St. Joseph Bicycle and Pedestrian Facility Implementation Study

Prepared for:
Town of St. Joseph, Wisconsin

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In cooperation with the St. Joseph Parks, Trails and Recreation Committee

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Executive Summary

The Town of St. Joseph plans to pursue funding to design and construct bicycling and pedestrian facilities identified in the 2013 Town of St. Joseph Outdoor Recreation Plan. That plan identifies eight alignments desired by the community. The Town of St. Joseph hired Stantec to provide planning and preliminary design work that will assist the Town when applying for grant resources that could fund right-of-way acquisition, final design and construction of planned alignments. The imminent completion of the St. Croix Crossing Bridge and the opportunities for enhanced connections via the Loop Trail adds urgency to the community's desire to begin implementation of the planned trail network. The new bridge will connect Minnesota and Wisconsin in St. Joseph. The project includes funding for construction of the "Loop Trail," a new bicycling trail connecting the St. Croix Crossing Bridge and the existing Stillwater Lift Bridge on both sides of the river. This trail will connect St. Joe with Minnesota bicycling facilities for the first time and open opportunities for recreation within and around St. Joseph.

This plan studies potential implementation of select alignments that meet Town priorities and are best positioned to connect key community destinations with the Loop Trail. The St. Joseph Parks, Trails and Recreation Committee prioritized the following alignments for this study:

- River Road (Alignment 1A)
- Anderson Scout Camp Trail (Alignment 4A)
- State Highway 35 (Alignment 2A)

The Committee directed Stantec to further analyze preliminary design considerations and requirements for future applications to fund construction of trails along these alignments.

Stantec conducted interviews with key agency partners at Wisconsin Department of Natural Resources, Wisconsin Department of Transportation, and St. Croix County to understand how each agency's priorities might align with St. Joseph's to support construction of these segments and with other segments on state and county properties that could connect this trail network.

In addition, Stantec researched key funding sources to understand the eligibility requirements proposed facilities must meet in order to score highly on applications for these funds. Through Knowles-Nelson Stewardship grants, WisDNR provides 50% of matching funds for off-road trails serving a recreational purpose. The program funds both land acquisition and trail construction. Through the federal Transportation Alternatives Program, WisDOT provides 80% of matching funds for on-road and off-road bicycling facilities that serve utilitarian transportation trips.

Finally, Stantec evaluated potential design options and construction costs for both on-road bicycling facilities and off-road trails in order to generate a preliminary understanding of right-of-way needs and relative funding needs for design options on each of the prioritized alignments. Construction cross sections and preliminary cost estimates for these alignments are described in the ensuing document.

1.0 INTRODUCTION

The Town of St. Joseph plans to pursue funding to design and construct alignments on the bicycling and pedestrian network identified in the 2013 Town of St. Joseph Outdoor Recreation Plan. The plan identifies eight alignments desired by the community.

The imminent completion of the St. Croix Crossing Bridge adds urgency to the community's desire to begin implementation of the planned trail network. Nearby road realignments and bicycling trails incorporated into the bridge's design create opportunity to enhance the bicycling network in St. Joseph. After bridge construction, portions of State Trunk Highway 35 will be turned over to the Town, creating an opportunity to reexamine how space is allocated in this right-of-way for bicycle and motorized travel. Meanwhile, the new Loop Trail presents an opportunity to connect destinations in St. Joseph with a wider trail network. This five-mile multi-use trail will run on both sides of the river between the St. Croix Crossing Bridge and the existing Stillwater Bridge, connecting bicyclists in St. Joseph to the St. Croix National Scenic Riverway and destinations in Minnesota.

The Town of St. Joseph hired Stantec to provide planning and preliminary design work that will assist the Town when applying for grant resources that could fund right-of-way acquisition, final design and construction of bicycling facilities. A study of select alignments that meet town priorities and are best positioned to connect key community destinations with the Loop Trail is included in this plan.

1.1 BENEFITS OF BICYCLING FACILITIES

In addition to supporting the goals of the St. Joseph Outdoor Recreation Plan, biking and walking facilities can bring economic benefit to a community. At least 49 percent of Wisconsin residents engage in bicycling for recreational purposes, and this produces positive economic impact through:

- Tourism/Events
- Community improvement
- Property value
- Health care costs

Rural communities have successfully used trails to attract tourist dollars. Many people travelling to a trail and spending the night are more economically well off with significant discretionary income. Different surveys have found that one third to one half of overnight trail users had incomes above $100,000 per year.[1]

[1] American Trails, Summer 2011. http://www.mlppubsonline.com/publication/?i=81590. pg 6

Communities with strong trail networks can experience economic benefit beyond what is spent by visitors. Some have found that property values as a whole increase because of the presence of public amenities like trails. This in turn supports higher tax revenues in these communities. Studies have shown that 70% of landowners felt that overall, an adjacent trail was a good "neighbor," with positive impacts including 1) getting in touch with nature (64%), 2) recreational opportunity (53%), and 3) health benefits (24%).[2]

Individuals who bicycle for transportation purposes can also experience economic benefit. A study of a Lincoln, Nebraska trail found that residents spent a per capital annual cost of $209 to use their trails, $59 of which was for construction and maintenance of the trail itself. However, their per capita annual direct medical benefit from increased physical activity levels as a result of using the trails was $564.[3] Meanwhile, the national Safe Routes to School movement is dedicated to promoting opportunities for children to walk or bike to school. Active transportation is a means for children to meet recommended daily physical activity guidelines and reduce risk of obesity and related diseases.

Development of trails in the Town of St. Joseph creates opportunities for economic benefit and a higher quality of life for St. Joseph citizens. Many communities that have implemented trails have found that their wide-ranging and long-lasting benefits to individuals and communities as a whole validate the expense of trail construction.

2.0 COMMUNITY INPUT

Stantec staff met with the Town of St. Joseph Parks, Trails and Recreation Committee in April 2014 to understand key destinations and community preferences regarding bicycle facilities.

The committee identified the following destinations as important to access by bicycle:

Town Destinations	Neighboring Destinations
Perch Lake/Homestead Park	Willow River State Park
Town Hall Park	Burkhardt
Bass Lake Public Access	Somerset
Houlton Elementary School	Stillwater
Bass Lake Cheese Factory	Hudson
	New Richmond

When considering connections among these destinations, the following principles summarize the community's priorities for bicycle trails:

- Separate bicyclists from motorized traffic on off-road trails wherever possible
- Build trails that can access a broader system of bicycling and walking facilities

[2] Gary Sjoquist "The Economic and Social Benefits of Trails," http://www.americantrails.org/resources/economics/MNecon.html,
[3] American Trails, Summer 2011. http://www.mlppubsonline.com/publication/?i=81590. pg 8

- Build trails that connect destinations
- Capture scenic elements within the town
- Mitigate hills

3.0 PRELIMINARY DATA GATHERING

To better understand planned and existing bicycle facilities in St. Joseph, Stantec developed the map in Appendix A.1. The map depicts the Parks, Trails and Recreation Committee's desired destinations, the eight alignments identified in the 2013 Outdoor Recreation Plan, and the proposed Loop Trail alignment. Most alignments are proposed along existing roadways, although two are cross-country routes that do not align with existing roads.

Because ownership of underlying right-of-way will determine which entity has primary responsibility for implementing a biking or walking facility, the map also depicts ownership of town, county and state roads in St. Joseph. The State of Wisconsin rates all county and state roads' suitability for bicycling based on traffic volumes, roadway widths, and the presence of paved shoulders. These ratings are also presented on the map.

Stantec analyzed this map to identify logical segments among each of the eight alignments based on their connection points to other planned facilities and underlying right-of-way ownership. These are presented in Appendix A.2. Two additional alignments were added to the eight originally identified in the 2013 Outdoor Recreation Plan to connect key destinations identified by the Parks, Trails and Recreation Committee as part of this study. The first is labeled 1B and depicts a connection from St. Joseph into Willow River State Park. The second, labeled segments 9A to 9F, was added to reflect community input regarding the importance of bicycling to Perch Lake and Bass Lake.

Next, the Parks, Trails and Recreation Committee identified which segments depicted in Appendix A.2 they considered priorities for further examination in this plan based on their connectivity to important destinations such as the Loop Trail, Willow River State Park, and Burkhardt. Recognizing that many of the proposed segments are on right-of-way owned by the state or county, the map presents each segment according to the agency that would be primarily responsible for implementing a biking or walking facility on that segment.

Based on underlying right-of-way ownership and the alignments' connectivity to key destinations, the Parks, Trails and Recreation Committee prioritized the following alignments and directed Stantec to further analyze preliminary design and considerations for future applications to fund construction on these segments:

- 1A (River Road)
- 4A (Anderson Scout Camp Trail and State Highway 35 turnback portion)
- 2A (State Highway 35 turnback portion)

Each of these alignments follows a roadway that is owned or planned to be turned back to the Town of St. Joseph.

To facilitate implementation of biking and walking facilities along county and state roads, the Town of St. Joseph would need to partner with county and state agencies to enhance facilities

on county or state right-of-way. St. Joseph would not be eligible to apply independently for grant funding to make bicycling improvements on those roads. The following segments remain important priorities to the Parks, Trails and Recreation Committee:

- 2B (New Highway 35)
- 3A (Highway 35 south of the St. Croix Crossing Bridge)
- 3B (Highway 35 north of the St. Croix Crossing Bridge)
- 5 (County Road A)
- 1B (Willow River State Park trail)

The Parks, Trails and Recreation Committee will continue to seek opportunities to partner with other agencies responsible for implementation of these segments. Each of these segments is depicted in Appendix A.3.

4.0 FACILITY SEGMENT DEVELOPMENT

To understand how St. Joseph's prioritized alignments complement goals to promote biking and walking among key agency partners, Stantec contacted individuals at partner agencies to discuss considerations regarding their role in coordinating or supporting efforts to develop St. Joseph's prioritized alignments. Stakeholders contacted include:

- Aaron Mason, Assistant Park Superintendent, Willow Rive State Park, Wisconsin Department of Natural Resources
- Jeffry Abboud, Northwest Region State Bicycle/Pedestrian Coordinator, Wisconsin Department of Transportation
- Ellen Denzer and Amanda Engesether, St. Croix County

4.1 WILLOW RIVER STATE PARK, WISCONSIN DEPARTMENT OF NATURAL RESOURCES

Stantec staff contacted Aaron Mason, Willow River State Park Assistant Park Superintendent in May 2014 to discuss the possibility of Alignment 1A along River Road and Alignment 1B through Willow River State Park. The northern boundary of Willow River State Park is along River Road; any off-road trail along Alignment 1A would likely require construction within park-owned land. In addition, both the park and nearby Burkhardt are important destinations to St. Joseph citizens, who desire an off-road trail connection from Alignment 1A into the park and through it to Burkhardt. A map of Willow River State Park is included in Appendix A.4. The following is a summary of Stantec's communication with Mason.

- Park staff is generally supportive of a trail segment that would connect Willow River State Park to the National Park system via the Loop Trail.
- Construction of paved bicycling trails in Willow River State Park is a possibility. Routes would have to first be incorporated into the park's master plan.

- Park staff plan to initiate a variance to the park master plan in fall 2014 or winter 2015 to include bicycling trails. Park users have expressed interest in single-track trails (mountain bike trails) and a request for a Loop Trail connection could be included as part of this variance.
- As part of the variance process, park staff will conduct a public hearing before forwarding recommendations to the Natural Resource Board. Board approval is required before park staff can initiate further work on projects.
- Regarding a trail entering into the park in St. Joseph, park staff is most interested in an off-road trail that runs north-south, connecting St. Joseph to Hudson. This enables access to the park by visitors from both directions. Park bicycling trails are typically constructed as gravel, but a paved trail is an option.
- Should St. Joseph residents desire a trail connection to Burkhardt, a potential solution is a short spur trail connecting the proposed north-south trail to the existing park road. Topography and wetlands in park's northeastern corner limit feasibility of an off-road bicycling trail parallel to River Road in that section.
- A small bridge was recently installed on a park hiking trail that could be repurposed and shared with bicyclists.
- In Wisconsin, most major off-road trails are part of the state bike trail system. Many trails in state parks are part of this system and it is likely that any trails on Willow River State Park property would be added to this system.

4.2 WISCONSIN DEPARTMENT OF TRANSPORTATION

Stantec staff contacted Jeffry Abboud, Wisconsin DOT Northwest Region State Bicycle/Pedestrian Coordinator in May 2014 to understand Wisconsin DOT's plans for construction of the Loop Trail and maintenance of State Trunk Highway 35 following construction of the Stillwater Crossing Bridge. State Trunk Highway 35 creates a logical connection between Willow River State Park and the Loop Trail via Alignment 1A, making this an important location to support bicycling enhancements. In addition, Alignment 2A and 4 are along old Highway 35 and their use will be affected by the nearby Highway 35 and Loop Trail. The following is a summary of Stantec's communication with Abboud. See Appendix A.5 for a project layout of the Loop Trail, Stillwater Crossing Bridge, and related roadway reconstruction.

- Design of the Wisconsin portion of the Loop Trail has not been finalized. Design work will likely be completed in 2016. Construction would take place after the new St. Croix Crossing Bridge and STH 35 are open to traffic.
- At the crossing of STH 35 and new STH 64, STH 64 will run below grade and cross beneath STH 35. The Loop Trail, which runs adjacent to STH 64, does not have a planned connection to STH 35 at that location. Because of right-of-way constraints, options for a vertical connection between the Loop Trail and STH 35 are extremely limited.
- On the new STH 35 overpass above new STH 64, the state plans to construct the bridge with an 8-foot wide pedestrian overlook on the west side of the bridge and 4-foot wide protected bicycle lane on the west side. A facility on the east side of the bridge is unlikely. No connection is currently planned between this bridge and the Loop Trail running below it.

- The state plans to construct a trailhead for the Loop Trail off County Road E, just east of Houlton Elementary School.
- Space has been allocated for a future park and ride lot at the southwest corner of the intersection STH 64 and new STH 35.
- Wisconsin DOT will turn over the portion of STH 35 north of new STH 35 to Town ownership around 2017 or early 2018 (this portion overlaps with Alignments 2A and 4A). Typically, Wisconsin DOT performs a mill and overlay on the roadway before turning over ownership to local jurisdictions. However, local jurisdictions desiring to reconstruct a road for other purposes, such as bicycle trails, have the option to negotiate with the DOT and accept a roadway in its current condition along with funds equal to the cost of the mill and overlay.
    - From the new STH 35 intersection south to the STH 35 bridge over new STH 64, existing roadway surface will remain in place.
    - Along STH between Hudson and Houlton, no additional roadway work is programmed through 2019.
- Per state policy, Wisconsin maintains a three foot wide shoulder on all state highways. Areas determined to be 'critical bicycling connections' may be widened to five feet. State Highway 35 currently has a five foot wide shoulder. The state typically does not construct off-road trails adjacent to roadways unless these facilities are requested and funded by local sources.

4.3 ST. CROIX COUNTY COMMUNITY DEVELOPMENT

Stantec staff and St. Joseph Parks, Trails and Recreation committee member Mark Vanasse met with Amanda Engesether and Ellen Denzer of St. Croix County in June 2014 to discuss county-wide trail priorities impacting St. Joe. The following is a summary of key points of discussion during that meeting.

- Off-road trails are not common in St. Croix County. Trail proposals have historically been met with opposition from land-owners. Those off-road trails that do exist are typically short segments within newer sub-division developments.
- Steep terrain is a barrier to trail construction in much of the county. On many roads, widening existing shoulders to better-accommodate bicyclists is cost-prohibitive due to steep slopes on either side.
- St. Croix County staff have received a Transportation Alternatives Program grant to update the county's bicycle and pedestrian plan. The plan will review priorities for bike routes in communities across the county and update the county's planned bicycling network. County community development staff hope to work closely with county transportation staff during this process to identify locations for enhanced bicycling accommodations on the roadway network. In particular, the western half of the county is experiencing increased development and traffic demand due to construction of the St. Croix Crossing Bridge. Low-traffic roads that were once comfortable for most bicyclists may require upgrades to remain bicycling routes in the future.

- The county is a bird migratory area and contains several natural areas and designated environmental sites. One goal of the county-wide bicycling system is to connect these recreation destinations.
- The county does not currently have a policy regarding local cost participation for trail construction on county road right-of-way.
- In general, St. Joseph's proposed trail connections are consistent with the needs of neighboring communities.
- Wisconsin DOT has not yet initiated design of the Loop Trail. St. Croix County staff recognize the importance of partner participation in the trail's final design, particularly with regard to access points on and off the trail.

5.0 FUNDING PROGRAMS FOR BIKING AND WALKING FACILITIES

To understand what requirements proposed alignments in St. Joseph would have to meet in order to be eligible for external funding, Stantec investigated the two primary sources of biking and walking facility funding in Wisconsin: the Federal Transportation Alternatives Program, administered by the Wisconsin Department of Transportation; and the Knowles-Nelson Stewardship Grants, administered by Wisconsin Department of Natural Resources.

5.1 FEDERAL TRANSPORTATION ALTERNATIVES PROGRAM (WISDOT)

This program funds on-road bicycling facilities, off-road bicycling facilities and infrastructure to support Safe Routes to School. Emphasis is on routes that serve utilitarian trips, rather than recreational trips.

- The program provides 80% project funding and requires a 20% local match. Federal funds and state transportation funds are not eligible sources of local match.
- The minimum award for infrastructure projects is $300,000. The minimum award for federally-funded real estate costs is $100,000. The minimum award for non-infrastructure projects is $50,000.
- Applications are solicited every other year; the next opportunity to apply is 2015.
- Attributes of high-scoring applications for bicycle facilities include:
    - The facility serves considerable daily users in relation to the amount of funding requested
    - Certainty that the project will serve a strong utilitarian/transportation purpose, based on the project's location and connection to origins, destinations, and other facilities
    - Community commitment to year-round maintenance of the facility
- Attributes of high-scoring applications for Safe Routes to School Infrastructure grants include:
    - School has completed a Safe Routes to School plan or undertaken a Safe Routes planning assessment

    - A severe problem has been identified, e.g. documented crash involving school aged children or high level of parental concern documented in survey data
    - Applicant has proven ability to administer WisDOT and federal funds and resolve any potential obstacles (eg. real estate titles) prior to application.
- Local agency coordination is very important to applicants' success. Identification of St. Joseph alignments in St. Croix County plans will enhance St. Joseph's eligibility to receive funding for those alignments.

5.2 KNOWLES-NELSON STEWARDSHIP PROGRAM (WISDNR)

This program combines funding from different sources and distributes them through a single application process, conducted annually. It is WisDNR's role to help guide applicants into the right programs. It is in applicants' best interest to score every point possible on the application. WisDNR can "marry grants" that score high under multiple programs. However, this is unlikely because competition for funding is high. In 2014, approximately one third of applications were funded.

- On-road bicycling facilities are ineligible for these grants. Proposed off-road trails must have five feet of separation from a roadway to receive funding.
- Trail funding is primarily distributed under two programs, each of which require 50% local match:
    - Recreational Trails Aid Program (federal dollars).
        - RTA applicants compete statewide.
        - Last year, the program had a cap of $45,000 on individual awards. No cap is anticipated during the May 2015 funding cycle. The 2016 and 2017 funding cycles will likely have caps of $45,000.
        - Priority under RTA is highest for trail maintenance, followed by development, followed by land acquisition.
    - Acquisition and Development of Local Parks (state dollars)
        - ADLP funding is divided regionally; projects compete within their region
        - Projects do not have caps under this program. If any project request is greater than $250,000, it is sent to a joint finance committee for review. Any land acquisition above $350,000 requires a second appraisal.
        - Single trail projects usually do not score well enough on applications to receive ADLP dollars. Trails must be able to connect to a state trail and other communities to score highly on applications.
        - Applications for trail development are not considered unless the applying agency owns trail right-of-way or has obtained a 25-year lease.
        - The program can fund land acquisition to purchase easements or property from land-owners for the purpose of building trails. Applicants must conduct appraisals and obtain agreements from landowners before applying for funds.

- Local agency coordination is very important to applicants' success. Successful applicants demonstrate support and coordination beyond letters of recommendation from partner agencies.

5.3 STATE BIKE TRAIL PROGRAM

In Wisconsin, many trails are designated as state trails. These trails are marketed by WisDNR as part of the state trail system and have potential to attract riders from a wide geographic area. Users of the state trail system are required to purchase a state trail pass ($20/annual, $4/daily rate in 2015). Communities that sell state trail passes keep a portion of these revenues (typically 70%) to put toward maintenance local trail maintenance.

Not all trails that are part of the state trail program are owned by the state. In some instances, local communities build and own a trail, but participate in the state trail program because of the marketing benefits and opportunities to collect trail pass revenues. All trails that are part of the state trail system must be built and maintained to meet state design standards and be approved by WisDNR as state trails. Not all communities that are part of the state trail system require users to purchase trail passes. An example is the Green Circle Trail in Stevens Point, which is maintained by the community through other funds.

The Loop Trail has not been proposed to be part of the state bike trail system, but there is a strong likelihood that it will be added to the system once other connections to and from the trail are in place. St. Croix County is expected to take over long term maintenance of the trail on the Wisconsin side of the St. Croix River.

Should St. Joseph pursue a Knowles-Nelson Stewardship grant for development or acquisition of a trail, designation of the segment as a state trail would enhance the application. St. Joseph would have to request state trail status and be approved before submitting a Stewardship grant application. Approval as a state trail typically takes two to four months.

6.0 PRELIMINARY CONSTRUCTION FEASIBILITY

To assess what resources would be required to develop St. Joseph's preferred alignments, Stantec developed preliminary construction cross sections of these alignments and estimates of the cost to construct these cross sections given underlying topographic conditions along these alignments.

In response to community preference for separated off-road trails versus on-road facilities, Stantec first analyzed the potential for off-road trails within existing roadway easements and outside of these easements. Should St. Joseph pursue the construction of trails outside of existing roadway easements, the Town will first have to acquire easements or right-of-way from property owners whose land underlies desired trail segments. The Knowles-Nelson Stewardship grants assist with land acquisition costs for trails; however, entities must first negotiate purchase agreements from willing sellers to become eligible for this assistance.

Recognizing that negotiating land acquisitions with individual property owners can be a lengthy and controversial process, Stantec also analyzed the feasibility of constructing trails within existing road right-of-way easements. To be eligible for Knowles-Nelson Stewardship funds, trails must maintain five feet of separation from a road to meet the requirements of an "off-road" trail. Generally, design options within existing road right-of-way would require costly alterations to accommodate trails, drainage ditches, shoulders, and roads within this constrained space.

In order to help the Town evaluate lower-cost options for bicycling facilities in the road right-of-way, Stantec also explored the feasibility of options to add on-road bicycling facilities, such as widened shoulders, bike lanes or protected bike lanes. These improve the safety and comfort of bicyclists riding on the roadway, can typically be accommodated within existing right-of-way, and generally require less reconstruction than adding an off-road trail within roadway right-of-way.

Each of these design cross sections is presented in further detail on the following pages. Full details are presented in Appendix A.6. Stantec only analyzed alignments along roadways owned by the Town of St. Joseph, as these are the locations in which St. Joseph would be eligible to apply for funding. As depicted in Appendix A.3, these segments are:

- 1A (River Road)
- 4A (Anderson Scout Camp Trail and State Highway 35 turnback portion)
- 2A (State Highway 35 turnback portion)

6.1 ASSUMPTIONS

Stantec used the following standard elements of off-road trail design in determining construction costs:

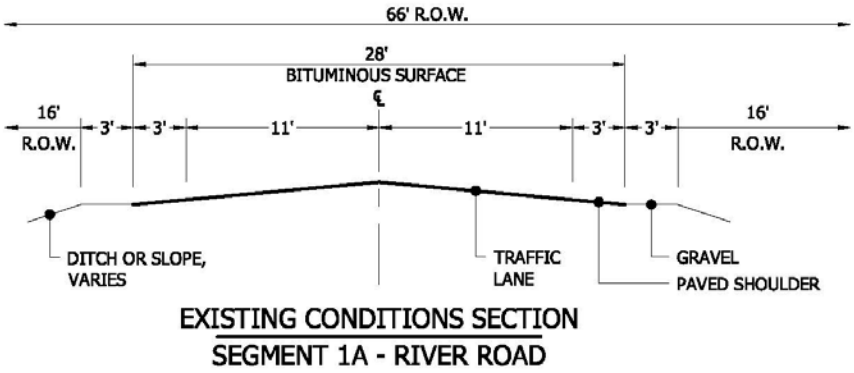
- 10' bituminous trail
- 2' gravel shoulders
- 3' trail clear zone
- Retaining walls with fencing where required
- 5' minimum separation between trail and roadway

For on-road facilities, Stantec assumed the following standard conditions:

- 5' lanes or paved shoulders on both sides of the roadway
- 3' gravel shoulders
- 4' buffer width for protective barriers (for protected bike lane options)

The construction cost estimates presented in this document include construction, construction contingency, and soft costs (engineering, legal, and administrative fees). They do not include right-of-way acquisition or temporary construction easement costs. Construction cost estimates assume any utility relocation would be done at the expense of the utility company.

6.2 ALIGNMENT 1A: RIVER ROAD



Currently, River Road falls within a 66 foot right-of-way. The existing two-lane road is 22 feet wide with three-foot paved shoulders and three-foot gravel shoulders on both sides of the road. The remaining right-of-way is sloped to tie into existing grades or used as ditch to accommodate water drainage.

Typical road conditions along River Road, depicting shoulders, drainage ditches, and adjacent agricultural land, trees, and residential properties.

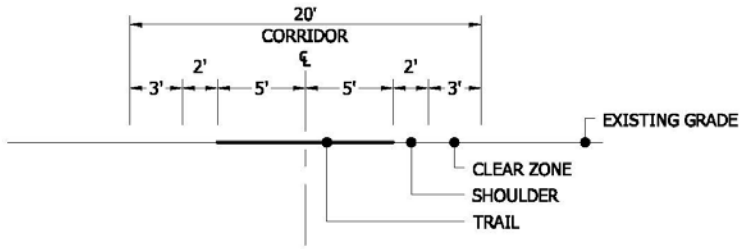
Stantec investigated four options for constructing trail alignment 1A along River Road. The cost to construct each alignment is presented here:

Alignment 1A Estimated Construction Cost			
	Length (linear feet)	Typical cost/lf	Estimated cost
Option 1: Off-road trail, acquired ROW	5,600	$105	*$588,000*
Option 2: Off-road trail, existing ROW	5,600	$620	*$3,471,992*
Option 3: Wide shoulder	5,600	$155	*$867,988*
Option 4: Protected bike lane	5,600	$270	*$1,511,980*

6.2.1 Alignment 1A Option 1

This option depicts construction of an off-road trail outside the existing right-of-way along the south side of River Road. A trail on the south side would allow easy connection into Willow River State Park, should the park develop a bicycling facility there in the future. This analysis assumes trail development is on the south side of River Road. Although not analyzed here, north side trail development could be considered as an alternative.

With an estimated construction cost of $588,000 this is the lowest cost option. Unlike the other options for this segment, it would not require any changes within the road right-of-way to realign the road or excavate new ditches in order to accommodate a trail. Construction costs assume the cost of materials and clearing and grading of existing agricultural fields and wooded areas.



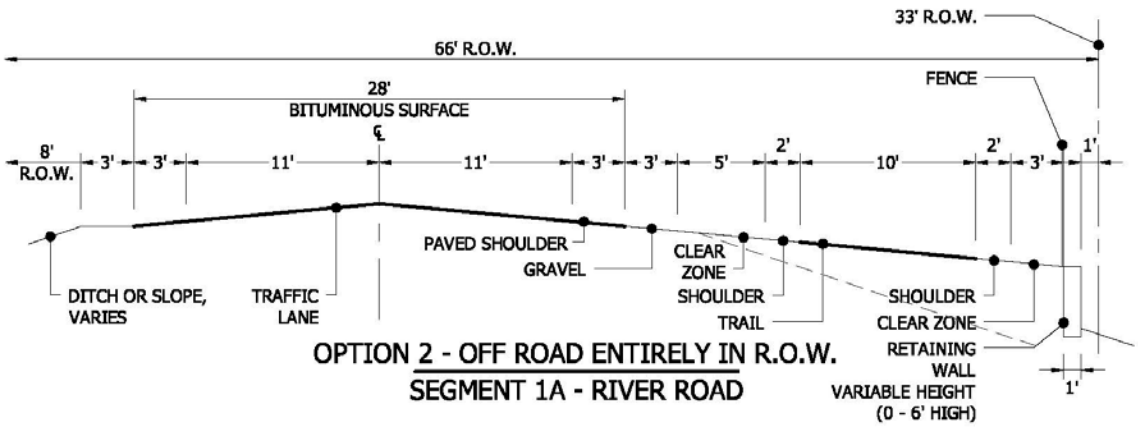
OPTION 1 - OFF ROAD ACQUIRE R.O.W. SECTION
SEGMENT 1A - RIVER ROAD

Although least expensive to construct, this option requires acquisition of land easements or right-of-way outside the existing road right-of-way. On this alignment, thirteen different properties exist between Highway 35 and Willow River State Park. Each property owner would have to grant easements or land title before construction of a trail could begin. The following table summarizes how many properties currently abut River Road on the south side and the approximate number of square feet that would need to be acquired from each to construct this option:

Land Acquisition Requirements, Option 1		
Parcel	Frontage Length (ft)	Acquisition SQFT
1	1,332	26,633
2	217	4,342
3	334	6,672
4	265	5,292
5	650	13,007
6	330	6,606
7	1,134	22,689
8	333	6,666
9	674	13,485
10	326	6,518
11	265	5,304
12	254	5,077
13	336	6,723

6.2.2 Alignment 1A Option 2

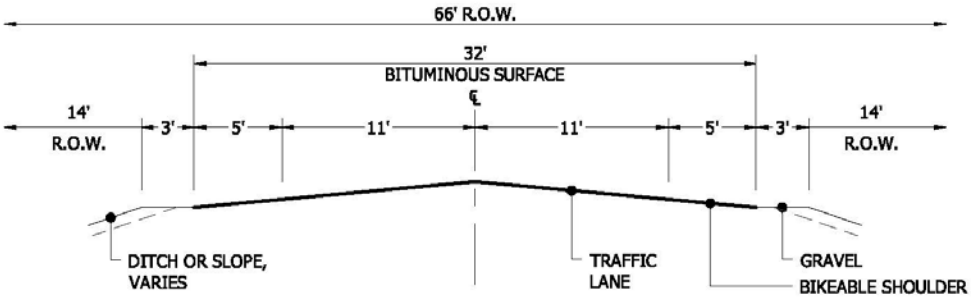
This option depicts construction of an off-road trail within the existing 66' right-of-way easement owned by the Town. This is the highest cost option for this alignment at $3,471,992. In order to accommodate a trail within existing right-of-way, the road would have to be shifted north to create space for a trail along the south side of the road. This necessitates filling existing ditch on both sides of the road and adding a new ditch on the north side of the road and storm sewers on the south side of the road for drainage. Because of existing slopes, retaining wall and fencing are necessary to protect trail riders from steep slopes along the trail's southern edge.



6.2.3 Alignment 1A Option 3

This option depicts construction of a five foot wide shoulder on both sides of the road. Wider shoulders would create additional space for bicyclists on the road without necessitating a separate facility. Bicyclists would travel in the direction of moving traffic and be governed by the same signage in place for vehicular traffic. Construction costs of this option are estimated at $867,988. Constructing this option would require shifting the existing ditch further from the road and adding more bituminous surface to the road. In total, this option adds four feet of bituminous surface (two feet on each side of the road) to the existing condition. However, this cost estimate assumes a total of 16 feet of bituminous surface is repaved (eight feet on each side of the road). This calculation was made because standard paving equipment is eight feet wide. Many communities choose to widen shoulders during standard road resurfacing, when the entire road is being repaved. This allows communities to integrate the cost of paving shoulders into regular road maintenance, rather than initiating a stand-alone project that requires partially

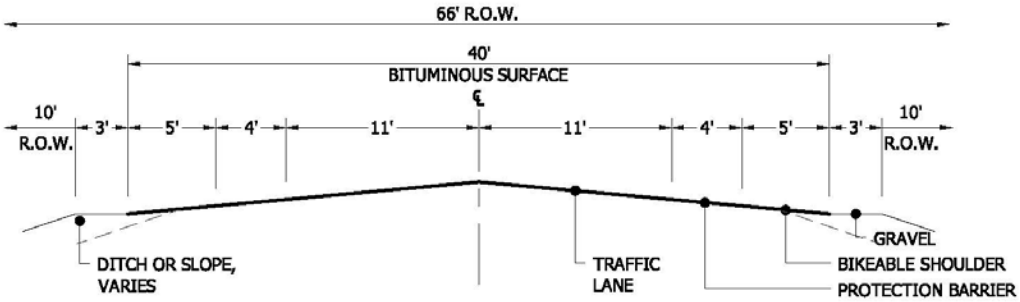
repaving most of the road for the exclusive purpose of widening shoulders.



OPTION 3 - SHOULDER BIKE LANE SECTION
SEGMENT 1A - RIVER ROAD

6.2.4 Alignment 1A Option 4

Alignment 1A Option 4 is similar to Option 3, but it adds a space between the travel lane and the widened shoulder to install a physical barrier separating moving traffic from bicycles. This is known as a "protected bike lane." While protected bike lanes are not common in rural areas of the U.S., they are regularly used in Europe and are gaining popularity in U.S. cities. The type of barrier placed in the buffered space can vary; common barrier types include curbing and flexible traffic posts. The $1,511,980 estimated construction cost of this option includes the cost of widening the roadway to accommodate a buffered area separated by flexible traffic posts. As an on-road option, this design would not typically be eligible for Knowles-Nelson Stewardship funds. Because protected bike lanes are a relatively new concept, few design standards exist for their application in rural areas, and WisDOT has not adopted any guidelines regarding their implementation. Should the Town pursue this option, planners should work closely with any funding partners to seek approvals for design variances to allow this treatment.



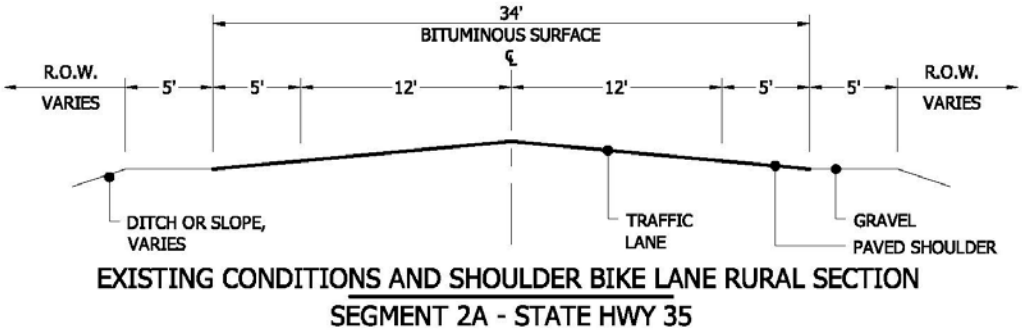
OPTION 4 - PROTECTED SHOULDER BIKE LANE SECTION
SEGMENT 1A - RIVER ROAD

Example protected bike lane, Sweden

6.3 ALIGNMENT 2A HIGHWAY 35

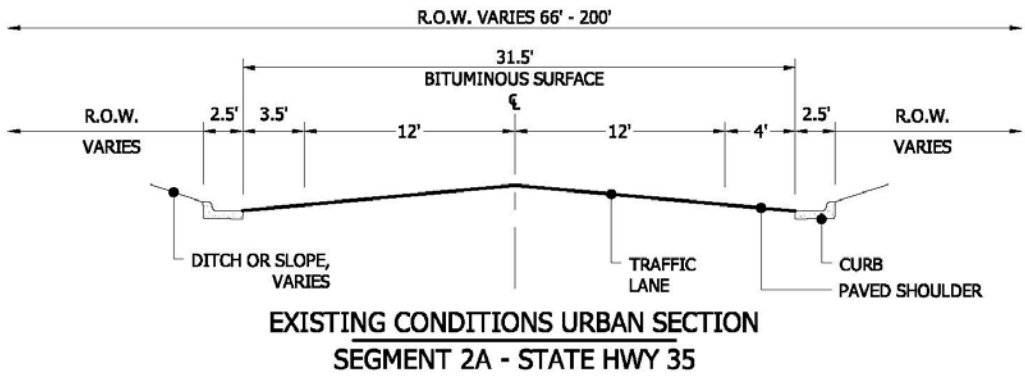
Alignment 2A runs along State Trunk Highway 35 and would connect the Loop Trail in Houlton with destinations to the south, including Willow River State Park. This portion of STH 35 will be turned over to the Town of St. Joseph in 2016 or 2017. Along with Alignment 3A and 3B, which run along Highway 35 and will remain under the jurisdiction of WisDOT, these connect the Loop Trail with Willow River State Park via Alignment 1A on River Road. Currently, no vertical connection is planned between the Loop Trail at the Highway 64/Highway 35 overpass. Should that vertical connection be developed, the necessity of Alignment 2A and Alignment 3A would be reduced.

Alignment 2A traverses two different roadway conditions. South of Houlton, the road is constructed in a rural condition, with twelve-foot travel lanes, five-foot paved shoulders, five-foot gravel shoulders, and slopes or ditch for drainage. The following cross section and photo depict this condition.



Rural section, Alignment 2A

Through the developed areas of Houlton, the road is lined with buildings. The road is designed to an urban condition with twelve-foot travel lanes, 3.5 or 4-foot shoulders, and 2.5-foot curb, which incorporate gutters for drainage. Although the Town's right-of-way easement for this section is between 66 and 200 feet, expanding the roadway would potentially impact adjacent yards and buildings that may have been constructed within the right-of-way.



Urban section, Alignment 2A

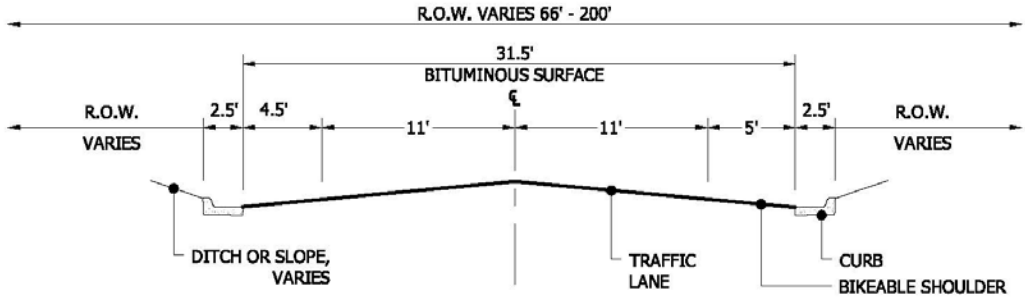
Because of right-of-way constraints caused by existing structures and adjacent properties, Stantec explored an on-road bicycling facility along Alignment 2A. After construction of the new State Highway 64, traffic volumes along this segment will likely drop, increasing safety and comfort for bicyclists traveling this segment. Option 1 depicts the addition of a bike lane and/or widened shoulder along this segment of road. Option 2 depicts the addition of a protected bike lane along this segment of road. Costs are outlined here:

Alignment 2A Estimated Construction Cost				
		Length (linear feet)	Typical cost/lf	Estimated cost
2A Option 1	On Road - Utilize Existing Road	1100	$0	$0
	On Road - Restripe/Widen Turn Lane	750	$35	$26,250
	Total On Road - Wide Shoulder	**1850**	**$14**	**$26,250**
2A Option 2	On Road - Widen Rd 2' (Rural)	1100	$183	$201,304
	On Road - Widen Rd 8.5' (Urban)	500	$225	$112,500
	On Road - Widen Rd 4.5'/Widen Turn Lane	250	$223	$55,750
	Total On Road - Protected Bike Lane	**1850**	**$200**	**$369,554**

6.3.1 Alignment 2A: Option 1

In the urban section of Alignment 2A, a bike lane could be added by reducing travel lanes to eleven feet and widening the shoulders to five feet. Five feet is a standard width for a bike lane that does not overlap with curb. This cost is shown at $0, since it would not require any new construction of the roadbed; it would only require changing paint and additional signage.

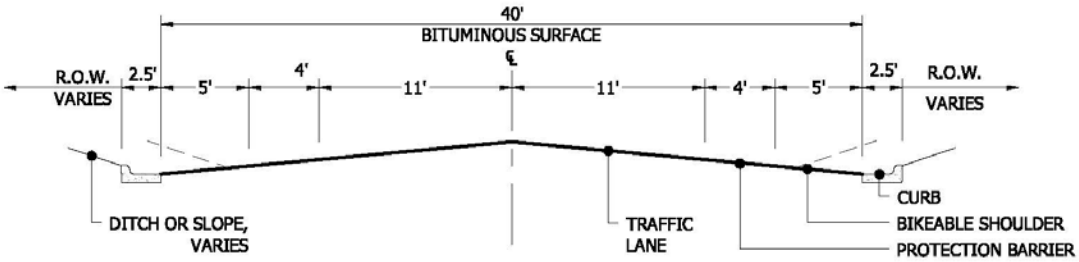
In the rural segments of Alignment 2A, an existing turn lane at County Road E would have to be widened in order to accommodate a bike lane. This cost is estimated at $26,250.



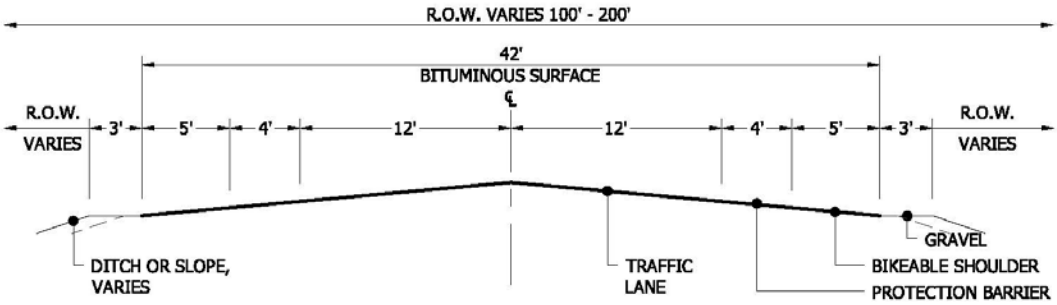
OPTION 1 - SHOULDER BIKE LANE URBAN SECTION
SEGMENT 2A - STATE HWY 35

6.3.2 Alignment 2A Option 2

Should St. Joseph desire greater separation between bicycles and traffic than what a bike lane would provide along this segment, Stantec investigated the feasibility of a protected bike lane. To create space for the protective barrier, these options require widening the existing roadbed. The cost to construct this option is estimated at $369,554. Although the Town's easements currently cover enough right-of-way to accommodate this option, widening the street may be a challenge because many homes in Houlton are constructed quite close to the road.



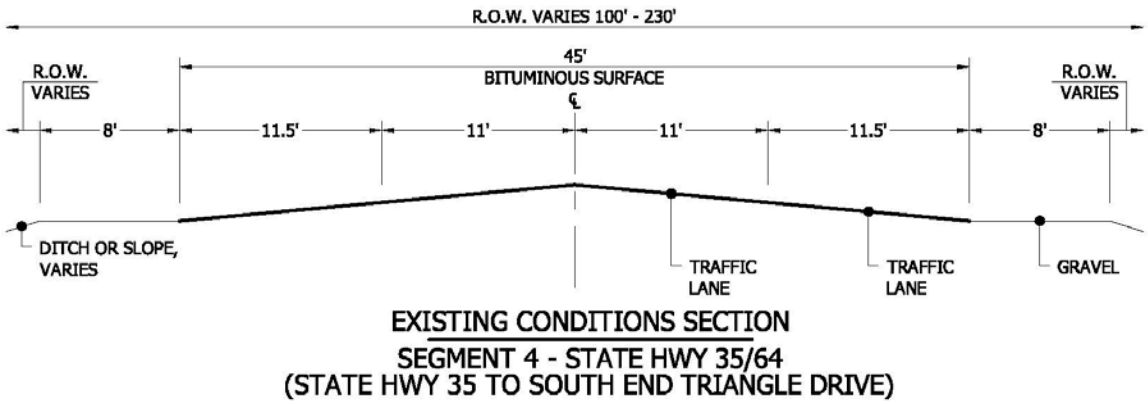
OPTION 2 - PROTECTED SHOULDER BIKE LANE URBAN SECTION
SEGMENT 2A - STATE HWY 35



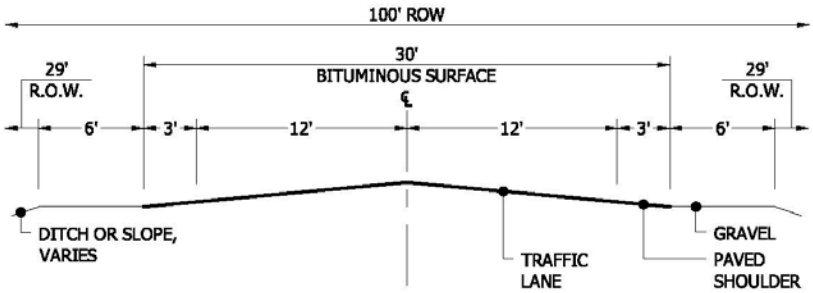
OPTION 2 - PROTECTED SHOULDER BIKE LANE RURAL SECTION
SEGMENT 2A - STATE HWY 35

6.4 ALIGNMENT 4A ANDERSON SCOUT CAMP TRAIL AND ANDERSON SCOUT CAMP TRAIL

Alignment 4A runs along Highway 35 and Anderson Scout Camp Trail. The portion along Highway 35 will be turned over to the town following bridge construction in 2016 or 2017. Anderson Scout Camp Trail is a town road.



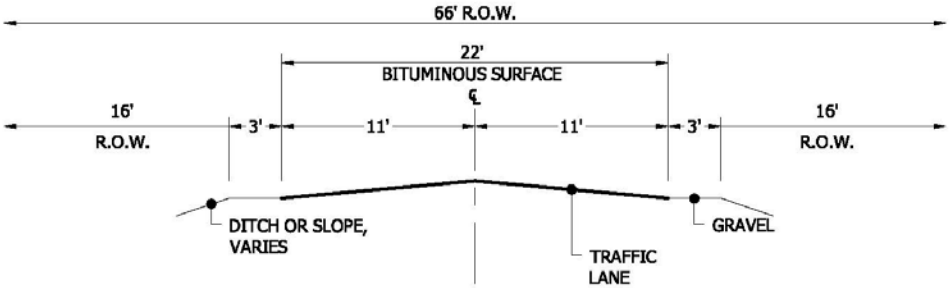
Existing Conditions, Highway 35



EXISTING CONDITIONS SECTION
SEGMENT 4 - STATE HWY 35/64
(SOUTH END TRIANGLE DRIVE TO ANDERSON SCOUT CAMP TRAIL)

Existing Conditions, Highway 35

Existing Conditions, Anderson Scout Camp Trail



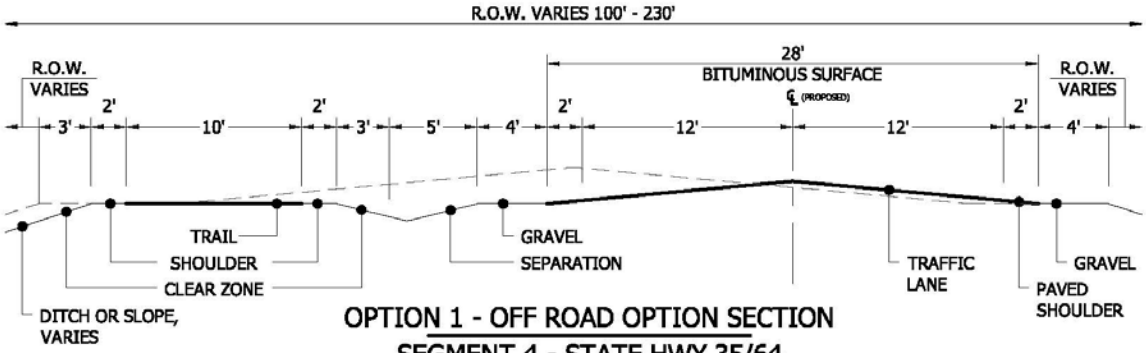
EXISTING CONDITIONS SECTION
SEGMENT 4 - ANDERSON SCOUT CAMP TRAIL

Three options were evaluated for adding bicycling facilities to this segment, including an off-road trail, wide shoulders, and wide shoulders with a protective barrier. Estimated construction costs are presented below.

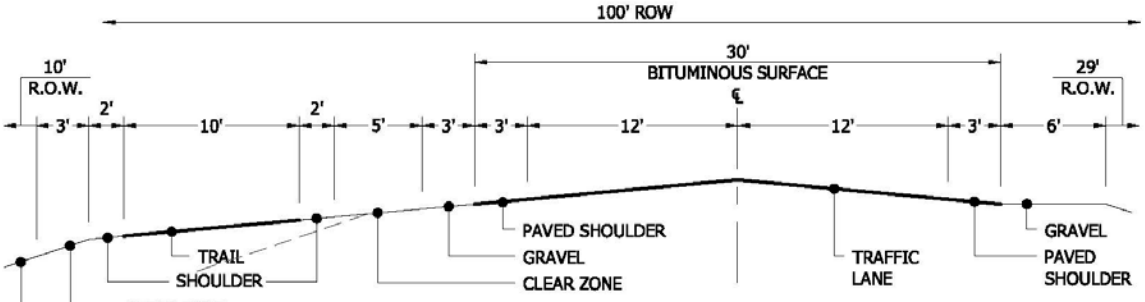
Alignment 4A Estimated Construction Cost				
		Length (linear feet)	Typical cost/lf	Estimated cost
4A Option 1	Off Road - Existing Roadbed	2200	$60	$132,000
	Off Road - Widen Shoulder 16' North Side	1700	$197	$334,908
	Off Road - (Acquired Right-of-Way)	5700	$88	$501,600
	Total Off Road	**9600**	**$101**	**$968,508**
4A Option 2	On Road - Restriping	2200	$13	$28,600
	On Road - Pave Shoulders (STH 35/64)	1700	$126	$214,198
	On Road - (Assumes bike facilities integrated with new road)	4100	$0	$0
	On Road - Widen Shoulders 5' Each Side (Anderson Scout Camp Trail)	1600	$233	$372,804
	Total On Road - Wide Shoulder	**9600**	**$64**	**$615,602**
4A Option 3	On Road - Restriping	2200	$13	$28,600
	On Road - Pave Shoulders/ Widen Shoulder 3' - (STH 35/64)	1700	$217	$368,893
	On Road - Utilize New Road	4100	$0	$0
	On Road - Widen Shoulders 9' Each Side (Anderson Scout Camp Trail)	1600	$337	$539,204
	Total On Road - Protected Bike Lane	**9600**	**$98**	**$936,697**

6.4.1 Alignment 4A Option 1

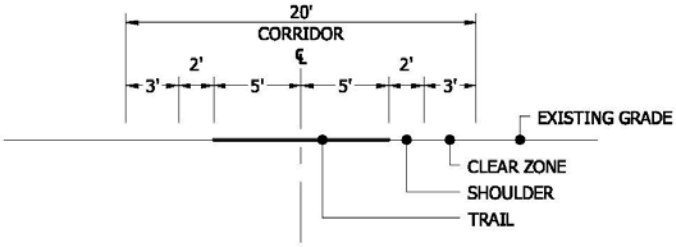
Alignment 4A Option 1 depicts the addition of an off-road trail along the west side of Highway 35 and Anderson Scout Camp Trail. For most of this segment, the trail can be accommodated in existing road right-of-way by shifting the existing roadway to the east and excavating new ditch for drainage. Between 7th Street and Anderson Scout Camp Trail, additional right-of-way would have to be acquired to accommodate an off-road trail. This option is estimated at $968,508 and does not include right-of-way acquisition.



OPTION 1 - OFF ROAD OPTION SECTION
SEGMENT 4 - STATE HWY 35/64
(STATE HWY 35 TO SOUTH END TRIANGLE DRIVE)



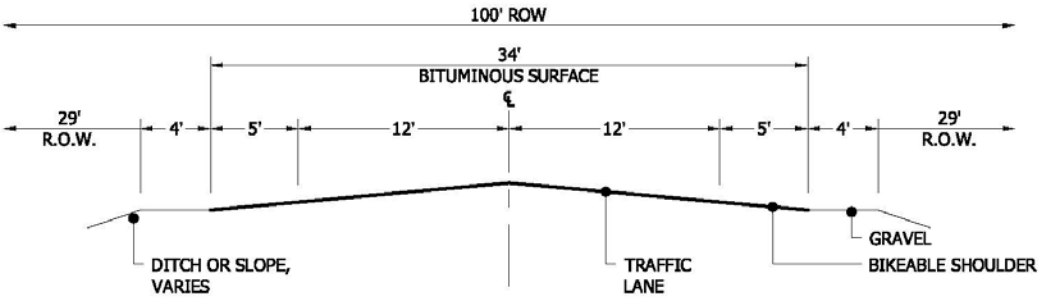
OPTION 1 - OFF ROAD ADJACENT TO ROADWAY SECTION
SEGMENT 4 - STATE HWY 35/64
(SOUTH END TRIANGLE DRIVE TO 7th STREET)



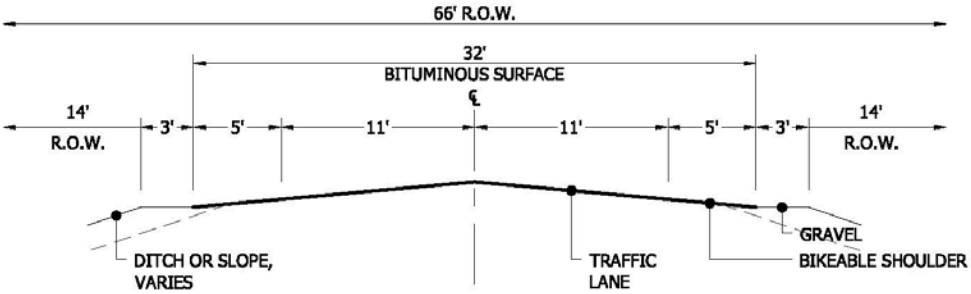
OPTION 1 - OFF ROAD ACQUIRE R.O.W. SECTION
SEGMENT 4 - STATE HWY 35/64
(7th STREET TO ANDERSON SCOUT CAMP TRAIL)

6.4.2 Alignment 4A Option 2

Alignment 4A Option 2 depicts an on-road bicycling facility created by widening shoulders to five feet. Along most of the segment following Highway 35, this can be accomplished through restriping existing road and does not require additional construction. Along the portion of Highway 64 being realigned by WisDOT, it is assumed that the cost of bicycling facilities are incorporated into that project. This option is estimated at $615,602.



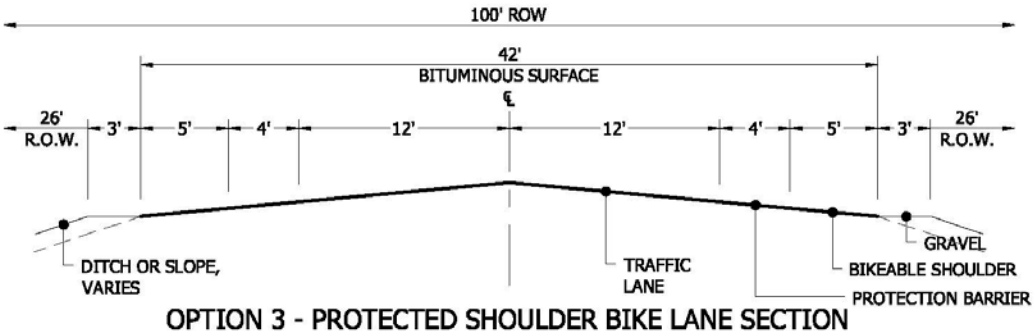
OPTION 2 - SHOULDER BIKE LANE SECTION
SEGMENT 4 - STATE HWY 35/64
(SOUTH END TRIANGLE DRIVE TO ANDERSON SCOUT CAMP TRAIL)



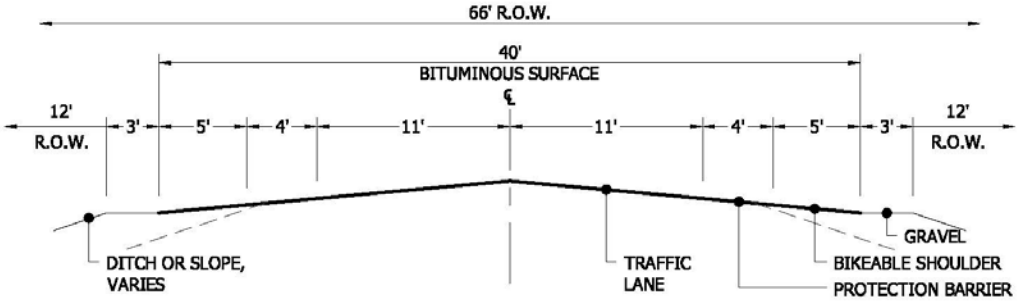
OPTION 2 - SHOULDER BIKE LANE SECTION
SEGMENT 4 - ANDERSON SCOUT CAMP TRAIL

6.4.3 Alignment 4A Option 3

Alignment 4A Option 3 depicts an on-road bicycling facility created by widening shoulders to 5 feet and adding a 4 foot buffered area for a protective barrier between the travel lane and the shoulder. Along some segments, this can be accomplished through restriping existing road and does not require additional construction. This option is estimated at $936,697.



OPTION 3 - PROTECTED SHOULDER BIKE LANE SECTION
SEGMENT 4 - STATE HWY 35/64
(SOUTH END TRIANGLE DRIVE TO ANDERSON SCOUT CAMP TRAIL)



OPTION 3 - PROTECTED SHOULDER BIKE LANE SECTION
SEGMENT 4 - ANDERSON SCOUT CAMP TRAIL

7.0 TRAIL SUPPORT FACILITIES

Since the alignments depicted in this plan are short segments connecting to the Loop Trail, stand-alone trail support facilities such as trailheads and restrooms are likely to unnecessary on these segments. However, proper wayfinding for users is an important element of bike route design. Wayfinding should make bicyclists aware of destinations along the route and any changes in direction necessary to access them. Specific locations for wayfinding signs cannot be identified until alignments are finalized; however, wayfinding signs will likely be necessary in Houlton to guide people between the Loop Trail and destinations along Alignments 1A, 2A and 4A.

8.0 RECOMMENDATIONS

The following are recommendations regarding next steps in pursuing funding and implementation of preferred trail alignments.

All Alignments:

- Develop a community vision for bicycling and walking facilities and the recreational and active transportation opportunities they can afford. Incorporate this plan with discussion of preferred alignments into the Town's upcoming Comprehensive Plan. Use Comprehensive Plan outreach opportunities to create a shared vision in support of these community trails.
- Participate in the upcoming public outreach process for the Willow River State Park master plan variance to show support for additional bicycling trails in the park and express the desirability of a connection from the Loop Trail into the park via St. Joseph.
- Participate in the upcoming St. Croix County bicycle and pedestrian planning process to build county-wide support for trails and identify opportunities for collaboration with other entities in the County to support bicycling facilities.
- Participate in conversations with the Wisconsin DOT to understand and influence final design of the Loop Trail and facilities that meet bicycling needs along State Highway 35.

Alignment 1A:

- Pursue Option 1 or Option 2 and continue efforts toward a Knowles-Nelson Stewardship application. Because of its nature as a recreational route between a state park and a national park, this project is more likely to be eligible for DNR funding applications than DOT funding applications.
- Continue to coordinate efforts with St. Croix County and Willow River State Park staff to generate support and identify mutual goals toward supporting the alignment.
- Pursue designation of the alignment as a state bike trail by Wisconsin DNR.
- Identify sources of local matching funds. Knowles-Nelson Stewardship grants require 50% local match for both land acquisition and trail development projects.
- Begin conversations with adjacent property owners to understand their concerns and potential sources of support for selling right-of-way or easements for an off-road trail.
- Pursue development agreements for trail easements as adjacent properties change ownership.

Alignment 2A

- Pursue Option 1 to add a bike lane and wide shoulder during upcoming road resurfacing. Traffic volumes are projected to decrease after bridge construction, increasing safety of on-road facilities.

Alignment 4A

- During turnback negotiations with Wisconsin DOT, St. Joseph should express the Town's desire for a bicycling facility on this alignment. St. Joseph may pursue cash in lieu of road resurfacing. St. Joseph will need to secure additional funding to support a bicycling facility above any funds received through negotiations.

Appendix A LIST OF CONTENTS

A.1 PLANNED AND EXISTING BIKE TRAILS

A.2 DESIRED BICYCLE TRAILS

A.3 PRIORITY BIKE TRAILS

A.4 WILLOW RIVER STATE PARK

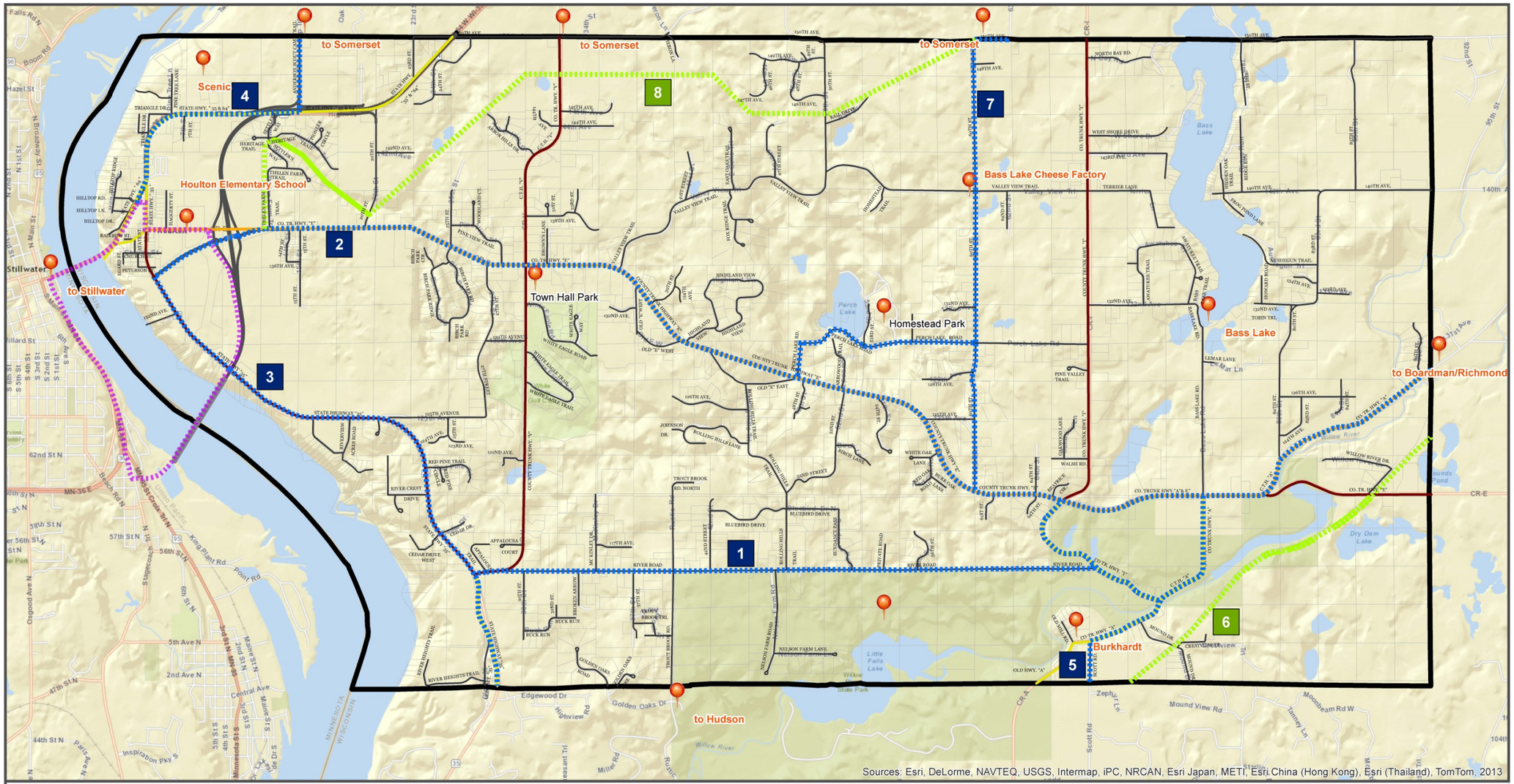
A.5 LOOP TRAIL, STILLWATER CROSSING BRIDGE, ROADWAY REALIGNMENTS

A.6 DETAILED COST ESTIMATES

ST. JOSEPH BICYCLE AND PEDESTRIAN FACILITY IMPLEMENTATION STUDY

Appendix A.1 Planned and Existing Bike Trails

November 4, 2014



Bike Trails

TOWN OF ST. JOSEPH, WISCONSIN

June 2014

N

0 0.6 1.2 Miles

St. Joseph Outdoor Rec. Plan

- Existing Trail
- Cross country bikeways
- Along road bikeways
- # Reference in plan
- Loop Trail

Desired destinations

Town Boundary

County/State Roads

State Bicycle Map Rating

- Best Condition
- Moderate Condition
- High Volume - Undesirable
- St. Croix Crossing
- Town Roads

The information on this map has been compiled by Stantec staff from a variety of sources and is subject to change without notice. Stantec makes no representations or warranties, express or implied, as to accuracy, completeness,timeliness, or rights to the use of such information.

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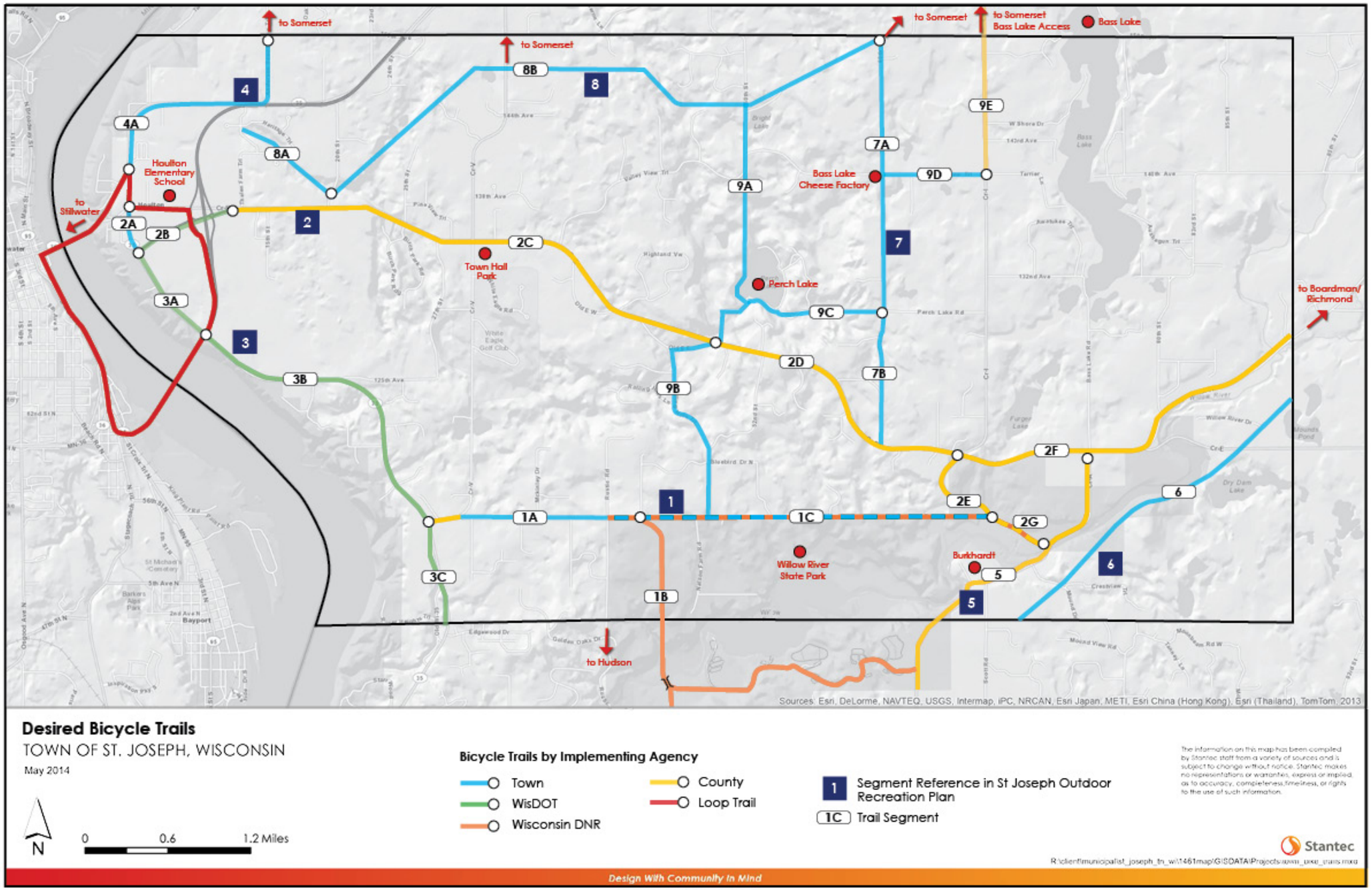
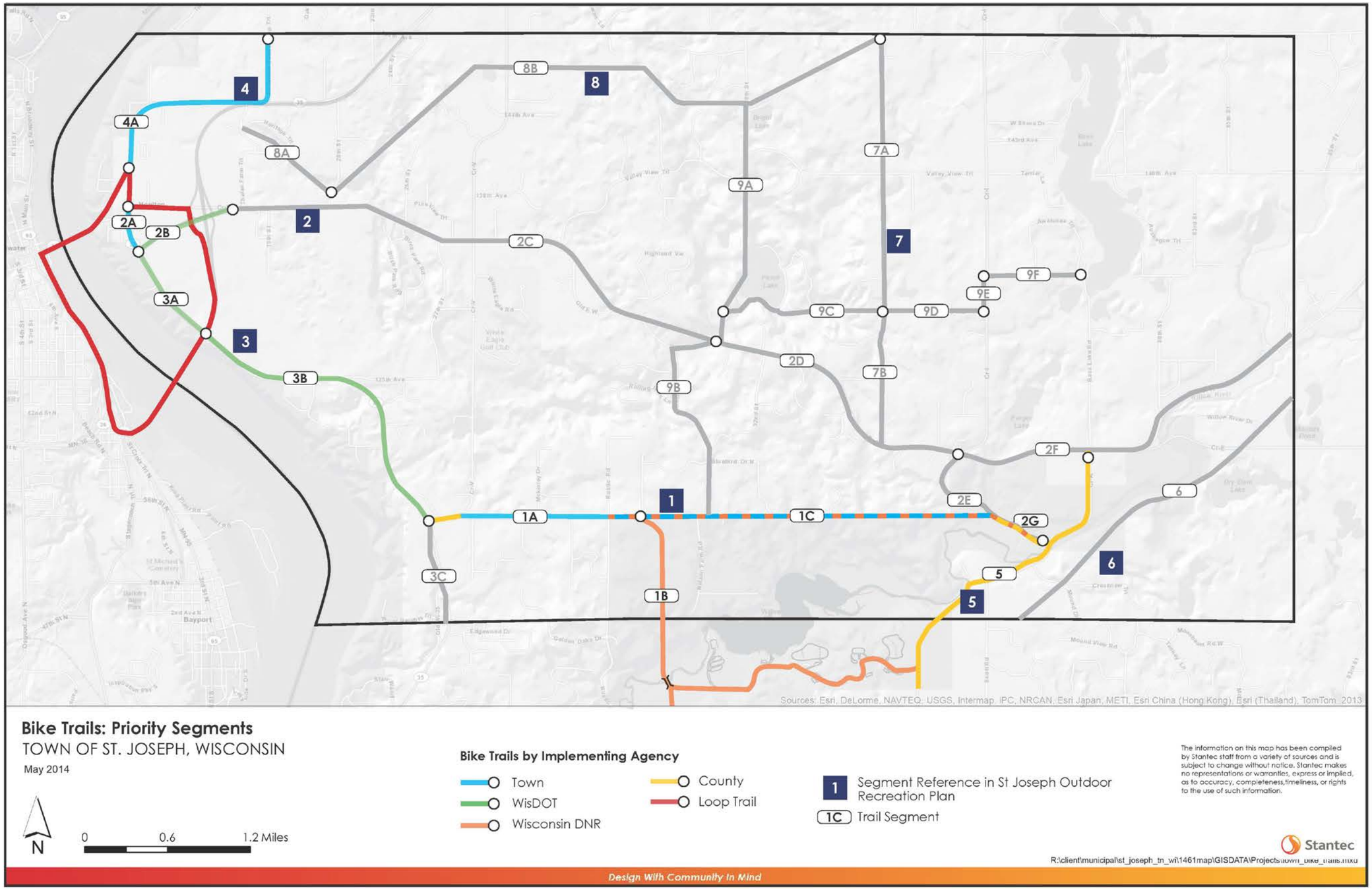
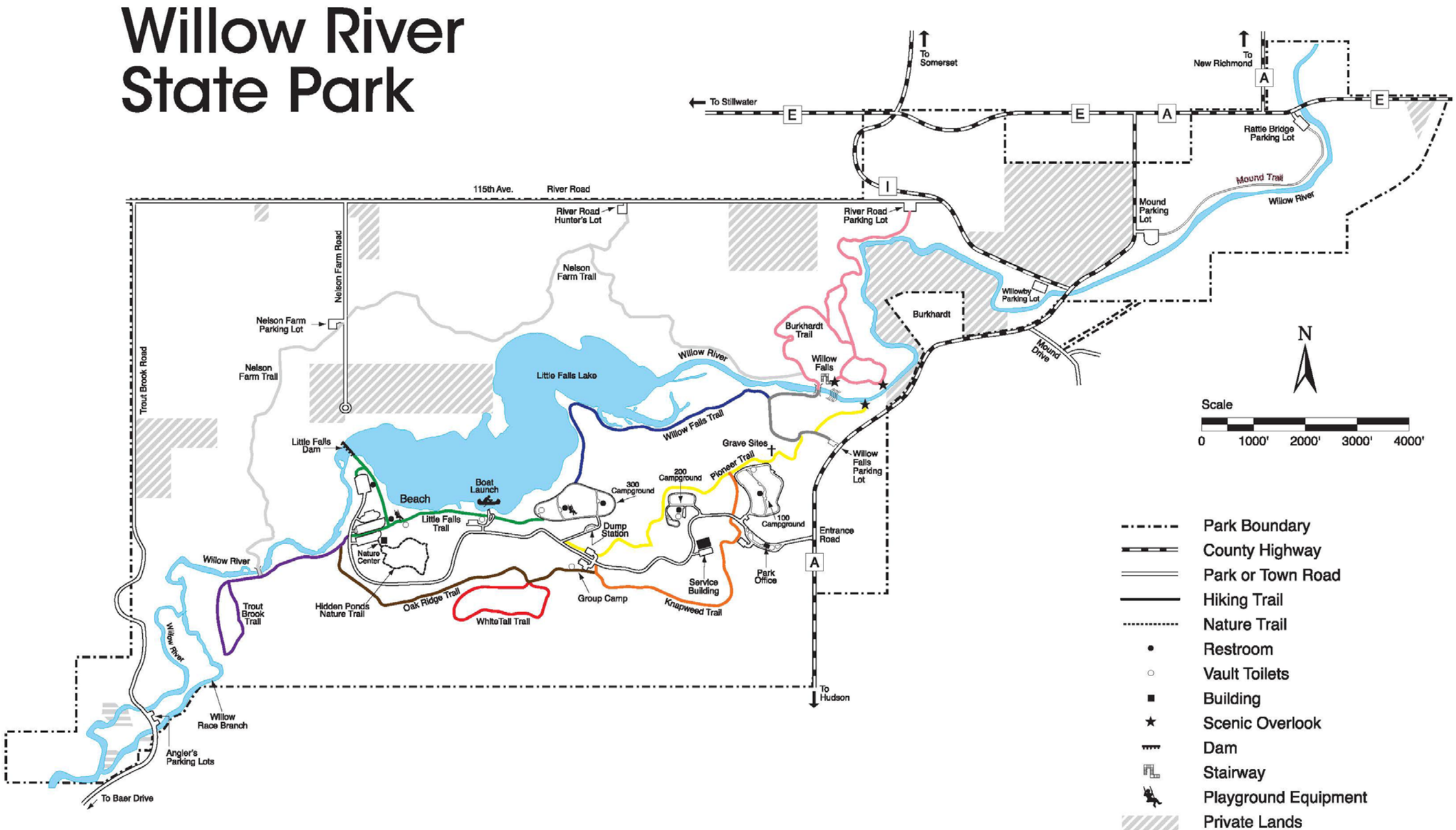
Stantec

Design With Community In Mind


to Somerset
to Somerset
to Somerset
to Somerset
Bass Lake Access
Bass Lake
Houlton Elementary School
to Stillwater
Town Hall Park
Perch Lake
Bass Lake Cheese Factory
to Boardman/ Richmond
Willow River State Park
Burkhardt
to Hudson
1
1A
1B
1C
2
2A
2B
2C
2D
2E
2F
2G
3
3A
3B
3C
4
4A
5
5
6
6
7
7A
7B
8
8A
8B
9A
9B
9C
9D
9E
Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013
Desired Bicycle Trails
TOWN OF ST. JOSEPH, WISCONSIN
May 2014
N
0
0.6
1.2 Miles
Bicycle Trails by Implementing Agency
Town
WisDOT
Wisconsin DNR
County
Loop Trail
Segment Reference in St Joseph Outdoor Recreation Plan
Trail Segment
The information on this map has been compiled by Stantec staff from a variety of sources and is subject to change without notice. Stantec makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information.
Stantec
Design With Community In Mind


4
4A
8B
8
8A
2
2A
2B
2C
3A
3
3B
7A
9A
7
9F
9E
9C
9D
2D
7B
9B
2F
1
1A
1C
2E
2G
6
3C
1B
5
Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013
Bike Trails: Priority Segments
TOWN OF ST. JOSEPH, WISCONSIN
May 2014
N
0
0.6
1.2 Miles
Bike Trails by Implementing Agency
Town
WisDOT
Wisconsin DNR
County
Loop Trail
Segment Reference in St Joseph Outdoor Recreation Plan
Trail Segment
The information on this map has been compiled by Stantec staff from a variety of sources and is subject to change without notice. Stantec makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information.
Stantec
Design With Community In Mind

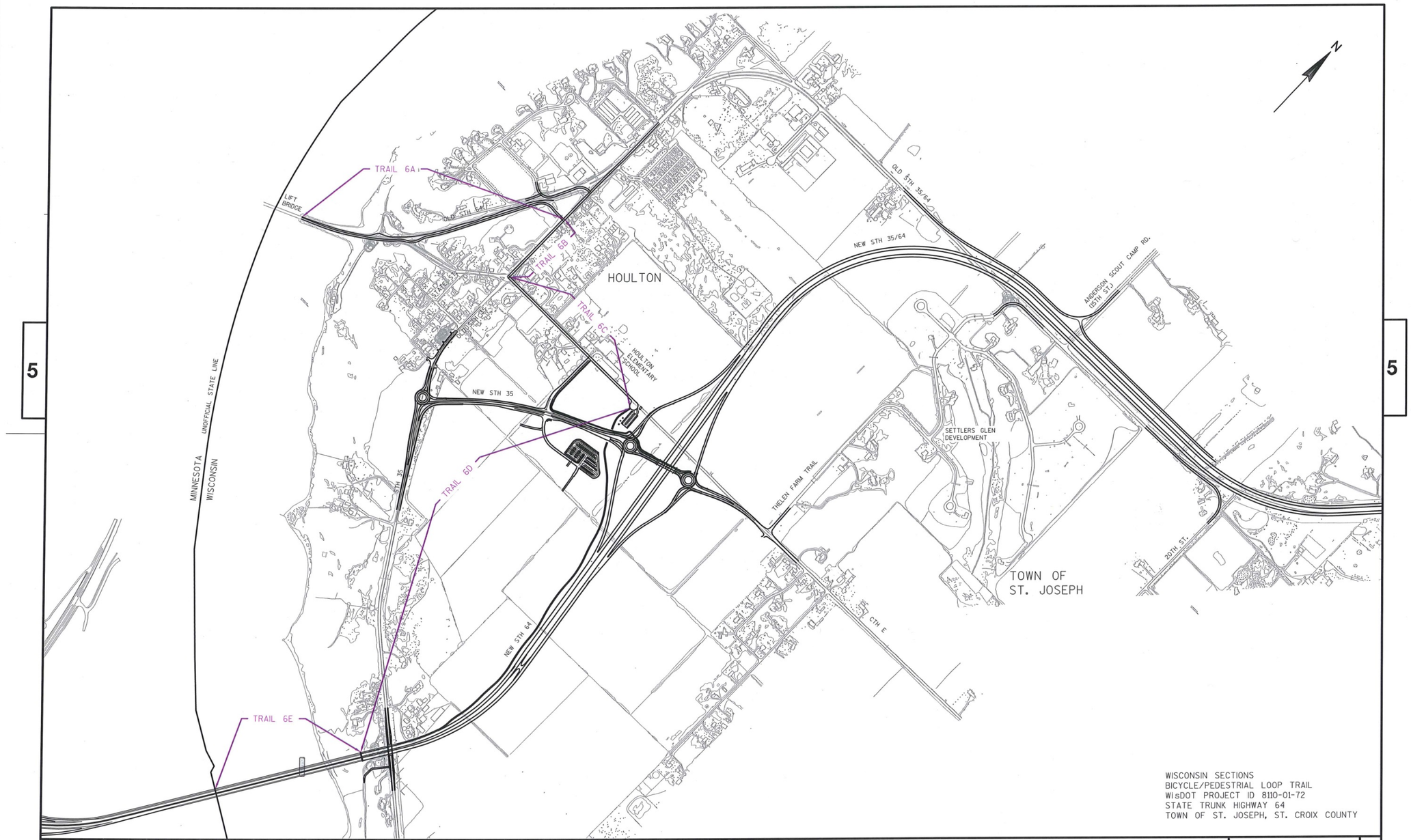

Willow River State Park
To Somerset
To New Richmond
To Stillwater
E
A
I
Rattle Bridge Parking Lot
Mound Trail
Willow River
Mound Parking Lot
115th Ave.
River Road
River Road Hunter's Lot
River Road Parking Lot
Nelson Farm Road
Nelson Farm Trail
Willowby Parking Lot
Burkhardt
Burkhardt Trail
Mound Drive
Nelson Farm Parking Lot
Trout Brook Road
Little Falls Lake
Willow Falls
Willow Falls Trail
Grave Sites
Pioneer Trail
Willow Falls Parking Lot
Little Falls Dam
Beach
Boat Launch
300 Campground
200 Campground
100 Campground
Little Falls Trail
Dump Station
Entrance Road
Nature Center
Park Office
Service Building
Hidden Ponds Nature Trail
Oak Ridge Trail
Group Camp
Knapweed Trail
WhiteTail Trail
Trout Brook Trail
Willow Race Branch
Angler's Parking Lots
To Baer Drive
To Hudson
N
Scale
0
1000'
2000'
3000'
4000'
Park Boundary
County Highway
Park or Town Road
Hiking Trail
Nature Trail
Restroom
Vault Toilets
Building
Scenic Overlook
Dam
Stairway
Playground Equipment
Private Lands

ST. JOSEPH BICYCLE AND PEDESTRIAN FACILITY IMPLEMENTATION STUDY

Appendix A.5 Loop Trail, Stillwater Crossing Bridge and Ensuing Roadway Realignments (courtesy Wisconsin DOT)

November 4, 2014

ATTACHMENT 1



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PROJECT NO: 8110-02-71	HWY: STH 64-STH 35-CTH E	COUNTY: ST. CROIX	LOOPTRAIL	SHEET	E

FILE NAME :N:\PDS\C3D\81100201\SHEETSOTHER\JURISDICTIONAL TRANSFER EXHIBIT.DWG
JURISDICTIONAL TRANSFER - JURISDICTIONAL TRANSFER EXHIBIT - 1

PLOT DATE : 4/8/2014 1:02 PM PLOT BY : ANDRITSCH, ERIC R PLOT NAME : PLOT SCALE : 1" = 1000'_XREF WISDOT/CADDS SHEET 44

Cost Summary				
Alignment 1A Estimated Construction Cost				
		Length (linear feet)	Typical cost/lf	Estimated cost
1A Option 1	Off-road (acquired right-of-way)	5,600	$105	**$588,000**
1A Option 2	Off-road (existing right-of-way)	5,600	$620	**$3,471,992**
1A Option 3	On-road wide shoulder	5,600	$155	**$867,988**
1A Option 4	On-road protected shoulder	5,600	$270	**$1,511,980**
Alignment 2A Estimated Construction Cost				
2A Option 1	On Road - Utilize Existing Road	1100	$0	$0
	On Road - Restripe/Widen Turn Lane	750	$35	$26,250
	Total On Road - Wide Shoulder	**1850**	**$14**	**$26,250**
2A Option 2	On Road - Widen Rd 2' (Rural)	1100	$183	$201,304
	On Road - Widen Rd 8.5' (Urban)	500	$225	$112,500
	On Road - Widen Rd 4.5'/Widen Turn Lane	250	$223	$55,750
	Total On Road - Protected Bike Lane	**1850**	**$200**	**$369,554**
Alignment 4A Estimated Construction Cost				
4A Option 1	Off Road - Existing Roadbed	2200	$60	$132,000
	Off Road - Widen Shoulder 16' North Side	1700	$197	$334,908
	Off Road – Acquired Right-of-Way	5700	$88	$501,600
	Total Off Road	**9600**	**$101**	**$968,508**
4A Option 2	On Road - Restriping	2200	$13	$28,600
	On Road - Pave Shoulders (STH 35/64)	1700	$126	$214,198
	On Road - (Assumes bike facilities integrated with new road)	4100	$0	$0
	On Road - Widen Shoulders 5' Each Side (Anderson Scout Camp Trail)	1600	$233	$372,804
	Total On Road - Wide Shoulder	**9600**	**$64**	**$615,602**
4A Option 3	On Road - Restriping	2200	$13	$28,600
	On Road - Pave Shoulders/ Widen Shoulder 3' - (STH 35/64)	1700	$217	$368,893
	On Road - Utilize New Road	4100	$0	$0
	On Road - Widen Shoulders 9' Each Side (Anderson Scout Camp Trail)	1600	$337	$539,204
	Total On Road - Protected Bike Lane	**9600**	**$98**	**$936,697**

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Trail Segment	Construction Type	Length	Estimated Construction Cost/LF*	Estimated Construction Cost*		R/W Acquisition (SF)	Temp Easement (SF)
1A Option 1	Off Road - Corn Field	2500	$105	$262,500		50,000	50,000
	Off Road - Trees	3100	$105	$325,500		62,000	62,000
	Total Off Road - Outside of Existing ROW	**5600**	**$105**	**$588,000**		**112,000**	**112,000**
1A Option 2	**Off Road - In Existing ROW**	**5600**	**$620**	**$3,471,992**		**0**	**131,600**
1A Option 3	**On Road - Wide Shoulder**	**5600**	**$155**	**$867,988**		**0**	**113,400**
1A Option 4	**On Road - Protected Bike Lane**	**5600**	**$270**	**$1,511,980**		**0**	**158,200**
2A Option 1	On Road - Utilize Existing Road	1100	$0	$0		0	0
	On Road - Restripe/Widen Turn Lane	750	$35	$26,250		0	0
	Total On Road - Wide Shoulder	**1850**	**$14**	**$26,250**		**0**	**0**
2A Option 2	On Road - Widen Rd 2' (Rural)	1100	$183	$201,304		0	0
	On Road - Widen Rd 8.5' (Urban)	500	$225	$112,500		0	0
	On Road - Widen Rd 4.5'/Widen Turn Lane	250	$223	$55,750		0	0
	Total On Road - Protected Bike Lane	**1850**	**$200**	**$369,554**		**0**	**0**
4 Option 1	Off Road - Existing Roadbed	2200	$60	$132,000		0	0
	Off Road - Widen Shoulder 16' North Side	1700	$197	$334,908		0	25,900
	Off Road - Corn Field	5700	$88	$501,600		114,000	114,000
	Total Off Road	**9600**	**$101**	**$968,508**		**114,000**	**139,900**
4 Option 2	On Road - Restriping	2200	$13	$28,600		0	0
	On Road - Pave Shoulders (STH 35/64)	1700	$126	$214,198		0	0
	On Road - Utilize New Road	4100	$0	$0		0	0
	On Road - Widen Shoulders 5' Each Side (Anderson Scout Camp Trail)	1600	$233	$372,804		0	44,800
	Total On Road - Wide Shoulder	**9600**	**$64**	**$615,602**		**0**	**44,800**
4 Option 3	On Road - Restriping	2200	$13	$28,600		0	0
	On Road - Pave Shoulders/ Widen Shoulder 3' - (STH 35/64)	1700	$217	$368,893		0	4800
	On Road - Utilize New Road	4100	$0	$0		0	0
	On Road - Widen Shoulders 9' Each Side (Anderson Scout Camp Trail)	1600	$337	$539,204		0	0
	Total On Road - Protected Bike Lane	**9600**	**$98**	**$936,697**		**0**	**4800**

* - Costs include Construction, Contingency, Engineering, Admin, Etc. but do not include Right Of Way acquisition or temporary construction easements

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1A Option 1 - Off Road Through Corn Field and Trees

- 10' paved trail
- Assume more topsoil in corn fields than in trees
- Additional excavation and common borrow to replace topsoil offsets the cost of tree clearing

1A Option 2 - Off Road - In Existing ROW

- 10' paved trail
- 14' widening of section (material costs for fill)
- $206,000 for storm sewer improvements (not including ponding or maintenance of pipes/ponds)
- $922,000 for retaining walls and fencing

1A Option 3 - On Road - Wide Shoulder (Both Sides)

- 5' paved shoulder, 3' gravel shoulder (each side)
- 4' widening of section (material costs for fill) (2' each side)
- 16' paving width (to account for common 8' paver machine width) (8' each side)

1A Option 4 - On Road - Protected Bike Lane (Both Sides)

- 5' paved shoulder, 4' protection zone, 3' gravel shoulder (each side)
- 12' Widening of section (material costs for fill) (6' each side)
- 16' paving width (to account for common 8' paver machine width) (8' each side)

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St. Joseph Bicycle and Pedestrian Facility Implementation Study

2A Option 1 - Wide Shoulder (Both Sides)

- Utilize existing roadway
- Restripe existing travel lanes from 12' to 11' lanes
- 5' widening of section for turn lane east side (material costs for fill)

2A Option 2 - Protected Bike Lane (Both Sides)

- 8 to 8.5' Widening of section (material costs) (4-4.5' each side)
- Remove and replace concrete curb and gutter
- Retaining wall relocation

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4 Option 1 - Off Road - Utilize existing road, widen section 8', through corn field

- 10' paved trail
- Shift centerline of existing STH 35/64 to keep trail on existing roadbed (STH 35 to South end of Triangle Dr.)
- Widen section 16' on north side to accommodate off road trail with 5' separation from road shoulder (Triangle Dr to 7th Street) (material costs for fill)
- Trail through corn field (7th Street to Anderson Scout Camp Road)

4 Option 2 - On Road - Wide Shoulder (Both Sides)

- 5' paved shoulder, 3' gravel shoulder (each side)
- STH 35/64 (STH 35 to Triangle Drive) - Restriping only
- STH 35/64 (Triangle Drive to 7th Street) - No section widening required
- STH 35/64 (Triangle Drive to 7th Street) - 16' paving width (to account for common 8' paver machine width) (8' each side)
- STH 35/64 (Triangle Drive to Anderson Scout Camp Trail) - Assume that new roadway will be built by WisDOT to accommodate
- Anderson Scout Camp Trail - Widen section 10' (material costs for fill) (5' each side)

4 Option 3 - On Road - Protected Bike Lane (Both Sides)

- 5' paved shoulder, 4' protection zone, 3' gravel shoulder (each side)
- STH 35/64 (STH 35 to Triangle Drive) - Restriping only
- STH 35/64 (Triangle Drive to 7th Street) - 6' widening of section (material costs) (3' each side)
- STH 35/64 (Triangle Drive to 7th Street) - 16' paving width (to account for common 8' paver machine width) (8' each side)
- STH 35/64 (Triangle Drive to Anderson Scout Camp Trail) - Assume that new roadway will be built by WisDOT to accommodate
- Anderson Scout Camp Trail - Widen section 18' (material costs for fill) (9' each side)

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Length	2500	lf			
Width			Area		
Bit	10	lf	Bit	25000	sf
Gravel	14	lf	Gravel	35000	sf
Sand	14	lf	Sand	35000	sf
Common	14	lf	Common	35000	sf
Thickness					
Bit	2	in			
Gravel	6	in			
Sand	0.5	ft			
Common Excavation	2	ft			
Common Borrow	1.00	ft			

Segment 1A - Option 1 - Off Road Through Corn Field

No.	Item	Unit	Quantity	Unit Price	Total Price
1	Mobilization	LS	1	$10,000.00	$10,000.00
2	Traffic Control	LS	1	$5,000.00	$5,000.00
3	Common Excavation - Trail	CY	2600	$20.00	$52,000.00
4	Common Excavation - Cut Areas	CY	600	$20.00	$12,000.00
5	Common Borrow - Trail	CY	1300	$15.00	$19,500.00
6	Common Borrow - Fill Areas	CY	600	$15.00	$9,000.00
7	Select Granular Borrow	CY	700	$15.00	$10,500.00
8	Aggregate Base	TON	1500	$15.00	$22,500.00
9	Bituminous Pavement	TON	400	$80.00	$32,000.00
10	Signing & Striping	LS	1	$1,000.00	$1,000.00
					$173,500.00
				±20% Contingency	$34,700.00
					$208,200.00
				±25% Engineering, Admin, Etc	$54,300.00
					$262,500.00
				ROW Acquisition / Temporary Construction Easement	
					$262,500.00
				Cost/LF	**$105.00**
	Right-Of-Way Acquisition	SF	50000		$0.00
	Temporary Construction Easement	SF	50000	$0.20	$10,000.00

Town of St. Joseph, WI
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Length	3100	lf

Width			Area		
Bit	10	lf	Bit	31000	sf
Gravel	14	lf	Gravel	43400	sf
Sand	14	lf	Sand	43400	sf
Common	14	lf	Common	43400	sf
Clearing	20	lf	Clearing	62000	sf

Thickness		
Bit	2	in
Gravel	6	in
Sand	0.5	ft
Common Excavation	1.67	ft
Common Borrow	0.67	ft

Segment 1A - Option 1 - Off Road Through Trees

No.	Item	Unit	Quantity	Unit Price	Total Price
1	Mobilization	LS	1	$10,000.00	$10,000.00
2	Traffic Control	LS	1	$5,000.00	$5,000.00
3	Clearing & Grubbing	AC	2	$10,000.00	$20,000.00
4	Common Excavation - Trail	CY	2700	$20.00	$54,000.00
5	Common Excavation - Cut Areas	CY	900	$20.00	$18,000.00
6	Common Borrow - Trail	CY	1100	$15.00	$16,500.00
7	Common Borrow - Fill Areas	CY	700	$15.00	$10,500.00
8	Select Granular Borrow	CY	900	$15.00	$13,500.00
9	Aggregate Base	TON	1900	$15.00	$28,500.00
10	Bituminous Pavement	TON	500	$80.00	$40,000.00
11	Signing & Striping	LS	1	$1,000.00	$1,000.00
					$217,000.00
				±20% Contingency	$43,400.00
					$260,400.00
				±25% Engineering, Admin, Etc	$65,100.00
					$325,500.00
				ROW Acquisition / Temporary Construction Easement	
					$325,500.00
				Cost/LF	**$105.00**

Right-Of-Way Acquisition	SF	62000	$0.00
Temporary Construction Easement	SF	62000	$0.00

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Length	5600	lf

Width			Area		
Bit - trail	10	lf	Bit	56000	sf
Bit - road	28	lf	Bit	156800	sf
Gravel - trail	15	lf	Gravel	84000	sf
Gravel - road	36	lf	Gravel	201600	sf
Sand - trail	15	lf	Sand	84000	sf
Sand - road	36	lf	Sand	201600	sf
Common - trail	0	lf	Common	0	sf
Common - road	36	lf	Common	201600	sf
Clearing - trail	5	lf	Clearing	28000	sf
Clearing - road	5	lf	Clearing	28000	sf

Thickness		
Bit - trail	2	in
Bit - road	3	in
Gravel - trail	6	in
Gravel - road	8	in
Sand - trail	0.5	ft
Sand - road	1	ft
Common Ex -trail	1.00	ft
Common Ex -road	1.67	ft
Common Borrow -trail	0.00	ft
Common Borrow -trail	0.00	ft

Segment 1A - Option 2 - Off Road Entirely in ROW

No.	Item	Unit	Quantity	Unit Price	Total Price
1	Mobilization	LS	1	$110,000.00	$110,000.00
2	Traffic Control	LS	1	$40,000.00	$40,000.00
3	Clearing & Grubbing	LS	1	$15,000.00	$15,000.00
4	Remove Bituminous	SY	17500	$3.00	$52,500.00
5	Common Excavation - Trail	CY	0	$20.00	$0.00
6	Common Excavation - Road	CY	12500	$10.00	$125,000.00
7	Common Excavation - Cut Areas	CY	5400	$10.00	$54,000.00
8	Common Borrow - Fill Areas	CY	16500	$10.00	$165,000.00
9	Storm Sewer Pipe	LF	3400	$40.00	$136,000.00
10	Storm Sewer Structures	EA	20	$3,500.00	$70,000.00
11	Retaining Wall	SF	27000	$30.00	$810,000.00
12	Chain Link Fence	LF	5600	$20.00	$112,000.00
13	Select Granular Borrow - Trail	CY	1600	$15.00	$24,000.00
14	Select Granular Borrow - Road	CY	7500	$15.00	$112,500.00
15	Aggregate Base - Trail	TON	3600	$15.00	$54,000.00
16	Aggregate Base - Road	TON	11400	$10.00	$114,000.00
17	Bituminous Pavement - Trail	TON	900	$80.00	$72,000.00
18	Bituminous Pavement - Road	TON	3400	$70.00	$238,000.00

19	Signing & Striping - Trail	LS	1	$2,000.00	$2,000.00
20	Signing & Striping - Road	LS	1	$11,200.00	$11,200.00
					$2,317,200.00
				±20% Contingency	$463,440.00
					$2,780,640.00
				±25% Engineering, Admin, Etc	$691,352.00
					$3,471,992.00
			ROW Acquisition / Temporary Construction Easement		
					$3,471,992.00
				Cost/LF	**$620.00**
	Right-Of-Way Acquisition	SF	0		$0.00
	Temporary Construction Easement	SF	131600		$0.00

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Length	5600	lf			
Width			**Area**		
Bit Removal	12	lf	Bit Rem	67200	sf
Bit	16	lf	Bit	89600	sf
Gravel	12	lf	Gravel	67200	sf
Sand	12	lf	Sand	67200	sf
Common	12	lf	Common	67200	sf
Shouldering	6	lf	Shoulder	33600	sf
Thickness					
Bit	3	in			
Gravel	8	in			
Sand	1	ft			
Common Excavation	1.67	ft			
Common Borrow	0.00	ft			
Shouldering	3	in			

Segment 1A - Option 3 - On Road 5' Unprotected Bike Lane Both Sides of Road

No.	Item	Unit	Quantity	Unit Price	Total Price
1	Mobilization	LS	1	$25,000.00	$25,000.00
2	Traffic Control	LS	1	$10,000.00	$10,000.00
3	Clearing & Grubbing	LS	1	$5,000.00	$5,000.00
4	Remove Bituminous	SY	7500	$6.00	$45,000.00
5	Common Excavation - Trail	CY	4200	$20.00	$84,000.00
6	Common Excavation - Cut Areas	CY	3000	$20.00	$60,000.00
7	Common Borrow - Fill Areas	CY	4500	$15.00	$67,500.00
8	Select Granular Borrow	CY	2500	$15.00	$37,500.00
9	Aggregate Base	TON	3800	$15.00	$57,000.00
10	Aggregate Shouldering	TON	800	$20.00	$16,000.00
11	Bituminous Pavement	TON	2000	$80.00	$160,000.00
12	Signing & Striping	LS	1	$8,000.00	$8,000.00
					$575,000.00
				±20% Contingency	$115,000.00
					$690,000.00
				±25% Engineering, Admin, Etc	$177,988.00
					$867,988.00
				ROW Acquisition / Temporary Construction Easement	
					$867,988.00
				Cost/LF	**$155.00**
	Right-Of-Way Acquisition	SF	0		$0.00
	Temporary Construction Easement	SF	113400		$0.00

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Length	5600	lf			
Width			**Area**		
Bit Removal	4	lf	Bit Rem	22400	sf
Bit	16	lf	Bit	89600	sf
Gravel	20	lf	Gravel	112000	sf
Sand	20	lf	Sand	112000	sf
Common	20	lf	Common	112000	sf
Shouldering	6	lf	Shoulder	33600	sf
Thickness					
Bit	3	in			
Gravel	8	in			
Sand	1	ft			
Common Excavation	1.67	ft			
Common Borrow	0.00	ft			
Shouldering	3	in			

Segment 1A - Option 4 - On Road 5' Protected Bike Lane Both Sides of Road

No.	Item	Unit	Quantity	Unit Price	Total Price
1	Mobilization	LS	1	$45,000.00	$45,000.00
2	Traffic Control	LS	1	$20,000.00	$20,000.00
3	Clearing & Grubbing	LS	1	$5,000.00	$5,000.00
4	Remove Bituminous	SY	2500	$6.00	$15,000.00
5	Common Excavation - Trail	CY	7000	$20.00	$140,000.00
6	Common Excavation - Cut Areas	CY	9000	$20.00	$180,000.00
7	Common Borrow - Fill Areas	CY	13500	$15.00	$202,500.00
8	Select Granular Borrow	CY	4200	$15.00	$63,000.00
9	Aggregate Base	TON	6300	$15.00	$94,500.00
10	Aggregate Shouldering	TON	800	$20.00	$16,000.00
11	Bituminous Pavement	TON	2000	$80.00	$160,000.00
12	Bike Lane Protection	LF	11200	$5.00	$56,000.00
13	Signing & Striping	LS	1	$8,000.00	$8,000.00
					$1,005,000.00
				±20% Contingency	$201,000.00
					$1,206,000.00
				±25% Engineering, Admin, Etc	$305,980.00
					$1,511,980.00
				ROW Acquisition / Temporary Construction Easement	
					$1,511,980.00
				Cost/LF	**$270.00**
	Right-Of-Way Acquisition	SF	0		$0.00
	Temporary Construction Easement	SF	158200		$0.00

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Total Length	1850	lf
Length Do Nothing	1100	lf
Length Re-Striping	750	lf
Length Shld widen	250	lf

Width			Area		
Bit Removal	3	lf	Bit Rem	750	sf
Bit	8	lf	Bit	2000	sf
Gravel	10	lf	Gravel	2500	sf
Sand	10	lf	Sand	2500	sf
Common	10	lf	Common	2500	sf
Shouldering	4	lf	Shoulder	1000	sf

Thickness		
Bit	3	in
Gravel	8	in
Sand	1	ft
Common Excavation	1.67	ft
Common Borrow	0.00	ft
Shouldering	3	in

Segment 2A - Option 1 - On Road with Restriping and Turn Lane Widening

No.	Item	Unit	Quantity	Unit Price	Total Price
1	Mobilization	LS	1	$1,500.00	$1,500.00
2	Traffic Control	LS	1	$750.00	$750.00
3	Common Excavation - Trail	CY	160	$20.00	$3,200.00
4	Ditch Grading	LS	1	$2,000.00	$2,000.00
5	Select Granular Borrow	CY	100	$15.00	$1,500.00
6	Aggregate Base	TON	150	$15.00	$2,250.00
7	Aggregate Shouldering	TON	30	$20.00	$600.00
8	Bituminous Pavement	TON	50	$80.00	$4,000.00
9	Signing & Striping	LS	1	$1,600.00	$1,600.00
					$17,400.00
				±20% Contingency	$3,480.00
					$20,880.00
				±25% Engineering, Admin, Etc	$5,370.00
					$26,250.00
				ROW Acquisition / Temporary Construction Easement	
					$26,250.00
				Cost/LF	**$35.00**

Right-Of-Way Acquisition	SF	0	$0.00
Temporary Construction Easement	SF	0	$0.00

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Length	1100	lf			
Width			**Area**		
Bit Removal	8	lf	Bit Rem	8800	sf
Bit	16	lf	Bit	17600	sf
Gravel	16	lf	Gravel	17600	sf
Sand	16	lf	Sand	17600	sf
Common	16	lf	Common	17600	sf
Shouldering	6	lf	Shoulder	6600	sf
Thickness					
Bit	3	in			
Gravel	8	in			
Sand	1	ft			
Common Excavation	1.67	ft			
Common Borrow	0.00	ft			
Shouldering	3	in			

Segment 2A - Option 2 - On Road 5' Protected Bike Lane Both Sides of Road - Rural

No.	Item	Unit	Quantity	Unit Price	Total Price
1	Mobilization	LS	1	$7,000.00	$7,000.00
2	Traffic Control	LS	1	$2,500.00	$2,500.00
3	Remove Bituminous	SY	1000	$6.00	$6,000.00
4	Common Excavation - Trail	CY	1090	$20.00	$21,800.00
5	Common Excavation - Cut Areas	CY	700	$20.00	$14,000.00
6	Common Borrow - Fill Areas	CY	700	$15.00	$10,500.00
7	Select Granular Borrow	CY	660	$15.00	$9,900.00
8	Aggregate Base	TON	990	$15.00	$14,850.00
9	Aggregate Shouldering	TON	140	$20.00	$2,800.00
10	Bituminous Pavement	TON	390	$80.00	$31,200.00
11	Bike Lane Protection	LF	2200	$5.00	$11,000.00
12	Signing & Striping	LS	1	$2,000.00	$2,000.00
					$133,550.00
				±20% Contingency	$26,710.00
					$160,260.00
				±25% Engineering, Admin, Etc	$41,044.00
					$201,304.00
				ROW Acquisition / Temporary Construction Easement	
					$201,304.00
				Cost/LF	**$183.00**
	Right-Of-Way Acquisition	SF	0		$0.00
	Temporary Construction Easement	SF	0		$0.00

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Length	500	lf			
Width			Area		
Bit Removal	7.5	lf	Bit Rem	3750	sf
Bit	16	lf	Bit	8000	sf
Gravel	10.5	lf	Gravel	5250	sf
Sand	10.5	lf	Sand	5250	sf
Common	10.5	lf	Common	5250	sf
Shouldering	0	lf	Shoulder	0	sf
Thickness					
Bit	3	in			
Gravel	8	in			
Sand	1	ft			
Common Excavation	1.67	ft			
Common Borrow	0.00	ft			
Shouldering	3	in			

Segment 2A - Option 2 - On Road 5' Protected Bike Lane Both Sides of Road (Widen 4.5' west and 4' east)

No.	Item	Unit	Quantity	Unit Price	Total Price
1	Mobilization	LS	1	$5,000.00	$5,000.00
2	Traffic Control	LS	1	$2,500.00	$2,500.00
3	Remove Bituminous	SY	500	$6.00	$3,000.00
4	Remove Concrete Curb & Gutter	LF	1000	$4.00	$4,000.00
5	Relocate Retaining Wall	EA	2	$3,000.00	$6,000.00
6	Common Excavation - Trail	CY	330	$20.00	$6,600.00
7	Common Excavation - Cut Areas	CY	160	$20.00	$3,200.00
8	Select Granular Borrow	CY	200	$15.00	$3,000.00
9	Aggregate Base	TON	300	$15.00	$4,500.00
10	Concrete Curb & Gutter	LF	1000	$16.00	$16,000.00
11	Bituminous Pavement	TON	180	$80.00	$14,400.00
12	Bike Lane Protection	LF	1000	$5.00	$5,000.00
13	Signing & Striping	LS	1	$1,600.00	$1,600.00
					$74,800.00
				±20% Contingency	$14,960.00
					$89,760.00
				±25% Engineering, Admin, Etc	$22,740.00
					$112,500.00
				ROW Acquisition / Temporary Construction Easement	
					$112,500.00
				Cost/LF	**$225.00**
	Right-Of-Way Acquisition	SF	0		$0.00
	Temporary Construction Easement	SF	0		$0.00

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Length Shld widen	250	lf

Width (Turn Lane)			Area (Turn Lane)		
Bit Removal	1	lf	Bit Rem	250	sf
Bit	9	lf	Bit	2250	sf
Gravel	14	lf	Gravel	3500	sf
Sand	14	lf	Sand	3500	sf
Common	14	lf	Common	3500	sf
Shouldering	4	lf	Shoulder	1000	sf

Width (Rd Widen)			Area (Rd Widen)		
Bit Removal	3.5	lf	Bit Rem	875	sf
Bit	8	lf	Bit	2000	sf
Gravel	5.5	lf	Gravel	1375	sf
Sand	5.5	lf	Sand	1375	sf
Common	5.5	lf	Common	1375	sf
Shouldering	0	lf	Shoulder	0	sf

Thickness		
Bit	3	in
Gravel	8	in
Sand	1	ft
Common Excavation	1.67	ft
Common Borrow	0.00	ft
Shouldering	3	in

Segment 2A - Option 2 - On Road Protected Bike Lane Widen Rd 4.5' West / Turn Lane Widening East

No.	Item	Unit	Quantity	Unit Price	Total Price
1	Mobilization	LS	1	$1,500.00	$1,500.00
2	Traffic Control	LS	1	$750.00	$750.00
3	Remove Bituminous	SY	130	$6.00	$780.00
4	Remove Concrete Curb & Gutter	LF	250	$4.00	$1,000.00
5	Common Excavation - Trail	CY	310	$20.00	$6,200.00
6	Common Excavation - Cut Areas	CY	80	$20.00	$1,600.00
7	Ditch Grading	LS	1	$2,000.00	$2,000.00
8	Select Granular Borrow	CY	190	$15.00	$2,850.00
9	Aggregate Base	TON	280	$15.00	$4,200.00
10	Aggregate Shouldering	TON	30	$20.00	$600.00
11	Concrete Curb & Gutter	LF	250	$16.00	$4,000.00
12	Bituminous Pavement	TON	100	$80.00	$8,000.00
13	Bike Lane Protection	LF	500	$5.00	$2,500.00
14	Signing & Striping	LS	1	$1,200.00	$1,200.00
					$37,180.00
				±20% Contingency	$7,436.00
					$44,616.00
				±25% Engineering, Admin, Etc	$11,134.00
					$55,750.00
				ROW Acquisition / Temporary Construction Easement	
					$55,750.00
				Cost/LF	**$223.00**

Right-Of-Way Acquisition	SF	0	$0.00
Temporary Construction Easement	SF	0	$0.00

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Length	2200	lf

Width			Area		
Bit Removal	21	lf	Bit Rem	46200	sf
Bit	10	lf	Bit	22000	sf
Gravel	14	lf	Gravel	30800	sf
Sand	14	lf	Sand	30800	sf
Common	14	lf	Common	30800	sf
Shouldering	4	lf	Shoulder	8800	sf
			Com Ditch	8	sf

Thickness		
Bit	2	in
Gravel	0	in
Sand	0	ft
Common Excavation	0	ft
Common Borrow	0.00	ft
Shouldering	2	in
Common Ex - Ditch	1	ft

Segment 4 - Option 1 - Off Road On Existing Roadbed

No.	Item	Unit	Quantity	Unit Price	Total Price
1	Mobilization	LS	1	$4,000.00	$4,000.00
2	Traffic Control	LS	1	$1,500.00	$1,500.00
3	Remove Bituminous	SY	5200	$6.00	$31,200.00
4	Common Excavation - Ditch	CY	700	$20.00	$14,000.00
5	Aggregate Shouldering	TON	200	$15.00	$3,000.00
6	Bituminous Pavement	TON	400	$80.00	$32,000.00
7	Signing & Striping	LS	1	$1,000.00	$1,000.00
					$86,700.00
				±20% Contingency	$17,340.00
					$104,040.00
				±25% Engineering, Admin, Etc	$27,960.00
					$132,000.00
				ROW Acquisition / Temporary Construction Easement	
					$132,000.00
				Cost/LF	**$60.00**

Right-Of-Way Acquisition	SF	0	$0.00
Temporary Construction Easement	SF	0	$0.00

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Length	1700	lf			
Width			**Area**		
Bit Removal	0	lf	Bit Rem	0	sf
Bit	10	lf	Bit	17000	sf
Gravel	15	lf	Gravel	25500	sf
Sand	15	lf	Sand	25500	sf
Common	0	lf	Common	0	sf
Shouldering	4	lf	Shoulder	6800	sf
Thickness					
Bit	2	in			
Gravel	6	in			
Sand	0.5	ft			
Common Excavation	1.00	ft			
Common Borrow	0.00	ft			
Shouldering	2	in			

Segment 4 - Option 1 - Off Road with 16' Shoulder Widening and Tree Clearing

No.	Item	Unit	Quantity	Unit Price	Total Price
1	Mobilization	LS	1	$10,000.00	$10,000.00
2	Traffic Control	LS	1	$5,000.00	$5,000.00
3	Clearing & Grubbing	LS	1	$15,000.00	$15,000.00
4	Common Excavation - Cut Areas	CY	1100	$20.00	$22,000.00
5	Common Borrow - Fill Areas	CY	8000	$15.00	$120,000.00
6	Select Granular Borrow	CY	500	$15.00	$7,500.00
7	Aggregate Base	TON	1100	$15.00	$16,500.00
8	Aggregate Shouldering	TON	100	$20.00	$2,000.00
9	Bituminous Pavement	TON	300	$80.00	$24,000.00
10	Signing & Striping	LS	1	$1,000.00	$1,000.00
					$223,000.00
				±20% Contingency	$44,600.00
					$267,600.00
				±25% Engineering, Admin, Etc	$67,308.00
					$334,908.00
				ROW Acquisition / Temporary Construction Easement	
					$334,908.00
				Cost/LF	**$197.00**
	Right-Of-Way Acquisition	SF	0		$0.00
	Temporary Construction Easement	SF	25900		$0.00

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Length	5700	lf

Width			Area		
Bit	10	lf	Bit	57000	sf
Gravel	14	lf	Gravel	79800	sf
Sand	14	lf	Sand	79800	sf
Common	14	lf	Common	79800	sf

Thickness		
Bit	2	in
Gravel	6	in
Sand	0.5	ft
Common Excavation	2	ft
Common Borrow	1.00	ft

Segment 4 - Option 1 - Off Road Through Corn Field

No.	Item	Unit	Quantity	Unit Price	Total Price
1	Mobilization	LS	1	$15,000.00	$15,000.00
2	Traffic Control	LS	1	$5,000.00	$5,000.00
3	Common Excavation - Trail	CY	6000	$20.00	$120,000.00
4	Common Borrow - Trail	CY	3000	$15.00	$45,000.00
5	Select Granular Borrow	CY	1500	$15.00	$22,500.00
6	Aggregate Base	TON	3400	$15.00	$51,000.00
7	Bituminous Pavement	TON	900	$80.00	$72,000.00
8	Signing & Striping	LS	1	$1,000.00	$1,000.00
					$331,500.00
				±20% Contingency	$66,300.00
					$397,800.00
				±25% Engineering, Admin, Etc	$103,800.00
					$501,600.00
				ROW Acquisition / Temporary Construction Easement	
					$501,600.00
				Cost/LF	**$88.00**

Right-Of-Way Acquisition	SF	114000	$0.00
Temporary Construction Easement	SF	114000	$0.00

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Total Length	2200	lf

Width			Area		
Bit	0	lf	Bit	0	sf
Gravel	0	lf	Gravel	0	sf
Sand	0	lf	Sand	0	sf
Common	0	lf	Common	0	sf
Shouldering	0	lf	Shoulder	0	sf

Thickness		
Bit	0	in
Gravel	0	in
Sand	0	ft
Common Excavation	0.00	ft
Common Borrow	0.00	ft
Shouldering	0	in

Segment 4 - Option 2 - On Road with Restriping of Existing Roadway

No.	Item	Unit	Quantity	Unit Price	Total Price
1	Mobilization	LS	1	$1,500.00	$1,500.00
2	Traffic Control	LS	1	$750.00	$750.00
3	Remove Pavement Markings	LS	1	$10,000.00	$10,000.00
4	Signing & Striping	LS	1	$5,500.00	$5,500.00
					$17,750.00
				±20% Contingency	$3,550.00
					$21,300.00
				±25% Engineering, Admin, Etc	$7,300.00
					$28,600.00
				ROW Acquisition / Temporary Construction Easement	
					$28,600.00
				Cost/LF	**$13.00**

Right-Of-Way Acquisition	SF	0	$0.00
Temporary Construction Easement	SF	0	$0.00

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Length	1700	lf			
Width			**Area**		
Bit Removal	12	lf	Bit Rem	20400	sf
Bit	16	lf	Bit	27200	sf
Gravel	14	lf	Gravel	23800	sf
Sand	14	lf	Sand	23800	sf
Common	14	lf	Common	23800	sf
Shouldering	8	lf	Shoulder	13600	sf
Thickness					
Bit	3	in			
Gravel	8	in			
Sand	1	ft			
Common Excavation	1.67	ft			
Common Borrow	0.00	ft			
Shouldering	3	in			

Segment 4 - Option 2 - On Road 5' Unprotected Bike Lane Both Sides of Road (STH 35/64)

No.	Item	Unit	Quantity	Unit Price	Total Price
1	Mobilization	LS	1	$5,000.00	$5,000.00
2	Traffic Control	LS	1	$3,000.00	$3,000.00
3	Remove Bituminous	SY	2300	$6.00	$13,800.00
4	Common Excavation - Trail	CY	1500	$20.00	$30,000.00
5	Select Granular Borrow	CY	900	$15.00	$13,500.00
6	Aggregate Base	TON	1400	$15.00	$21,000.00
7	Aggregate Shouldering	TON	300	$20.00	$6,000.00
8	Bituminous Pavement	TON	600	$80.00	$48,000.00
9	Signing & Striping	LS	1	$2,000.00	$2,000.00
					$142,300.00
				±20% Contingency	$28,460.00
					$170,760.00
				±25% Engineering, Admin, Etc	$43,438.00
					$214,198.00
				ROW Acquisition / Temporary Construction Easement	
					$214,198.00
				Cost/LF	**$126.00**
	Right-Of-Way Acquisition	SF	0		$0.00
	Temporary Construction Easement	SF	0		$0.00

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St. Joseph Bicycle and Pedestrian Facility Implementation Study

Length	1600	lf

Width			Area		
Bit Removal	6	lf	Bit Rem	9600	sf
Bit	16	lf	Bit	25600	sf
Gravel	18	lf	Gravel	28800	sf
Sand	18	lf	Sand	28800	sf
Common	18	lf	Common	28800	sf
Shouldering	6	lf	Shoulder	9600	sf

Thickness		
Bit	3	in
Gravel	8	in
Sand	1	ft
Common Excavation	1.67	ft
Common Borrow	0.00	ft
Shouldering	3	in

Segment 4 - Option 2 - On Road 5' Unprotected Bike Lane Both Sides of Road (Anderson Scout Camp Trail)

No.	Item	Unit	Quantity	Unit Price	Total Price
1	Mobilization	LS	1	$12,000.00	$12,000.00
2	Traffic Control	LS	1	$6,000.00	$6,000.00
3	Clearing & Grubbing	LS	1	$7,500.00	$7,500.00
4	Remove Bituminous	SY	1100	$6.00	$6,600.00
5	Common Excavation - Trail	CY	1800	$20.00	$36,000.00
6	Common Excavation - Cut Areas	CY	1500	$20.00	$30,000.00
7	Common Borrow - Fill Areas	CY	2300	$15.00	$34,500.00
8	Select Granular Borrow	CY	1100	$15.00	$16,500.00
9	Aggregate Base	TON	1700	$15.00	$25,500.00
10	Aggregate Shouldering	TON	300	$20.00	$6,000.00
11	Bituminous Pavement	TON	600	$80.00	$48,000.00
12	6' B&B Coniferous Tree	EA	60	$300.00	$18,000.00
13	Signing & Striping	LS	1	$2,000.00	$2,000.00
					$248,600.00
				±20% Contingency	$49,720.00
					$298,320.00
				±25% Engineering, Admin, Etc	$74,484.00
					$372,804.00
				ROW Acquisition / Temporary Construction Easement	
					$372,804.00
				Cost/LF	**$233.00**

Right-Of-Way Acquisition	SF	0	$0.00
Temporary Construction Easement	SF	44800	$0.00

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St. Joseph Bicycle and Pedestrian Facility Implementation Study

Length	1700	lf			
Width			**Area**		
Bit Removal	8	lf	Bit Rem	13600	sf
Bit	16	lf	Bit	27200	sf
Gravel	20	lf	Gravel	34000	sf
Sand	20	lf	Sand	34000	sf
Common	20	lf	Common	34000	sf
Shouldering	6	lf	Shoulder	10200	sf
Thickness					
Bit	3	in			
Gravel	8	in			
Sand	1	ft			
Common Excavation	1.67	ft			
Common Borrow	0.00	ft			
Shouldering	3	in			

Segment 4 - Option 3 - On Road 5' Protected Bike Lane Both Sides of Road (STH 35/64)

No.	Item	Unit	Quantity	Unit Price	Total Price
1	Mobilization	LS	1	$12,000.00	$12,000.00
2	Traffic Control	LS	1	$3,500.00	$3,500.00
3	Remove Bituminous	SY	1600	$6.00	$9,600.00
4	Common Excavation - Trail	CY	2100	$20.00	$42,000.00
5	Common Excavation - Cut Areas	CY	1000	$20.00	$20,000.00
6	Common Borrow - Fill Areas	CY	2400	$15.00	$36,000.00
7	Select Granular Borrow	CY	1300	$15.00	$19,500.00
8	Aggregate Base	TON	2000	$15.00	$30,000.00
9	Aggregate Shouldering	TON	300	$20.00	$6,000.00
10	Bituminous Pavement	TON	600	$80.00	$48,000.00
11	Bike Lane Protection	LF	3400	$5.00	$17,000.00
12	Signing & Striping	LS	1	$2,000.00	$2,000.00
					$245,600.00
				±20% Contingency	$49,120.00
					$294,720.00
				±25% Engineering, Admin, Etc	$74,173.00
					$368,893.00
				ROW Acquisition / Temporary Construction Easement	
					$368,893.00
				Cost/LF	**$217.00**
	Right-Of-Way Acquisition	SF	0		$0.00
	Temporary Construction Easement	SF	4800		$0.00

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Length	1600	lf			
Width			**Area**		
Bit Removal	0	lf	Bit Rem	0	sf
Bit	18	lf	Bit	28800	sf
Gravel	26	lf	Gravel	41600	sf
Sand	26	lf	Sand	41600	sf
Common	26	lf	Common	41600	sf
Shouldering	6	lf	Shoulder	9600	sf
Thickness					
Bit	3	in			
Gravel	8	in			
Sand	1	ft			
Common Excavation	1.67	ft			
Common Borrow	0.00	ft			
Shouldering	3	in			

Segment 4 - Option 3 - On Road 5' Protected Bike Lane Both Sides of Road (Anderson Scout Camp Trail)

No.	Item	Unit	Quantity	Unit Price	Total Price
1	Mobilization	LS	1	$12,000.00	$12,000.00
2	Traffic Control	LS	1	$6,000.00	$6,000.00
3	Clearing & Grubbing	LS	1	$7,500.00	$7,500.00
4	Common Excavation - Trail	CY	2600	$20.00	$52,000.00
5	Common Excavation - Cut Areas	CY	3400	$20.00	$68,000.00
6	Common Borrow - Fill Areas	CY	3700	$15.00	$55,500.00
7	Select Granular Borrow	CY	1600	$15.00	$24,000.00
8	Aggregate Base	TON	2400	$15.00	$36,000.00
9	Aggregate Shouldering	TON	300	$20.00	$6,000.00
10	Bituminous Pavement	TON	700	$80.00	$56,000.00
11	Bike Lane Protection	LF	3200	$5.00	$16,000.00
12	6' B&B Coniferous Tree	EA	60	$300.00	$18,000.00
13	Signing & Striping	LS	1	$2,000.00	$2,000.00
					$359,000.00
				±20% Contingency	$71,800.00
					$430,800.00
				±25% Engineering, Admin, Etc	$108,404.00
					$539,204.00
				ROW Acquisition / Temporary Construction Easement	
					$539,204.00
				Cost/LF	**$337.00**
	Right-Of-Way Acquisition	SF	0		$0.00
	Temporary Construction Easement	SF	57600		$0.00