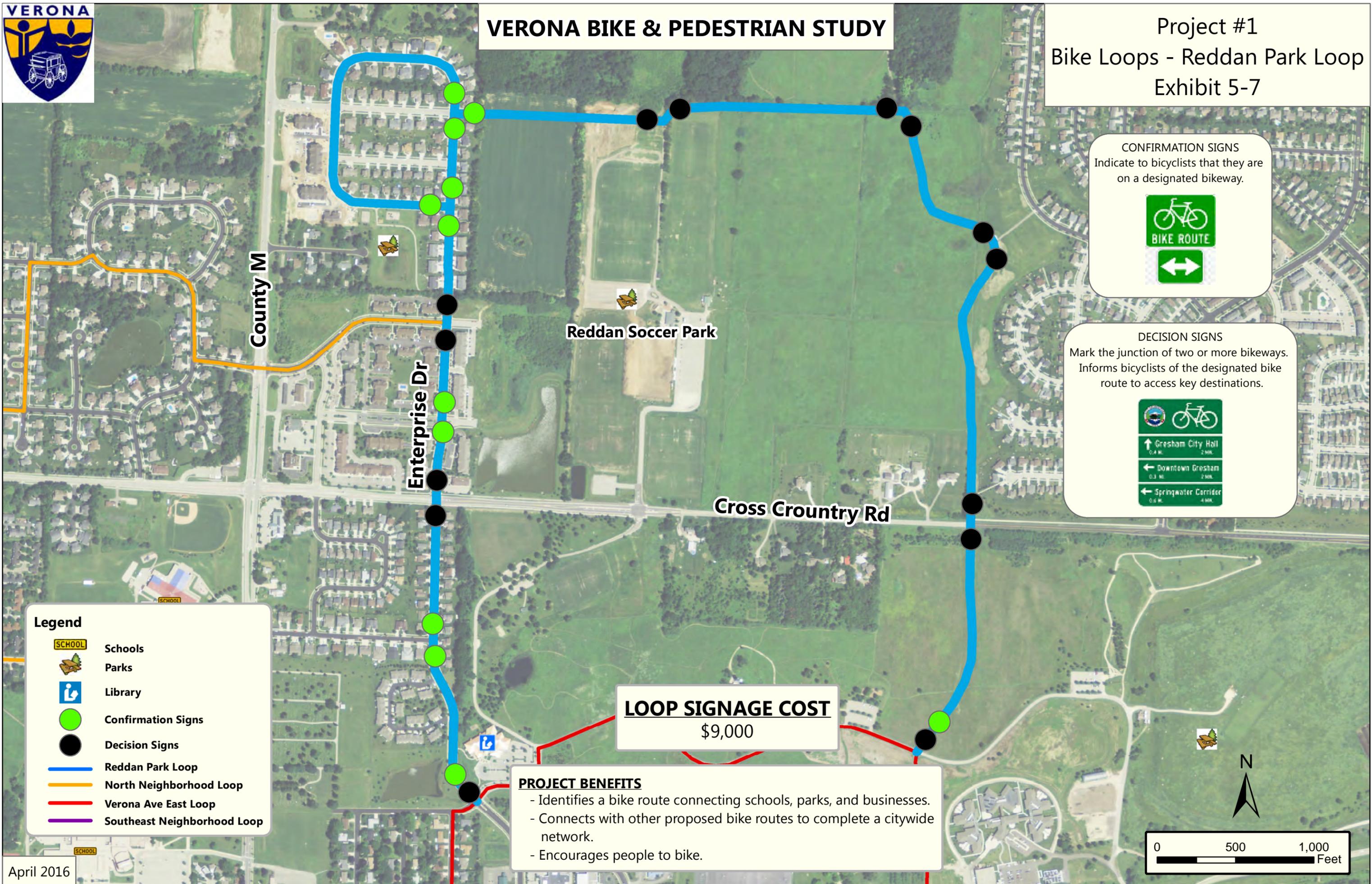
- ★ Hometown Junction
- SCHOOL Schools
- 🌳 Parks
- Confirmation Signs
- Decision Signs
- Epic Loop
- North Neighborhood Loop
- Verona Ave East Loop
- Military Ridge State Trail





VERONA BIKE & PEDESTRIAN STUDY

Project #1
Bike Loops - Reddan Park Loop
Exhibit 5-7



CONFIRMATION SIGNS
Indicate to bicyclists that they are on a designated bikeway.



DECISION SIGNS
Mark the junction of two or more bikeways. Informs bicyclists of the designated bike route to access key destinations.



Legend

- Schools
- Parks
- Library
- Confirmation Signs
- Decision Signs
- Reddan Park Loop
- North Neighborhood Loop
- Verona Ave East Loop
- Southeast Neighborhood Loop

LOOP SIGNAGE COST

\$9,000

PROJECT BENEFITS

- Identifies a bike route connecting schools, parks, and businesses.
- Connects with other proposed bike routes to complete a citywide network.
- Encourages people to bike.





VERONA BIKE & PEDESTRIAN STUDY

Project #2
Downtown Intersection Improvements
Exhibit 6

Westlawn Ave

Marietta St

Main St/County M

Franklin St

Jefferson St

PROJECT COST
\$349,700

- PROJECT BENEFITS**
- Provides better to downtown neighborhood and businesses.
 - Better utilization of roadway width to accomodate safer crosswalks.
 - Intersection improvements for safer pedestrian/bicyclist crossing.
 - Encourages people to bike/walk.

Verona Ave & Franklin St
Intersection Cost: \$106,900

Construct Curb Bump-Outs
(each approach)

Install Rectangular Rapid Flash Beacon (RRFB)
(east-west approach)

Verona Ave

Verona Ave & Jefferson St
Intersection Cost: \$64,100

Construct Curb Bump-Outs
(west approach)

Install Rectangular Rapid Flash Beacon (RRFB)
(east-west approach)

Verona Ave & Westlawn Ave
Intersection Cost: \$64,100

Construct Curb Bump-Outs
(east approach)

Install Rectangular Rapid Flash Beacon (RRFB)
(east-west approach)

Typical Curb Bump-Outs



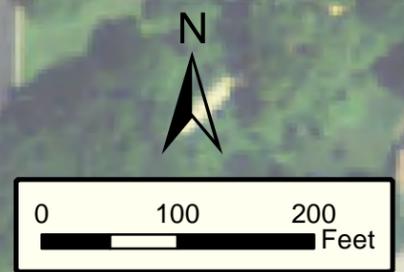
Rectangular Rapid Flash Beacon (RRFB)



Verona Ave & Marietta St
Intersection Cost: \$114,600

Construct Curb Bump-Outs
(each approach)

Install Rectangular Rapid Flash Beacon (RRFB)
(east-west approach)





VERONA BIKE & PEDESTRIAN STUDY

Project #3
County M Intersection Improvements
Exhibit 7

County M & Locust Dr
Intersection Cost: \$41,400

County M & Whalen Rd
Intersection Cost: \$33,900

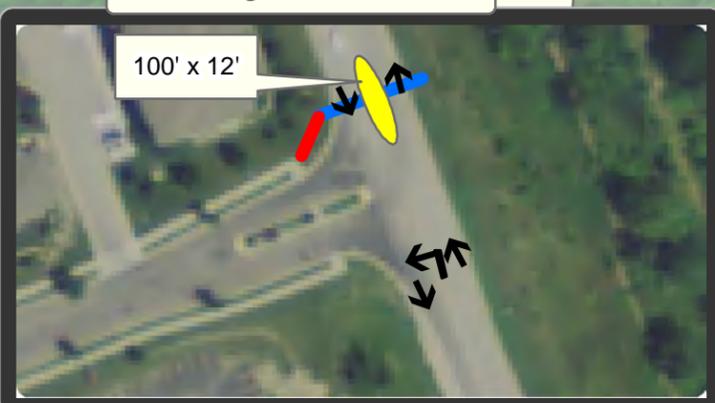
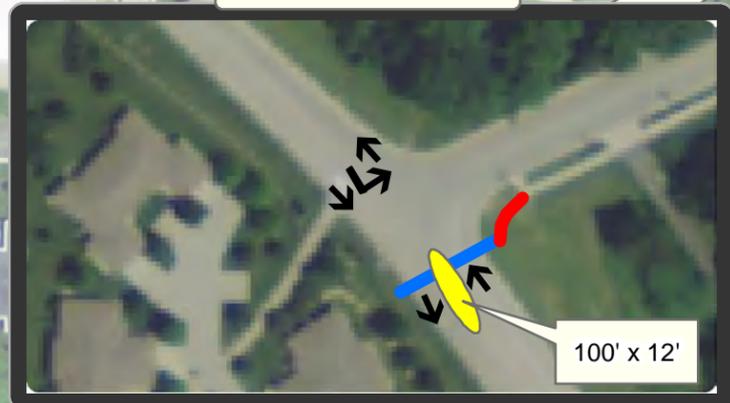
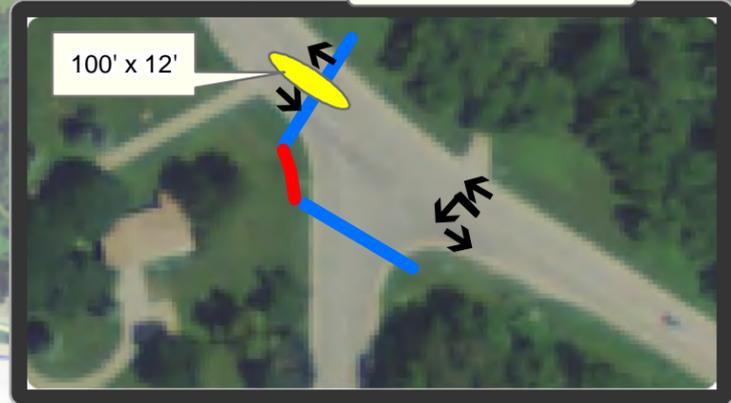
County M & Prairie Heights Dr
Intersection Cost: \$39,300

PROJECT COST
\$114,600

PROJECT BENEFITS

- Provides better access of southern neighborhoods/businesses to the downtown area.
- Intersection improvements for safer pedestrian/bicyclist crossing.
- Provides better access to various parks and schools.
- Encourages people to bike/walk.

Intersection improvements for Prairie Heights Dr, Whalen Rd, and Locust Dr. Improvements include constructing a median island, extending the existing sidewalk, and a crosswalk. Each crosswalk, with the exception of Whalen Rd, would have the installation of a Rectangular Rapid Flash Beacon (RRFB).



Legend

- Schools
- Parks
- Sidewalk
- Crosswalk
- Median Island

Locust Dr



VERONA BIKE & PEDESTRIAN STUDY

Project #4
Bike Lanes
Exhibit 8-1

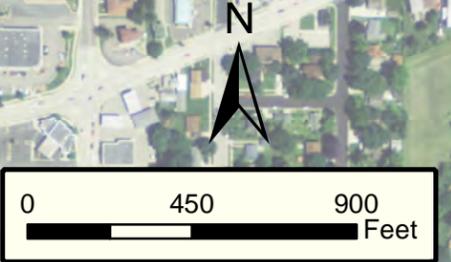


TOTAL PROJECT COST
\$116,300

- PROJECT BENEFITS**
- Better utilization of the roadway width.
 - Assigns a designated bike lane and parking.
 - Safer ride for both bicyclists and drivers.
 - Provides better access to parks and schools

Legend

- Schools
- Parks
- Bike Lanes





VERONA BIKE & PEDESTRIAN STUDY

Project #4
Bike Lanes - Edward St
Exhibit 8-2

Roadway Width = 39 ft
Segment Length = approx. 5,100 ft

Bike Lanes connecting Westridge Park & Harriet Park

EDWARD BIKE LANES COST

\$38,200

PROJECT BENEFITS

- Better utilization of the roadway width.
- Assigns a designated bike lane and parking.
- Safer ride for both bicyclists and drivers.
- Provides better access to Westridge Park, Harriet Park, and the Verona High School.



Harriet Park

Install Bike Lane Ahead Sign

Westridge Park

Install Bike Lane Ends Sign

Edward St

Install Bike Lane Ends Sign

Install Bike Lane Ahead Sign

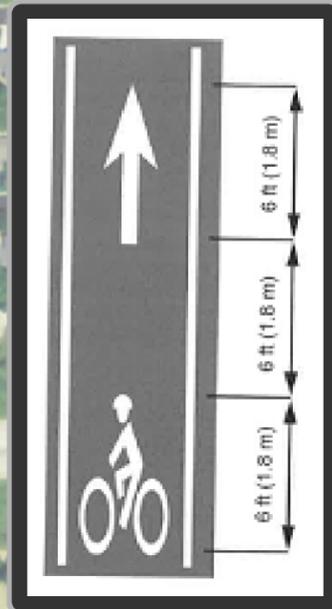
Bike lane markings should be placed after each intersection

Shared Bike Lane/Parking = 9.5 ft (on each direction)
Travel Lanes = 10 ft



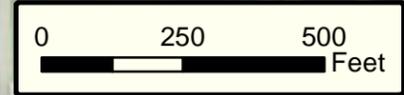
Legend

- Schools
- Parks
- Bike Lanes - Edward St

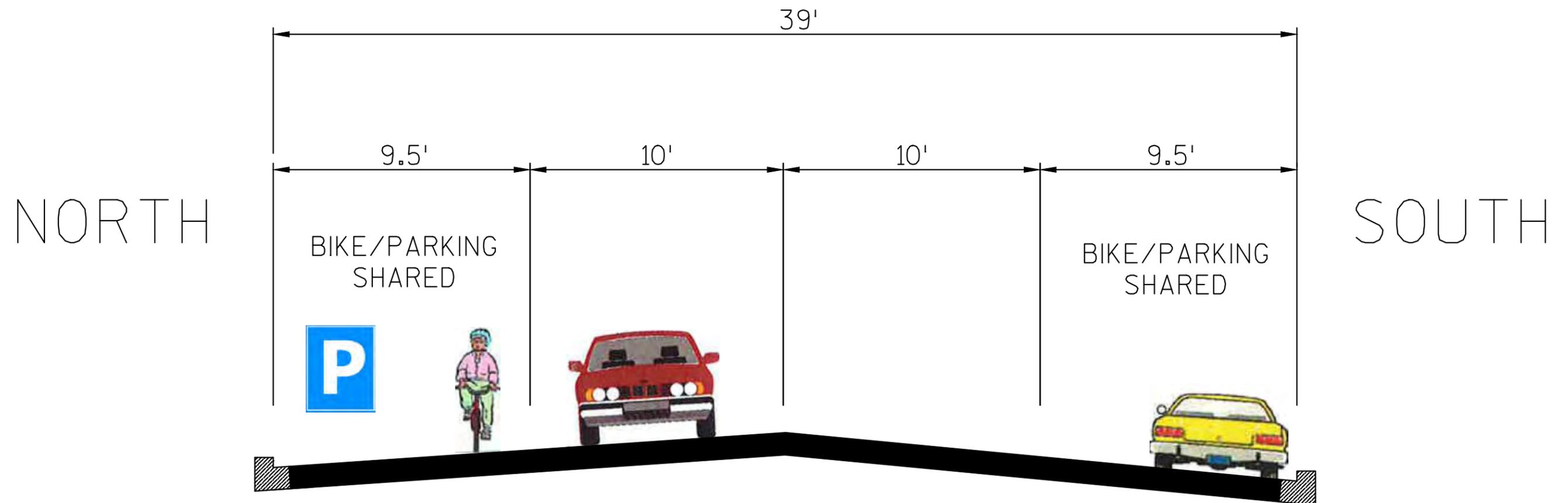


Nine Mound Rd

Verona Ave



TYPICAL ROADWAY CROSS SECTION EDWARD STREET



VERONA BIKE & PEDESTRIAN STUDY



PROJECT #4
BIKE LANES - EDWARD ST
EXHIBIT 8-3
APRIL 2016



VERONA BIKE & PEDESTRIAN STUDY

Project #4
Bike Lanes - Basswood Ave
Exhibit 8-4

Roadway Width = 48 ft
Segment Length = approx. 4,000 ft

Bike Lanes connecting Nine Mound Rd & Hemlock Dr
(which would also connect to the Middle/High School and
Cross Country Park)

BASSWOOD BIKE LANES COST
\$45,600

PROJECT BENEFITS

- Better utilization of the roadway width.
- Assigns a designated bike lane and parking.
- Safer ride for both bicyclists and drivers.
- Provides better access to Cross Country Park, and the Verona High School.



Install Bike Lane Ahead Sign



Install Bike Lane Ends Sign



Install Bike Lane Ends Sign

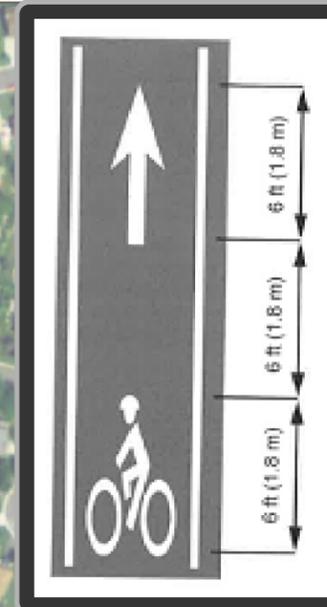


Install Bike Lane Ahead Sign

Basswood Ave

Bike lane markings should be placed after each intersection

Bike Lanes = 5 ft (on each direction)
Travel Lanes = 11 ft
Parking = 8 ft (on each direction)



Cross Country Park

Verona High School

Legend



Schools

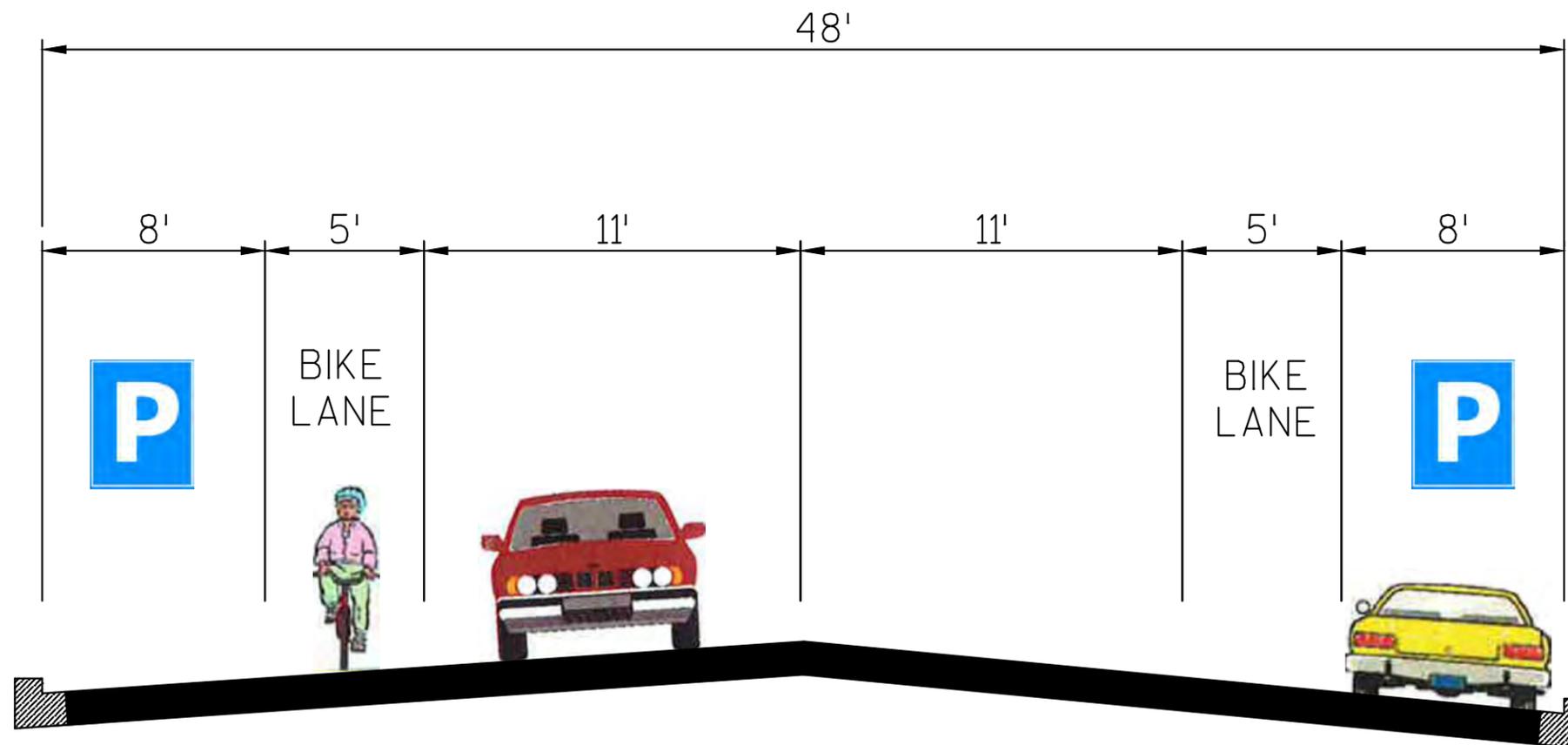


Parks

Bike Lanes - Basswood Ave



TYPICAL ROADWAY CROSS SECTION BASSWOOD AVENUE



VERONA BIKE & PEDESTRIAN STUDY



PROJECT #4
BIKE LANES - BASSWOOD AVE
EXHIBIT 8-5
APRIL 2016



VERONA BIKE & PEDESTRIAN STUDY

Project #4
Bike Lanes - Tamarack Way
Exhibit 8-6

Roadway Width = 48 ft
Segment Length = approx. 1,950 ft

Bike Lanes connecting Basswood Ave & Cross Country Rd
(which would also connect to the Elementary School)

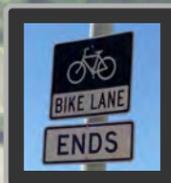
SCHOOL

Country View Elementary School

Lone Pine Way



Install Bike Lane Ahead Sign



Install Bike Lane Ends Sign

Cross Country Rd

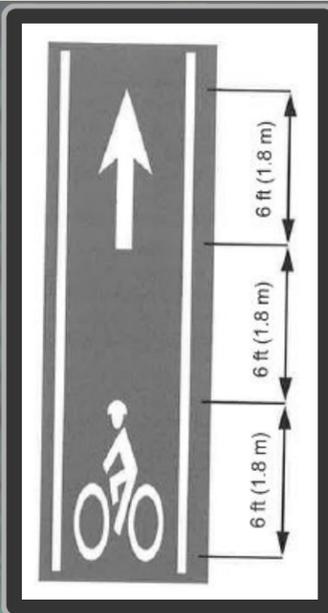
TAMARACK BIKE LANES COST

\$21,700

PROJECT BENEFITS

- Better utilization of the roadway width.
- Assigns a designated bike lane and parking.
- Safer ride for both bicyclists and drivers.
- Provides better access to Country View Elementary School.

Bike lane markings should be placed after each intersection



Tamarack Way

Bike Lanes = 5 ft (on each direction)
Travel Lanes = 11 ft
Parking = 8 ft (on each direction)



Legend

- Schools
- Bike Lanes - Tamarack Way

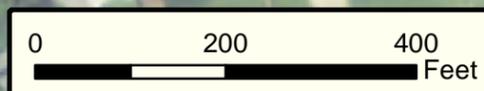


Install Bike Lane Ends Sign

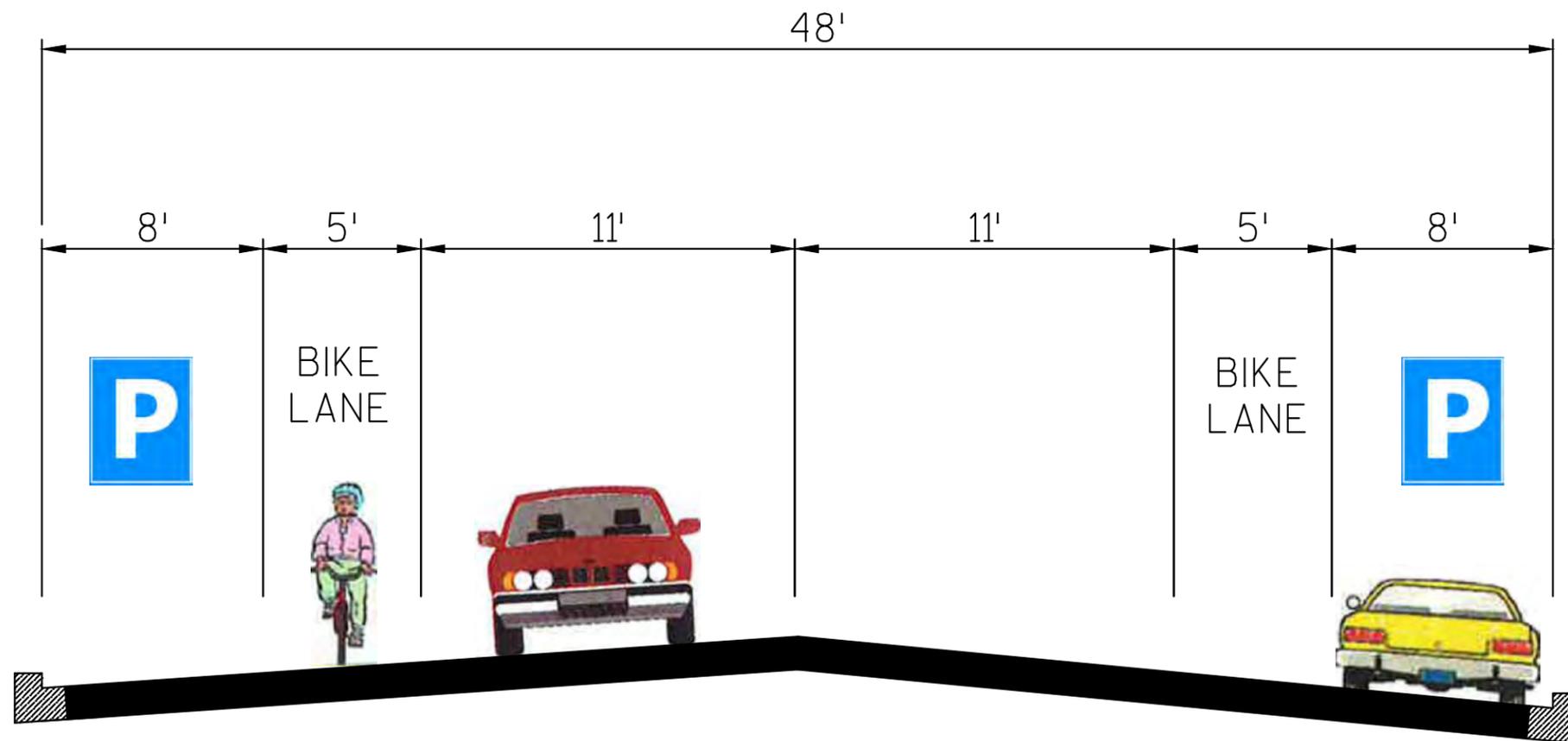


Install Bike Lane Ahead Sign

Basswood Ave



TYPICAL ROADWAY CROSS SECTION TAMARACK WAY



VERONA BIKE & PEDESTRIAN STUDY



PROJECT #4
BIKE LANES - TAMARACK WAY
EXHIBIT 8-7
APRIL 2016



VERONA BIKE & PEDESTRIAN STUDY

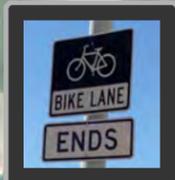
Project #4
Bike Lanes - Hemlock Dr
Exhibit 8-8

Country View Elementary School

Roadway Width = 39 ft
Segment Length = approx. 1,150 ft
Bike Lanes connecting Basswood Ave & Cross Country Rd
(which would also connect to the Elementary School)



Install Bike Lane Ahead Sign



Install Bike Lane Ends Sign

Cross Country Rd

HEMLOCK BIKE LANES COST
\$10,800

PROJECT BENEFITS

- Better utilization of the roadway width.
- Assigns a designated bike lane and parking.
- Safer ride for both bicyclists and drivers.
- Provides better access to Country View Elementary School.

Shared Bike Lane/Parking = 9.5 ft (on each direction)
Travel Lanes = 10 ft

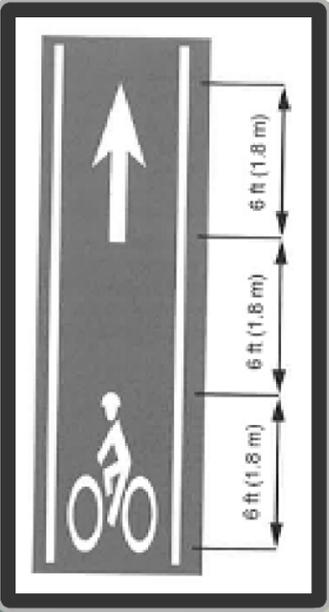


Hemlock Dr

Bike lane markings should be placed after each intersection



Install Bike Lane Ends Sign



Install Bike Lane Ahead Sign



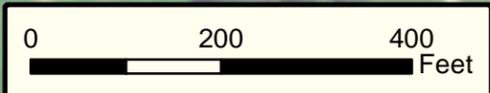
Legend

- Schools
- Parks
- Bike Lanes - Hemlock Dr

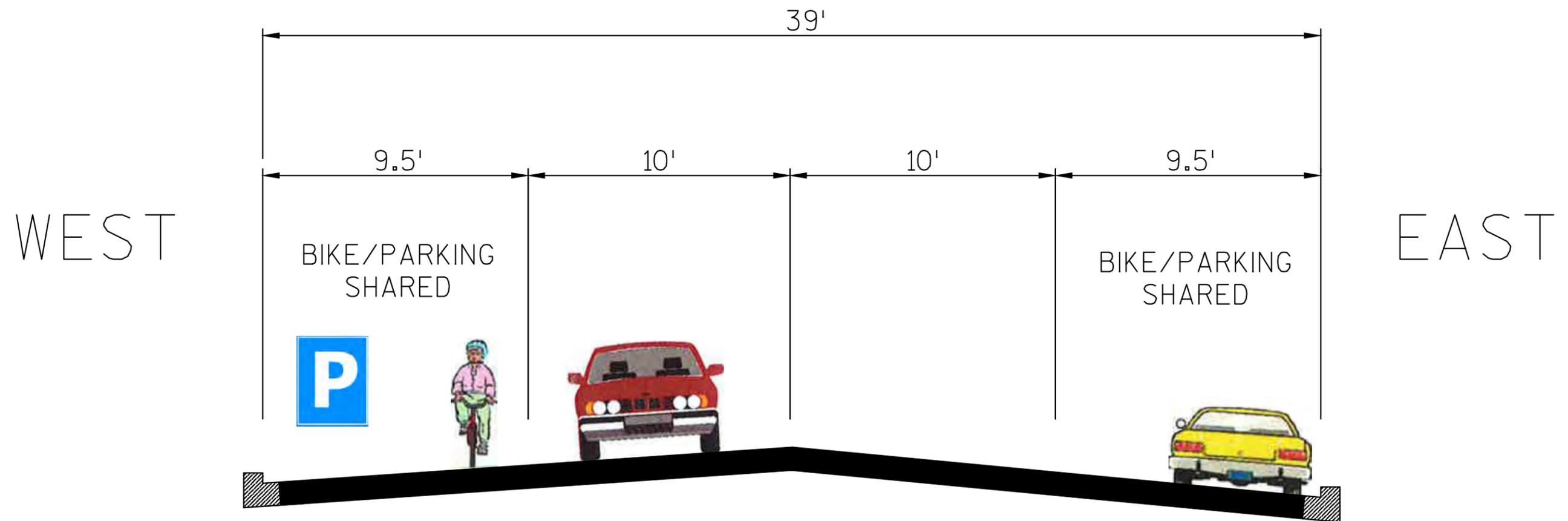
Mahogany Way

Basswood Ave

Cross Country Park



TYPICAL ROADWAY CROSS SECTION HEMLOCK DRIVE



VERONA BIKE & PEDESTRIAN STUDY



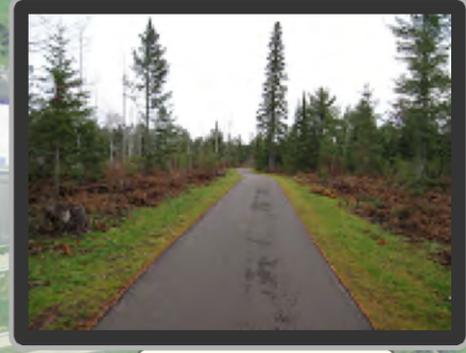
PROJECT #4
BIKE LANES - HEMLOCK DR
EXHIBIT 8-9
APRIL 2016



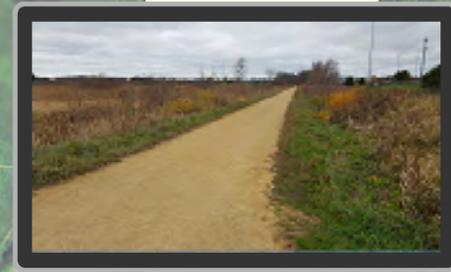
VERONA BIKE & PEDESTRIAN STUDY

Project #5
Military Ridge State Trail Paving
Exhibit 9

Path Width = 10 ft
Segment Length = approx. 7,550 ft
Paving Military Ridge State Trail between Old County PB and
Nine Mound Rd



Proposed conditions



Existing conditions

Paving starts/ends at the at Old County PB

Paving starts/ends at Nine Mound Rd

W. Verona Ave

E. Verona Ave

Old County PB

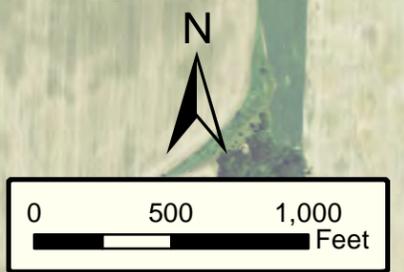
Nine Mound Rd

PROJECT COST
\$288,600

- PROJECT BENEFITS**
- Improves surface of the trail.
 - More users would be using this segment of the trail.
 - Along with other projects/trails, it connects the downtown area with the rest of the City, including parks and schools.
 - Encourages people to bike/walk.

Legend

- ★ Hometown Junction
- SCHOOL Schools
- Parks
- Library
- Military Ridge State Trail
- Paved Military Ridge State Trail





VERONA BIKE & PEDESTRIAN STUDY

Project #6
Ice Age Junction Path Extension
Exhibit 10

Legend

- Hometown Junction
- Schools
- Parks
- Confirmation Signs
- Decision Signs
- Ice Age Junction Path Extension - Phase 1
- Ice Age Junction Path Extension - Phase 2
- Ice Age Junction Path Extension - Phase 3
- Ice Age Junction Path Extension - Phase 4
- Military Ridge State Trail
- Segment to be completed in Project #7

Phase 1 - Cost: \$286,600
 Off-Street Path Width = 14 ft
 Off-Street Path Length = approx. 2,950 ft
 On-Street Path Length = approx. 1,520 ft

Phase 2 - Cost: \$813,400
 Off-Street Path Width = 14 ft
 Off-Street Path Length = approx. 2,050 ft
 Approximately 300' of boardwalk
 The path along County M to be constructed in Project #10 (County M Sidewalk)

Phase 3 - Cost: \$567,400
 Off-Street Path Width = 14 ft
 Off-Street Path Length = approx. 1,700 ft
 Approximately 200' of boardwalk

Phase 4 - Cost: \$107,300
 Off-Street Path Width = 14 ft
 Off-Street Path Length = approx 1,200 ft
 On-Street Path Length = approx. 770 ft



PROJECT COST
\$1,774,700

- PROJECT BENEFITS**
- Runs basically the entire city with minor vehicular interaction.
 - Connects with the Military Ridge State Trail for more access to the City and the City of Madison.
 - Provides better access to various parks and schools.
 - Runs along the Badger Mill Creek for a pleasant and scenic travel.
 - Encourages people to bike/walk.

DECISION SIGNS
 Mark the junction of two or more bikeways. Informs bicyclists of the designated bike route to access key destinations.

CONFIRMATION SIGNS
 Indicate to bicyclists that they are on a designated bikeway.



VERONA BIKE & PEDESTRIAN STUDY

Project #7
Military Ridge Reserve Trail
Exhibit 11

Military Ridge State Trail



Existing conditions at this location

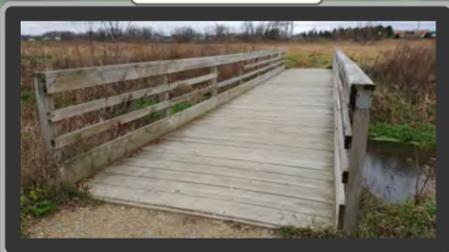
Path starts/ends at Military Ridge State Trail Junction

Path Width = 14 ft
Path Length = approx. 530 ft

CONFIRMATION SIGNS
Indicate to bicyclists that they are on a designated bikeway.

DECISION SIGNS
Mark the junction of two or more bikeways. Informs bicyclists of the designated bike route to access key destinations.

Existing bridge



Path Width = 10 ft
Path Length = approx. 1,580 ft

Military Ridge Reserve

Culvert at this location



Culvert at this location

PROJECT COST
\$155,500



Proposed Paved Conditions

PROJECT BENEFITS

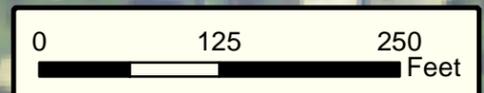
- Connects southern neighborhood to the rest of the City.
- Connects with the Military Ridge State Trail for more access to the City and the City of Madison.
- Provides better access to the Hometown USA Community Park.
- Encourages people to bike/walk.

Legend

- Confirmation Signs
- Decision Signs
- Paved Military Ridge Reserve Trail (10 ft)
- Paved Military Ridge Reserve Trail (14 ft)
- Military Ridge State Trail

Path starts/ends at Glacier Ridge Trail

Glacier Ridge Trail





VERONA BIKE & PEDESTRIAN STUDY

Project #8
Locust Dr. Sidewalk
Exhibit 12

Sidewalk starts/ends at County M



County M

Sidewalk Width = 5 ft
Sidewalk Length = approx. 1,080 ft

Existing conditions



Remove and reinstall fence

PROJECT COST

\$132,300

PROJECT BENEFITS

- Connects the southern neighborhood to the rest of the City.
- Provides better access for businesses along Locust Dr, Bruce St, and Investment Ct.
- Encourages people to bike/walk to the downtown area.

Locust Dr

Build the sidewalk further away from the road



Sidewalk starts/ends at Meadowside Dr

Install railing over culvert

Bruce St



VERONA BIKE & PEDESTRIAN STUDY

Project #9
Reddan Park Trail
Exhibit 13

County M

Ineichen Dr

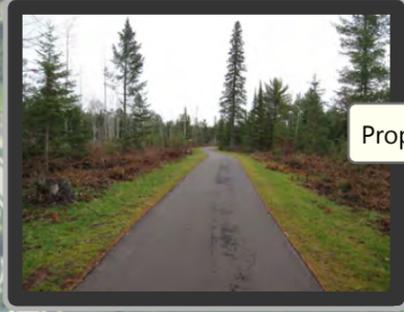
Enterprise Dr

Harmony Hills Park

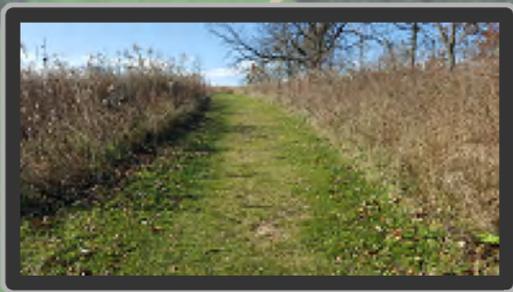
Reddan Soccer Park

Cross Country Rd

Ice Age Trail



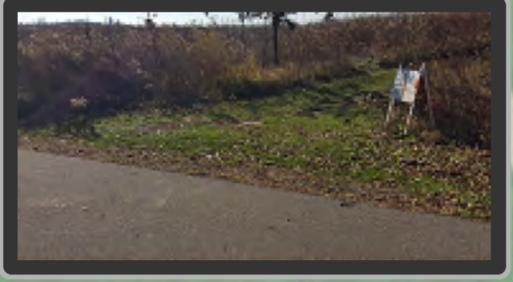
Proposed conditions



Existing conditions



Extend existing path



Existing junction

Path starts/ends at Ineichen Dr

Path starts/ends at Ice Age Trail

PROJECT COST
\$228,100

DECISION SIGNS
Mark the junction of two or more bikeways.
Informs bicyclists of the designated bike route to access key destinations.



CONFIRMATION SIGNS
Indicate to bicyclists that they are on a designated bikeway.



PROJECT BENEFITS
- Connects the northern neighborhoods with Reddan Soccer Park.
- Connects with the Ice Age Trail, which give access to the rest of the City as well as the City of Madison.
- Encourages people to bike/walk to the downtown area.

Path Width = 14 ft
Path Length = approx. 2,900 ft
Paved path connecting Ineichen Dr and Ice Age Trail around the northern side of Reddan Soccer Park

Legend

- Parks
- Decision Signs
- Reddan Park Trail
- 2016 Project

N

0 375 750 Feet



VERONA BIKE & PEDESTRIAN STUDY

Project #10
County M Sidewalk
Exhibit 14-1

PROJECT COST
\$633,500

PROJECT BENEFITS

- Connects the southern neighborhood to the rest of the City.
- Provides better access to Glacier Edge Elementary School.
- Encourages people to bike/walk to the downtown area.



Proposed Bike Lanes on County M between Whalen Rd & Locust Dr

Section 5 - Cost: \$22,600
Carnes island

Sidewalk Width = 5 ft
Sidewalk Length = approx. 260 ft

Relocate 3 light poles

Construct a 150' x 6' wall

Install guardrail

Section 4 - Cost: \$165,600
Locust Dr - Carnes driveway

Path Width = 10 ft
Section Length = approx. 600 ft

Section 3 - Cost: \$311,600
Whalen Rd - Locust Dr

Sidewalk Width = 5 ft
Sidewalk Length = approx. 1,300 ft
Path Width = 10 ft
Path Length = approx. 550 ft

Includes adding bike lanes in this section

Add Crosswalk

Sidewalk connecting Prairie Heights Dr, Whalen Rd, Locust Dr, and sidewalks leading to downtown.

A proposed 10' path to be constructed in this project as part of the Badger Mill Creek Trail project.

Section 2 - Cost: \$47,800
Prairie Heights Dr - Whalen Rd

Sidewalk Width = 5 ft
Section Length = approx. 680 ft

Section 1 - Cost: \$85,900
Bridge - Prairie Heights Dr

Sidewalk Width = 5 ft
Section Length = approx. 800 ft

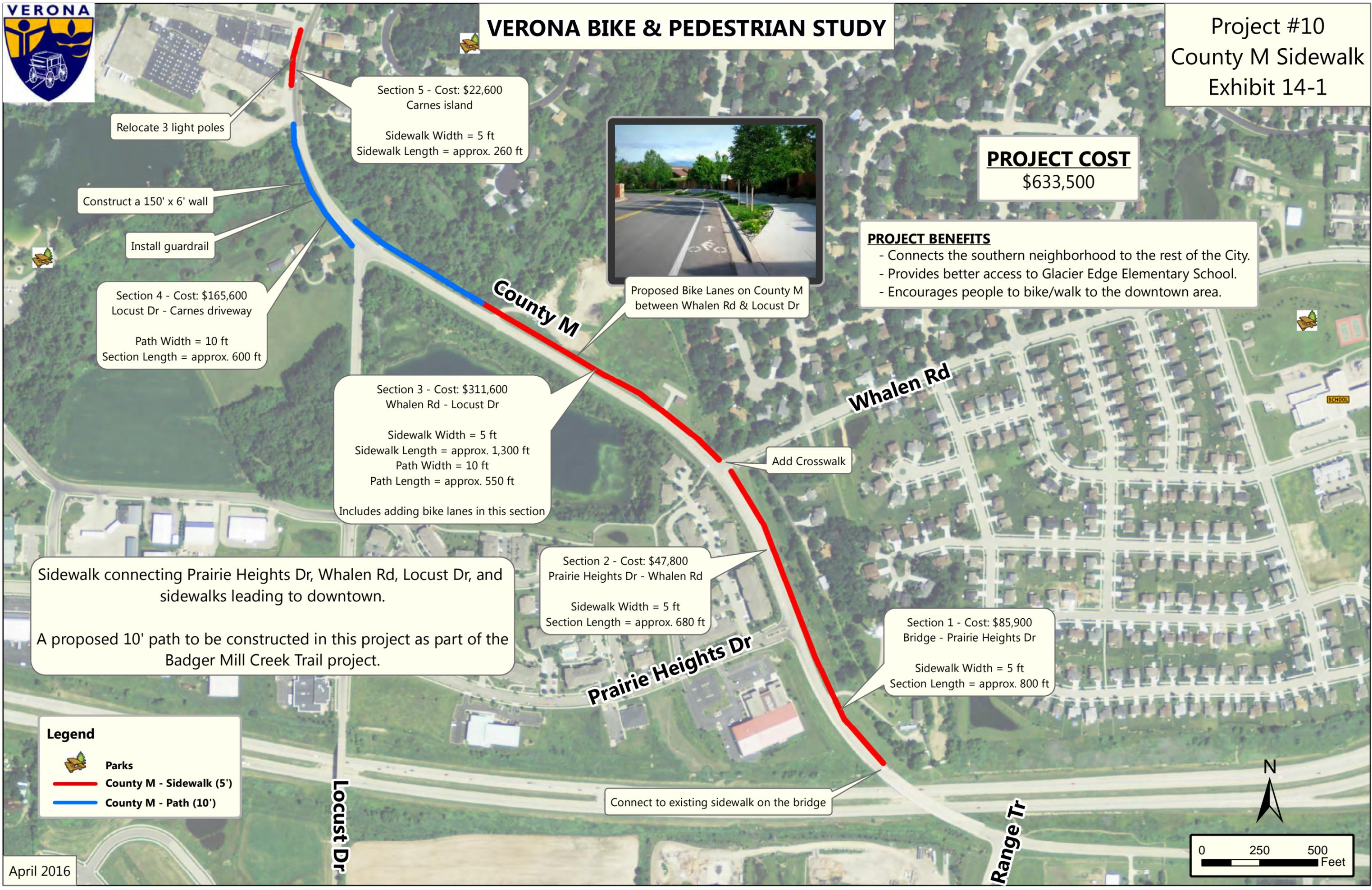
Connect to existing sidewalk on the bridge

Legend

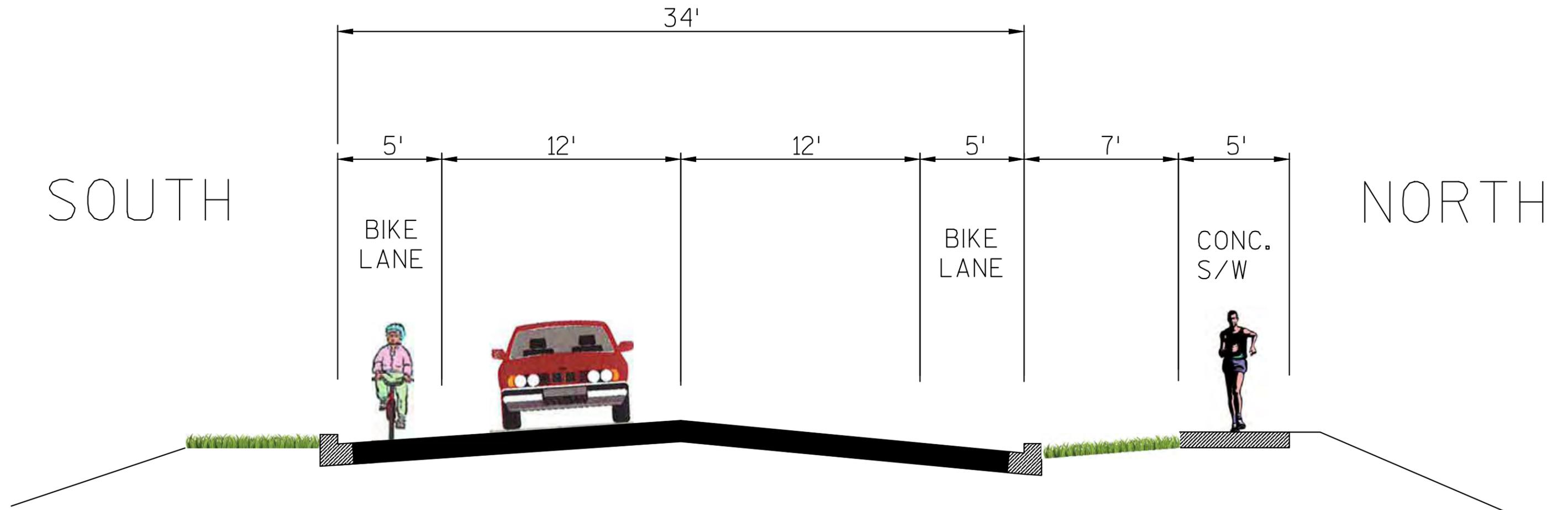
- Parks
- County M - Sidewalk (5')
- County M - Path (10')

North arrow pointing up.

Scale bar: 0, 250, 500 Feet



TYPICAL ROADWAY CROSS SECTION COUNTY M (SIDEWALK)

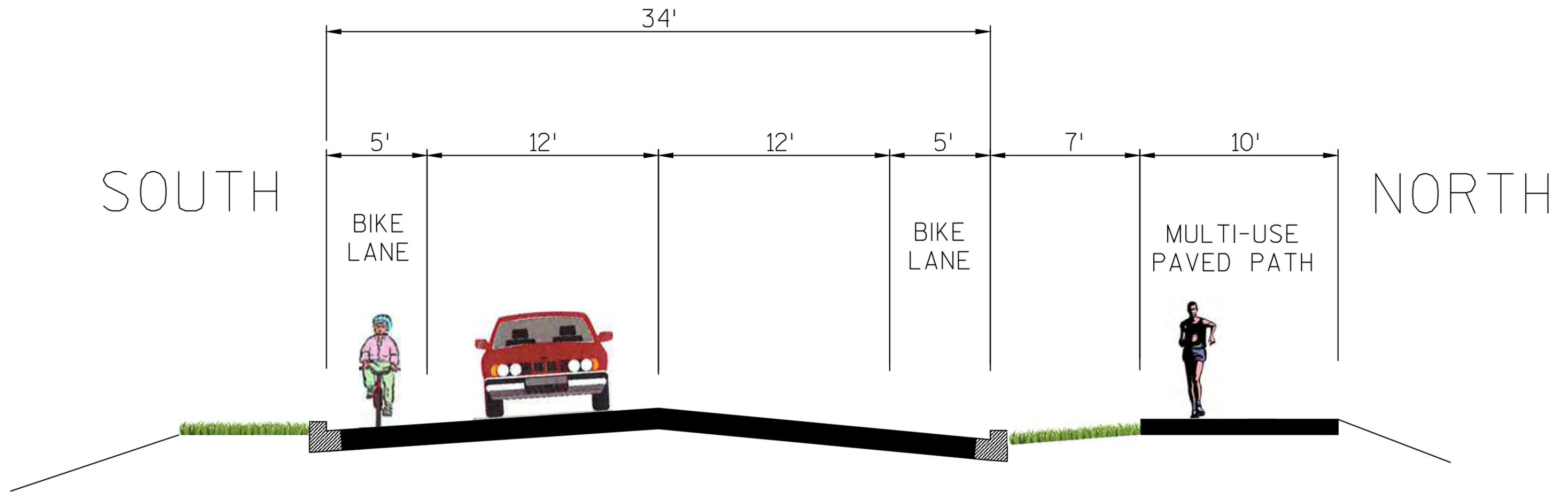


VERONA BIKE & PEDESTRIAN STUDY



PROJECT #4
BIKE LANES - COUNTY M
EXHIBIT 14-2
APRIL 2016

TYPICAL ROADWAY CROSS SECTION COUNTY M (MULTI-USE PAVED PATH)



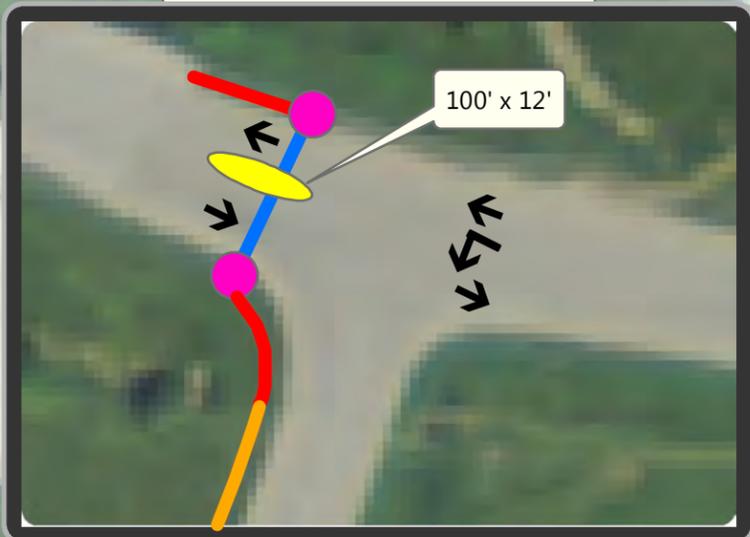
VERONA BIKE & PEDESTRIAN STUDY



PROJECT #4
BIKE LANES - COUNTY M
EXHIBIT 14-3
APRIL 2016



County M & Range Trail intersection



Connect to existing sidewalk on the bridge

County M

High-Intensity Activated crossWalk beacon (HAWK)



Improvements at the County M & Range Trail intersection with a median island, crosswalk and HAWK beacon to allow for safer pedestrian/bicyclist crossing.

Range Trail

PROJECT COST

\$161,100

PROJECT BENEFITS

- Connects southern neighborhood to the rest of the City.
- Improves the County M & Range Tr intersection making it safer for the pedestrians/bicyclists and vehicles.
- Encourages people to bike/walk to the downtown area.

Legend

- HAWK Beacon
- Median Island
- Sidewalk
- Crosswalk
- Sidewalk - by Developer

Sidewalk to be constructed by developer





Verona Bike & Pedestrian Study

Priority	Project	Improvement	Individual Cost	Engineering Year	Construction Year	Project Cost	2016	2017	2018	2019-2021	PW Staff Priority List	COMMENTS
1	Project #2 - Downtown Intersection Improvements	Verona Ave & Westlawn Intersection	\$ 64,100.00	2016	2017	\$ 349,700.00		\$ 349,700.00		\$ -	Verona Ave 2017 Bump outs on 2016	MARIETTA & WESTLAWN INTERSECTION CONST. WILL BE PART OF THE W.VERONA AVE RESURFACING \$178,700
		Verona Ave & Marietta St Intersection	\$ 114,600.00	2016	2017							
		Verona Ave & Franklin St Intersection	\$ 106,900.00	2016	2016							
		Verona Ave & Jefferson St Intersection	\$ 64,100.00	2016	2016							
2	Project #4 - Bike Lanes	Basswood Ave Bike Lanes	\$ 45,600.00	2016	2016	\$ 116,300.00	\$ 116,300.00	\$ -	\$ -	\$ -	#1 - safety, no ped movemen	
		Tamarack Way Bike Lanes	\$ 21,700.00	2016	2016							
		Hemlock Dr Bike Lanes	\$ 10,800.00	2016	2016							
		Edward St Bike Lanes	\$ 38,200.00	2016	2016							
3	Project #8 - Locust Dr Sidewalk	All improvements	\$ 132,300.00	2017	2017	\$ 132,300.00	\$ -	\$ 132,300.00	\$ -	\$ -		
4	Project #10 - County M Sidewalk	Section #4 - Locust Drive-Carnes Driveway	\$ 165,600.00	2016	2017	\$ 188,200.00		\$ 188,200.00	\$ -	\$ -		
		Section #5 - Carnes Island	\$ 22,600.00	2016	2017							
5	Project #3 - County M Intersection Improvements	County M & Locust Dr Intersection	\$ 41,400.00	2016	2016	\$ 114,600.00	\$ 114,600.00	\$ -	\$ -	\$ -		
		County M & Whalen Rd Intersection	\$ 33,900.00	2016	2016							
		County M & Prairie Heights Dr Intersection	\$ 39,300.00	2016	2016							
6	Project #7 - Military Ridge Reserve Trail	All improvements	\$ 155,500.00	2017	2017	\$ 155,500.00	\$ -	\$ 155,500.00	\$ -	\$ -		
7	Project #6 - Ice Age Junction Path Extension	All improvements with limestone	\$ 1,405,890.00	2018	2019	\$ 1,405,890.00			\$ 1,405,890.00			With limestone not asphalt
8	Project #10 - County M Sidewalk	Section #1 - Bridge-Prairie Heights Dr	\$ 85,900.00	2018	2019-2021	\$ 445,300.00	\$ -	\$ 311,600.00	\$ -	\$ 133,700.00		
		Section #2 - Prairie Heights-Whalen	\$ 47,800.00	2018	2019-2021							
		Section #3 - Whalen-Locust	\$ 311,600.00	2017	2017							
9	Project #1 - Bike Loops	Hometown Junction	\$ 2,300.00	2017	2017	\$ 74,400.00	\$ -	\$ 74,400.00		\$ -		
		Loop #1 - Verona East	\$ 13,700.00	2017	2017							
		Loop #2 - South Neighborhood	\$ 10,600.00	2017	2017							
		Loop #3 - Southeast Neighborhood	\$ 11,300.00	2017	2017							
		Loop #4 - North Neighborhood	\$ 8,800.00	2017	2017							
		Loop #5 - Reddan Park	\$ 9,000.00	2017	2017							
Loop #6 - Epic	\$ 18,700.00	2017	2017									
10	Project #11 - Range Trail Intersection	All improvements	\$ 161,100.00	2019	2019-2021	\$ 161,100.00	\$ -	\$ -		\$ 161,100.00		
11	Project #9 - Reddan Park Trail	All improvements	\$ 228,100.00	2018	2018	\$ 228,100.00			\$ 228,100.00	\$ -		
12	Project #5 - Military Ridge State Trail Paving	All improvements	\$ 288,600.00	2019	2019-2021	\$ 288,600.00	\$ -	\$ -	\$ -	\$ 288,600.00		
Total			\$ 3,659,990.00			\$ 3,659,990.00	\$ 255,900.00	\$ 1,341,700.00	\$ 1,633,990.00	\$ 583,400.00		
			15% CONTINGENCY			\$ 548,998.50	\$ 38,385.00	\$ 201,255.00	\$ 245,098.50	\$ 87,510.00		
			TOTAL			\$ 4,208,988.50	\$ 294,285.00	\$ 1,542,955.00	\$ 1,879,088.50	\$ 670,910.00		
			FUNDED UNDER THE W. VERONA AVE RESURFACING				Borrowing	\$ 349,700.00				
			FUNDED PARKS CAPITAL PLAN, REDDAN PARK TRAIL				600,000	\$ 52,455.00	\$ 100,000.00			



APPENDIX

VERONA BIKE AND PEDESTRIAN STUDY

September 24, 2015



Conventional Bike Lanes

- Bike lanes designate an exclusive space for bicyclist through the use of pavement markings and signage
- Typically on the right side of the street; left side may be installed on one-way streets
- May be buffered if space permits
- Desired width of 6'; minimum of 4'



Shared Lanes or “Sharrows”

- Pavement markings used to indicate a shared lane environment for bicycles and vehicles
- Should not be considered a substitute for bike lanes
- Not appropriate on streets that have speed limit above 35 mph



Source: NACTO Urban Bikeway Design Guide

VERONA BIKE & PEDESTRIAN STUDY



Cycle Tracks or “Separated Paths”

One-way Protected Cycle Tracks

- Exclusive bike facility that combines the user experience of a separated path with the on-street infrastructure of a conventional bike lane
- May be combined with a parking lane or other barrier between the cycle track and the motor vehicle travel lane



Source: NACTO Urban Bikeway Design Guide

VERONA BIKE & PEDESTRIAN STUDY



Intersections Treatments

Crossing Markings

- Guide bicyclists on a safe and direct path through intersection
- Reinforces that through bicyclists have priority over turning vehicles or vehicles entering the roadway, including driveways
- Raises awareness for bicyclists and motorists of potential conflict areas



Source: NACTO Urban Bikeway Design Guide



CITY OF VERONA



VERONA BIKE & PEDESTRIAN STUDY



Intersections Treatments

Median Refuge Island

- Protected spaces placed in the center of the street to facilitate bicycle and pedestrian crossings
- Allows bicyclists and pedestrians to navigate only one direction of traffic at a time
- Provides a protected space to wait for an acceptable gap in traffic
- Desired width is 10' ; minimum of 6'



Source: NACTO Urban Bikeway Design Guide



CITY OF VERONA



VERONA BIKE & PEDESTRIAN STUDY



Signals

Activate Warning Beacon

- User-actuated amber flashing lights that supplement warning signs at unsignalized intersections
- Actuated either manually by a push-button or passively through detection
- Should be used to alert drivers to yield where bicyclists have the right-of-way crossing a road



Source: NACTO Urban Bikeway Design Guide



CITY OF VERONA

VERONA BIKE & PEDESTRIAN STUDY



Signals

Hybrid Beacon

- Also known as High-intensity Activated Crosswalk (HAWK)
- Consists of a signal-head with two red lenses over a single yellow lens on the major street, and pedestrian and/or bicycle signal heads for the minor street
- Improves non-motorized crossings of major streets in locations where side-street volumes do not support installation of a conventional traffic signal



Source: NACTO Urban Bikeway Design Guide



CITY OF VERONA

VERONA BIKE & PEDESTRIAN STUDY



Signals

Hybrid Beacon

Sequence for Coordinated HAWK, Bicycle and Pedestrian Signal.

Interval	Motor Vehicle	Bicyclist	Pedestrian
1			
2			
3			
4			
4			
5			15
6			10
7			5
8			
1			



Source: NACTO Urban Bikeway Design Guide



CITY OF VERONA



VERONA BIKE & PEDESTRIAN STUDY



Signing

Bike Route Wayfinding

- Comprehensive signing and/or pavement markings to guide bicyclists to their destinations along preferred bicycle routes
- Signs are typically placed at decision points
- Can include arrows, destinations and distance/time
- Direct users to a number of different types of destinations:
 - On-street bikeways
 - Commercial Centers
 - Schools
 - Parks and trails
 - Hospitals
 - Civic/Community destinations



Source: NACTO Urban Bikeway Design Guide



CITY OF VERONA



VERONA BIKE & PEDESTRIAN STUDY



Walk [Your City] Tool Pedestrian wayfinding signs

- Online source for anyone to create their own wayfinding signs to print and install
- The signs use minutes to walk to tell the distance to a destination, and unique colors to pertain to different destinations
- The tool integrates with Google Maps
- People can scan the QR code on the sign, and it directs them to a mobile friendly web page with walking directions to the destination



www.walkyourcity.org



CITY OF VERONA

VERONA BIKE & PEDESTRIAN STUDY



Bike Route Wayfinding Surrounding Areas



CITY OF VERONA

VERONA BIKE & PEDESTRIAN STUDY



Pavement Markings Surrounding Areas



Current Facilities City of Verona



