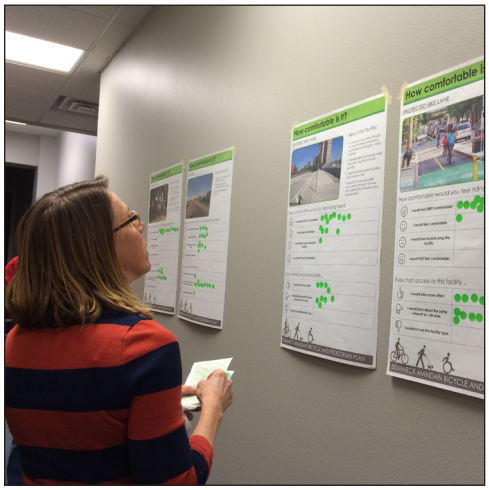
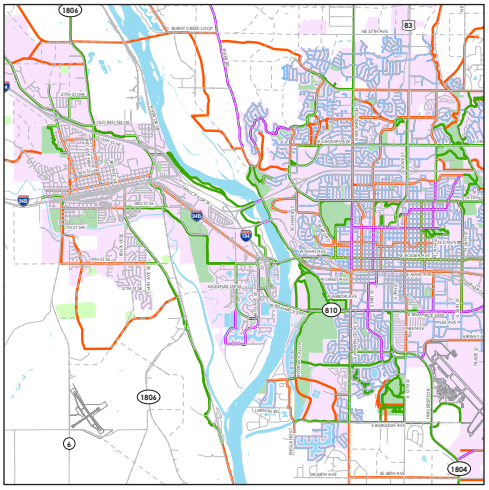


BISMARCK - MANDAN
BICYCLE + PEDESTRIAN PLAN

DECEMBER 19, 2017



Bismarck-Mandan
Metropolitan Planning Organization

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This Bicycle and Pedestrian Plan would not have been possible without the collaboration of the Bismarck-Mandan Metropolitan Planning Agency, the City of Bismarck, the City of Mandan, Burleigh County, Morton County, steering committee members, consultant staff, and the general public. A special thanks to these team members for the dedication and effort they gave to make this Plan a success.

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CHAPTER 1:
Introduction

The Bismarck-Mandan MPO and its partners have initiated a bicycle and pedestrian plan to support and grow engineering, education, encouragement, enforcement, and evaluation efforts to continue to advance bicycling and walking as safe, comfortable, and reliable modes of transportation in Bismarck-Mandan. A chapter has been dedicated to each of these 5 E's of bicycle and pedestrian planning.

Bismarck-Mandan was awarded a Bronze Level "Bicycle Friendly Community" designation from the League of American Cyclists in 2016. This designation reflects the community's strong network of multi-use trails, presence of community organizations that actively advocate for cycling and provide public education outreach, and inclusion of bicycling facilities in the Bismarck Mandan MPO Long Range Transportation Plan. A multi-use trail in Bismarck is depicted in Figure 1-1. Some of the community's weaknesses in supporting bicycling include a high rate of bicycle crashes, low percentage of commuters who bicycle, and limited network of on-road facilities. The elements of a bicycle friendly community are illustrated in Figure 1-2 on the following page.

This Plan includes a discussion of community engagement completed as part of the planning process and the vision and goals driving the entire planning process. The Plan also includes chapters for each of the 5 E's which address existing conditions and issues facing bicyclists and walkers in Bismarck and Mandan, community priorities, and best practices for improving the pedestrian and bicycle experience in each of those areas. This Plan also includes a description of the full and prioritized bicycling routes and intersection improvements in the two communities.

The Plan has been organized into the following chapters:

1. Introduction
2. Outreach + Engagement
3. Vision + Goals
4. Engineering
5. Education
6. Encouragement
7. Enforcement
8. Evaluation
9. Implementation

A successful plan is one that is both actionable and implementable. Chapter 9 of this Plan includes implementation strategies for all 5 E's.

This Plan also includes three appendices for reference. These appendices include:

- Appendix A: Public Open House Summaries
- Appendix B: Steering Committee Meeting Minutes
- Appendix C: Evaluation and Monitoring Technical Memorandum

Figure 1-1: River Trail, Bismarck

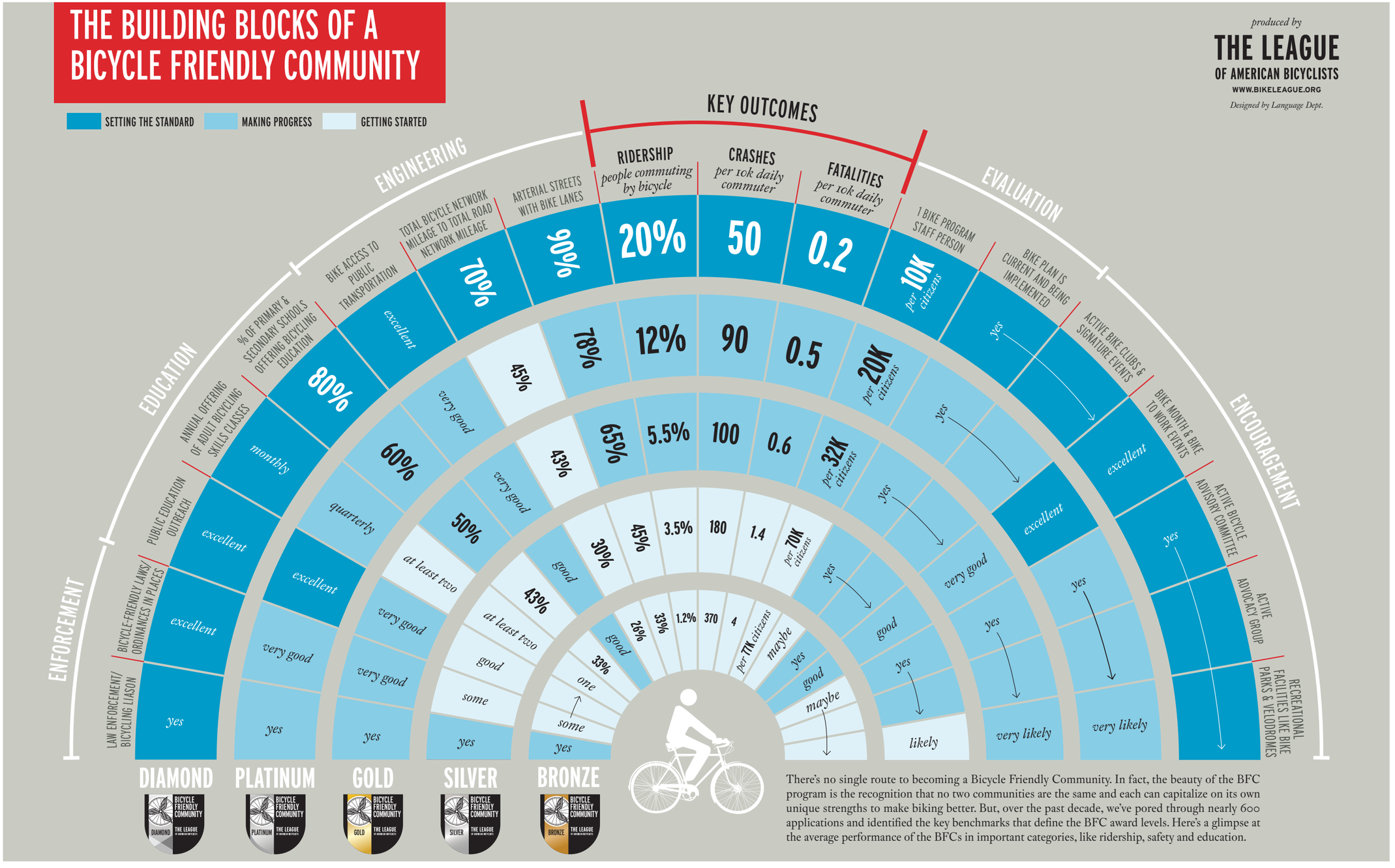

Figure 1-2: Building Blocks of a Bicycle Friendly Community | Source: League of American Cyclists

CHAPTER 2:
Outreach + Engagement

STUDY OUTREACH

Public input has been an integral part of the Bismarck-Mandan Bicycle and Pedestrian Plan's success. Therefore, public open house meetings and Steering Committee meetings were embedded into the entire process. Through these meetings, the project team was not only able to collect the public's comments and opinions but also use this feedback to develop a customized bicycle and pedestrian network and implementation plan for Bismarck and Mandan.

MEETINGS

Project Initiation Kick-Off Meeting

The Project Initiation Kick-Off Meeting for the Bismarck-Mandan Bike and Pedestrian Plan was held on December 16, 2016 at the Blackstead Room in Bismarck City Hall and there were 12 attendees.

The main purpose of the meeting was to inform attendees of the project schedule and the scope. The team discussed the community engagement process for the Plan which would involve the project website, surveys, dotmocracy boards, and open houses. It was also explained that the project scope was built around the 5 E's - encouragement, engineering, education, enforcement, and evaluation - to develop a plan that is implementable over the next 5 years.

Community Open Houses

There were two public open house meetings held throughout the duration of the project: one meant to serve as a kick-off to the project, identifying issues and opportunities for bicycling and walking in the area, and the second to review the Draft Plan. Both open houses are summarized in the following sections. Full summaries of the open house events are included in Appendix A.

Open House 1

The first public open house meeting was held on March 2, 2017 at the Bismarck Parks and Recreation community Room. Over 35 people attended the workshop and gave input on bicycling and walking in Bismarck and Mandan. Meeting attendees provided feedback through comment cards, describing their comfort level on different facility types, identifying desired routes and destinations, and conversing with staff to identify other important issues. Some of the key questions public meeting attendees were asked to explore included:

- What are current experiences and issues along roads in Bismarck and Mandan?
- Where are preferred future routes?
- Which types of facilities are most comfortable for bicycling and walking?
- Which types of facilities will encourage more bicycling and walking in the future?

The meeting was arranged around six different interactive stations which educated attendees about the upcoming plan and asked for feedback on preferred routes and different facility types. The six stations included:

1. Welcome: This station included a sign-in area, and included handouts about the Plan (see Figure 2-1).
2. About the Bismarck-Mandan Bicycle and Pedestrian Plan: This station provided background information about the Plan and process.
3. Comfort Continuum: This station allowed participants to rank their perceived comfort of different bicycle and pedestrian facilities and state if that facility would encourage them to walk or bike more. This activity was the in-person version of the online survey (see Figure 2-2).
4. Routes I Would Ride: This station allowed participants to draw on a map the routes they would like to bike or walk in Bismarck and Mandan. This activity was the in-person version of the wiki-map online (see Figure 2-3).
5. Future Bike Parking: This station allowed participants to identify where they would like to see future bicycle racks. Adding bicycle parking at key destinations is a strategy to encourage this mode of transportation.
6. General Comments: This station allowed participants to leave comments about the project in an open-ended format. This station included a large-scale board and comment cards.

Figure 2-1: Welcome Station, Open House 1

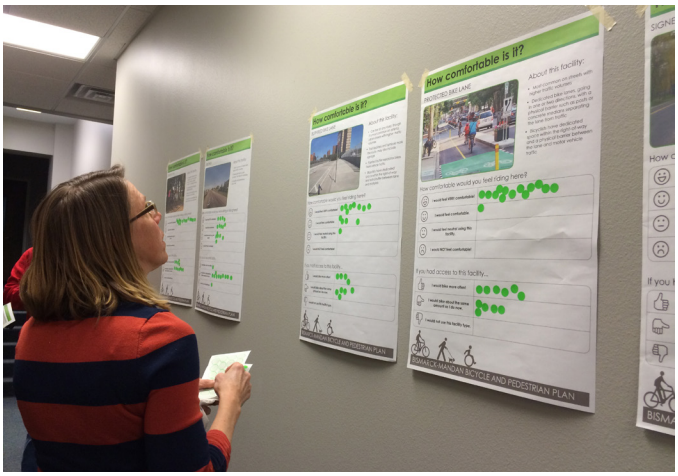

Figure 2-2: Comfort Continuum, Open House 1

Figure 2-3: Routes I Would Ride, Open House 1

Open House 2

On Thursday November 2nd from 5:30 to 7:30pm, the Bismarck-Mandan MPO hosted the second public open house for the Bicycle and Pedestrian Plan at the Ed "Bosh" Froehlich Meeting Room in Mandan City Hall. Eighteen people, not including children of attendees, attended the workshop and gave input on the draft Bismarck and Mandan Bicycle and Pedestrian Plan. Meeting attendees provided feedback through verbal Q & A, comment cards, online/website comments, and conversing with staff.

Meeting attendees were presented the process and results of the Plan, through a series of boards and a presentation. They were asked to provide their comments and questions on changes that should be made to the Draft Plan before final adoption.

In addition to the presentation, the meeting included a variety of printed boards which educated attendees about the planning process and work done to date. The boards included:

1. Welcome (Figure 2-4)
2. Vision and Goals
3. Future Bicycle Network
4. Engineering: Top 5 Routes
5. Engineering: Top 5 Intersections (Figure 2-5)
6. Education Opportunities and Priorities
7. Encouragement Opportunities and Priorities
8. Enforcement Opportunities and Priorities
9. Evaluation Opportunities and Priorities

Meeting attendees were able to also listen to a detailed presentation about the planning process and contents of the plan. The presentation addressed:

- Plan process and updates
- Community engagement and results of survey, website, and open house 1
- Vision and Goals of the plan
- Determining the proposed bicycle network
- Priorities for each of the 5 E's and implementation
- Next steps in the process

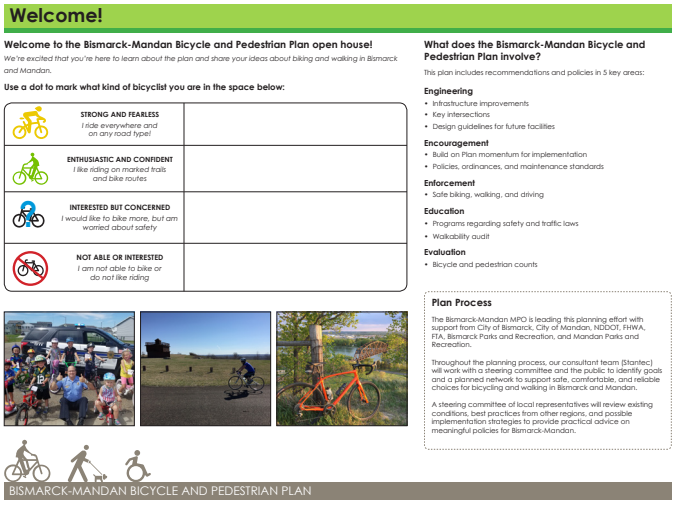

Figure 2-4: Welcome Board Open House 2

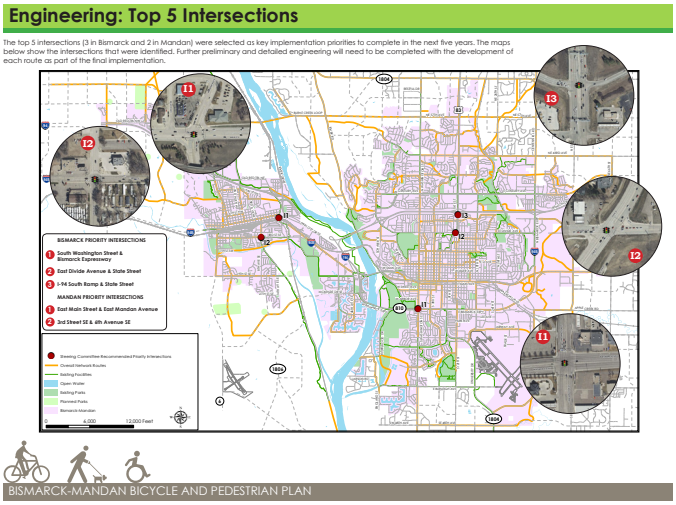

Figure 2-5: Top 5 Intersections Board Open House 2

Steering Committee

The Steering Committee was established by the MPO and included local partners to provide input on key points of the project and act as champions for future implementation of the study. Representatives from MPO, City departments, Go! Bismarck-Mandan Coalition, Central Dakota Cyclists, The ND Active Transportation Alliance, NDDOT, Bismarck/Mandan Parks and Recreation Department, ND FHWA, Bismarck PD, and Mandan PD were all members of the Steering Committee.

Each Steering Committee meeting started with the reviewing of minutes from the previous meeting. The six steering committee meetings are summarized in the following sections. Full meeting minutes from each of the six steering committee meetings are included in Appendix B.

Steering Committee Meeting 1

The first Steering Committee meeting was held on March 2, 2017 at the Bismarck Parks and Recreation District and there were 24 attendees. The reasons for initiating the plan, the benefits of bicycling and walking to communities, and the project scope and schedule were presented to the Steering Committee. The roles and expectations for steering committee members were also outlined and they were asked to share information about the plan in their organizations, review materials ahead of meetings, and come to meetings prepared to discuss implementable options in Bismarck-Mandan.

Steering Committee members were informed about a walkability audit which would help members understand the existing bicycling and walking conditions in their city. In addition, the group received the following set of questions for discussion regarding the project process:

- What are three phrases that describe how you'd like bicycling and walking to be in the future?
- How can we achieve more regarding bicycling?
- How can we achieve more regarding walking?

Preparation for the upcoming Community Open House, public engagement ideas, and a project website were also subjects of the first Steering Committee meeting.

Steering Committee Meeting 2

The second Steering Committee meeting was held on April 6, 2017 at the Mandan Prairie West Golf Club and there were 21 attendees at the meeting. In the six weeks between these two meetings, data from the public was collected through the project wikimap, on-line survey, and community kiosks stationed in 14 locations throughout Bismarck-Mandan. There was an update of the ongoing project progress. By the second Steering Committee meeting, the project website had 75 visitors, 285 people had responded to the survey, and160 unique comments were made via the wikimap. These engagement methods are discussed in more detail later in this chapter.

Visions and Goals were the main topic of discussion for the Steering Committee meeting. The Draft Vision and Goals that were developed were presented to the members. The Long Range Transportation Plan (LRTP) provided the overall direction for the transportation system, and the committee members were notified of the importance of aligning the Bicycle and Pedestrian Plan goals with those established in the LRTP. Based on the public input, goals were developed and are included in Chapter 3 of this Plan.

The criteria that was used to evaluate the planned network to understand high priority routes was also reviewed. Routes and intersections were evaluated for their ability to support the following areas: safety, equity, accessibility, and demand. There were several sub-categories of evaluation within each of the four main topic areas. However, the steering committee concurred that each of the four main topic areas should be weighted the same in the evaluation system.

Steering Committee Meeting 3

Steering Committee Meeting 3 was held over the course of two dates: on May 23, 2017 and May 25, 2017. These meetings were slightly different from the first two meetings, as one day focused on engineering and the other focused on encouragement.

The third Steering Committee Meeting that focused specifically on Engineering was held at the Hillside Aquatics Complex Community Room and there were 16 attendees. The purpose of the meeting was to address the following four things under the engineering component of the project:

- Prioritize "five in five" improvements
- Identify top five planned routes to implement over the next five years
- Identify the top five intersections in need for safety improvements for bicycles and pedestrians
- Identify best practices for roadway and bikeway design

The second half of the Steering Committee was held the very next day at the same venue and there were 15 attendees. A large majority of the meeting was spent talking about the Survey Monkey result on the question, "What are the top encouragement issues to address?" The top issues identified by committee members included:

1. Complete streets policies
2. Events to encourage bicycling and walking
3. Ordinances mandating that sidewalks be built when lots are platted
4. Printed and/or online trail maps for the entire region
5. Events such as "Open Streets" or "Cyclovia"

These top five issues were derived from the survey results and the Steering Committee answered the following five questions for each of the top five encouragement issues:

- In what ways can agencies coordinate better?
- What would make information sharing easier?
- What recommendations for encouragement do you want to see in the plan?
- Who are responsible parties?
- Timeline for implementation?
- What are our five-year initiatives related to bicycling and walking?

This Survey Monkey result was not only informative but helpful in designing the most appropriate and best-fit bike and pedestrian plan for the two cities.

Steering Committee Meeting 4

The fourth Steering Committee meeting was held on July 12, 2017 at the Mandan Parks and Recreation Office and there were 21 attendees at the meeting. The focus of the fourth meeting included both "Enforcement" and "Education." Interview results with Mandan and Bismarck law enforcement officers were discussed during the Steering Committee. The interviews focused on the following 5 important questions to the law enforcement officers:

- What are some obstacles law enforcement encounters regarding daily practice concerning bicycles and pedestrians?
- What are some improvements that can be made to better enforce road safety?
- What would help facilitate law enforcement officers in the process of enforcing/ensuring safety for all?
- What are some things that are already being done to encourage and safe guard bicycle and pedestrian traffic?
- What coordination or changes would be made to make enforcement more effective for bicyclists and pedestrians?

After completing the interview, it was clear that the top five Education policies were supported by the interviews and the basic guidance on driving and cycling. The top 5 educational policies and programs identified by the Steer Committee were:

1. "Road Safety" campaigns using local media
2. Safety educational programs at schools
3. Inviting law Enforcement to talk about road safety
4. Yard and roadway signage in the neighborhood
5. Media blitz and more emphasis on bike safety on driver's license exams

Another topic discussed during the fourth Steering Committee meeting was the result of the walk audit. The walk audit was considered part of the Educational component of the plan because it was developed and completed as a "Train the Trainer" event. There was a discussion about the scoring and the need for modifications to make the document more useful in future local walk audits. The recommended change was to develop a spread sheet to track the scores of the audit for multiple intersections and segments along the same corridor. The full meeting summaries of the walk audit were provided for review and discussion.

Steering Committee Meeting 5

The fifth Steering Committee meeting took place on September 12, 2017 and the group reviewed the 5th and final "E" for Evaluation. This meeting also included a follow up to preliminary engineering concepts for the to 5 segments as identified during the 3rd Steering Committee meeting.

The Evaluation portion of the meeting covered the basics of developing an evaluation program and the preliminary potential locations for monitoring. Criteria for monitoring locations included:

- A mix of urban and rural locations
- A mix of facility types (on- and off-road)

With this criteria, 11 locations in Bismarck and 7 locations in Mandan were identified. These locations and the proposed evaluation program are discussed further in Chapter 8: Evaluation.

Next, the group discussed the top 5 route improvements to complete in the next 5 years (3 routes in Bismarck and 2 in Mandan). For each of the routes, Steering Committee members discussed:

- Route location
- Route features
- Suitable bicycle facility type
- Cross-sections for how the new facility would fit within the existing right-of-way

Top 5 route improvements are discussed further in Chapter 9: Implementation.

Steering Committee Meeting 6

The sixth and final Steering Committee meeting was held on October 10, 2017 to review and discuss the Draft Plan and take comments from all of the Steering Committee members on the plan prior to taking it to the second public open house. Comments were both general and specific in nature and were incorporated into the most recent version of the Plan.

Steering Committee members also reviewed the top 5 intersection improvements in Bismarck and Mandan (3 intersections in Bismarck and 2 in Mandan). A walk audit of each of these intersections helped to identify issues and challenges pedestrians face when crossing. The group reviewed one intersection together and City staff from Bismarck and Mandan reviewed the other intersections independently. Top 5 intersection improvements are discussed further in Chapter 9: Implementation.

ONLINE ENGAGEMENT

Project Website: www.bismanbikewalk.com

Throughout the duration of the project, a project website was active to educate the public about the project and provide an opportunity for the public to ask questions and give feedback (see Figure 2-4). The website also hosted online map application (wiki-map) and the project photo contest. The wiki-map allowed users to identify routes they would like to walk or bike and drop pins for local destinations and barriers. By the numbers:

- 14 comments were left on the website
- 12 contestants submitted photographs to the photo contest
- 119 desired walking and biking routes were identified through the Wiki mapping application
- There were over 100 unique views of the website over the duration of the project

Comfort Survey

The project website also linked to an online survey intended to understand which facility types were preferred for pedestrians and bicyclists in Bismarck and Mandan. Survey participants were asked to rank different facility types as more or less comfortable to use and whether or not building that facility would encourage them to walk or bike more (see Figure 2-6). In total, 288 community members completed the survey.

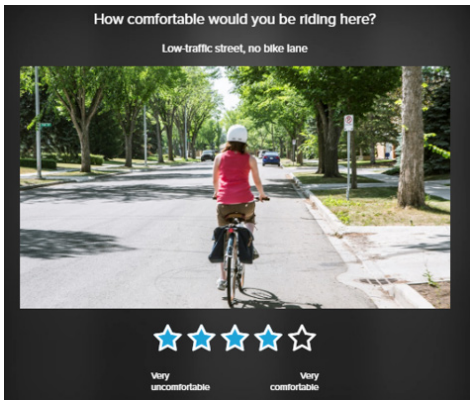

Figure 2-6: Comfort Continuum, Online Survey

COMMUNITY KIOSKS

Prior to the first open house, kiosk voting was available at numerous public locations throughout Bismarck and Mandan. These kiosks included a board with dots, allowing the public to share which bicycle and pedestrian facilities they felt most comfortable using (see Figure 2-7). Community Kiosks were placed at the following locations:

- Scheels (Bismarck)
- Midway Lanes (Mandan)
- The World War memorial Building (Bismarck)
- Skyzone (Bismarck)
- Stations West restaurant (Mandan)
- Mandan YMCA
- Bismarck YMCA
- Bismarck Aquatic center
- Mandan Brave Center
- Bismarck Golf Dome
- Terra Nomad (Bismarck)
- Cyclist's Cove (Mandan)
- Epic Sports (Bismarck)
- Bismarck/Burleigh Public Health

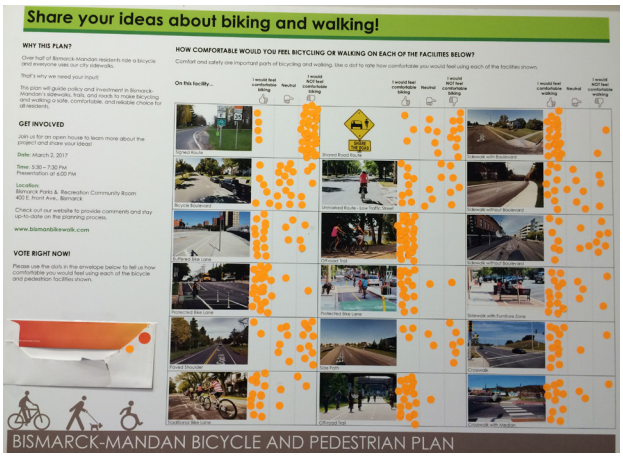

Figure 2-7: Community Kiosk

CHAPTER 3:
Vision + Goals

VISION FOR WALKING AND BICYCLING

The Bismarck-Mandan Bicycle and Pedestrian Plan's vision is to convey that bicycling and walking are safe, comfortable, and convenient choices for all people. In hopes of creating an environment in which people feel comfortable and safe to bicycle and walk in Bismarck and Mandan.

PLAN GOALS

The five goals described in the following sections help to promote the vision for the Plan. They serve as pillars which will support the development of the proposed network and implementation strategies discussed later in the Plan. The goals will also guide the implementation of the 5 E's of the Plan: Engineering, Education, Encouragement, Enforcement, and Evaluation. It was important that the goals developed for this plan were in line with the goals outlined within the MPO Long Range Transportation Plan all while responding to comments received by the public during the development of the plan.

Goal 1: Network Use

Increase the number of bicycling and walking trips made by people in Bismarck and Mandan.

Once perceived and real barriers are removed, walking and biking can become a daily experience for all residents, employees, and visitors. A well-established network gives people the option to not only be healthier but, be environmentally friendly by choosing to walk or bike. Encouraging people to bike and walk more frequently increases the number of bicycling and walking trips made by people.

Goal 2: Connectivity

Develop a connected network of bicycling and walking routes throughout both communities in partnership with local, regional and state partners. Connect bicycling and walking routes to community destinations and other transportation systems, including transit.

The connectivity of bicycle and pedestrian routes to not only community destinations but other transportation systems can decrease vehicle miles traveled per person in Bismarck and Mandan while providing viable options to combine travel needs. Connectivity of routes that lead people to community destinations is important as it promotes bicycling and walking not as a form of leisure activities but as alternative modes of transportation.

Goal 3: Safety and Comfort

Build and maintain safe and comfortable bicycling and walking facilities for people of all ages and abilities. Support driving, walking and bicycling behaviors that increase the safety of people who walk and bicycle.

Promoting and encouraging safe behaviors from drivers, walkers, and bicyclists offers a level of predictability to a functional system. Predictability of modes in a shared space better ensures the safety of drivers, bicyclists and pedestrians. By creating an environment in which all individuals feel safe and comfortable, this can be a driving force in encouraging biking and walking.

Goal 4: Maintenance

Protect the public's investment in the bicycling and walking system over the long-term and ensure system accessibility all year round.

Walking and bicycling can become a habitual part of daily life with a high-level of maintenance reliability. People will choose alternative modes of transportation when obstacles are reduced. The maintenance of public investment in the bicycling and walking system conveys the cities' commitment in trying to encourage people to bike and walk. It ensures people the permanency of these alternative modes of transportation.

Goal 5: Planning

As new commercial and residential projects are planned, integrate bicycle and pedestrian facilities with project designs during the development review process.

Implementing improved facilities in the development review process not only increases opportunities to better allocate physical space needs, but property owners and developers reap the benefits of an enhanced public realm. By incorporating bicycle and pedestrian facilities in project designs during the development review process, this establishes a sense of permanency in advocating biking and walking in the community.

CHAPTER 4:
Engineering
EXISTING BICYCLE AND PEDESTRIAN NETWORK

Facilities

The Cities of Bismarck and Mandan are home to 516 miles of bicycle and pedestrian facilities, including sidewalks, multi-use trails, and on-street bicycle facilities. Other infrastructure investments to support bicycling and walking include bicycle racks and trail kiosks throughout both communities. Table 4-1 summarizes these facilities. Table 4-1 does not categorize off-road unpaved trails, as there was no available data for these routes. However, it was identified in the public comment period that these trails are a critical component of the bicycling and walking network in the community and should be preserved in the future.

Figure 4-1 illustrates the existing bicycle and pedestrian network in Bismarck and Mandan. It includes existing sidewalks, bicycle lanes, and multi-use trails.

Figure 4-2 illustrates known locations of existing bike racks in Bismarck and Mandan. This figure also shows community destinations that typically generate bicycling and walking trips, such as schools, employment centers, and civic facilities. This information was collected via crowd-sourcing by the Bismarck-Mandan MPO for the 2016 League of American Cyclists Bicycle Friendly Community application. In total, these bike racks provide 1,913 spaces for bike parking in the two communities. An estimated ten percent or less of these bike racks conform to the American Pedestrian and Bicycle Professional guidelines for secure bike racks. All of the bike parking are racks. In May 2017, one indoor bike parking facility was added in a downtown parking garage -on 6th and Thayer- and it conforms to APBP guidelines (bike corral). Additional bike parking facilities that were not identified by the Bismarck-Mandan MPO may exist.

Table 4-1: Existing Walking and Bicycling Facilities, 2016

Facility Type	Description	Miles
Sidewalks	Sidewalks are located on most streets in Bismarck and are typically located on both sides of the street once a property is developed.	437 miles in Bismarck (No data in Mandan)
Multi-use trails	These trails are separated from the roadway and used for bicycling, walking, running, or other non-motorized activities. There are multi-use trails in both Bismarck and Mandan. Many of these trails continue past city limits into Morton County and Burleigh County.	52 miles in Bismarck 18 miles in Mandan
Bicycle Lanes	Some roads in Bismarck include dedicated bicycle lanes, which are between 4 and 6 feet wide and marked with paint.	4 miles in Bismarck
Shared Road Routes	Some residential and collector roads in Bismarck are marked with Share the Road signs and/or street markings to encourage motorists to make space for bicyclists.	5 miles in Bismarck
Bike Racks	The Bismarck-Mandan MPO conducted a recent count of bicycle racks in the two cities. This map shows known locations of these racks.	136 Racks
TOTAL	**516 miles of pedestrian and bicycle facilities 136 bike racks**	

Figure 4-3 illustrates bicycle and pedestrian crashes in Bismarck and Mandan between 2012 and 2016. In total, there were 87 bicycle and 129 pedestrian crashes during the five year period. Of these, fifteen bicycle crashes and thirty-three pedestrian crashes required emergency response. Without a counting system in place to understand the total number of bicyclists and pedestrians using the network, it is hard to develop a bicyclist or pedestrian crash rate. Little data exists to generate a crash rate that compares the total number of bicycle and pedestrian crashes with the total number of network users.

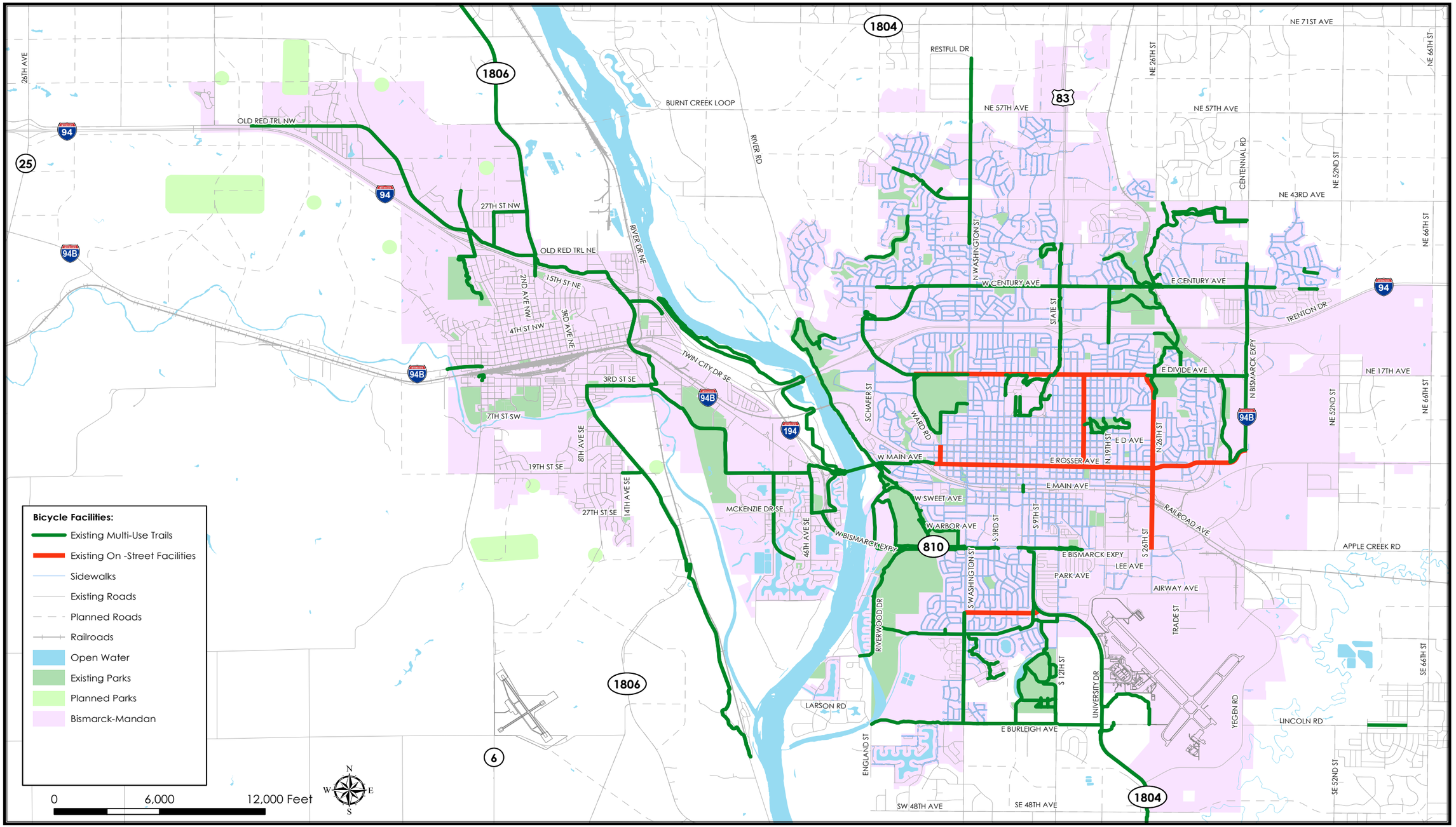

Figure 4-1: Existing Facilities

Bismarck-Mandan Bicycle and Pedestrian Plan

October 16, 2017

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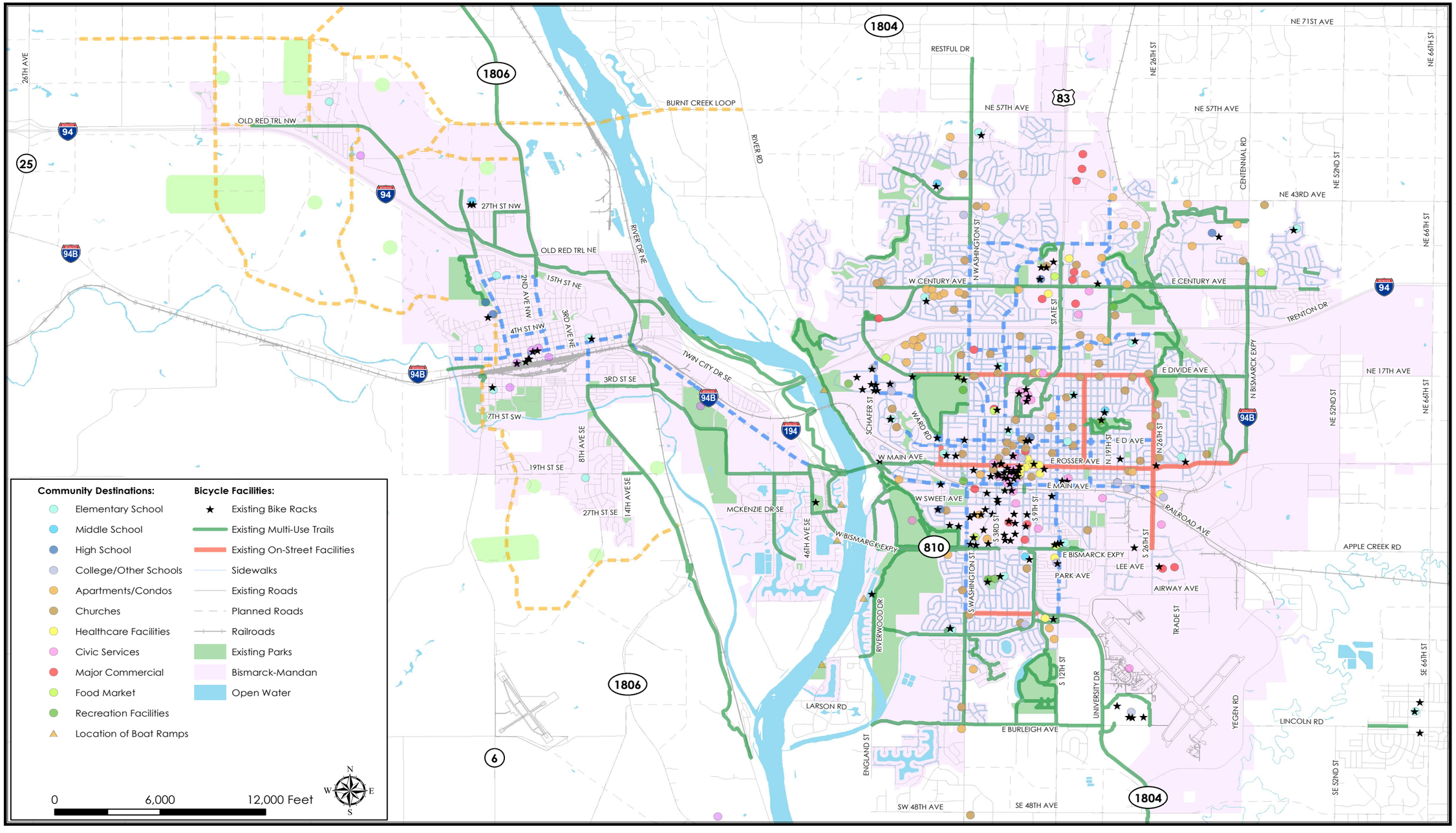

Figure 4-2: Bike Rack Locations and Community Destinations

Bismarck-Mandan Bicycle and Pedestrian Plan

October 16, 2017

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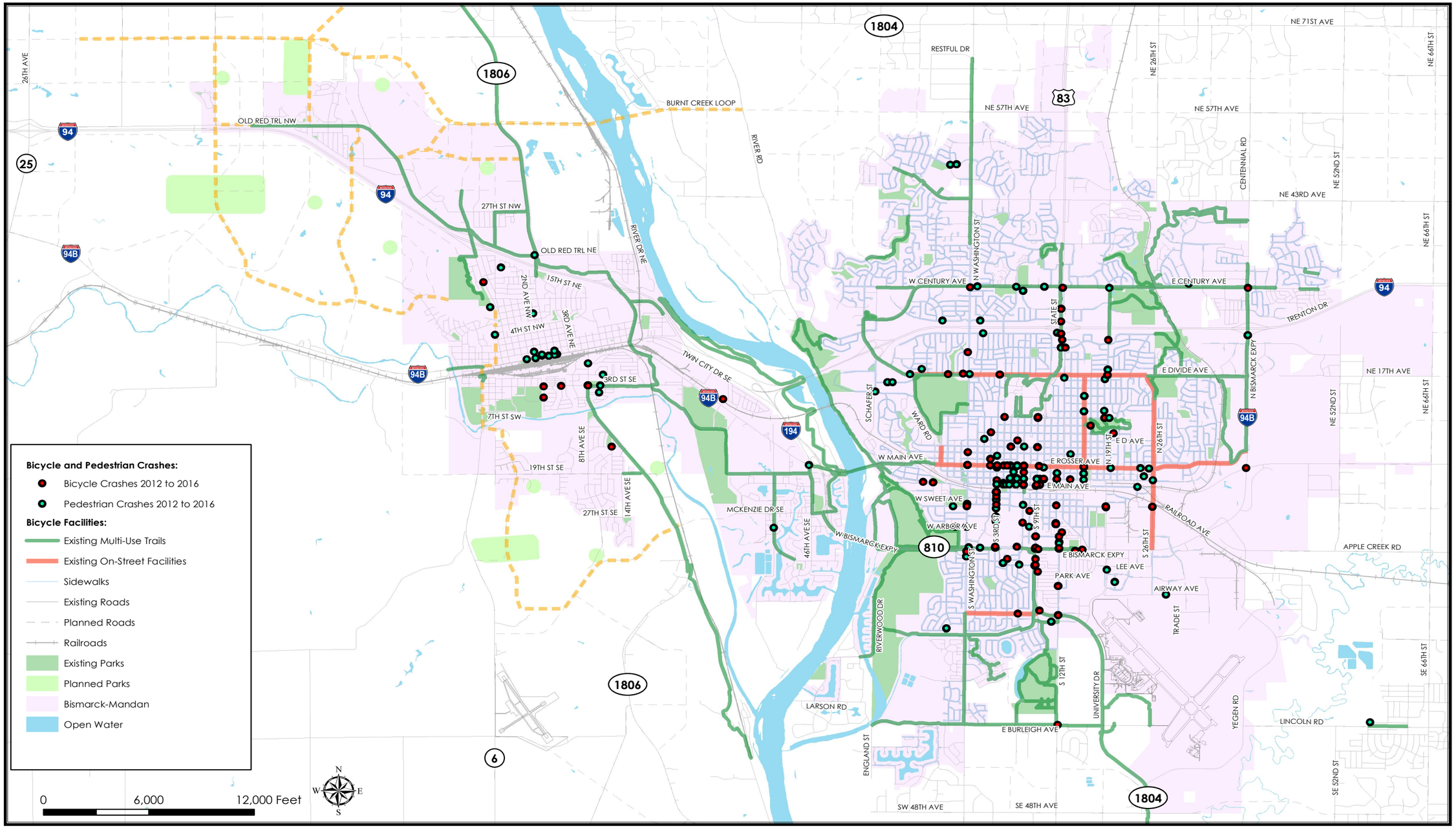

Figure 4-3: Bicycle and Pedestrian Crashes (January 2012 - December 2016)

Bismarck-Mandan Bicycle and Pedestrian Plan

October 16, 2017

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System Use and Safety

According to the Bismarck-Mandan-Lincoln Regional Travel Survey Final Report (2013), 52 percent of all respondents indicated that someone in their household had ridden a bike in the previous year. Of this group, 80 percent rode for recreational purposes, three percent for commuting, and nineteen percent for both recreational and commuting purposes.

The U.S. Census also collects information on commute mode to work. According to the 2015 American Community Survey, 221 people (less than one percent of all Bismarck commuters) arrived by bicycle, while 821 people (two percent of commuters) walked to work. In Mandan, 26 people or less than one percent of commuters arrived by bicycle and 126 people or one percent of all commuters walked to work.

The North Dakota Department of Transportation Local Road Safety Program (LRSP) for Burleigh County and the City of Bismarck was completed in November 2013. The report provides insight into vehicle crashes that occurred between 2008 and 2012. During that timeframe, there were 13,083 traffic crashes in the county, 83 percent of which occurred on local or county roads. Of those crashes, 81 percent were in urban areas, including the City of Bismarck. The program's data also showed that of Burleigh County's Severe Crashes, 11 percent were crashes involving pedestrians and one percent were crashes involving bicycles. See Table 4-2.

Table 4-2: Bismarck/Burleigh County Bicycle and Pedestrian Crashes, 2008-2012

	North Dakota		Burleigh County	
	%	#	%	#
Total Severe Crashes	100%	2,231	100%	152
Crashes Involving Pedestrian	5%	117	11%	17
Crashes Involving Bicycle	2%	46	1%	2

The NDDOT LRSP for Mandan and Morton County is part of a larger report analyzing the North Dakota Central Region. In the Central Region between 2009 and 2013, there were 2,472 crashes, 59 percent of which were in urban areas including Mandan. Only one percent of crashes in these urban areas included bicyclists and pedestrians. However, approximately twenty percent of severe crashes involved bicyclists and pedestrians. This is illustrated in Table 4-3.

Table 4-3: Mandan and Jamestown Bicycle and Pedestrian Crashes, 2009-2013*

Safety Emphasis Area	Statewide (% of Total)	Mandan and Jamestown, ND	
		%	#
Total Severe Crashes (Motorized and Non-Motorized vehicles)	100% (2,231 total crashes)	100%	31
Crashes involving Pedestrian and Bicycle	7% (163 total crashes)	11%	6

For roads in Mandan, the following risks were identified:

- Average Daily Traffic (ADT): head-on collisions were more likely on roads with ADTs above 5,000
- Access Density: More access points were correlated with more collisions
- Road Geometry: Crashes were more common on roadways with four or more lanes
- Speed Limit: Rear-end and head-on collisions were more likely in low-speed (30-40 mph) corridors

* Note: The Local Road Safety Program included both Mandan and Jamestown and did not differentiate data by each City.

EXISTING PLANS, POLICIES AND PROCEDURES

Bismarck-Mandan Long-Range Transportation Plan

The Cities of Bismarck and Mandan have planned additional on-street bicycle facilities and multi-use trail routes throughout the region as part of the 2015 Long Range Transportation Plan (LRTP). In the two cities, there were twelve miles of planned on-street routes and 53 miles of planned trails within the 2015 LRTP. The future planned networks within the LRTP served as the basis for reviewing future planned networks as part of this Plan.

Downtown Bismarck Subarea Plan

The City of Bismarck adopted the Downtown Bismarck Subarea Plan in December 2013. Like the Long Range Transportation Plan, the findings and recommendation of the Downtown Bismarck Subarea Plan are supported by the Bicycle and Pedestrian Plan and were also a basis in developing our Planned Network. The plan includes a "Complete Streets Framework" that identifies improvements to make downtown Bismarck a more pedestrian and bicycle friendly environment. This plan calls for several improvements to connect the downtown to the wider bicycle and pedestrian network, including a rails-with-trails connection to the riverfront trails along the south side of the existing railroad track, safety improvements to an important downtown rail crossing, and bicycle and pedestrian infrastructure to be included with a major infill redevelopment known as Five South.

For pedestrians, the plan envisions a network of pedestrian-friendly streets linking downtown to the outlying neighborhoods. Streets are categorized three ways:

Signature Street

Main Avenue and Fifth Street establish the 'cruciform' structure for retail development and Fifth Street provides a linkage between the Kirkwood Mall to the public library. The envisioned pedestrian improvements incorporate landscaping and widened sidewalks to foster walking, outdoor seating, and public art display.

Neighborhood Connector

Streets linking downtown to outlying neighborhoods between destinations such as parks, new housing, employment, and shopping areas are identified. These routes may include off-street shared multi-use trails. At elevated crossings, such as those proposed at Seventh Street and Ninth Street, the design should incorporate a cantilever to the existing rail crossing or separate pedestrian/bicycle bridge structure.

Pedestrian Underpass

The Fifth Street Pedestrian Underpass is envisioned as a light and airy connection under the BNSF rail line thereby linking Main Avenue to the Event Center and Kirkwood Mall. Since adoption of the plan, this option has been evaluated and determined to be infeasible due to the high cost of tunneling under the active BNSF rail corridor.

Bicycling Improvements and Multi-Use Trails

For bicyclists, the plan envisions an off-street system of protected bikeways and multi-use trails. The network is intended to provide greater connectivity through downtown Bismarck to the trail network in peripheral neighborhoods. These connections include a "Trail with Rail" component that would run a multi-use trail along the BNSF corridor serving both bicyclists and pedestrians. A task force has prepared a series of alternative routes that would serve this connection and draft findings are under review by the City of Bismarck. A demonstration of these alternative routes was implemented as a "pop-up pathway" from September to October of 2017 to allow citizens a chance to provide feedback. The group that has arranged this has renamed from "rail trail" to "Bismarck Central Pathway."

ROADWAY AND TRAIL DESIGN STANDARDS

City of Bismarck and Bismarck Parks and Recreation District

Sidewalks Design Standards

The City of Bismarck is served by approximately 437 miles of sidewalk. In residential districts, sidewalks are constructed to be 4.5 feet wide. In manufactured home parks, sidewalks are constructed to be at least four feet wide. In commercial and industrial districts and on school properties, sidewalks are six feet wide. Sidewalks are constructed to current ADA standards at the time of construction.

The total width of roadway right-of-way is determined by the roadway's functional classification. The total width of a sidewalk is determined by the zoning district of adjacent land uses. The width of boulevard space between a sidewalk and the road is determined by the need for travel lanes, turn lanes, and medians within the roadway.

On-Street Bicycling Facilities Design Standards

The City of Bismarck maintains approximately four miles of bicycle lanes. These are installed on some collector and minor arterial roadways. Typical bicycle lanes are four feet wide. In commercial areas without on-street parking needs, bike lanes are six feet wide. Travel lanes are generally widened in these areas to accommodate larger vehicles. Right of way and roadway width standards vary throughout Bismarck and are based on Functional Classification, platted standards, zoning, traffic studies and year in which platted or constructed. The City of Bismarck maintains requirements for new right of way and roadways widths which are outlined in ordinance. No standards currently exist in ordinance for bicycle facilities. Determination of future use of right of way and roadway widths for integrated bicycle facilities is investigated on a case by case basis.

In addition to bike lanes, the city has approximately six miles of Shared Road Routes that are marked with Share the Road signs and pavement markings.

All constructed bicycling facilities meet standards set in the 2012 AASHTO Guide for the Development of Bicycle Facilities.

Multi-use Trails Design Standards

Bismarck is served by approximately 55 miles of multi-use trails. All multi-use trails meet the standards set in the 2012 AASHTO Guide for the Development of Bicycle Facilities. Trails are only constructed at widths narrower than ten feet when space is constrained by physical barriers, such as mature trees or along parts of the Missouri River.

Multi-use trails constructed adjacent to collectors and arterials are typically added during construction or reconstruction of these roads. The width of these paths is determined based on the total right-of-way of the road and the space requirements of motor vehicles (travel lanes, turn lanes, medians and parking lanes). When trails are constructed along roadways, they are designed to be ten feet wide with variable widths of separation from the road. This separation may be paved with a brick scoring pattern or green space to help users stay separate from the road or with a wider grass boulevard, as right-of-way allows. Because most multi-use trails are constructed parallel to roadways, standard pedestrian crossing treatments help to control interactions between path users and motor vehicles at intersections. At mid-block crossings, multi-use trails are marked with continental crossing bars and pedestrian crossing signs on the road. Trail crossing treatments are closely coordinated between the Bismarck Parks and Recreation District and City engineering staff and are applied consistently throughout the city.

Multi-use trails are marked by signs at every trailhead that include a map of the system and trail rules. Longer trails are signed throughout the distance of the trails. Bismarck Parks and Recreation maintains drinking fountains along two of the city's most popular multi-use trails, the Riverfront Trail and the Tom O'Leary Trail.

City of Mandan And Mandan Parks and Recreation District

Sidewalks Design Standards

The City of Mandan does not have standard minimum widths for sidewalks; new sidewalks are typically installed at five feet wide. The City does require that sidewalk slopes and curb ramps conform with ADA requirements for tactile warnings and slopes. Sidewalks within public right of way are to be laid with the edge parallel to and one foot from the adjacent property line.

Boulevard space in Mandan is typically wide. Mandan's subdivision design standards require right-of-way dedication of at least 100 feet for arterial roads, 80 to 100 feet for collector roads, and 66 to 80 feet for local roads. Signage is placed behind sidewalks. This can result in some signs being difficult for motor vehicle drivers to see if the adjacent boulevard width is greater than ten feet.

Multi-use Trails Design Standards

Mandan is served by approximately 18 miles of multi-use trails. Multi-use trails are designed to be ten feet in width. Trails are typically constructed from asphalt; concrete is used in locations where vehicular traffic crosses trails.
Trails are not common in rural road sections where right-of-way is dedicated to stormwater drainage ditches.

All trails conform to ADA standards at the time of construction. When the city performs mill and overlay projects on adjacent roadways, curb ramps at trails are updated to current ADA standards.
At major intersections, trail users are controlled by stop signs on trails and pedestrian crossing markings. Pedestrian signals are sometimes installed at mid-block trail crossings on roads with speeds above 25 mph or low trail visibility.

DEVELOPING THE FUTURE BICYCLE AND PEDESTRIAN NETWORK

Bike and pedestrian planning was one of the components of the 2015 Long Range Transportation Plan (LRTP). The LRTP served as a jumping off point for developing a full bicycle and pedestrian plan for Bismarck and Mandan. Based on the bike and pedestrian network in the LRTP, new connections and routes were identified to complete the network during this plan development.

The new connections for this bicycle and pedestrian plan were determined by several factors. First, an extensive effort was undertaken to gather public input. Through a series of data gathering opportunities - wikimap survey, Survey Monkey, website comments, and dotmocracy voting and feedback during public open houses - new potential connections were identified. These routes were based on existing bike routes, routes the public would like to ride in the future, and barriers that would have an impact on safety, equity, accessibility, mobility, and demand. The new connections were then compared with the existing ones in the LRTP to identify the elements beyond the planned system. These elements were evaluated with spacing and connectivity criteria in relation to the planned system and community destinations to determine additions to the LRTP network. Finally, the Steering Committee reviewed a draft of the planned network and identified additional connections for a full build out network that would further connect both existing and planned facilities.

This full existing and planned network is illustrated in Figure 4-4.

The next step was to evaluate the priorities of individual connections and critical intersections for the entire planned network in each community. Based on discussions with the Steering Committee, an evaluation methodology was developed to evaluate the connections and intersections in categories of safety, equity, accessibility, and demand. These categories for evaluation and prioritization were taken directly from the goals that were developed for this plan. Before the criteria were applied to the network, it was necessary to understand the characteristics of individual connections in terms of functional classification and regional location.

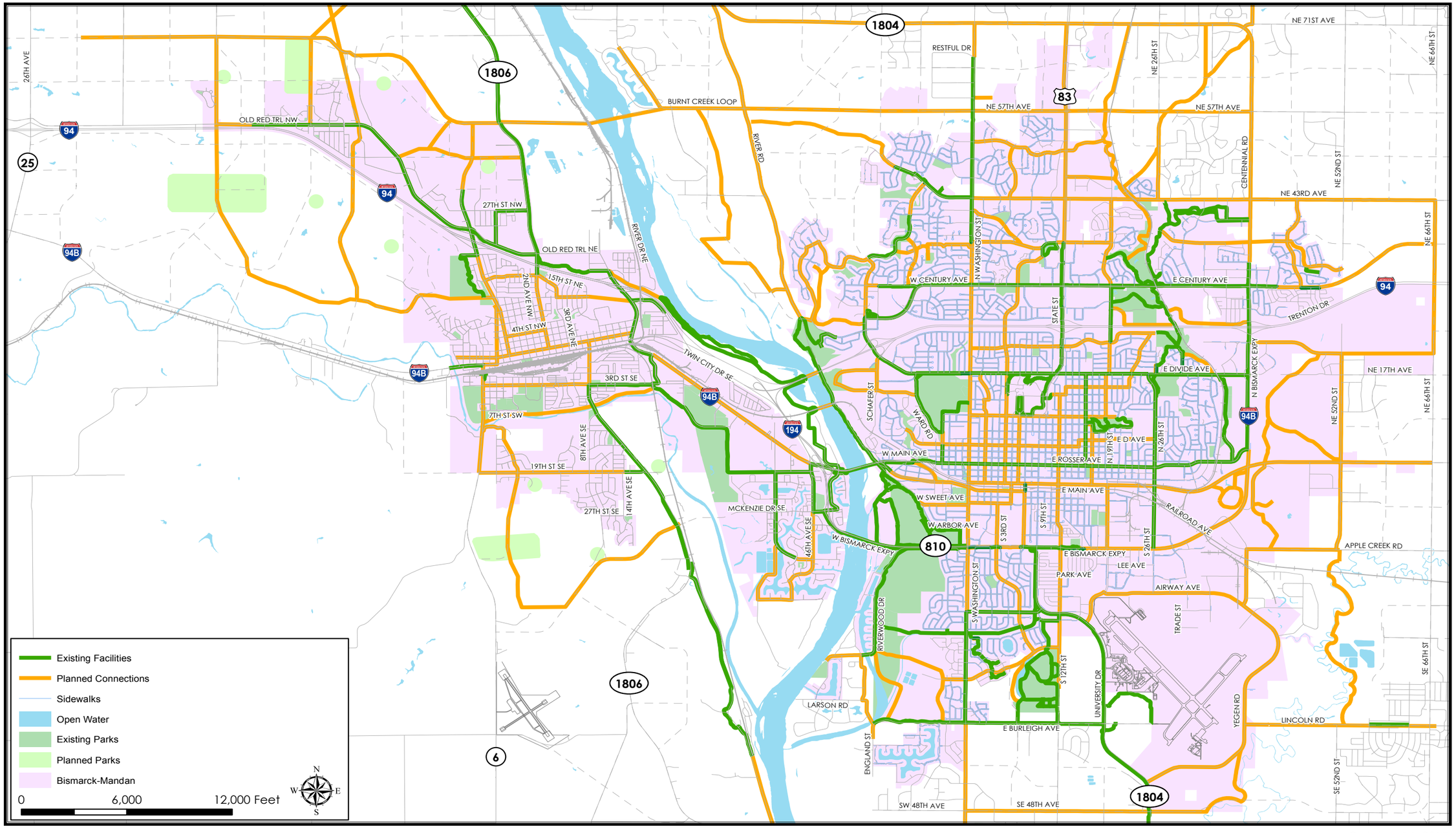

Figure 4-4: Recommended Overall Connections

Bismarck-Mandan Bicycle and Pedestrian Plan

October 16, 2017

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Pedestrian improvements are not illustrated in the planned network map. However, Staff and Steering Committee members valued the existence of a complete and well-maintained sidewalk network in Bismarck and Mandan. Policy tools to advance sidewalk connectivity and construction are discussed in Chapter 6: Encouragement. Additionally, key intersection improvements for 5 intersections in the region have been developed. These improvements will benefit bicyclists and pedestrians, while promoting motor safety as well. Intersection priorities are discussed further in Chapter 9: Implementation.

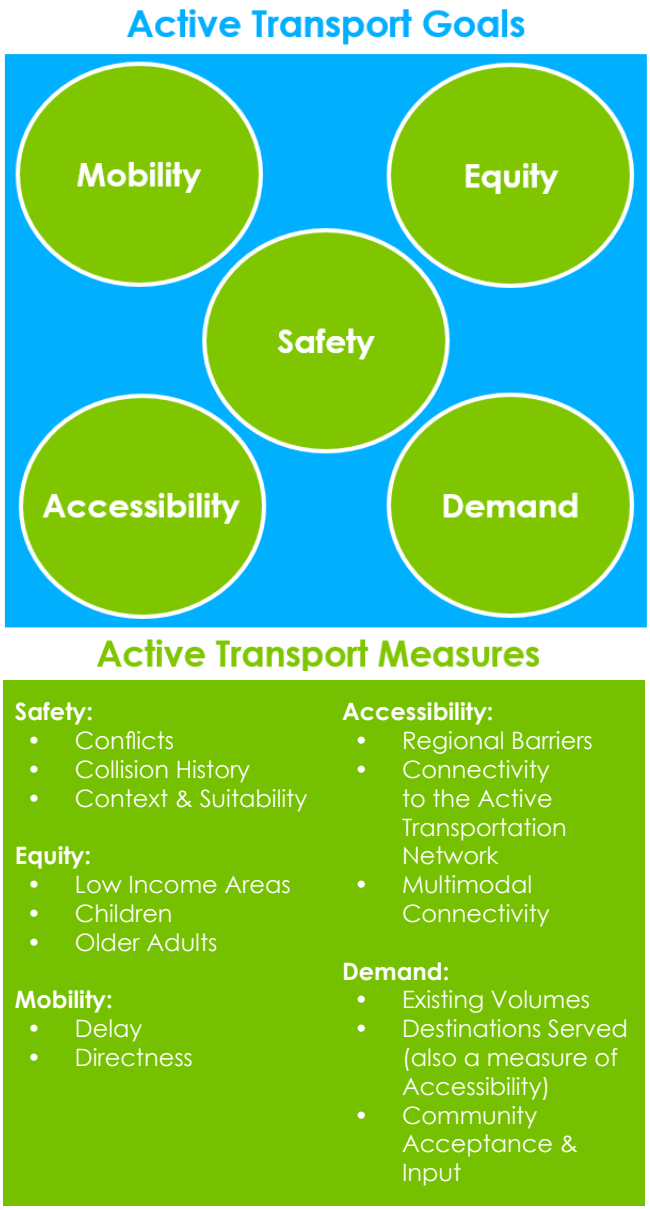
Route and Intersection Prioritization

Methods

Despite the desire to build a totally integrated bicycling and pedestrian network, route prioritization is important to an effective implementation of the network. By evaluating the proposed routes and intersections, we can determine which routes will balance accessibility, safety, demand, and equity. In evaluating routes for prioritization, the project team considered the entire length of the route which was defined as an on-street bicycle facility or a shared-use trail, not a sidewalk. Elements considered in the score were: collision history, context and suitability; equity (children, older adults and population in poverty). US Census block data and the MPO environmental justice information was used for this. The accessibility and mobility scoring addressed bicycling network connectivity, multimodal connectivity and physical barriers (railroad, bridges and arterials). Network demand addressed destinations served, community acceptance and input through this process. Each segment was scored 0-5 based on these criteria, with the highest potential score being 25. When each route was scored, the total score was then divided by the length of the route to eliminate bias toward longer routes. This evaluation process, including how criteria ties to the Plan goals, is illustrated in Figure 4-5. The analysis and ranking of these routes and intersections are illustrated by their percentage ranking and overall rankings for the top 15 routes and intersections in Figures 4-6 and 4-7, respectively.

The network connections were divided into categories of arterial, collector and local connections and then individual segments were identified for analysis based on further investigation of their locational characters. The majority of the critical intersections were identified in the LRTP and the rest were identified through the public outreach efforts. The established analysis methodology was applied to all the individual segments and intersections.

Figure 4-5: Route Evaluation Criteria



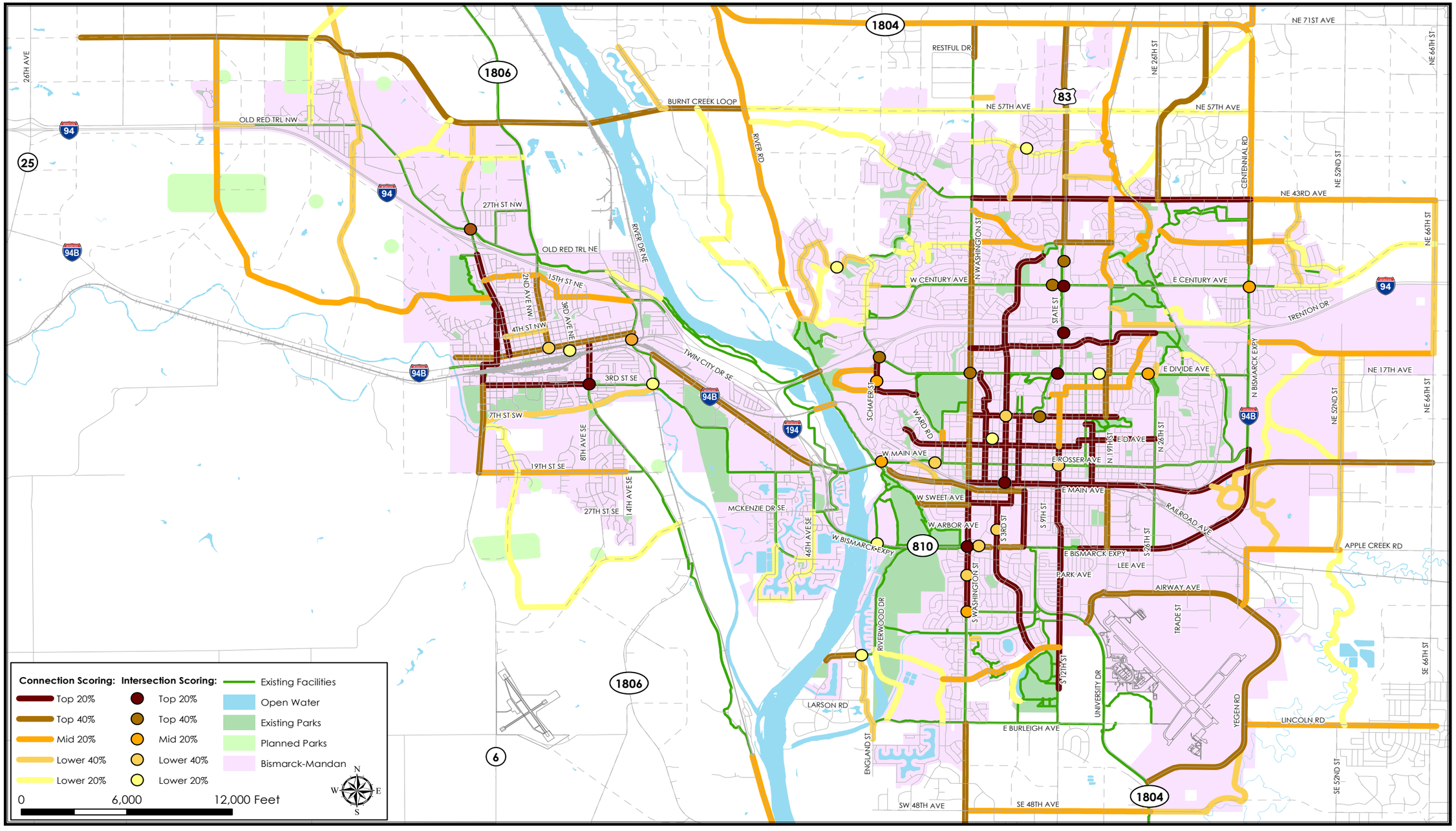


Figure 4-6: Connection and Intersection Analysis Scoring

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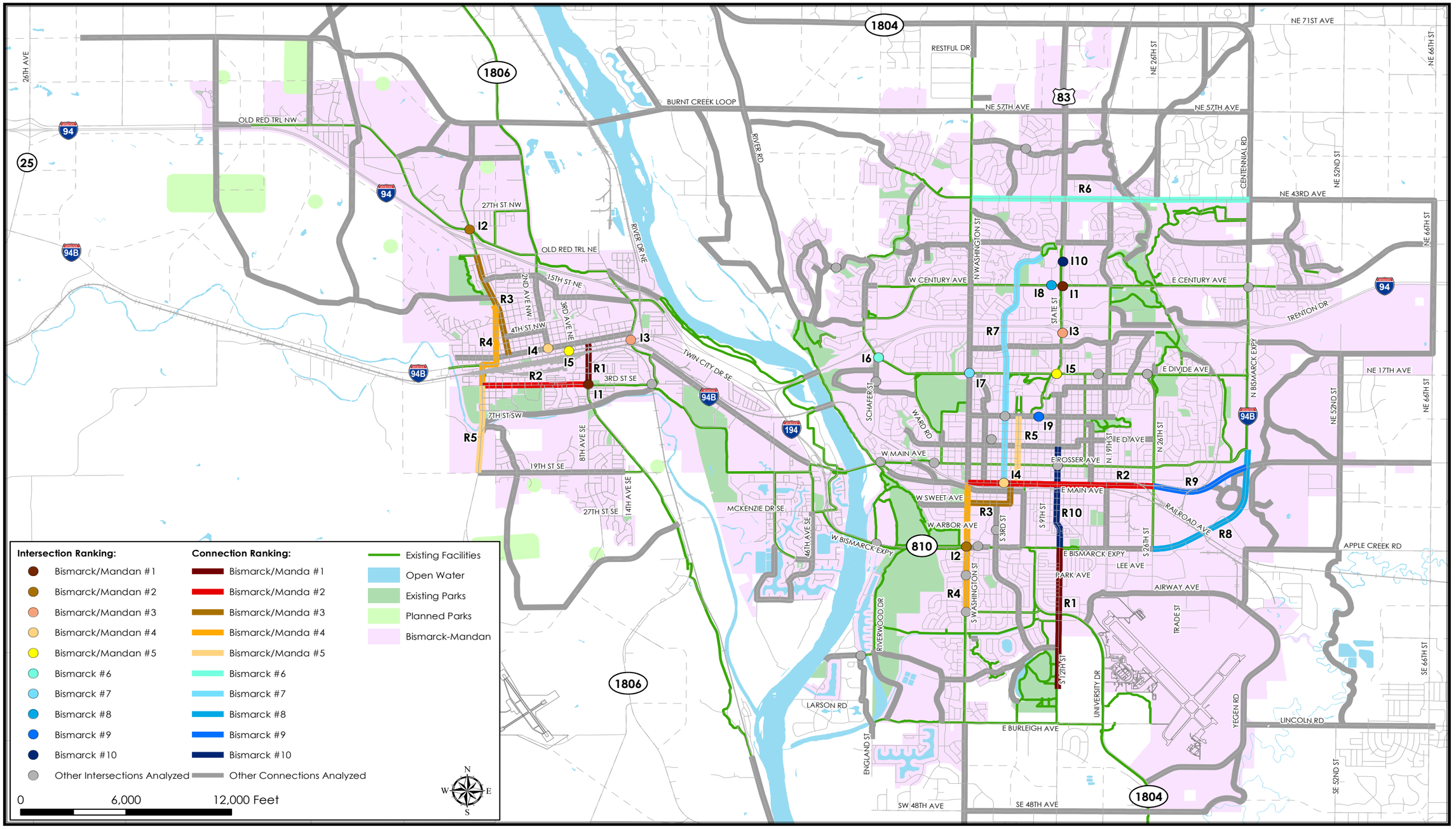

Figure 4-7: Connection and Intersection Ranking

Bismarck-Mandan Bicycle and Pedestrian Plan

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In evaluating intersections for prioritization, the project team utilized the Long Range Transportation Plan plus any issues identified by the public. All four corners of an intersection were considered. Intersections were evaluated for both bicycling and walking. For intersections, safety addressed collision history and intersection conflicts. Equity criteria included lower income populations, children, and the elderly; accessibility and mobility were also considered. Demand factors included destinations served; community acceptance and input; plus bicycle and pedestrian user counts.

Prioritized Route and Intersections

Once a selection of potential routes and intersections was determined, each route and intersection were given a score based on the evaluation criteria mentioned earlier. There was a total of 10 routes and 10 intersections in Bismarck that were included in the evaluation process; there were five routes and five intersections in Mandan that were included in the evaluation process. The scores of the route and intersection were the main determinants to identify the routes and intersections. The top ten routes and intersection in Bismarck and top five routes and intersections in Mandan include:

Bismarck Routes

- 1: South 12th Street (0.4mi N of Burleigh Avenue to E Bismarck Expressway)
- 2: West & East Main Avenue (N Washington Street to N 26th Street)
- 3: West & East Bowen Avenue and South 5th Street (S Washington Street to E Main Avenue)
- 4: South Washington Street (W Wachter Avenue to W Main Avenue)
- 5: North 6th Street (E Main Avenue to E Boulevard Avenue)
- 6: Northeast 43rd Avenue (N Washington Street to Centennial Road)
- 7: North 4th Street and Dominion Street (W Main Avenue to N 10th Street)
- 8: East Bismarck Expressway (S 26th Street to E Rosser Avenue)
- 9: East Main Avenue (S 26th Street to E Bismarck Expressway)
- 10: South & North 12th Street (E Bismarck Expressway to Avenue C)

Mandan Routes

- 1: 6th Avenue Southeast (3rd Street SE to 1st Street NE)
- 2: 3rd Street Southwest & Southeast (Highway 6 to 6th Avenue SE)
- 3: Sunset Drive Northwest (1st Street NW to Boundary Street NW)
- 4: Highway 6 & Main Street West & 8th Avenue Northwest (3rd Street SW to 9th Street NW)
- 5: Highway 6 (19th Street SW to 3rd Street SW)

Bismarck Intersections

- 1: East Century Avenue & State Street
- 2: West Bismarck Expressway & South Washington Street
- 3: I-94 Ramp & State Street
- 4: East Main Avenue & North 4th Street
- 5: East Divide Avenue & State Street
- 6: Tyler Parkway & I-94 Ramp & West Divide Avenue & Schafer Street
- 7: West Divide Avenue & North Washington Street
- 8: East Century Avenue & North 11th Street
- 9: State Street & East Boulevard Avenue
- 10: Weiss Avenue & State Street

Mandan Intersections

- 1: 3rd Street Southeast & 6th Avenue Southeast
- 2: Sunset Drive Northwest & Old Red Trail Northwest
- 3: Mandan Avenue East & Main Street East
- 4: 1st Street Northwest & Collins Avenue
- 5: 3rd Avenue Northeast & Main Street East

Top ranked connections and intersections were presented to the Steering Committee members where they were asked to assist in selecting the top five (three in Bismarck and two in Mandan) for engineering considerations. Graphics were provided to Steering Committee members and they were asked to review the graphics and provide feedback based on their local knowledge of routes. They were also asked to consider potential opportunities for coordination with other capital projects, how each route connects to destinations, other on-road bicycle facilities, trails and transit, and finally to consider the feasibility of implementing improvements.

Figure 4-8 displays the top five routes and intersections. The top five routes and intersections are further evaluated within the implementation chapter that include the recommended facility type for the routes and opportunities and challenges to be considered as the top five routes and intersections are programmed and implemented.

DETERMINING APPROPRIATE BICYCLE FACILITIES FOR FUTURE ROUTES

Through public input, we were able to identify the bicycle facility types that individuals within the Bismarck and Mandan areas are most comfortable utilizing. This plan included the development of a Bicycle Facilities Selection Framework (Table 4-4) that will serve to assist the local government in selecting an appropriate bicycle facility type for all of the planned future routes as they are programmed and implemented. Initially, we utilized the framework to recommend bicycle facilities for the top five prioritized routes.

A suitable bicycle facility type depends on the context. The Bikeway Selection Framework, consistent with national and international guidance, was used to identify preferred bike facilities. The selection framework can be used in numerous ways to select and evaluate bikeway facility types in the design process.

- If a street has been selected for a bikeway, the framework can help identify candidate bikeway facilities for that street.
- If a bikeway facility (e.g., separated bike lane) has been selected, the framework can help identify candidate streets with suitable conditions for that facility type.
- If a bikeway facility has been selected for a street, the framework can help identify what the target motor vehicle speed on that street should be. This can be used to allocate traffic calming measures and enforcement resources.
- The framework can be used to evaluate if an existing bikeway facility remains suitable for prevailing conditions based on motor vehicle traffic speeds and volumes.

Research has shown that motor vehicle speed and volume are key considerations in identifying a suitable bikeway facility based on people's level of comfort. Higher motor vehicle speeds require increased separation for the safety and comfort of people cycling, while higher motor vehicle volumes increase the number of potential conflicts. The type of conflicting traffic can also impact the suitable bikeway type; streets with more trucks and buses may also warrant different infrastructure. Bikeway facility selection criteria are summarized in Table 4-4.

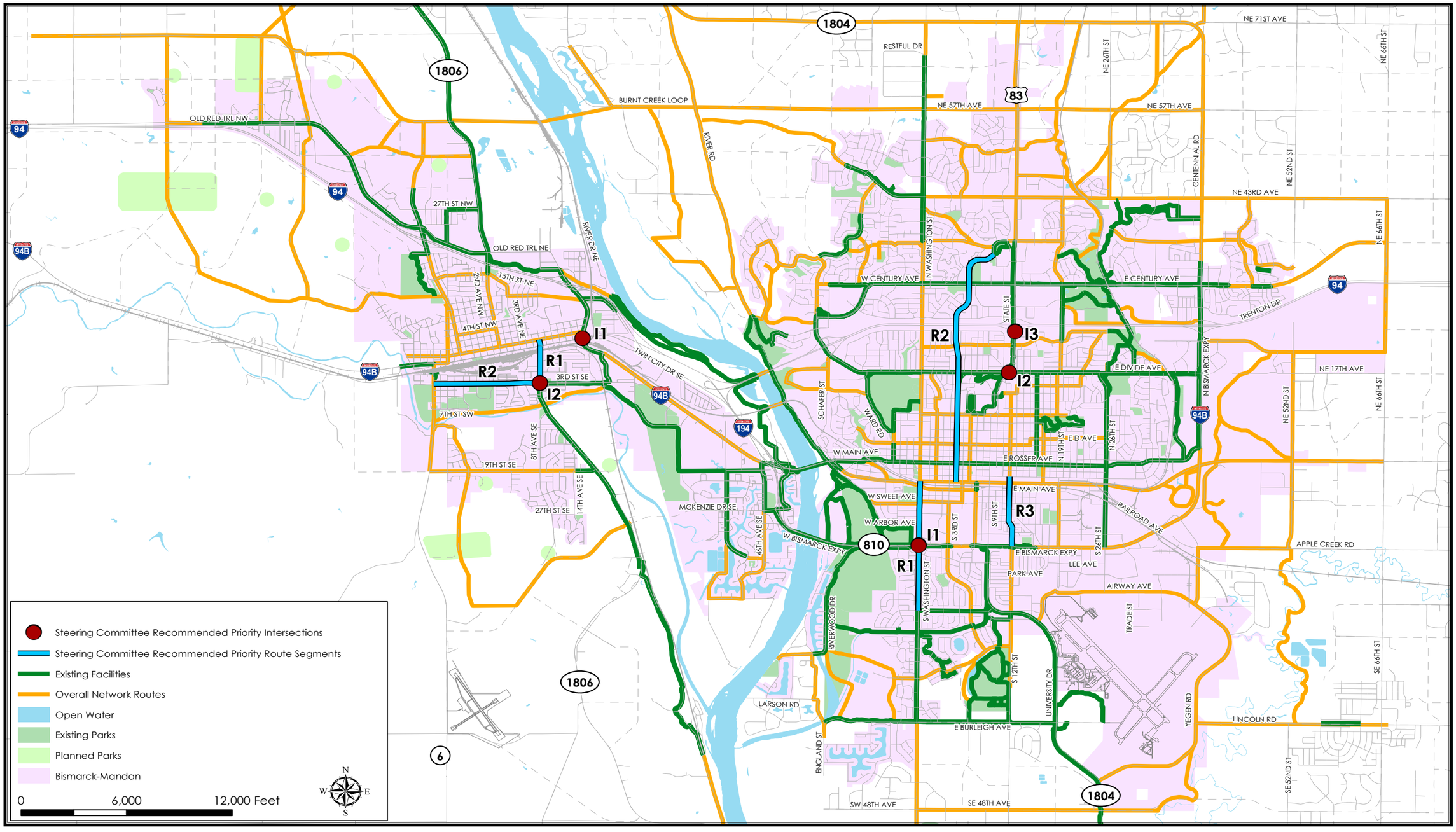

Figure 4-8: Steering Committee Recommended Routes and Intersections

Bismarck-Mandan Bicycle and Pedestrian Plan

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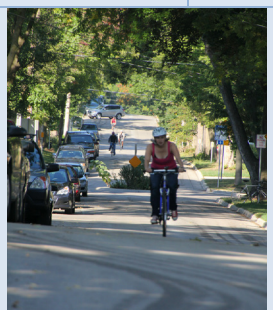
Table 4-4: Bikeway Facilities Selection Framework

Table 1 Bikeway Facilities Selection Framework

<table>
<tr><th rowspan="2">Bicycle Infrastructure Type</th><th colspan="4">Suitable Conditions</th></tr>
<tr><th>Posted Speed Limit</th><th>Vehicle Volumes</th><th>Walking and/or Cycling Volumes</th><th>Transit Operations</th></tr>
<tr><td rowspan="3">Bike Lane
(A division of a road with lines to designate use specifically for cyclists.) or
Buffered Bike Lane
(A division of a road with buffer space that separates cyclists from motor vehicles.)</td><td>20 miles per hour (mph) or less</td><td>2,500 vehicles per day (vpd) or more</td><td>N/A</td><td>N/A</td></tr>
<tr><td>Over 20 mph to 30 mph</td><td>Less than 4,000 vpd</td><td>N/A</td><td>N/A</td></tr>
<tr><td colspan="4">   </td></tr>
<tr><td rowspan="3">Protected Bike Lane*
(A division of a road with a physical buffer that separates cyclists from motor vehicles.)</td><td>30 mph or less</td><td>Any volume</td><td rowspan="2">Any volume and particularly with higher volumes (greater than 10 persons per hour per foot of path width) and in downtown environments</td><td>N/A</td></tr>
<tr><td>Over 30 mph to 50 mph</td><td>Any volume but more rigid barriers required at higher speeds (e.g., over 60 km/hr) or a bike path or SUP may be more suitable</td><td>N/A</td></tr>
<tr><td colspan="4">  
*Along streets with frequent driveways, protected bike lanes can be challenging to provide with continuous separation. Options can include raising the lane to sidewalk height to provide vertical separation or consider buffered bike lanes (depending on vehicle volumes).</td></tr>
</table>

Table 4-4: Bikeway Facilities Selection Framework (Continued)

Table 1 Bikeway Facilities Selection Framework (continued)

Bicycle Infrastructure Type	Suitable Conditions			
	Posted Speed Limit	Vehicle Volumes	Walking and/or Cycling Volumes	Transit Operations
Shared Use Path (SUP; A path that is designed for mixed-use specifically for pedestrians, cyclists, and all non-motorized vehicles.)	50 mph or less	Any volume	Consider segregating walking and bike paths when greater than 10 persons per hour per foot of path width	N/A
	Over 50 mph	Any volume with greater separation (i.e., outside the clear zone)		
				
Bicycle Boulevard (A designated path for bicycles where the speed limit for motor vehicles is very low and the boulevard is designed to be bicyclist-friendly.)	20 mph or less	Less than 2,500 vpd	N/A	No transit service or limited, small bus community service (less than 8 buses per peak hour)
	Up to 25 mph	Less than 1,000 vpd		
				

CHAPTER 5:
Education
EXISTING EDUCATION PROGRAMS

School Programs

Bismarck and Mandan's public schools host numerous programs to support bicycling and walking. These programs include events like Bike-to-School Day, partnerships with local police, and biking and walking safety education. These programs were identified through the Metropolitan Planning Organization's School Safety Crossing Study. School initiatives and programs are summarized in Table 5-1.

Table 5-1: Existing Education Programs in Bismarck and Mandan Public Schools

Program	Description	Participating Schools
Safety videos and classroom presentations	Classes are shown videos or presentations regarding safe walking, biking, and riding the bus	• Dorothy Moses Elementary • Fort Lincoln Elementary • Grimsrud Elementary • Liberty Elementary • Northridge Elementary • Red Trail Elementary • Rita Murphy Elementary • Robert Place Miller Elementary • Roosevelt Elementary (Mandan)
Safety Newsletters and Announcements	Newsletters are sent out to families about safety on and off school grounds	• Bismarck High • Century High • Jeannette Myhre Elementary • Mandan Middle • Northridge Elementary • Rita Murphy Elementary • Sunrise Elementary • Victor Solheim Elementary

Park Programs

The Bismarck Park and Recreation District hosts education programs on its trail system. An example is a trailhead sign with information about the system (see Figure 5-1). Parks-based educational programs are summarized in Table 5-2.

Table 5-2: Existing Educational Programs in the Parks

Program	Description
Park & Trail Map	BPRD Park & Trail Map includes "Bike Safety 101" bicycle education information as well as trail rules and suggested level of trail usership
Trailhead Signs	Trail rules are included on all trailhead signs, as well as a trail map and contact information

Figure 5-1: Information Trailhead Sign, Bismarck

WALKABILITY AUDIT

On June 27, 2017, Bartlett & West, a consultant for the Bicycle and Pedestrian Plan, conducted two demonstration walk audits for the City of Bismarck and the City of Mandan. These activities were held in support of the Bismarck-Mandan Bicycle and Pedestrian Master Plan and were intended to serve as a "train the trainer" activity, wherein those in attendance could easily replicate the exercise with other stakeholders throughout the community, on a case-by-case basis, as various project needs arise. A full memorandum summarizing the Walk Audits conducted in Bismarck and Mandan is included in Appendix C.

The Walk Audit Process

Walk audits serve an important role in evaluating current pedestrian infrastructure in order to raise awareness, identify gaps and evaluate potential project opportunities for municipalities and neighborhood groups. Many times, this activity serves as a measurable exercise to complete at the onset of a project, in response to public concerns, or in conjunction with other planning studies. The process of a walk audit can be led by city engineering or planning staff and includes the following:

Gather with invited stakeholders (recommended size of 3 to 12 participants) to review the walking corridor and survey questions.

Review intersection evaluation criteria in response to these items:

- Vehicle Speeds
- Curb Returns/ Corner Treatments
- Visibility & Lighting
- ADA Ramps
- Crossing Controls
- Traffic Signals

Review Mid-Block evaluation criteria to assess the following:

- Sidewalk Presence
- Sidewalk Width
- Driveway Slopes & Design
- Sidewalk Condition
- Vehicle Speed
- Street Trees & Vegetation
- Place
- Lighting
- Median
- Accessibility
- Transit

Walk the Route

Complete the pre-determined walking route to review each intersection configuration and midblock condition in accordance with the walk audit criteria. It is recommended that the group complete one set of evaluation questions for each intersection and mid-block area that is encountered along the route. Walk audit routes are recommended to be contiguous, but do not necessarily need to follow a direct linear path--as it is expected that the evaluation corridors can turn and take detours as necessary.

Share your Ideas

Once the group has completed the walking route, it is important to reconvene to review the existing conditions as observed during the exercise. This recap discussion provides an important opportunity to identify areas of most concern, record general observations, and facilitate group discussion of how potential improvements could be addressed. Some questions which should be included within this reflection time are:

- What did you see?
- As a person walking, did you feel like you were of importance to other road users?
- Did you make any other observations while performing the audit?
- What needs to change? (in the short, medium, long-term timeframe)
- How did the roadway and intersection segments rank?

Walk Audit Evaluation Criteria

The primary value of a walk audit rests on the evaluation criteria. As part of this exercise an extensive list of questions has been developed to evaluate the pedestrian needs of a walking corridor for both roadway intersections as well as mid-block environments. Each of these criteria are scored on the following scale:

- Good (+3 points)
- Fair (+1 point)
- N/A (0 points)
- Poor/Gap in pedestrian infrastructure (-3 points)

It should be noted that the cumulative score of a walk audit is important, but not the ultimate indicator for how a corridor should be evaluated. In many instances, the scoring system provides an opportunity to specifically measure the efficacy of each element, rather than the overall performance of the walking route itself. At present time, there are no known industry scoring standards which have been developed to assess pedestrian elements. The scoring aspect of the walk audit process has been provided to help stakeholders prioritize areas of improvement along corridors where numerous challenges may exist.

The following list of walk-audit questions have been assembled and included within the scoring sheets. During the walk-audit exercise, each of these questions are evaluated on an individual basis (per the scale provided above) in order to set priorities and establish goals for improvement. The questions are divided into two categories: Intersections and Mid-Block, and are described in the following sections.

Intersections

Vehicle Speed
- What is the operating speed of the roadway adjacent to the sidewalk?
- What is the posted speed of the two intersecting roadways?

Curb Returns/Corner Treatments
- What are the corner treatments? (tight, large, channelized right turn, 'smart' right turn, curb extension)

Visibility & Lighting
- Are people walking visible to the people driving through the intersection?
- Is lighting provided that illuminates the roadway when people are walking across the street?
- Does lighting illuminate the people waiting to cross the street on the sidewalk?

ADA Ramps
- Are ADA ramps existing at all corners of the intersections that have sidewalk connections?
- Are the ramps shared at the corner or is there one ramp per direction?

Crossing Controls
- What pedestrian crossing controls are present?
- Does the control type convey the importance of a crossing location?

Traffic Signals
- Is the signal designed to minimize the delay to people waiting to cross the intersection?
- Is there adequate time for people of all ages and abilities to cross the street?
- Is there information provided to indicate the amount of time remaining in crossing the street?
- Are accessible signals provided?
- Are tactile walking surface indicators used to navigate the intersections?

Mid-Block

Sidewalk Presence
- Are sidewalks existing on both sides of the street?

Sidewalk Width
- How wide is the sidewalk?
- Is it conducive for two people in wheelchairs to wheel side-by-side while passing another person (8.5' clearance)?
- Can two wheelchair users pass each other on the sidewalk without issue (6' clearance)?
- Is the sidewalk clear of obstructions?

Driveway slopes & Design
- Describe the driveway treatments (if present)
- Comment on the degree of side slope that exists for the driveway portion if walking or wheeling is expected to occur across it.

Sidewalk Condition
- What is the condition of the sidewalk?
- Is it conducive to reliable wheelchair travel?

Vehicle Speed
- What is the observed operating speed of the roadway adjacent to the sidewalk?
- What is the posted speed of the roadway adjacent to the sidewalk?
- What is the distance from the edge of the sidewalk to the nearest travel lane?

Street Trees & Vegetation
- Is there a boulevard present?
- Are trees or vegetation able to be viable and thrive in the boulevard?

Place
- Are there programming and design components that enhance the experience in the area?

Lighting
- Is lighting provided that illuminates the walkways in addition to the roadway?
- Is lighting provided in a manner that does not create darker areas that feel less comfortable and secure?

Median
- Is there a median in the street? If yes, what is the width and what is it made of?

Accessibility
- Are tactile walking surface indicators used to navigate the street?
- Is the street clear of obstacles that would be a barrier to access?

Transit Access
- Are transit stops easy to access and accessible for all users?
- Are transit stops located outside of the clear walkway width, not impeding travel along the sidewalk?

Observations of the Walk Audit Demonstration

Overall, both Bismarck and Mandan walk audit groups indicated that the exercise was valuable and could be utilized as an effective tool to help convey the importance of pedestrian infrastructure. Participants indicated they felt comfortable replicating this with other community constituent groups, and elected officials, in the future.

Participants in both groups conveyed the importance of site context and how it impacts the audit process. There are some questions that more aptly pertain to busier streets and high density areas, while other questions are better suited to smaller scale contexts such as residential neighborhoods and calmer streets.

Due to the wide-ranging seasonal considerations experienced in North Dakota, it is important to note that this exercise would provide value if completed at various times of the year to evaluate pedestrian access, snow removal and accommodation of stormwater runoff.

Full walk audit reports and summary of the June 27, 2017 audit are included in the Appendix of this Plan for reference.

IDENTIFYING EDUCATIONAL ISSUES AND PRIORITIES

Engagement and Planning Process

Education was the focus of the July 2017 Steering Committee meeting. An online survey with a list of potential educational policies and programs to improve the safety of all individuals on the road was sent out to the Steering Committee members.

Steering Committee Survey Results

Fourteen members of the Steering Committee, 43% from Bismarck, 21% from Mandan and another 36% from elsewhere, participated in the education policies and programs survey that was made available in June 2017. When asked "What education programs, policies, or ideas do you think will work in your city to address biking and walking safety?" the results were as shown in Figure 5-2.

Then, the top five education policies and programs were identified based on the Survey Monkey.

The top five education issues in Bismarck and Mandan include:

1. "Road Safety" campaigns using local media and NDDOT Bicycles Safety PSA –NDDOT has many instructional safety videos and materials for the public on its website
2. Safety educational programs at schools
3. Inviting law enforcement to talk about road safety
4. Yard signage in the neighborhood
5. Media blitz and more emphasis on bike safety on driver's license exams

In the Steering Committee meeting itself, members received a presentation of the results of the survey and additional information, and then split up into small groups for facilitated discussions.
During the Steering Committee meeting, Steering Committee members mentioned the need to improve road safety rules and practices for parents. Through student fliers, schools can educate parents on proper helmet fitting, best and safest roadways when riding bicycles, and even simple hand signaling that would allow for children to communicate better with drivers. Other ideas generated during these discussions have been incorporated into the specific policy, program, and idea descriptions on the following pages.

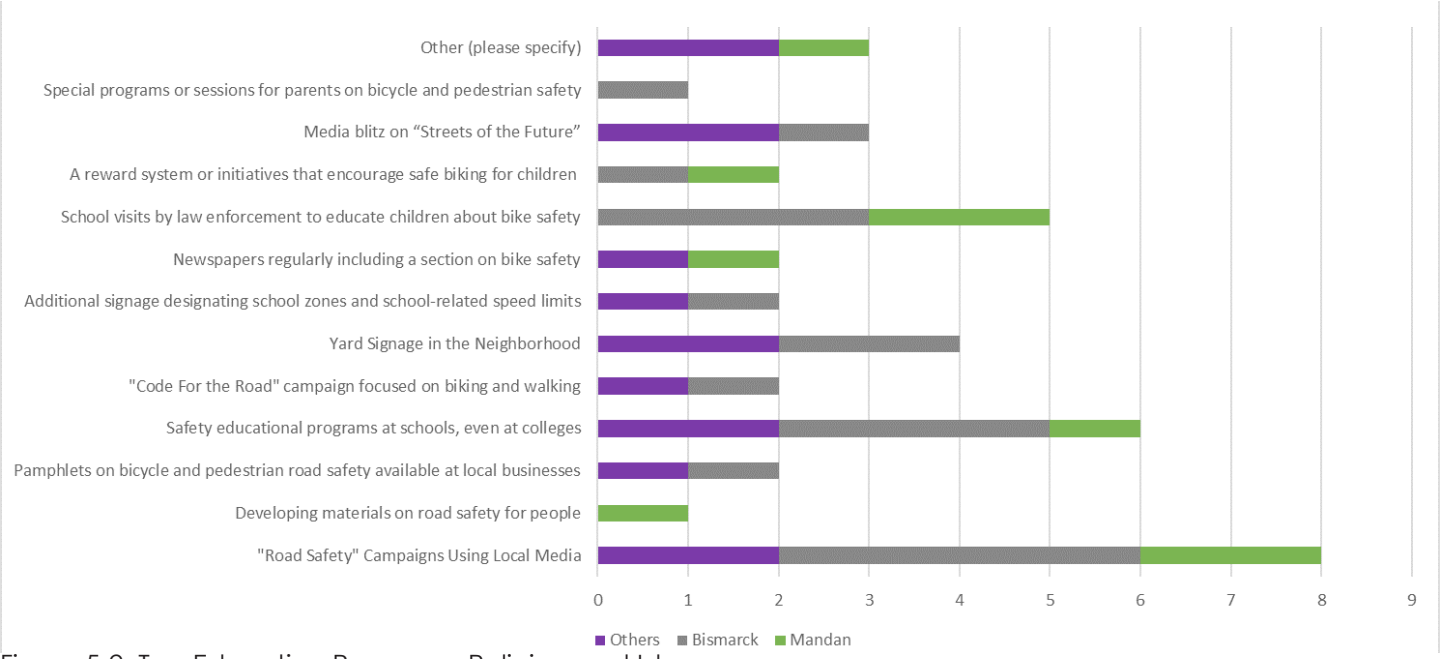


Figure 5-2: Top Education Programs, Policies, and Ideas

TOP EDUCATION POLICIES, PROGRAMS, AND IDEAS

"Road Safety" Campaigns Using Local Media

"Road Safety" campaigns using local media such as, television and radio stations, periodically throughout the year can serve to be friendly reminders for people to stay safe when driving, walking, or bicycling. Optional "Road Safety" media campaigns can focus on school-related issues at the start of the school year and information about preventive measures can be distributed to bicyclists and pedestrians. Local radio stations can be useful for live traffic and road accident updates for drivers. With more cities active on social media, Twitter, Facebook, Instagram, etc. can all be contributing factors to "Road Safety" campaigns.

There are several U.S. cities that are taking advantage of local media to further promote "Road Safety" to the public. Bemidji, MN has a radio show called, "Chat About." The radio show invited police officers and city council members to talk about bicycling and how to stay safe on the road. North Dakota Department of Transportation (NDDOT) also has a bike safety jingle. The short and easy bicycle safety Public Safety Announcement has a catchy tune that is readily available online to the public. In addition to these existing campaigns done on local media, here are few other potential ideas on how to best utilize the local media to promote road safety:

- Local news channels inviting law enforcement officers to talk about road safety during peak walking and bicycling season
- Incorporating NDDOT's Code for the Road for a bicycle/vehicle safety campaign
- Fast facts during radio commercial breaks
- "Road Safety" campaign advertisements on newspapers
- Using Twitter, Facebook, Instagram, etc. to promote "Road Safety"

Messaging that should be presented to Bismarck and Mandan residents include:

- Danger for a potential conflict between cyclists riding at higher speeds and pedestrians
- Informing motorists that cyclists have the right to ride in the roadway
- Cyclists riding on the roadway need to follow the same rules of the road as motor vehicles
- On-road cyclists should ride with traffic
- Watching out for one another at intersections including right turns in front of pedestrians and cyclists (right hook), sight lines, and stopping behind stop bars
- Wearing helmets saves lives
- Sharing the roadway including behavior at intersections
- Trail behavior including sharing the trail between bicyclists and pedestrians and allowing room for all users
- Bicyclist hand signals including revising the signals to include pointing in both directions
- The role of bicycle facilities in promoting equity and revitalization while maintaining a variety of housing units and price-points (managing risks of gentrification)

Safety Educational Programs in Schools

Drivers aren't the only contributing factors to road accidents with bicyclists and pedestrians. Bicyclists and pedestrians are just as responsible for the safety of everyone on the road. While some road safety rules and laws seem obvious, children aren't as aware of these rules as adults. Therefore, it is crucial to educate children, teenagers, and even parents on how to be safe. Road safety programs shouldn't be limited to just elementary, middle, and high schools but should be available at upper level educational institutions as well. Parents should also play an integral part in keeping children safe on the road. Therefore, it is important parents and adults are also well-aware of safety bicycling practices and road safety rules.

In Brookings, SD, there are several programs that contribute to teaching and keeping children safe on the roads. Not only were bikes donated to schools by Sioux River Bicycle & Fitness for students to use during physical education class but, free helmet and bike safety checks are available at the Kite and Bike Festival. Potential safety educational programs that could be adopted in Bismarck and Mandan are:

- Helmet checks at school and helmet donations from the department of Public Health and Safe Routes to School.
- Providing safety courses during freshmen orientation at colleges. This could be connected to a bike advocacy group (St. Mary's currently does not have a bicycling group).
- Incorporating road safety as part of a school's physical education (P.E.) curriculum. This needs to happen in both public and private schools.
- Helping keep children safe by providing educational opportunities for parents including proper helmet fits and seat heights, the importance of bike tuning, etc.
- Interactive activities in which students act out different road safety scenarios.
- Connecting with parents of students through school newsletters to continue education at home.
- Implementation of the "What do you Consider Lethal" program at area high schools.

Figure 5-3: Bicycle Safety with Bismarck Police

Inviting Law Enforcement to Talk About Road Safety

School visits by law enforcement to educate children about bike safety may be one of the best ways for children to learn about road safety. It is important that children are properly informed about road safety. With law enforcement visits to schools, children will be properly informed on how to practice safe walking and biking. Children should also have a good understanding that "road safety" is only ensured due to a mutual understanding between motorists, bicyclists, and pedestrians.

Some of the things law enforcement can address during school visits are:

- Standard hand signals when turning
- Proper bike gear and attire (i.e. helmet and closed-toe-shoes)
- Helping children understand traffic laws and the importance of abiding traffic laws
- What to do in the case of an accident
- How to practice safe bicycling behaviors on multimodal/busy streets
- Safe turning practices. This includes proper left-turn lane merges for bicyclists and awareness of bicyclists and pedestrians on adjacent facilities when turning right, so as not to "cut off" or "T-bone" these users.

Law enforcement can continue to promote safe behavior outside of schools by presenting children with coupons or stickers for being safe while walking and biking. Bismarck is currently implementing a similar program at events (see Figure 5-3).

"Don't Thump Your Melon" is a bicycle safety rodeo kit for communities that is sponsored by the South Dakota Department of Public Safety and is implemented in Pierre, SD. The challenge with police-run events is that attendance can be limited. Partnering with the park district or school district will help advertise the event. North Dakota State University has also adopted a "Bicycle safety & Rules of the Road" guide that not only lists safety measures when bicycling but also the responsibilities of bicyclists on the road. Law enforcement can also pass out this guide at events.

Improved Signage for Cyclists and Pedestrians

Signs printed by the City, advocacy groups, or school district to place on yards along popular walking or bicycling routes can be friendly reminders for drivers (see Figure 5-4). With signs on bicycling routes and known problem areas, drivers may be more inclined to reduce their speed or be more aware of the possibility of pedestrians and bicyclists on the road. Bismarck has signs put up in the neighborhood to help keep people safe on the road. It could be more effective if there were more signs up in neighborhoods in Bismarck and Mandan, ND. River Road in Bismarck is a contentious street for bicyclists and motorists. Numerous public comments were submitted requesting that "Share the Road" signs be erected along this road. Given the community support, River Road would be a good candidate for additional signage.

In Boston, MA, signs about road safety are up on Commonwealth Avenue to improve road safety. There are also organizations that work closely with neighborhoods to help build a safer environment for children to bike and walk. Because many organizations that advocate road safety make road signs and yard signage easily accessible and free for printing, this can be a quick and easy implementation to ensure road safety.

Possible yard signs may read:

- "Drive Like Your Kids Walk Here"
- "Slow Down! Keep Our Kids Safe!"
- "People walking/People Bicycling Come First!"
- "Keep A Safe Distance Away from People walking and bicycling"

Signs could also be implemented in the right-of-way by the local government, but these would need to be regulated with special approvals.

Media Blitz and More Emphasis on Bike Safety on Driver's License Exams

Media blitz of "Streets of the Future" to showcase existing or future streets that are great examples of complete streets can be very informative. It'll allow for community members to have a better visualization of the multimodal transportation system. In the Twin Cities, MN, not only are "complete streets" an integral part of city planning but, people have numerous ways to access information on bicycle and pedestrian friendly" routes; there are mobile apps that specifically help people design their walking and biking routes. Implementing a more permanent system shows the city's commitment to its bicycle and pedestrian plan; people will feel safer and more inclined to bicycle and walk.

Ways to improve road safety awareness:

- Provide visualizations of complete streets for community members
- Educate policy and decision makers about the benefits of a complete streets program

In addition to a media blitz, driver's license exams and renewal processes should cover more content on bike safety. Mandan has driver's education courses through their school curriculum. However, Bismarck does not currently offer driver's education through their school curriculum. Developing bicycle safety and awareness resources for parents teaching their children to drive will be critical in the region.

Figure 5-4: Temporary Safety Yard Sign

CHAPTER 6:
Encouragement

INTRODUCTION

Of the 5 E's, Encouragement is the topic that most relates to all of the plan goals of increasing network use, connectivity, safety and comfort, maintenance, and planning. Future pedestrians and bicyclists will be the most encouraged to begin walking and biking on a regular basis by seeing others do it as part of a safe, convenient, and well-planned system.

A major component to encouraging the use of alternative modes of transportation such as walking and biking is to make it more visible and accessible. This can usually start with community discussions around planning a network. In 2013, the City of Bismarck adopted the Downtown Bismarck Subarea Plan with a "Complete Streets Framework" that identified improvements to make downtown Bismarck a more pedestrian and bicycle friendly environment. Two years later, the Bismarck-Mandan Metropolitan Planning Organization adopted the Bismarck-Mandan Long Range Transportation Plan with numerous goals and objectives addressing bicycle and pedestrian transportation.

We can think about encouragement in two ways:

- Encouragement to build a safe, comfortable bicycling and walking network or
- Encouragement to use a safe, comfortable bicycling network

EXISTING ENCOURAGEMENT PROGRAMS

North Dakota Department of Transportation Programs

Motorist Guidebook

NDDOT has developed a guidebook for motorist, pedestrian and bicyclist safety. The guide serves as a "plain-language" summary of state traffic code and provides tips and recommendations to drivers, bicyclists, and pedestrians. For example, it explains the law requiring that bicyclists may not ride more than two abreast, and also states that single file is safer and recommended. It also provides information regarding bike hand signals and interprets traffic sign meanings. The Motorist Guidebook can be accessed online at: www.dot.nd.gov/divisions/driverslicense/docs/noncommercial-dl-manual-class-d.pdf

School Programs

Bismarck and Mandan's public schools host numerous programs to support bicycling and walking. These programs include events like Bike-to-School Day, partnerships with local police, and biking and walking safety education. These programs were identified through the Metropolitan Planning Organization's School Safety Crossing Study. One of the school encouragement programs is a bicycle rodeo (see Figure 6-1). All school initiatives and programs are summarized in Table 6-1 on the following page.

Figure 6-1: Bicycle Rodeo

Table 6-1: Existing Encouragement Programs in Bismarck and Mandan Public Schools

Program	Description	Participating Schools
Teacher Monitors and/ or Crossing Guards	School grounds and streets are monitored for safety during arrival and dismissal times	• BECEP • Centennial Elementary • Custer Elementary • Dorothy Moses Elementary • Fort Lincoln Elementary • Grimsrud Elementary • Horizon Middle School • Jeannette Myhre Elementary • Lewis and Clark Elementary • Liberty Elementary • Mandan Middle • Prairie Rose Elementary • Red Trail Elementary • Rita Murphy Elementary • Roosevelt Elementary (Bismarck) • Roosevelt Elementary (Mandan) • Simle Middle • Sunrise Elementary • Victor Solheim Elementary • Wachter Middle • Will-Moore Elementary
Ride Your Bike to School Day	Students are encouraged to ride their bikes to school	• Robert Place Miller Elementary • Victor Solheim Elementary
Bike Rodeo	Students and community members participate in a bike event each year to promote riding and safety	• Custer Elementary

Park Programs

The Bismarck Park and Recreation District hosts encouragement and education programs on its trail system. These are summarized in Table 6-2.

Table 6-2: Existing Encouragement Programs in Bismarck Parks

Program	Description
Park & Trail Map	BPRD Park & Trail Map includes "Bike Safety 101" bicycle education information as well as trail rules and suggested level of trail usership
Trail Exploration Programs	Trail programs like Trail Trek and Great Trails Discovery encourage families to try out different trails

Non-Governmental Programs

Advocacy

The Bismarck-Mandan region hosts two major active bicycle groups, the Central Dakota Cyclists and the Burleigh County Bike Club. Central Dakota Cyclists hosts group rides, advocates for laws that promote safe bicycling, educates the public on safety, and works with the North Dakota Department of Transportation to enhance roadways for cycling. The Burleigh County Bike Club hosts mountain biking events and rides in the region.

The Go! Bismarck Mandan is a public health coalition that represents organizations and governments throughout the region. The strategic plan for Go! Bismarck Mandan includes goals to increase the bike-friendliness of the community, both through the actions of local governments and private organizations and individuals. The committee has set a target to achieve one percent bike share for all commutes region-wide within the near future and action steps intended to achieve this benchmark. The coalition's 2017 workplan includes promotion of walking month in April.

Institutions

In past, the United Tribes Technical College developed an unregulated bike share program. The program provided bicycles for students, staff, and faculty to use on campus from March to October each year. The program did not formally manage the location of its bicycles or track their use.

Community Initiatives

- Annual celebration of National Bike Month each May. Go! Bismarck-Mandan publishes an activity guide and promotes events, including traffic safety courses, Bike to Work Day promotions, a Mayor's ride, a kid's bike rodeo, and group rides.
- Bike to School Day celebrations in May. Walk to School Day celebrations in October.
- Organized rides: Burleigh County Cup Gravel ride, Harmon Lake triathlon, BCBC MTB Series, Otter Creek 55 MTB Race, Cyclofemme Ride, and weekly cyclocross events each fall.
- BisMarket (Bi-Weekly Seasonal Farmers Market) offers discounts for people who ride their bike to the market.

Existing Policies and Development Standards

City of Bismarck

The development of sidewalks is required in all public right-of-way in new subdivisions within the city. Sidewalks are required to be installed in tandem with development of each individual lot. Sidewalks are constructed one and a half feet from the property line in residential areas and at the property line in commercial areas. (§14-09).

The City of Bismarck passed an ordinance in 2013 intended to eliminate gaps in the city's sidewalk network. City Ordinance §10-03-02 directs the city engineer and sidewalk commissioner to prepare a list of sidewalks to be constructed, rebuilt, or repaired and requires that adjacent property owners of listed sidewalks construct, repair or rebuild the sidewalk at the property owner's expense. Property owners may pay for repairs or construction outright from a qualified contractor, or have work performed by the City and pay for this service via a property tax assessment. The City began implementing this program in 2014 and anticipates that full build-out of the sidewalk network will take approximately ten years.

Ordinance §10-03-02 also requires that new residential, commercial, industrial, or public properties include the installation of sidewalks unless specifically waived by the City during the platting process. Construction of sidewalks is required at the time building permits are issued. This can result in gaps in the sidewalk network of new subdivisions when lots are not fully built out at the same time. In some situations, such as near school properties, the Board of City Commissioners orders these gaps to be filled in advance of building permits and paid for by the property owner. In residential areas, the City of Bismarck may require developers to provide easements for multi-use trail access between properties to create mid-block access to schools through the development. Easements for multi-use trails may also be required in developments as part of the City of Bismarck's "Neighborhood Parks and Open Space Policy."

City Ordinance §10-03-04 requires that property owners keep sidewalks clean and unobstructed at all times. Property owners have 24 hours after a snowfall event to clear their sidewalk of snow and ice. In most areas, property owners shovel snow into the adjacent boulevard or onto their property. In years with heavy winter snowfall, such as 2016-2017, boulevard widths are not wide enough to adequately accommodate snow storage. In downtown, property owners may shovel snow to the curb. City crews haul this snow out of downtown to maintain access to downtown properties. Properties that are not cleared during winter are addressed on a complaint basis by the city. The City of Bismarck removes snow and ice and the adjacent property owner is assessed for this service. In light winters, the city may receive less than 100 complaints a season. During the heavy 2016-2017 winter, the city received over 400 complaints.

City of Mandan

According to local ordinances, in new developments, sidewalks are required to be built, or arranged to be built, by the developer (§105-1-7). When preparing a subdivision plat, developers are required to make improvements including pedestrian walkways to schools, playgrounds, and shopping centers, as determined by the city (§109-3-2).

City ordinance §115-6 defines Mandan's policy for sidewalk construction and maintenance. It is the duty of property owners to construct a sidewalk adjacent to their property, unless there is an approved plan or agreement that specifies no sidewalk is required. The City of Mandan relies on § 40-29-03 of the North Dakota Century Code to enforce the construction of sidewalks in developed subdivisions. The enforcement of this ordinance happens between the City and the property owner on a case-by-case basis. It is also the duty of the property owner to maintain sidewalks in a safe condition. Any cost to the city to repair sidewalks is assessed to property owners.

Property owners are responsible for removing snow and ice along sidewalks adjacent to their property (§115-6-2). In downtown, property owners must clear snow to the curb where it is hauled away by city crews. The winter of 2016-2017 came with extraordinary snow removal challenges. Though snow removal is required within 24 hours of the end of an event per ordinance, extraordinary snow events may cause the city to relax on that requirement. Also, given the widespread nature of the impact of snowstorm events, the order to remove is typically complaint based.

IDENTIFYING ENCOURAGEMENT ISSUES AND PRIORITIES

Engagement and Planning Process

As discussed in the Outreach Summary section of this Plan, encouragement was the focus of the May 2017 Steering Committee meeting. Prior to the steering committee meeting, the project team created a list of top bicycle and pedestrian encouragement issues facing Bismarck and Mandan. These issues were identified by looking at a variety of sources including:

- Existing code language (City of Bismarck, City of Mandan and the ND Century Code)
- Conversations with public works staff and engineers
- League of American Bicyclists Bicycle Friendly Community report
- Issues identified in the ongoing School Safety Crossing Study
- Research of local advocacy groups and events
- Review of policy reports including Move this Way (2013) by ChangeLab Solutions and Guide for the Development of Bicycle Facilities (2012) by AASHTO

Public input on key encouragement issues were also identified through online comments and a community-wide survey. These issues included:

- Winter maintenance: "Better sidewalk and trail clearing during the winter months - snow and ice on major trails make it very difficult to exercise outside."
- Bike parking: "More bike stands outside shops."
- Programming/events: "More advertising/ better awareness of the trails we do have. Continue to highlight a month to raise awareness with Go! initiative."
- System amenities: "Make sure all trails are safe/lighted/in an open area with water fountains and restrooms."
- Unpaved Trails and Maintenance: "There is a ready community of passionate trail users, ranging from hikers, mountain bikers, and cross-country running teams with strong interest in expanding these types of facilities in our area… these trails simply require mowing/trimming a few times each year to stay passable, which could be performed at minimal cost to the cities, counties, and state entities which list these types of facilities in their inventories and advertising."
- General: "Plan neighborhoods and commercial developments around walkability and bikability."

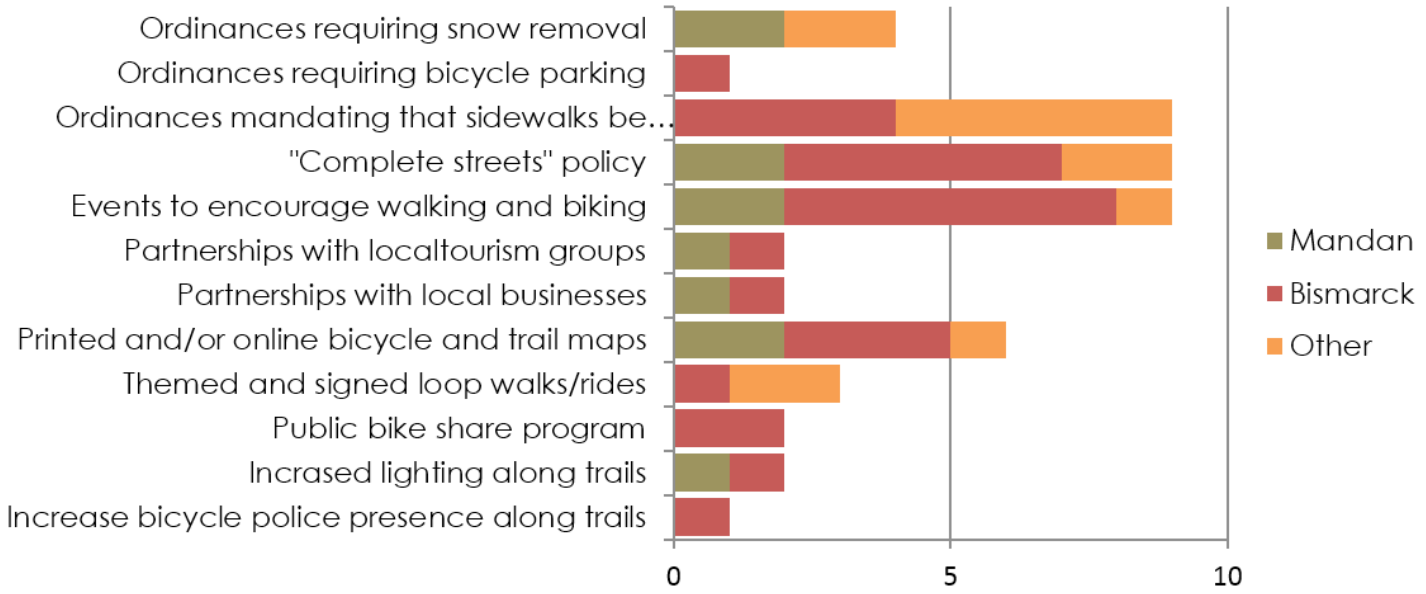


Figure 6-2: Top Encouragement Programs, Policies, and Ideas

Steering Committee Survey Results

The survey results are from 17 Steering Committee members including 52% from Bismarck, 24% from Mandan and another 24% from elsewhere (see Figure 6-2). The top five encouragement issues to address include:

1. Ordinances requiring that sidewalks be built in new subdivisions when roadways are built. Is there another timeframe that would work better?
2. Ordinances requiring snow removal and winter maintenance on sidewalks and bicycle facilities
3. "Complete Streets" Policies
4. Printed and/or online trail maps for the entire region
5. Events such as "Open Streets" or "Cyclovia"

The Steering Committee also identified a critical sixth issue to address:

6. Form a Bicycle and Pedestrian Committee to lead additional planning and implementation work, following the completion of the Plan

Overall Top Encouragement Issues

The Steering Committee identified the five Encouragement issues to focus on, discussing the opportunities and challenges associated with implementation and next steps.

During the steering committee meeting, it was discussed that the maps being developed by the park districts are already being developed and are in good shape. The steering committee recommended that the fourth issue for printed and/or online trail maps should be replaced with a recommendation to form a Bicycle and Pedestrian Committee that meets regularly to encourage that the recommendations within this Plan are carried forward.

Each of these issues is described in the following section. Successful implementation of these strategies, including funding opportunities, is discussed further in the implementation chapter of this Plan.

It is important to note that, while not a part of the original survey of encouragement opportunities, the development of a bicycle and pedestrian committee is an important element to the success of this Plan. The proposed committee is discussed further in Chapter 9: Implementation.

TOP ENCOURAGEMENT POLICIES, PROGRAMS, AND IDEAS

Ordinances requiring that sidewalks be built in new subdivisions when roadways are built

When sidewalks are not connected, people are discouraged from walking. Sidewalks need to lead people to community destinations. However, when sidewalks exist in small patches, people are unable to get from point A to B without having to walk on non-designated pedestrian paths. To create an environment that would not only encourage people to walk but feel safe doing so, a well-connected sidewalk network is essential. To create a sidewalk network that is well connected, ordinances mandating that sidewalks are constructed at the time homes are built are common and can be influential. In a typical site plan review process, a city might examine how roadway networks connect to existing developments. The same should be done for sidewalks and trails.

In Bismarck and Mandan, this issue has been related to residential subdivisions and commercial developments. For example, a new commercial development may have sidewalks in front of all the stores but there may not be sidewalks connecting the commercial and the residential development. One possible way to fund these connections would be to add sidewalk costs to street assessments. Another challenge is that home construction can cause damage to sidewalks that have already been installed. Protecting these features is important to ensure a safe, well-maintained network.

Ordinances requiring snow removal and winter maintenance on sidewalks and bicycle facilities

While property owners are responsible for clearing snow off their sections of the sidewalks, most cities remove snow from local roadways. Every city has different criteria before they plow the streets; in Bismarck, this threshold is four inches. While a few inches of snow may not be an issue for automobiles, it can make bicycling and walking not only unpleasant but more importantly, dangerous. Poor winter road and street conditions discourage or, when conditions are very bad, make it impossible for people to bike or walk during the winter. Various cities around the United States work with non-profit organizations to facilitate mobility and accessibility in the winter, whether that be for bicyclists, pedestrians, or drivers. Neighbor shovel networks or friendly reminders can be ways to make sure the entire network of streets is cleaned and safe.

During the winter of 2016/2017, the Bismarck-Mandan area experienced more snow than it had for years. In many locations people were required to walk in the streets for days because the sidewalks were not cleared. The City of Mandan is currently revisiting their snow removal practice. As discussed earlier in this chapter, snow removal on city streets (including unprotected bike lanes) is done by the cities, snow removal on public trails is done by the parks departments and snow removal on sidewalks is the responsibility of the property owner. The parks departments have established priorities for snow removal on the trails. Priority is given to heavily used trails like the Century Ave trail. They provided notice on their web site which trails were open and which were closed. Last winter a lot of sidewalk trails never opened while there was snow on the ground.

Both Bismarck and Mandan require property owners to remove all snow and ice from their sidewalk within 24 hours after its deposit. Generally (exceptions were made during the winter of 2016/2017) if it is not removed, it may be removed by each city and the cost charged to the property owner. This process is driven by complaints. Last winter complaints regarding street snow removal were focused in the Central Business District, bridges and near the schools. Downtown property owners cleared the sidewalks in front of their buildings, moving the snow onto the street and losing parking spaces.

Steering Committee members recommended using a door hanger that describes the snow removal policy, encourages neighbors to help each other, and keep the walks clean would be a positive way to educate the public about snow removal requirements (see Figure 6-3). These public service announcements could also be included in water bills or other City communications.

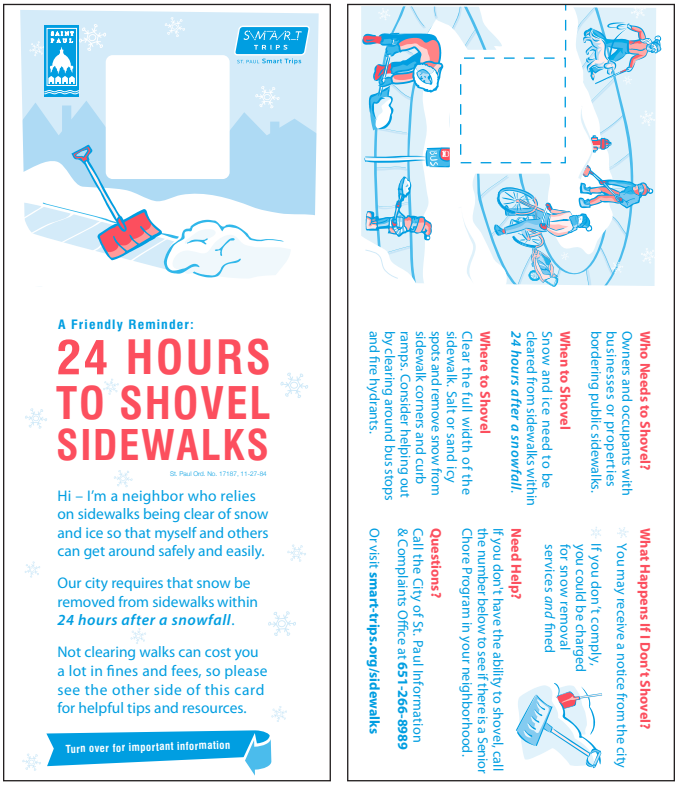


Figure 6-3: Neighbor Snow Removal Reminder, St. Paul, MN

"Complete Streets" Policies

When roads are designed to prioritize the efficient and effective movement of vehicles, this often comes at the expense of other modes of transportation. The wider the roadway becomes, the more distance a pedestrian must travel to cross the street. With wider traffic lanes, motor vehicles travel much faster and the safety of bicyclists and pedestrians are at risk. Complete Streets policies have been implemented across the United States to establish a multi-modal framework that prioritizes walking and bicycling. The policy addresses the many uses and modes of transportation in our roadway including walking, cycling, riding transit, and driving. An example of a complete street is illustrated in Figure 6-4.

This issue has received push back in Bismarck and Mandan in the past, but there was some interest in designing appropriate streets for different areas of the community. For example, it was identified that residential streets may not need a designated bike lane, but that appropriate bicycle and pedestrian facilities in high-traffic areas would be beneficial. Some of the challenges with implementing a "Complete Streets" policy or other pedestrian and bicycle improvements include the time and financial resources as well as public attitude and political barriers.

Figure 6-4: Complete Street Concept, Baltimore, MD

Printed and/or online trail maps for the entire region

Trail maps, both print and online, provide the best-fit option for cyclists, runners, and pedestrian when planning a trip whether that be for transportation or recreation. For riders who are new to the system, or experienced riders looking for new routes, not having access to a comprehensive map can be challenging. With today's reliance on smartphones and digital technology, online maps and applications are also in demand. Not limited to just providing route options for map users, these interactive maps can also provide information on the kind of facility types and popular destinations accessible en route. The City of Seattle has an online mapping application for their bicycle network, separated by facility type which can help riders figure out a route they are most comfortable using (see Figure 6-5).

Bismarck and Mandan have local trail maps, but these aren't interactive maps for people. Moving forward, it will be important for Bismarck and Mandan park districts to collaborate on mapping parks and trails on both sides of the river. However, numerous challenges exist including the resources it takes to map all trails and sidewalks, especially as new areas develop.

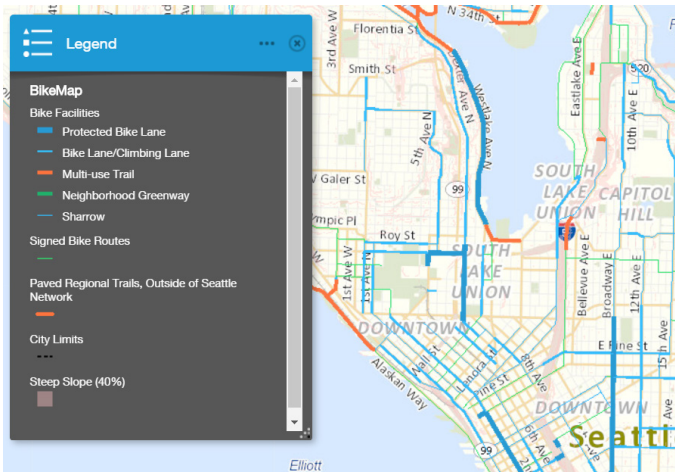


Figure 6-5: Online Trail Map, Seattle, WA

Events such as "Open Streets" or "Cyclovia"

A city with an abundance of parking spaces, no sidewalks, or bike lanes doesn't provide people with the right environment to bike or walk. Creating an environment in which people want to bike and walk is important. To change the preconception that roads are only for motor vehicles, cities can close major thoroughfares to car traffic to host bicycle and walking events. By transforming spaces that aren't normally considered bike or pedestrian friendly, people may be more inclined to bike or walk in the future. Various cities in the United States close off main streets to motor vehicles, transforming them into pedestrian-friendly areas in which children and adults can safely attend on-street events (see Figure 6-6). Farmers' markets have become one of the popular on-street events to not only encourage community engagement but as a way to make roads multifunctional. Through these events, the public can experience roads as more than just a form of infrastructure for transportation. Roads can be multipurpose are for social gatherings and events.

In Bismarck and Mandan, there are many cycling groups that could get involved in a large-scale event like "Open Streets", but coordination and collaboration is needed amongst all the interested groups and agencies. A cohesive committee or bicycle and pedestrian advisory committee could help to organize a large-scale event. In Bismarck and Mandan, several street festivals exist throughout the summer in which the streets are closed to motor vehicles.

Figure 6-6: Open Streets, Minneapolis, MN

CHAPTER 7: Enforcement

EXISTING ENFORCEMENT PROGRAMS

North Dakota Department of Transportation Programs

Code for the Road Program

The Code for the Road is an on-line program developed in 2013 by NDDOT and partner agencies to develop an educational campaign around traffic safety and regulations in the state (www.ndcodefortheroad.org). The program has six components, each focusing on a major road safety and traffic code issue:

- Buckle up: wearing seatbelts
- Hang up: avoiding talking and texting while driving
- Speak up: encouraging teenagers to speak up to friends and classmates about distracted driving
- Wise up: minimizing impaired driving
- Heads up: motorcycle awareness and safety precautions
- Ease up: addressing speeding and aggressive driving

Code for the Road educates the public about the traffic code through programs, public safety announcements, and videos. None of these programs explicitly address bicycle or pedestrian safety, but the program provides an existing platform that could be tailored to include these elements in the future.

NDDOT Local Road Safety Programs

Working with cities and counties, NDDOT has developed Local Road Safety Programs (LRSP) across the state, including Bismarck, Mandan, and surrounding counties. These programs review safety and crash data (summarized on page 17) and recommend safety strategies at a macro level. In Bismarck and Burleigh County, numerous strategies are identified to minimize crashes including:

- Eliminate drinking and driving
- Enforce DUI laws
- Enforce seat belt laws
- Promote safety education programs in workplaces and schools
- Promote safety and increase visibility of motorcyclists
- Educate and train young drivers
- Set appropriate speed limits
- Improve traffic controls, especially at intersections

EXISTING REGULATIONS AND POLICIES

Numerous jurisdictions regulate traffic and govern road safety around Bismarck and Mandan. The following section summarizes existing policies that regulate traffic and promote safety for all road users, including bicyclists and pedestrians. State and local code is referenced throughout this document.

State-Level Policies and Regulations

The North Dakota Department of Transportation (NDDOT) has developed numerous reports and campaigns to promote pedestrian and bike safety on highways and local roads. These policies are summarized on the following page.

North Dakota Century Code

The Century Code is the set of regulations enacted by the State of North Dakota, approved by the State Legislature. The code encompasses a wide array of areas including traffic, roadways, and safety. The following sections, summarized below, are relevant to biking and pedestrian safety in Bismarck-Mandan.

Title 24: Highways Bridges and Ferries

§24-01-04.1: Metropolitan Planning Organizations have the responsibility of developing plans and programs for pedestrian walkways and bicycle facilities within the metropolitan area.

Title 39: Motor Vehicles

§39-07: Bicycles are considered vehicles on all roadways within the state and must comply with the same regulations as motor vehicles.

§39-10: This section provides general traffic rules for motorists and pedestrians in North Dakota. These regulations are summarized below:

- Motorists must yield to pedestrians in marked crosswalks and on sidewalks, including pedestrians walking across driveway cuts
- In unmarked crosswalks, motorists must yield to pedestrians when they are half way through the intersection
- Pedestrians must yield to cars when crossing the road somewhere other than a crosswalk or when crossing the road when a pedestrian bridge or tunnel has been provided
- Pedestrians must not cross divided or controlled-access highways if those roadways are marked prohibiting pedestrians
- Pedestrians must obey signalized intersections

§39-10.1: This section is dedicated to specific rules for bicyclists. These rules include:

- Bicycles are considered vehicles and must obey traffic laws
- Bicycles may only carry as many riders as they were designed to carry
- When on a roadway, bicyclists must ride as far right as practicable

§39-10.1-01: This section outlines fines for violating any of the bicycle or pedestrian laws in place.

- It is unlawful for any person to do any act forbidden or fail to perform any act required in this chapter. Any person who violates any of the provisions of this chapter may be assessed a fee not to exceed five dollars.
- The parent of any child and the guardian of any ward may not authorize or knowingly permit any such child or ward to violate any of the provisions of this chapter.
- These provisions applicable to bicycles apply whenever a bicycle is operated upon any highway or upon any path set aside for the exclusive use of bicycles subject to those exceptions stated herein.

Municipal Policies and Regulations

City of Bismarck

The City of Bismarck Code of Ordinances includes regulations specific to biking and walking derived from the ND DOT Century Code and enhanced to protect local residents. These regulations include:

Bike Safety: Bicyclists must follow traffic ordinances. Biking on sidewalks is prohibited in the central business district. If biking on a sidewalk, cyclists must yield to pedestrians. Lights are required when biking at night.

Pedestrian Safety: Pedestrians must follow applicable traffic laws and devices. When there are no signals at an intersection, motorists must yield to pedestrians. Pedestrians not crossing at crosswalks must yield to motorists.

Motorist Safety: Motorists must obey traffic signals and signs, yield to bikes and pedestrians in marked crosswalks, and must not pass a car or bus that is stopped for pedestrians.

Crosswalks: Regardless of whether the signal or if the intersection is marked, "the driver of a motor vehicle must stop before entering a marked school crossing when the crossing guard is displaying a stop sign within the crosswalk" §12-16-02.

City of Mandan

The City of Mandan has traffic code policies to promote walking and biking safely in the city. These include:

Bike Safety: Bicycles must follow traffic laws and biking on sidewalks is prohibited in business districts. If biking on a sidewalk, bicyclists must yield to pedestrians.

Pedestrian Safety: Pedestrians have the right of way at crosswalks if they are at least half way through the intersection. Pedestrians must yield to vehicles outside of a crosswalk. Pedestrians must use sidewalks when they are available.

Motorist Safety: Motorists must obey traffic signals and signs, yield to bikes and pedestrians in marked crosswalks, and must not pass a car or bus that is stopped for pedestrians.

IDENTIFYING ENFORCEMENT ISSUES AND PRIORITIES

Law Enforcement Interviews

Law enforcement phone interviews were conducted with two law enforcement officers. Lt. Jeff Solemsaas represents the Bismarck Police Department and Chief Jason Ziegler represents the Mandan Police Department. Both Lt. Solemsaas and Chief Ziegler have been interactive with the Bismarck-Mandan Bicycle and Pedestrian Plan as well as the on-going School Safety Crossing Study. The interviews help identify key enforcement issues, opportunities, and implementation priorities.

Question 1

What are some of the things you already do to encourage and safe guard bicycle and pedestrian traffic? In addition, what are some problems that people (bicyclists and pedestrians) are most concerned about? (One of the comments after the public meeting was that people "don't pay attention or obey laws when driving which makes it frightening to walk or ride bike.")

Responses:

> Lt. Jeff Solemsaas: It is kind of limited but we're trying to do some more outreach with the bicycle and pedestrian groups. Bicyclists do not always know they must follow the same rules of the road as cars, so we have tried to do some public service announcements. We also do activities with kids such as Bike Rodeos and Safe Routes to School events. We used to do "Traffic Tip Tuesday" as a press release to talk about the rules of the road. Traffic Tip Tuesday has been aimed at drivers.
>
> Chief Jason Ziegler: We hand out helmets to kids at the Bike Rodeos and bike patrol officers attend community events. School resource officers are bicycle certified and they will go speak to schools. I am putting together a Commission agenda document right now for a yearly traffic grant. Part of this grant is to be used for distracted driving and drive sober week. The size of the city makes it hard to focus on those specific areas, but the grant would help pay for an off-duty officer to do this type of work. We are setting up Strategic Traffic Enforcement

Program (STEP) right now which will observe traffic, write citations, and draft a report on the results.

Question 2

What are the things you are either thinking of implementing or is already in the pipeline to better educate and encourage people to walk and bike from a law enforcement standpoint?

Responses:

Lt. Jeff Solemsaas: Bismarck established bike lanes about 5 years ago and it was spearheaded by the mayor. One of the thoughts was to expand that more to get people walking and biking.

Chief Jason Ziegler: We apply for the traffic grant every year but this is the first year for enhanced DUI enforcement. Our main goal is to enforce laws and then educate people, bike safety is a part of that. We adjust to what the community and city are doing but it isn't our job to encourage biking. Seeing bike officers might encourage biking but we aren't doing campaigns for biking but instead for biking safely. It would be nice to do training on how to properly fit a bicycle, a program for this would be a good idea but the police department doesn't have the capacity to do that right now. I would like to get as many officers as possible bike certified.

Question 3

What are some of the obstacles you encounter regarding daily practice concerning bicycles and pedestrians? What do you think are some of the biggest issues with enforcement or law breakers regarding bicyclists and pedestrians and also vehicles interacting with bike/peds? (People commented that it would be nice to better educate people of road safety laws.) Do you have any concerns with having more pedestrians and bicyclists on the street? Could having more bikes/peds on the street help control how people drive on the streets? Do you think this would be a way to implement and change driving behaviors? Or, do you think this could be more problematic?

Safety for all is the number one priority for anyone who is on the street. Where are some crash/road accident hotspots? What do you think is the main cause of these accidents - careless driving, bad traffic coordination, bikes/peds not following the rules of the road, lack of pedestrian/bicyclist friendly planning in the area, etc.?

Responses:

Lt. Jeff Solemsaas: Most of the bicycle accidents are equally mixed to who are at fault, bikes riding on sidewalks or going through lights are the primary causes. Officers won't usually cite bicyclists even though they can, so there can be improvement on this point. I have no concerns about having more pedestrians and bicyclists on the streets because it will cause more awareness – drivers don't anticipate them right now because there are so few.

Chief Jason Ziegler: Yes, there is a law-breaking issue. We don't see a lot of officers writing citations for not wearing helmets but we will write tickets for bicycling while intoxicated. Our patrolling officers aren't usually looking for bicycle violations compared to other issues. We make quite a bit of arrests with the bad guys on bicycles. Bicycle rodeos are held once a year – kids can bring bikes and the officers bring bikes, officers train kids through an obstacle course. Not many kids show up, though, maybe a dozen. It would probably be more effective to bring it into classrooms but the schools are resistant to taking away academic time. A concern about more bicyclists could be having to minimize bikes on sidewalks - except for kids, maybe. Riding on sidewalks is not a major problem right now. Accident hotspots could be any major intersection but I can't think of any place with bike issues.

Question 4

What coordination or changes could be made to make enforcement more effective for bicycles and pedestrians? People noted that they would like to "…see trails policed so more people feel safe." What are some changes that could/would happen within the law enforcement with more people walking and biking – i.e. police on bikes?

What would help facilitate law enforcement officers in the process of enforcing/ensuring safety for all? What tools/resources/access does the law enforcement currently lack to help promote road safety?

Responses:

Lt. Jeff Solemsaas: I would need to go to each of the patrol shifts to do a training on how to enforce laws equally. We do bike patrols – Parks funds extra money for patrols on trails. We do it particularly along the river. We probably do 20-30 hours a week. I know of some areas where I wouldn't want to be a pedestrian (HWY 83) because of traffic volumes.

Jason Ziegler: Markings on the roadway could help, educational pamphlets to bicyclists, and education for law enforcement on bicycle laws could help with infractions. For issues related to perception of safety for pedestrians, CPTED (Crime Prevention Through Environmental Design) issues are really handled by city engineers even though I worked with CPTED issues at a previous job in Florida. If officers saw an issue like this, they would send it to the City Engineer.

Question 5

What may be some of the easiest strategies to implement (low hanging fruits) in your community that can be implemented over the next 5 years to improve bike and pedestrian safety from a law enforcement standpoint? Community members have indicated that an increase in fines for traffic violations can be a solution to careless/reckless driving. Do you agree?

What are some existing laws that would help further implement road safety in relation to bicycles and pedestrians? Is it common for law enforcement to ticket bicyclists or pedestrians that are breaking the law? Would a bike/ped enforcement blitz be beneficial?

What are some ways law enforcement officers can help educate people about road safety for drivers, bicyclists, and pedestrians?

Responses:

Lt. Jeff Solemsaas: Increasing traffic violations would help. Any fine would have to come through the State legislature but we've had bills before them the last 12 years and they continually vote it down. The Bismarck legislator might be more open to it than the one in Mandan. We like using Facebook so we've been trying to do education videos and tips, we could use that more for awareness.

Chief Jason Ziegler: Educational pamphlets on bicycling and an increase in fines would help. However, legislators have not been supportive of an increase in fines. Quick reference guides for related laws for police officers would be helpful. Educating the cycling community about the benefits would also be good as education is a huge component.

TOP ENFORCEMENT STRATEGIES

Based on the interviews conducted with local law enforcement and conversations with MPO staff and Steering Committee members, five top enforcement strategies were developed. These strategies are listed below and explained in detail in Chapter 9: Implementation.

1. Support for the communities traffic grant application
2. Promote the Strategic Traffic Enforcement Program (STEP)
3. Increase the number of law enforcement officers bicycle certified
4. Encourage 20-30 hours a week of patrolling on the existing trail systems
5. Patrol shifts could use additional training to enforce laws equally between bicycle/ pedestrians and motor vehicles

CHAPTER 8:
Evaluation

INTRODUCTION

Evaluation is a critical component of a successful bicycle and pedestrian program in any community. Understanding the use of the system can help to guide future planning and investment. It is critical that agencies in the region monitor bicycle and pedestrian users throughout the community and develop metrics to measure success. An effective evaluation program will help to establish baseline levels and set targets to gauge the effectiveness of bicycle related investments and regularly update plans accordingly.

EXISTING EVALUATION PROGRAMS

The Bismarck-Mandan MPO provides institutional support for planning bicycle and pedestrian facilities in the region. In 2016, the MPO initiated the School Safety Crossing Study to evaluate the student safety as they travel to and from Bismarck, Mandan, and Lincoln's public schools. As part of the study, all classroom teachers in both districts conducted tallies to document how students travel to and from school (e.g. bike, walk, bus, family vehicle, etc.). This provides important baseline information to evaluate future efforts seeking to increase the number of students who bike or walk to school.

In addition, the MPO collected bicycle and pedestrian counts for the first time in 2017. Video data was recorded at 25 intersections throughout Bismarck and Mandan over a 24-hour period to count levels of bicycle and pedestrian traffic at each intersection. This provides an important baseline in future efforts to evaluate change in bicyclist and pedestrian mode share.

DEVELOPING A BASELINE MONITORING PROGRAM

This chapter focuses on the development of a baseline evaluation or monitoring program for the Bismarck and Mandan area. A full technical memorandum that analyzes each of the elements required to develop a monitoring program can be found in Appendix C.

The Bismarck-Mandan MPO has identified the need for a bicycle and pedestrian monitoring program to inform metropolitan planning initiatives and efforts to evaluate programs and infrastructure improvements designed to support bicycling and walking. The key objectives to the baseline bicycle and pedestrian monitoring program is to accomplish the following:

- Gain a general understanding of bicycle and pedestrian traffic volumes and trends at particular locations by repeating monitoring annually over time;
- Characterize the bicycle and pedestrian traffic flows on particular elements of a transportation network;
- Inform site-specific planning or engineering analyses such as installation of new network facilities or traffic controls;
- Evaluate impacts of changes or improvements in the bicycle and pedestrian network; and
- Provide data for funding requests for infrastructure projects.

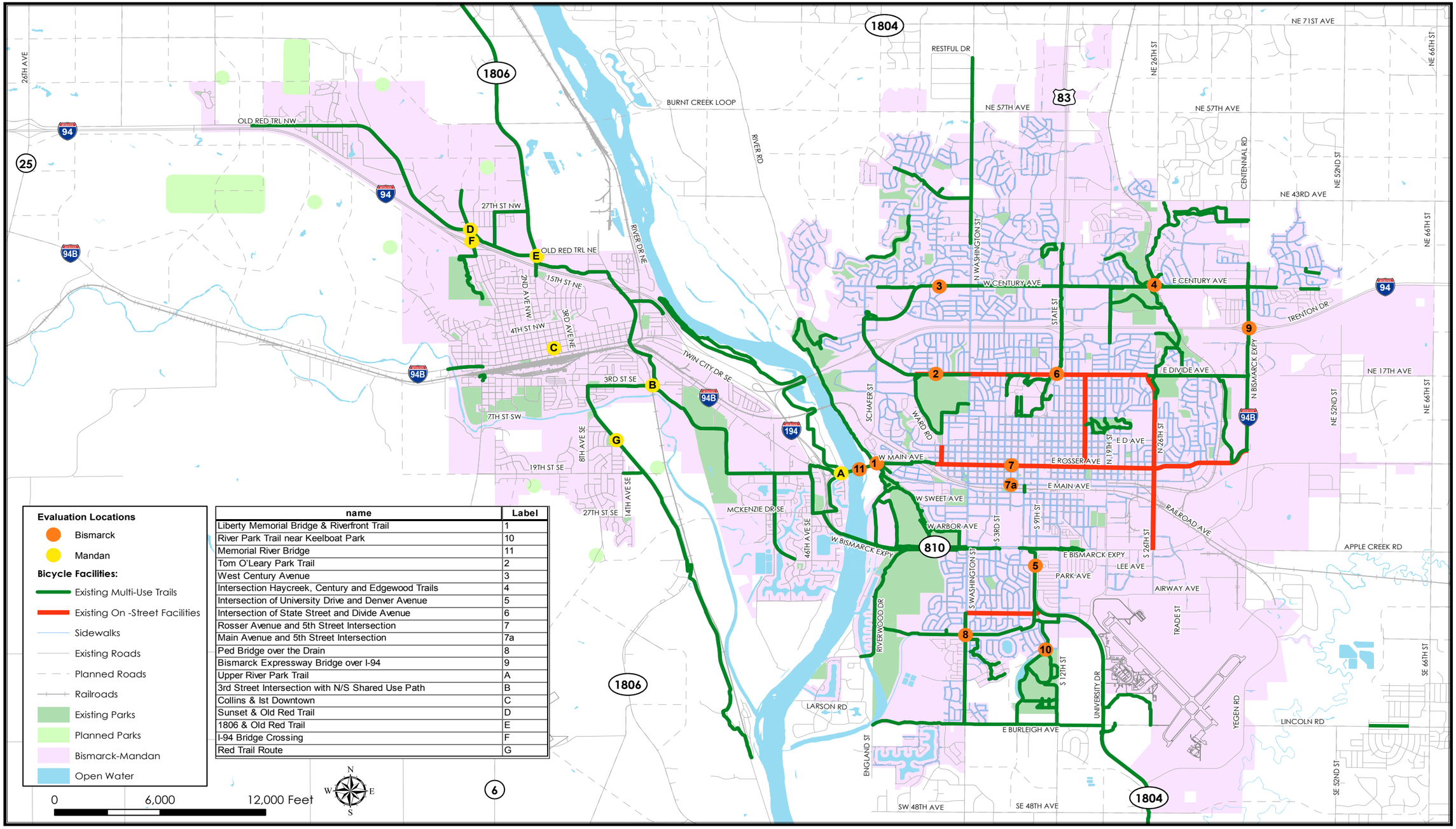
As part of establishing the baseline monitoring program, the project steering committee identified a total of nineteen locations in Bismarck and Mandan to begin monitoring bicycle and pedestrian traffic on a variety of existing bicycle and pedestrian network facilities. The sites selected by the steering committee are listed below and shown in Figure 8-1. The next steps to developing the monitoring program will include establishing a monitoring task force to spearhead the efforts of the program and investing in and deployment of counters. These next steps are further discussed in the Implementation Chapter 9.

Bismarck Locations:

- Liberty Memorial Bridge & Riverfront Trail
- River Park Trail near Keelboat Park
- Memorial River Bridge
- Tom O'Leary Park Trail
- West Century Avenue
- Intersection Haycreek, Century and Edgewood Trails
- Intersection of University Drive and Denver Avenue
- Intersection of State Street and Divide Avenue
- Rosser Avenue and 5th Street Intersection
- Main Avenue and 5th Street Intersection
- Ped Bridge over the Drain
- Bismarck Expressway Bridge over I-94

Mandan Locations:

- Upper River Park Trail
- 3rd Street Intersection with N/S Shared Use Path
- Collins & Ist Downtown
- Sunset & Old Red Trail
- 1806 & Old Red Trail
- I-94 Bridge Crossing
- Red Trail Route



Evaluation Locations
- Bismarck
- Mandan

Bicycle Facilities:
- Existing Multi-Use Trails
- Existing On -Street Facilities
- Sidewalks
- Existing Roads
- Planned Roads
- Railroads
- Existing Parks
- Planned Parks
- Bismarck-Mandan
- Open Water

name	Label
Liberty Memorial Bridge & Riverfront Trail	1
River Park Trail near Keelboat Park	10
Memorial River Bridge	11
Tom O'Leary Park Trail	2
West Century Avenue	3
Intersection Haycreek, Century and Edgewood Trails	4
Intersection of University Drive and Denver Avenue	5
Intersection of State Street and Divide Avenue	6
Rosser Avenue and 5th Street Intersection	7
Main Avenue and 5th Street Intersection	7a
Ped Bridge over the Drain	8
Bismarck Expressway Bridge over I-94	9
Upper River Park Trail	A
3rd Street Intersection with N/S Shared Use Path	B
Collins & Ist Downtown	C
Sunset & Old Red Trail	D
1806 & Old Red Trail	E
I-94 Bridge Crossing	F
Red Trail Route	G

0 6,000 12,000 Feet

N W E S

6

Figure 8-1: Bicycle/Pedestrian Existing Network and Evaluation Locations

Bismarck-Mandan Bicycle and Pedestrian Plan

October 16, 2017

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CHAPTER 9: Implementation

INTRODUCTION

The Implementation Plan for the Bismarck-Mandan Bicycle and Pedestrian Plan identifies specific action steps that the MPO and community can take to implement key recommendations in the Plan. This section examines goals identified in the Plan and develops specific opportunities to implement these goals as well as establish a timeline for completion. The implementation chapter is organized by the 5 E's of bicycle planning: engineering, education, encouragement, enforcement, and evaluation.

ENGINEERING IMPLEMENTATION PRIORITIES

Chapter 4 identified the development process for the future bicycle and multi-use trail facilities planned network in Bismarck and Mandan. This chapter further identified the process to evaluate and prioritize the future network segments and intersections to implement improvements for both five future network connections and five intersections in need of improvements to better accommodate bicyclists and pedestrian needs at the intersections. Although the top five routes and intersections were identified and are further discussed as part of this implementation plan, it is important to note that implementation of all routes is recommended as opportunities arise with programmed projects.

Top 5 Routes in Bismarck and Mandan

The top 5 routes (3 in Bismarck and 2 in Mandan) are further explored within this section to identify opportunities and constraints provided by each route. The intent of identifying the top five routes is to focus on the five routes for programming and implementation over the next five years. Because this Plan is not an in-depth engineering study, further preliminary and detailed engineering will need to be completed with the development of each route as part of the final implementation. Initially as part of the fifth steering committee meeting to discuss the top five routes, preliminary cross sections were developed to show the recommended facility types and how they would fit within the existing roadways and rights of way. However, after the meeting further discussion with members of the Steering Committee indicated that the cross-sections were too detailed for this planning level document and should be further evaluated as part of the preliminary and final design for each route.

Bismarck Priority Route #1: South Washington Street: W Wachter Avenue to W Main Avenue

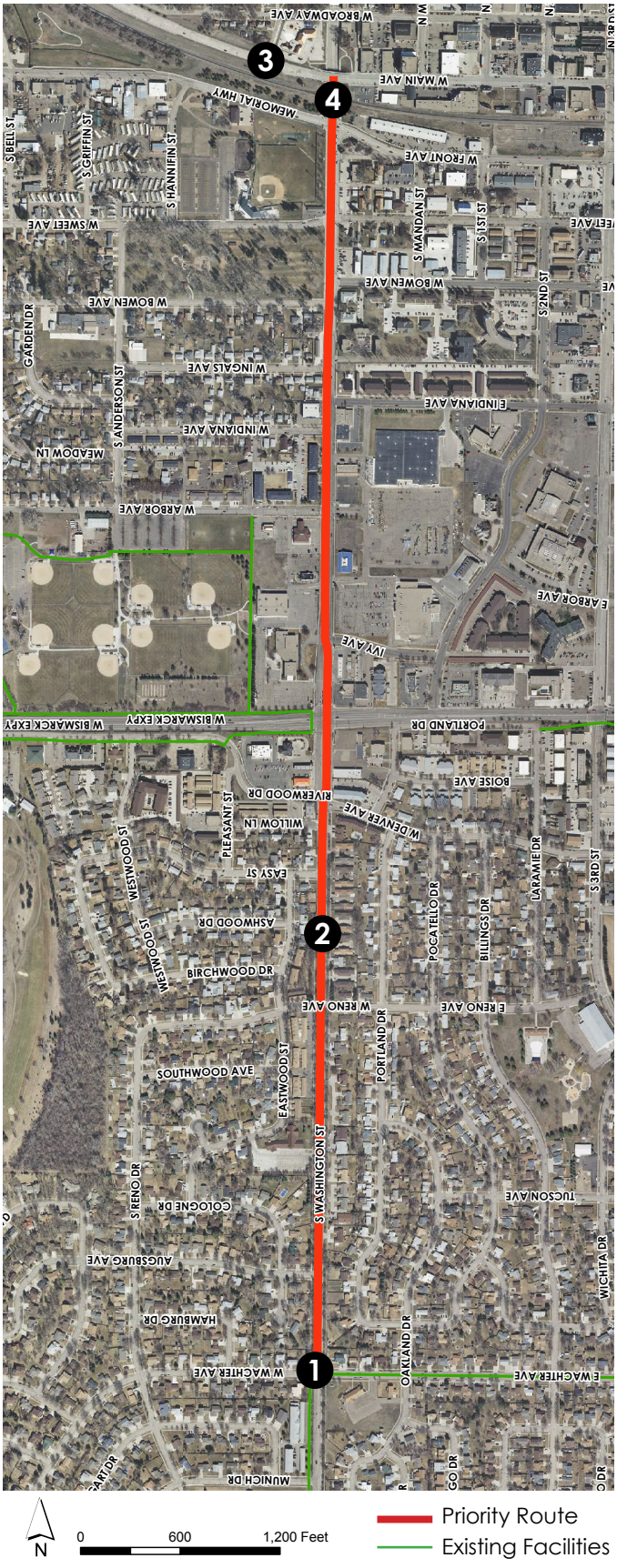
Based on the Bicycle Suitability Matrix, appropriate bicycle infrastructure is for this route is a Shared Use Path. Transit service is present along the route as well as existing sidewalk along the corridor, so the addition of the shared use path will serve multiple modes of transportation. Existing roadway widths along the corridor are as follows while additional opportunities and constraints are further identified in Figure 9-1 and the legend below.

- ~30-37 ft. curb-to-curb @ Expressway Intersection (from curbline to center median, one direction)
- ~60 ft. curb-to-curb north of Expressway
- ~53 ft. curb-to-curb south of Expressway

Bismarck Route 1: Opportunities and Constraints

1. Connection to existing facilities
2. Challenges with right-of way, may require burying overhead powerlines and removing trees
3. Future connection to a shared path
4. Underpass and railroad crossing may be needed

Figure 9-1: Bismarck Route #1



Bismarck Priority Route #2: North 4th Street & Dominion Street: West Main Avenue to N 10th Street

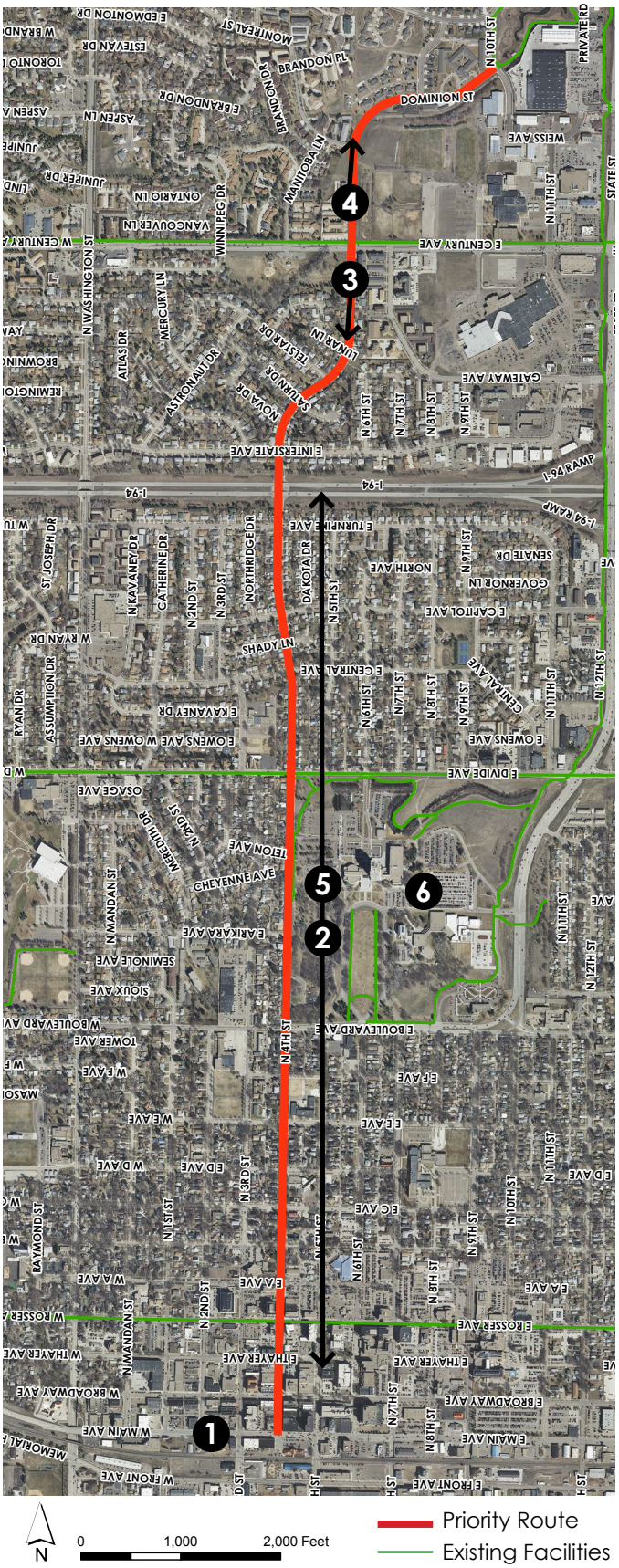
Based on the Bicycle Suitability Matrix, the initial recommended appropriate bicycle infrastructure for this route was identified as a Protected Bike Lane. However, the frequency of driveways along this route would require multiple breaks in the protected bike lane and therefore a Buffered Bike lane is the recommended appropriate bicycle facility for this route. Transit service is present along the route, so the addition of the bicycle facility will serve multiple modes of transportation. Existing roadway widths along the corridor are as follows while additional opportunities and constraints are further identified in Figure 9-2 and the legend below.

- ~46-48 ft. curb-to-curb north of Route 94
- ~48-50 ft. curb-to-curb Route 94 to Capitol Ave
- ~39 ft. Capitol Ave to Divide Ave
- ~43-44 ft. south of Divide Ave

Bismarck Route 2: Opportunities and Constraints

1. Connection to future facilities on West Main
2. Currently 1 lane of traffic in each direction with parking on both sides of the street
3. Potential project to turn this roadway to a three-lane road with a center turn lane
4. Roadway north of Century would remain a two-lane road
5. Adding a facility would likely result in the loss of parking on one or both sides of the street
6. Connection to the State Capitol

Figure 9-2: Bismarck Route #2



Bismarck Priority Route #3: 12th Street: E Bismarck Expressway to Avenue C

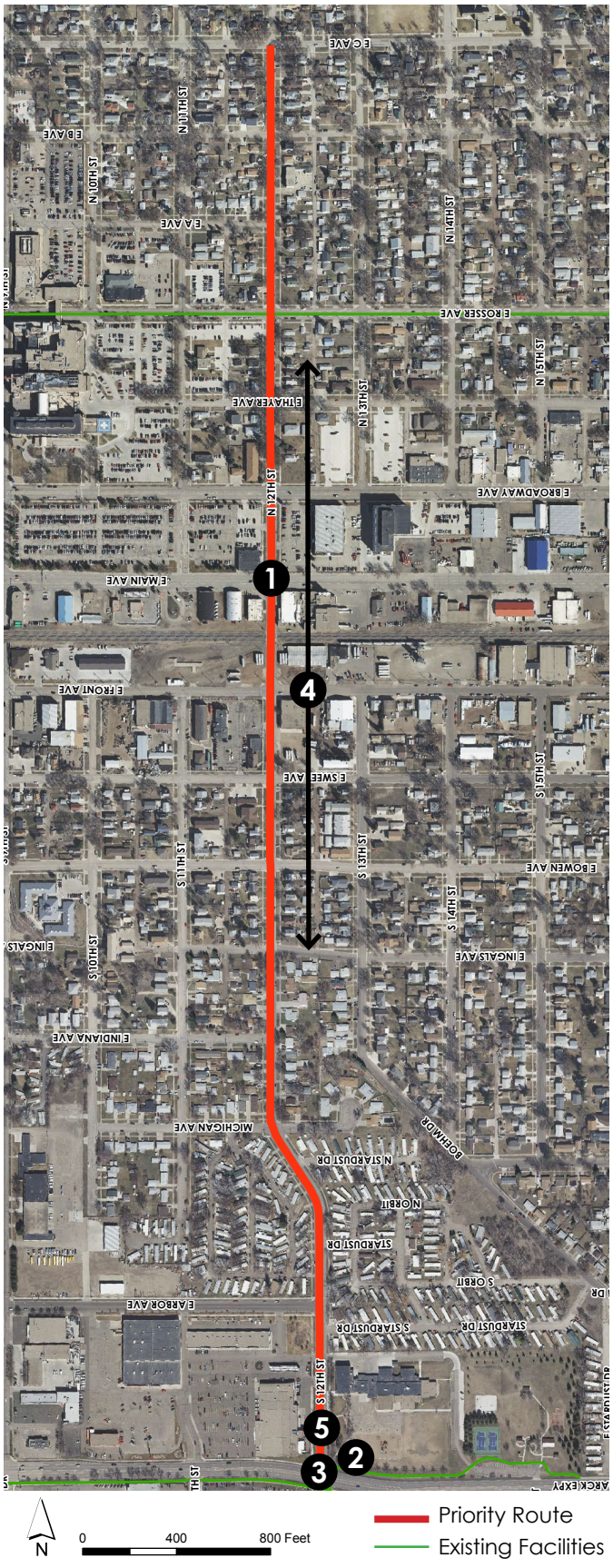
Based on the Bicycle Suitability Matrix, the initial recommended appropriate bicycle infrastructure for this route was identified as a Protected Bike Lane. However, the frequency of driveways along this route would require multiple breaks in the protected bike lane and therefore a buffered bike lane is the recommended appropriate bicycle facility for this route. Transit service is present along the route, so the addition of the bicycle facility will serve multiple modes of transportation. Existing roadway widths along the corridor are as follows while additional opportunities and constraints are further identified in Figure 9-3 and the legend below.

- ~40-45 ft. curb-to-curb north of Michigan Ave
- ~48-49 ft. curb-to-curb south of Michigan Ave to Bismarck Expressway

Bismarck Route 3: Opportunities and Constraints

1. Connection to future facilities on Main
2. Connection to facilities on the Bismarck Expressway
3. Intersection will need careful planning and possible leading interval for pedestrians and bicyclists
4. Roadway includes one lane of travel in each direction with parking on both sides of the street
5. Intersection includes three lanes of travel

Figure 9-3: Bismarck Route #3



Mandan Priority Route #1: 6th Avenue SE: 3rd Street SE to 1st Street NE

Based on the Bicycle Suitability Matrix, the long term appropriate bicycle infrastructure for this route was identified as a Protected Bike Lane. Existing roadway widths along the corridor are as follows while additional opportunities and constraints are further identified in Figure 9-4.

- ~30-35 ft. curb-to-curb north of Main St to 1st St NE
- ~51 ft. curb-to-curb south of Main St

Mandan Route 1: Opportunities and Constraints

1. Two lanes of travel in each direction, though a 4-lane to 3-lane conversion has been recommended in past plans
2. Channelized right turn lanes
3. Underpass with grade separation between sidewalk and roadway
4. Connection to existing and future facilities on 3rd Street SE
5. Connection to future facilities on 1st Street NE

Figure 9-4: Mandan Route #1

Mandan Priority Route #2: 3rd Street SW & SE: Highway 6 to 6th Avenue SE

Based on the Bicycle Suitability Matrix, the initial appropriate bicycle infrastructure for this route was identified as a Protected Bike Lane. However, due to the existing roadway width and existing driveway along the corridor it was determined that Buffered Bike Lanes are a more suitable facility. Transit service is present along the route, so the addition of the bicycle facility will serve multiple modes of transportation. Existing roadway widths along the corridor are as follows while additional opportunities and constraints are further identified in Figure 9-5 as well as the legend below.

- ~34-45 ft. curb-to-curb

Mandan Route 2: Opportunities and Constraints

1. One lane of travel in each direction
2. Connection to future facility
3. Connections to existing and future facilities
4. Future facility may result in the reduction of on-street parking, an off-road facility could be considered along the south side of the street instead

Figure 9-5: Mandan Route #2

Top 5 Intersections in Bismarck and Mandan

The top 5 intersections (3 in Bismarck and 2 in Mandan) are further explored within this section. The study team conducted an audit of each intersection that followed the same criteria of the "intersection walkability audit" as developed for this plan. However, the audit was completed from the perspective of both a pedestrian and cyclist. Graphics with corresponding notes have been developed to illustrate opportunities to improve the safety and comfort level of pedestrians and cyclists as they maneuver through the top five identified intersections. It is important to note that while there are challenges with these intersections, they were designed to meet the standards required at the time they were constructed.

Bismarck Priority Intersection #1: South Washington Street & Bismarck Expressway

Vehicle Speed: Rating Poor
- Posted speed: 35 mph on Washington, 40 mph on Expressway
- Signal length is only long enough for pedestrians to make it to the median (not all the way across)
- Mid street medians (with signal pedestals) are too narrow to hold wheelchair or bicycle, very uncomfortable for pedestrians, no surface indicators to identify boundary of median space
- Only east and south respite islands have truncated domes
- Neighboring residents cross further east or south of the intersection

Curb Returns/Corner Treatments: Rating Good
- Good corner treatments with 'tight' curb radii

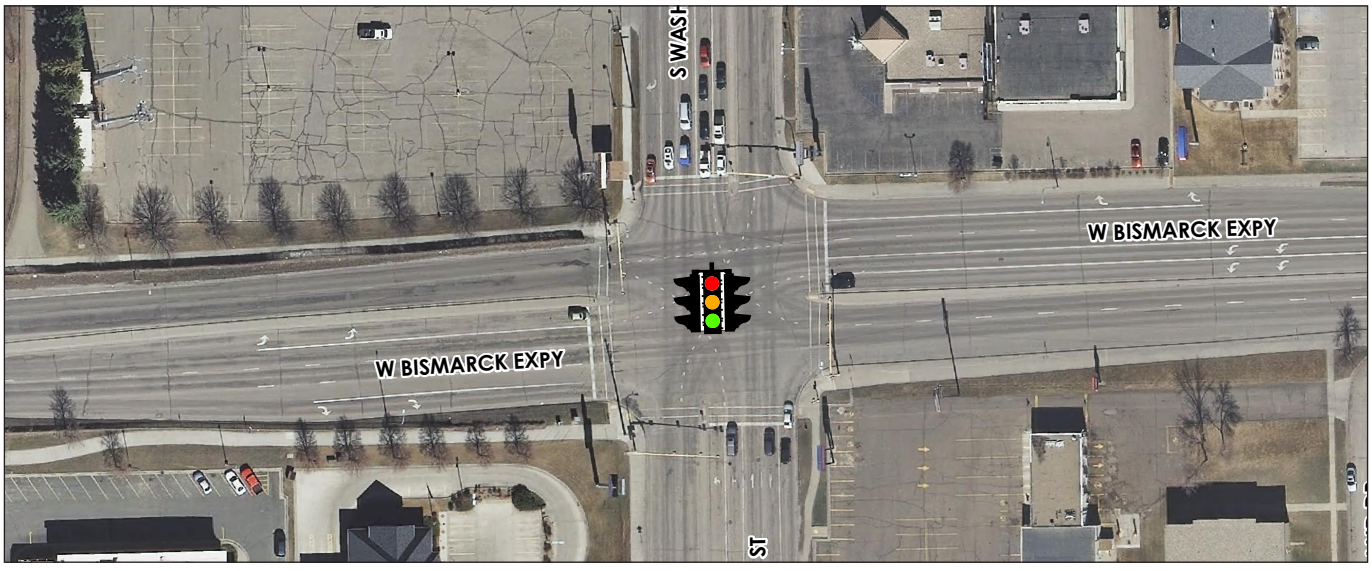
Visibility & Lighting: Rating Good

ADA Ramps: Rating Fair
- Ramp only on some corners

Crossing Controls: Rating Poor
- Push button pedestrian controls are very far away from crossing area, not enough time to cross

Traffic Signals: Rating Poor
- Signal not designed to minimize the delay to people waiting to cross the intersection
- Inadequate time for people of all ages and abilities to cross the street
- No information provided to indicate the amount of time remaining in crossing the street
- Only some accessible signals provided
- Controls feel very high

Additional Comments:
- Striping worn off



Bismarck Priority Intersection #2: East Divide Avenue & State Street

Vehicle Speed: Rating Fair

- Posted speed: 25 mph on E Divide, 40 mph on State St
- Large pavement width, hard to see pedestrians crossing
- Pedestrian signage is on the other side of the road (from NE corner to cross State)

Curb Returns/Corner Treatments: Rating Poor

- Corner treatments with 'large' curb radii
- Large NW curb to angled intersection <90 degrees
- Bike lane East & West on Divide not at intersection, no sign, markings or dedicated sign to travel through

Visibility & Lighting: Rating Good

ADA Ramps: Rating Fair

- No truncated domes to mark ADA ramps
- Pavement markings need to be re-striped

Crossing Controls: Rating Poor

- Push button cross with countdown—not adequate time to cross State St. going East/ West, need to stop in median, but narrow width of median respite feels uncomfortable, very exposed
- Push button pedestal is a bit of a distance away from crossing, signals could be located closer to the crossing locations
- Additional pavement could be added to the northwest quadrant of the intersection to add another push button pedestal for better access

Traffic Signals: Rating Poor

- Signal not designed to minimize the delay to people waiting to cross the intersection
- Inadequate time for people of all ages and abilities to cross the street
- Tactile walking surface indicators (e.g. truncated domes) are not present to navigate intersections
- Only some accessible signals provided

Bismarck Priority Intersection #3: I-94 South Ramp & State Street

Vehicle Speed: Rating Poor

- Posted speed: 40 mph on State St
- New crossing marks needed on west I-94 off ramp, need stop bar for motorists
- Motorists do not look before they make right hand turns onto State Street from eastbound I-94 off-ramp, possible solution to add "no turn on red" sign?
- Numerous cyclists and pedestrians observed using this route and intersection to cross over the interstate

Curb Returns/Corner Treatments: Rating Poor

- Corner treatments with 'large' curb radii
- Need to realign curb on I-94 off ramp to State St south bound

Visibility & Lighting: Rating Fair

- Lighting is provided on one side only, using high mast lights

ADA Ramps: Rating Fair/Poor

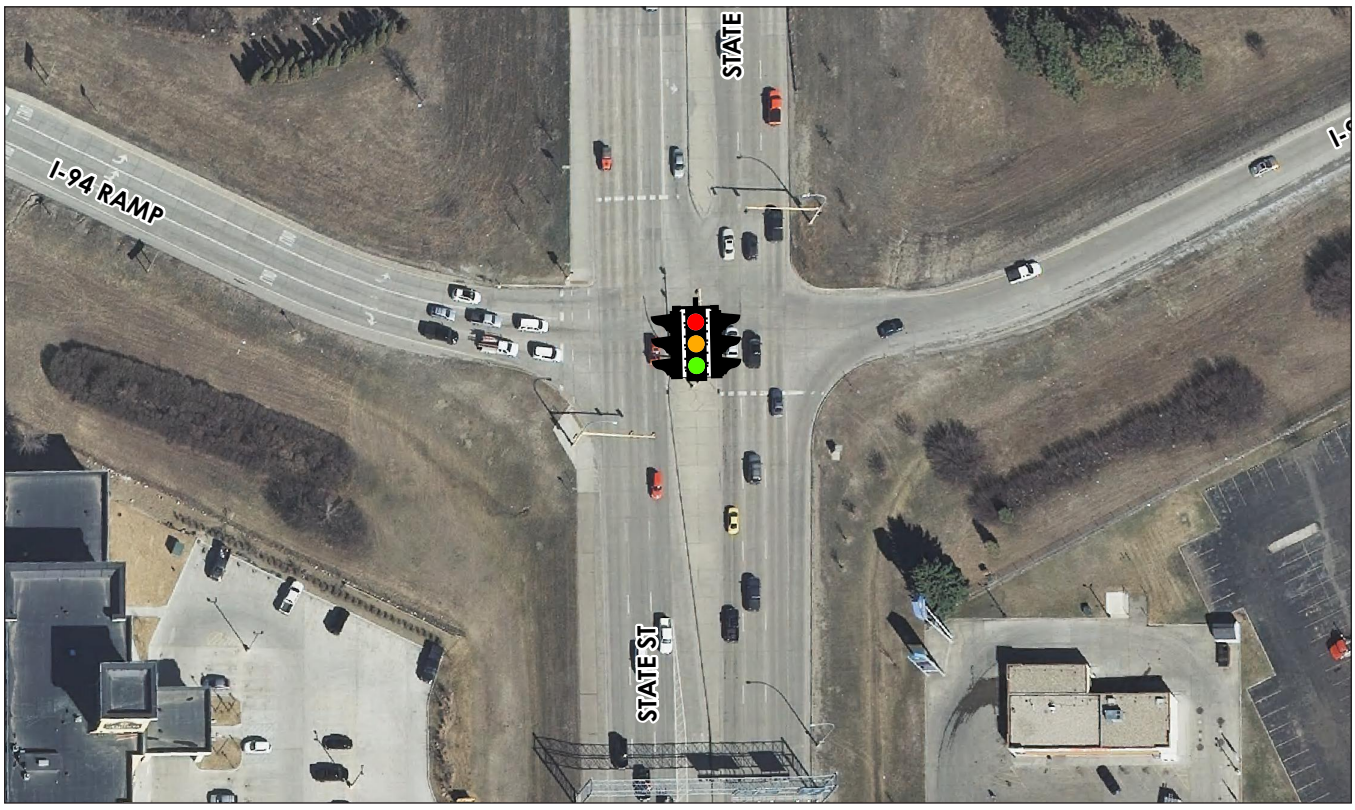
- South side of the crossing has a shared ramp but it needs to be aligned in the direction of travel. North side of crossing does not have a shared ramp

Crossing Controls: Rating Fair

- Push button with voice/audio confirmation that the button has been pushed, no other auditory signals present to signal safe time to cross
- The control type does not convey the importance of the crossing location

Traffic Signals: Rating Fair

- Signal not designed to minimize the delay to people waiting to cross the intersection
- No tactile walking surface indicators (e.g. truncated domes) used to navigate intersections
- Only some accessible signals provided



Mandan Priority Intersection #1: East Main Street & East Mandan Avenue

Vehicle Speed: Rating Good

- Posted speed: 25 mph on E Mandan Ave, 30 mph on E Main St
- Overall, this intersection feels comfortable and safe—from a bike/pedestrian perspective, good crossing controls and surface indicators all around

Curb Returns/Corner Treatments: Rating Fair

- Large curb radii, "pork chop" curb returns but good signal access. Could use some more signage for both motorists and cyclists/ pedestrians to yield and watch out for one another

Visibility & Lighting: Rating Good
ADA Ramps: Rating Good
Crossing Controls: Rating Good

- Auditory signal notifies when button has been pushed but does not "count down"
- Missing signal at NE corner—no way to access the signal if you're crossing the "pork chop" westbound, need additional signage for motorists to yield and another pedestal control
- Overall, east/west crossing of the intersection is good
- Plenty of time to cross the intersection

Traffic Signals: Rating Fair

- Signal design somewhat minimizes delay to people crossing the intersection
- The crossing time provided is adequate for people of all ages and abilities to cross (with information provided)
- Has some accessible push buttons
- No tactile walking surface indicators are provided
- Striping good, but indicators only at ramps

Additional Comments:

- Overall need to replace crossing markings

Mandan Priority Intersection #2: 3rd Street SE and 6th Avenue SE

Vehicle Speed: Rating Good
- Posted speed: 25 mph on SE 3rd St, 30 mph on SE 6th Ave

Curb Returns/Corner Treatments: Rating Good
- Good corner treatments with 'tight' curb radii

Visibility & Lighting: Rating Good
- LED lights on some
- Missing lighting on NE corner of the intersection, present on all other corners

ADA Ramps: Rating Poor
- No surface indicators (truncated domes) on ramps
- Ramp pavement needs repair
- Duplicate ramp on SW corner, offset from corner (shared) ramp
- Ramp space and sidewalk widths feel tight to navigate
- Intersection is very congested and tight during rush hour/peak traffic volumes

Crossing Controls: Rating Good
- Good push button controls

Traffic Signals: Rating Fair
- Signal design does not minimize delay to people crossing the intersection
- The crossing time provided somewhat adequate for people of all ages and abilities to cross
- No information provided to indicate the amount of time remaining in crossing the street
- No tactile walking surface indicators are provided
- Striping needs redone

Funding Sources for Implementing Engineering Improvements

Securing funding is critical to the implementation of any successful bicycle or pedestrian project. The following matrix outlines national-level programs that may be available for the development of the top five route and intersection improvements, as well as any other proposed improvements in Bismarck and Mandan (see table 9-1). Local government bodies should also coordinate to include bicycle and pedestrian infrastructural improvements in their annual Capital Improvement Plans (CIPs).

Table 9-1: Grant opportunities for funding bicycle and pedestrian infrastructure

Funder	Program	About	Award Amount	Eligible Agency	Deadline
ND DOT	Transportation Alternatives Program (TA)	Funding for Safe Routes to School and other Bike and Ped improvement projects. Funding in both urban (population over 5,000) and rural (under 5,000) communities. http://www.dot.nd.gov/divisions/localgov/TAP.htm	Up to $290,000 with a 20% local match	MPO, City of Bismarck, City of Mandan, Burleigh County, Morton County	December Annually
ND Parks and Rec	Recreational Trails Program	Motorized and non-motorized trails. http://www.parkrec.nd.gov/recreation/grants/rtp/rtpoverview.html	Up to $200,000 with a 20% local match	MPO, City of Bismarck, City of Mandan, Burleigh County, Morton County, Local park districts	January 31 Annually
ND DOT	Highway Safety Improvement Program	State is eligible for State Highway Safety Program grants by having and implementing an approved Highway Safety Plan (HSP). The funding can go to bike and ped safety, school bus safety, and driver safety on state roadways. https://safety.fhwa.dot.gov/legislationandpolicy/policy/section402/	Varies	City of Bismarck, City of Mandan, City of Lincoln, Burleigh County, Morton County	December Annually
US DOT	Transportation Improvement Generating Economic Recovery (TIGER)	Transportation improvement projects including bicycle and pedestrian elements and intermodal projects. https://www.transportation.gov/tiger	At least $1,000,000 with a 20% local match	State of ND, MPO, City of Bismarck, City of Mandan City of Lincoln, Burleigh County, Morton County	October Annually (though funding is dependent of federal budgets)
Federal Transit Administration	Urbanized Area Formula Program	Grants for public transportation capital, planning, job access and reverse commute projects including bicycle routes to transit, bike racks, shelters and equipment for public transportation vehicles. https://www.transit.dot.gov/funding/grants/urbanized-area-formula-grants-5307	Varies with a 20% local match	State of ND which sub-allocates funds to local jurisdiction, MPO (Urban areas can apply directly to FTA)	Annually
People for Bikes	People for Bikes Community Grant	Funding for corridor improvements, trails, mountain bike facilities etc. http://www.peopleforbikes.org/pages/grant-guidelines	Up to $10,000 (no match requirement)	Local government and non-profits	April and September Annually

EDUCATION IMPLEMENTATION PRIORITIES

There are numerous existing educational programs in Bismarck and Mandan, discussed in Chapter 5. These programs have helped to shape bicycling and walking in the cities and educate all users on safety. Top implementation priorities for educational programs help to build on these existing opportunities. These priorities will require close coordination with other agencies and organization. Because coordination is so critical, top priorities are listed in a table with potential partners (see Table 9-2).

Table 9-2: Education Implementation Partnerships

Priority	Coordinating Partners
Road Safety Program	ND DOT
Safety education in schools	Bismarck School District, Mandan School District, private schools in both communities
Inviting law enforcement to talk about safety	Bismarck Police, Mandan Police, Burleigh County sheriff, Mandan County sheriff
Improve signage for bicyclists and pedestrians	City of Bismarck and City of Mandan
Media Blitz	Local newspapers and TV affiliates

ENCOURAGEMENT IMPLEMENTATION PRIORITIES

There are numerous implementation priorities based on the issues and opportunities raised in Chapter 6. These priorities include:

- Develop a Bicycle and Pedestrian Committee
- Examine sidewalk development policies to promote a more connected pedestrian network - including investigating local ordinance changes to require installation of on-site facilities in conjunction with site development/redevelopment.
- Examine snow removal policies and programs to encourage safe bicycling and walking year-round
- Examine the possibility of adopting a Complete Streets policy
- Plan and coordinate large-scale events such as Cyclovia or Open Streets

The first implementation priority: develop a Bicycle and Pedestrian Committee is the most important aspect of implementing successful encouragement programs across Bismarck and Mandan. This committee will supervise implementation of the Bicycle and Pedestrian Plan across all five E's and guide future planning going forward.

While the development of a Bicycle and Pedestrian Committee will not be easy, it is a top priority to ensuring the success of the Plan and should be established immediately. The Committee can be made up of current Steering Committee members and be hosted under the Bismarck-Mandan MPO. This will require the commitment of staff and financial resources but can be implemented at a small scale to begin and grow as the responsibilities of the Committee become more substantial. For example, in the first year, the Committee could meet quarterly. This would involve four one or two hour meetings, hosted by MPO staff. The potential tasks and hours required to develop the Committee are summarized in Table 9-3.

Table 9-3: Bicycle and Pedestrian Committee Potential Requirements

Task	Time
Meeting Prep and Scheduling	4 hours per meeting
Host Meeting	2 hours per meeting
Meeting Follow-up (synthesizing minutes, acting on next steps)	6 hours per meeting
Total	12 hours per meeting
	48 hours annually

When the time commitment is broken down and added to MPO staff's annual work plan, the commitment will be manageable at approximately 48 hours annually as listed on Table 9-3. Committee members would be volunteers or compensated for their time by their host agency or organization. The Committee would be charged with examining the other Encouragement Implementation Priorities as well as implementing the proposed monitoring program, discussed later in this chapter.

ENFORCEMENT IMPLEMENTATION PRIORITIES

After discussing existing enforcement programs and challenges as well as the interviews with local law enforcement, the following five implementation themes were identified:

- Support for the communities traffic grant application
- Promote the Strategic Traffic Enforcement Program (STEP)
- Increase the number of law enforcement officers bicycle certified
- Encourage patrolling the existing trail system
- Enforce laws equally between bicycle/ pedestrians and motor vehicles

Each of these themes are further described as follows.

Support for the communities traffic grant application

A major hurdle to better law enforcement is available funding and staff resources. Grant programs at the State and National level can be a viable funding solution. The Communities Traffic Grant is being applied for in both Bismarck and Mandan and is used to promote seat belt usage and other traffic safety measures. Funding is limited for bicycle and pedestrian safety but there are some options available. For example, Bismarck received $5,000 for two years from a Safe Routes to School non-infrastructure grant which can be used towards enforcement improvements for the school sites.

Promote the Strategic Traffic Enforcement Program (STEP)

This program can be used to monitor bicycle and pedestrian traffic and writing citations for bicyclists and pedestrians that are not following the law. Because bicycle education courses are not required, safe and legal operation of a bicycle can be an issue in the community. Officers in both Bismarck and Mandan noted that walking and cycling while intoxicated has led to traffic accidents in the past.

Increase the number of law enforcement officers bicycle certified

Many communities across the United States have developed programs to help certify their law enforcement to become bicycle patrols. In Bismarck, some officers have gone through a similar training. The program involves the one-time completion of a 40-hour course. Additionally, if an officer wants to be on bicycle patrol, they can work with another officer that is already certified. A challenge is that, because certification is not required, some officers have interest in being bicycle certified and others do not.

Encourage Patrolling the Existing Trail Systems

Trail patrols exist in both Bismarck and Mandan, particularly along the River and on park-owned trails. In Bismarck, officers patrol about 30-40 hours a week (5 days a week) but more bike patrols are needed on the trails early in the morning and late at night when there are not as many people around and people feel less secure with low lighting. This is especially problematic in the summer where day time temperatures may force more people to ride in the early mornings or evenings. There was also steering committee interest in public funding for lighting of the trails or a blue light phone system for increased security.

Enforce laws equally between bicycle/ pedestrians and motor vehicles

In Bismarck and Mandan, avid cyclists have complained about casual riders violating traffic laws and riding unsafely. While enforcement can help to deter unsafe behavior, additional education is needed as well. For example, the older generations in the community learned that they should bike against traffic and they are passing this incorrect information on to their children. Another challenge is that bicycle laws are limited in North Dakota and small fines ($5) are not enough to deter unsafe and illegal behavior. The State is currently conducting an Active Transportation Plan which could promote the implementation of more bicycle and pedestrian safety regulations.

EVALUATION IMPLEMENTATION PRIORITIES

The Bismarck-Mandan MPO can make modest investments and initiate an ad hoc, exploratory monitoring program at a few sites. This approach has the benefit of generating bicycle and pedestrian traffic data at a limited number of locations and enabling MPO staff to gain experience working with different types of monitoring devices.

The Steering Committee has identified 18 potential locations for monitoring and identified the need for costs estimates for minimal and comprehensive programs (see Figure 8-5). This chapter includes costs estimates for an exploratory monitoring program including the 18 locations, a minimal monitoring program including the 18 locations, and a comprehensive monitoring program designed to characterize trail traffic on all 70 miles of trail and on 100 miles of arterial, collector, and local roads in Bismarck and Mandan. The main difference between the exploratory and minimal programs is the installation of permanent inductive loop counters on both trails and streets in the minimal program. The cost of installing inductive loops, which involves saw-cutting into pavement or concrete, typically is more expensive than the inductive loop counters themselves. Hence, if the decision is made to move to inductive loops immediately, costs increase substantially. Monitoring devices for each of the 18 identified segments is included in Table 9-4.

Table 9-4: Monitoring Devices by Location

City / Location	Facility Type	Monitoring Device – Portable	Monitoring Device - Permanent
Bismarck			
1. Liberty Memorial Bridge & Riverfront Trail	Multiuse Trail	Infrared	Infrared Infrared / Inductive Loop
2. Tom O'Leary Park Trail	Multiuse Trail	Infrared	Infrared Infrared / Inductive Loop
3. West Century Avenue	Multiuse Trail	Infrared	Infrared Infrared / Inductive Loop
4. Intersection of Haycreek, Century Avenue and Edgewood Trails	Multiuse Trail	Infrared	Infrared Infrared / Inductive Loop
5. Intersection of University Drive and Denver Avenue	Multiuse Trail	Infrared	Infrared Infrared / Inductive Loop
6. Intersection of State Street and Divide Avenue	Street	Pneumatic Tube	Inductive Loop
7. Rosser Avenue and 5th Street Intersection	Street	Pneumatic Tube	Inductive Loop
(7a) Main Avenue and 5th Street Intersection	Street	Pneumatic Tube	Inductive Loop
8. Ped Bridge over the Drain just east of South Washington Street	Multiuse Trail	Infrared	Infrared Infrared / Inductive Loop
9. Bismarck Expressway Bridge over I-94 – I-94 Bridge Crossing	Multiuse Trail	Infrared	Infrared Infrared / Inductive Loop
10. River Park Trail	Multiuse Trail	Infrared	Infrared Infrared / Inductive Loop
11. Count on the Memorial River Bridge between Bismarck and Mandan	Multiuse Trail	Infrared	Infrared Infrared / Inductive Loop
Mandan			
A. Upper River Park Trail	Multiuse Trail	Infrared	Infrared Infrared / Inductive Loop
B. 3rd Street interesting with N/S Shared Use Path	Multiuse Trail	Infrared	Infrared Infrared / Inductive Loop
C. Collins and 1st Street (Downtown)	Street	Pneumatic Tube	Inductive Loop
D. Sunset and Old Red Trail	Multiuse Trail	Infrared	Infrared Infrared / Inductive Loop
E. Old Red Trail and 1806	Multiuse Trail	Infrared	Infrared Infrared / Inductive Loop
F. I-94 crossing at Sunset Interchange – I-94 Bridge Crossing	Multiuse Trail	Infrared	Infrared Infrared / Inductive Loop
G. River Trail Route at 1806 between 19th Street SE & the Heart River	Multiuse Trail	Infrared	Infrared Infrared / Inductive Loop

Exploratory Monitoring Program

Objectives

- Gain experience working with equipment
- Characterize traffic volumes at 18 locations identified by Steering Committee
- Identify locations for installation of permanent monitors

Multiuse Trail Monitoring

- Mixed mode (undifferentiated bicycle and pedestrian counts) acceptable for exploratory purposes
- Passive infrared monitors for all trail locations
- 2 infrared monitors deployed continuously as "quasi-permanent" locations (1 in Bismark, 1 in Mandan) to establish annual record (e.g., April, 2018 – March 2019)
- 2 infrared monitors deployed as portable monitors at 12 locations (minimum 10 days / location)
- Additional sites as labor allows

Street Monitoring

- Short-duration counts acceptable for exploratory purposes
- Pneumatic tubes for all street locations
- 8 sets of tubes (because of intersection monitoring) deployed as portable monitors (minimum 10 days / location)
- Additional sites as labor allows

Labor costs: summer intern $10,000 + portion of MPO staff person

Minimal Monitoring Program (with in-ground permanent monitors)

NOTE: Same locations as Exploratory Program, but with permanent, inductive loops on trails, streets

Objectives

- Establish long-term monitoring program with permanent, in-ground monitors
- Characterize traffic volumes and trends at 18 locations identified by Steering Committee

Multiuse Trail Monitoring

- 2 integrated infrared-inductive loop monitors deployed permanent locations (1 in Bismark, 1 in Mandan) to establish annual record and provide separate counts by mode (i.e., bicycles and pedestrians)
- 2 infrared monitors deployed as portable monitors (minimum 10 days / location)
- Summer intern hired for deployment and analysis
- Additional locations added as labor allows

Street Monitoring

- 4 permanent inductive loops installed at two locations (segment counts, not intersection counts)
- Pneumatic tubes for two locations
- 4 sets of tubes (because of intersection monitoring) deployed as portable monitors (minimum 10 days / location)
- Additional sites as labor allows

Labor costs: summer intern $10,000 + portion of MPO staff person

Comprehensive Monitoring Program

Objectives

- Establish long-term monitoring program with permanent, in-ground monitors
- Characterize annual average daily trail traffic (AADTT) on every mile of trail and annual average daily bicyclists (AADB) on all arterials and collectors

Approach and Assumptions

- Follow FHWA Traffic Monitoring Guide (TMG) guidelines
- Establish permanent monitoring stations for development of factors for extrapolating short-duration samples and conduct short-duration samples on entire network

Permanent monitoring stations

- Establish minimum of three permanent monitoring stations for every "factor group" or "pattern type" for development of adjustment factors and estimating AADT and AADB from each short-duration sample
- Anticipate three factor groups: commuter, recreational, mixed traffic
- Total estimated permanent monitoring stations: 18
    - 3 each for commuter, recreation, and mixed patterns on trails
    - 3 each for commuter, recreation, and mixed patterns on streets
    - for both trails and on-street bicyclists
- Fewer permanent stations may be required if some patterns not identified (e.g., commuter on trails; recreational on streets) or if MPO is willing to accept possible loss of accuracy in extrapolation associated with using factors from recreational patterns to extrapolate counts from commuter location, etc.
- 9 infrared trail monitors (assume mixed-mode traffic sufficient)
- 9 in-street inductive loop monitors

Short-duration monitoring stations

- Assume short duration samples taken annually on every mile (segment) of trail excluding segments with permanent monitors
- Assume short duration samples taken biannually on every mile (segment of arterial and collector) in road network

Multiuse Trail Monitoring

- 70 miles of trail
- 9 permanent monitors
- 61 miles for short-duration monitoring requires 610 monitoring days
- Given 10 days/location and 90 day monitoring period (June, July, August), require 7 portable monitors
- Costs can be reduced by decreasing number of permanent sites and reducing emphasis on matching pattern types for extrapolation, increase length of segment to be monitored, or reducing frequency of short-duration sampling.
- Example: 6 permanent monitoring stations and 3-4 portable counters would enable monitoring entire network in one summer if segments were two miles long
- Cost estimates for comprehensive trail monitoring
- Labor costs: summer intern $10,000 + half-time MPO employee $35,000 = $45,000

Street Bicycle Monitoring

- Bismarck: 344 center lane miles, 1200 lane miles
- Mandan: 103 miles of paved streets
- Assume 100 miles to be monitored, one mile-segments (arterials, collectors, selected local roads)
- 9 permanent monitors
- 91 miles for short-duration means 182 deployments
- Need 20 portable monitors
- Costs can be reduced by decreasing number of permanent sites

Probable Program Costs

It is important to note that the costs of counters were obtained through conversations with vendors and review of vendor websites in September 2017. The costs depend on the features of particular devices and the vendor, and they sometimes involve tradeoffs against capital and labor. For example, some devices offer automated transmission of data, but at a cost of a few hundred dollars per year. Transmission eliminates the need for manual retrieval of data but increases annual costs. Costs are presented with and without a 25% contingency. The reason for the contingency is to account for maintenance and replacement of counters if necessary due to malfunction or vandalism.

- **Exploratory:** $21,000 - $48,500, including 25% contingency
- **Minimal:** $78,310 - $109,250
- **Comprehensive:**
    - Trail monitoring: $9,000 - $80,500
    - On-street bicycle monitoring: $77,000 - $117,000 plus data transmission costs
    - Total (trail and on-street monitoring): $86,000 - $195,500

As noted, potential costs vary widely: TRAFx infrared monitors, for example, cost $2,300 for the first unit and only $550 for each additional unit, while each Eco-Counter Pyro costs $2,900. The Eco-Pyros come with data transmission capabilities and more advance analytic software. An exploratory program is recommended to obtain information about traffic at sites before a minimal or more comprehensive program is established. This approach will help ensure that the costs of installation associated with inductive loops is incurred only when local program operators are confident a site will be a useful permanent monitoring location.

FUNDING SOURCES FOR NON-INFRASTRUCTURAL IMPROVEMENTS

Agencies seeking to fund non-infrastructural bicycle and pedestrian programs have sought funding opportunistically. For example, in the Cincinnati metropolitan region, the OKI Regional Planning Commission received a small grant from FHWA to initiate monitoring. In other cases, nonprofits like the Rails to Trails Conservancy have worked with local officials to initiate bicycle safety and monitoring programs. Potential sources of funding worthy of exploration include:

- FHWA grants
- ND DOT's Transportation Innovation Program (TRIP)
- Philanthropic organizations
- League of American Bicyclists
- AARP
- Other nonprofit and advocacy organizations
- Partnerships with private organizations, institutions, health insurance and service providers, and local businesses (partnerships can leverage both financial and in-kind donations)
- Other agencies interested in particular facilities, including Economic Development Associations and/or park districts.

APPENDIX A:
Public Open House Summaries

To:	Steve Saunders Bismarck-Mandan MPO	From:	Fay Simer, AICP Stantec
File:	Bismarck Mandan Bicycle and Pedestrian Plan Public Open House and Engagement Summary	Date:	March 30, 2017

BISMARCK-MANDAN BICYCLE AND PEDESTRIAN PLAN PUBLIC OPEN HOUSE SUMMARY

MEETING OVERVIEW

On Thursday March 2nd from 5:30 to 7:30pm, the Bismarck-Mandan MPO hosted the first public open house for the Bicycle and Pedestrian Plan at the Bismarck Parks and Recreation Community Room. Over 35 people attended the workshop and gave input on bicycling and walking in Bismarck and Mandan. Meeting attendees provided feedback through comment cards, describing their comfort level on different facility types, identifying desired routes and destinations, and conversing with staff to identify other important issues.

Key questions public meeting attendees were asked to explore included:

- What are current experiences and issues along roads in Bismarck and Mandan?
- Where are preferred future routes?
- Which types of facilities are most comfortable for bicycling and walking?
- Which types of facilities will encourage more bicycling and walking in the future?

The meeting was arranged around six different interactive stations which educated attendees about the upcoming plan and asked for feedback on preferred routes and different facility types. The six stations included:

1. Welcome
2. About the Bismarck-Mandan Bicycle and Pedestrian Plan
3. Comfort Continuum
4. Routes I Would Ride
5. Future Bike Parking
6. General Comments

Meeting attendees were first asked to identify what type of cyclist they were and learn about the importance of walking. Most participants identified as "strong and fearless" bicyclists (20 participants), though many were also "enthusiastic and confident" (11 participants). Only a few participants in the meeting were "interested but concerned" (4 participants) or "not able or interested" (1 participant). Figure 4 illustrates the different characteristics of the workshop participants. Nationally, these numbers are quite different. According to the Oregon Transportation Research and Education Consortium, most riders in the United States are considered "interested but concerned" (53 percent). In fact, only one percent of the population is strong and fearless. Figure 5 illustrates these national trends. The high percentage of strong and fearless riders and enthusiastic and confident riders at the Bismarck-Mandan open house is likely a reflection of residents who are excited to be a part of the bicycle and pedestrian planning process.

Figure 1: Station 1

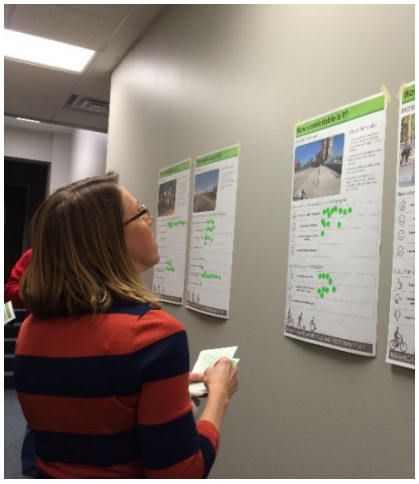


Figure 2: Station 3

Figure 3: Station 4

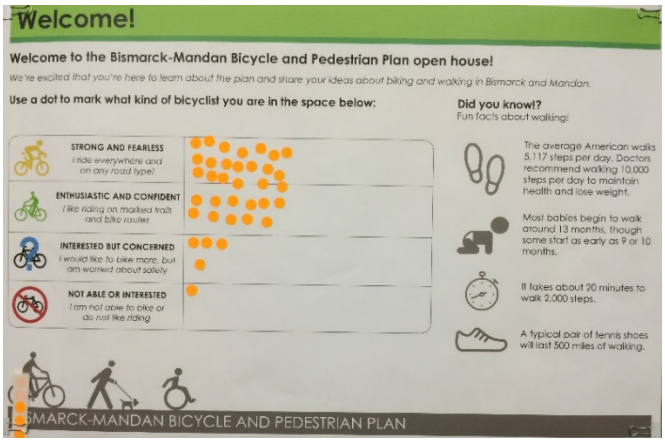


Figure 4: Participants were asked to self-identify their comfort level as a bicyclist (Station 1)

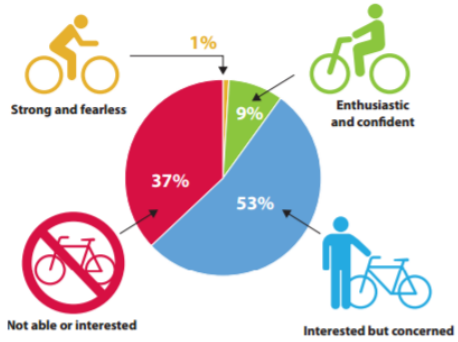


Figure 5: Bicyclist Types in the US

FINDINGS VIA "COMFORT CONTINUUM" STATION AND ONLINE SURVEY

In Station 3, participants used dots to mark their perceived comfort on different bicycling and walking facility types. Participants were then asked if this facility was available, would they choose to walk or bike more. Figure 5 below illustrates an example of one of these boards.

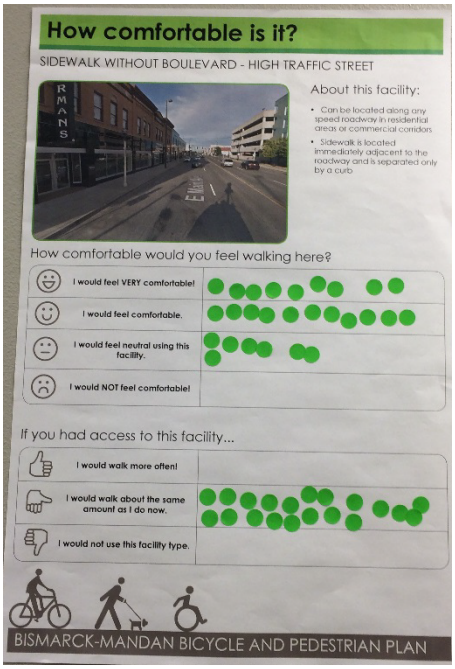


Figure 5: Comfort Continuum Activity: Perceived Comfort of Sidewalks without Boulevards (High Traffic Streets)

This activity included 13 different facility types:

Bicycling Facilities:

- Off-road Trail
- Protected Bike Lane
- Traditional Bike Lane
- Buffered Bike Lane
- Side Path
- Unmarked Route (low traffic)
- Signed Route

Pedestrian Facilities:

- Sidewalk with Furniture Zone
- Sidewalk with Boulevard
- Sidewalk without Boulevard (low traffic)
- Sidewalk without Boulevard (high traffic)
- Crosswalk with Median
- Traditional Crosswalk

Generally, facility types that are separated from traffic, such as protected bike lanes and off-street trails are considered the most comfortable and most likely to generate additional biking and walking in the community. Facilities that are least comfortable do not prioritize bicyclists and pedestrians, including signed routes. It is important to note that, typically, the facilities that were viewed as the most comfortable were also the most likely to encourage more biking and walking.

This activity was repeated in an online survey, which attracted 282 participants from across Bismarck and Mandan. Survey participants were asked to score their perceived comfort and likelihood of using different pedestrian and cycling facilities. Participants were also asked to share how often they bike and walk and their knowledge of traffic laws.

The comfort continuum activity was also repeated at four kiosks in high-traffic locations throughout Bismarck and Mandan. At the kiosks, participants were asked to rank their comfort level in different facility types (no question of if the facility would increase their desire to bike or walk). A focus group with city leaders also followed this format. Photos of kiosks are included in Figures 6 and 7.

All three activities identified separated facilities, such as protected bike lanes and sidewalks with boulevards or furniture zones as the most comfortable and likely to encourage new users. A summary of survey and comfort continuum results is included on the following pages. The first page highlights the most and least successful facility types and the second focuses on facilities with more "neutral" effects. The important thing to consider with these neutral facilities is that context matters for perceived safety and future facility use.

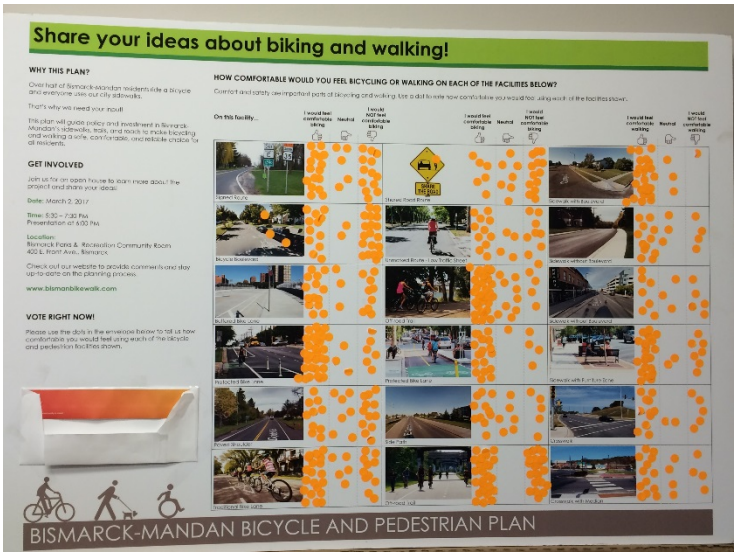


Figure 6: Community Kiosk Results

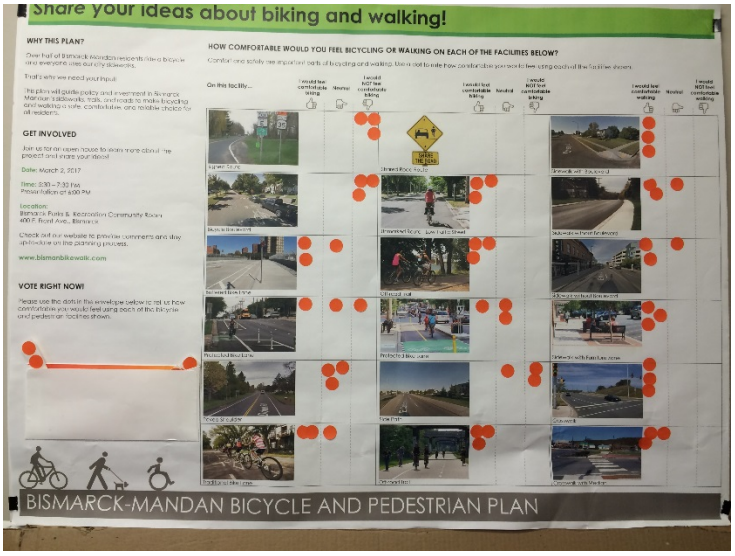


Figure 7: City Leaders Results

Stantec

Survey and Public Meeting Results

Facility Type	Overall Score (Out of 10 Points)
Most Successful Facilities	
 High traffic street, protected bike lane	9.4
 Off-road trail	9.2
 Sidewalk with furniture zone	8.9
Least Successful Facilities	
 Low traffic street, marked bicycle boulevard	6.3
 High traffic street, buffered bike lane	6.2
 Signed route	4.5

Stantec

Survey and Public Meeting Results

Facility Type	Overall Score (Out of 10 Points)
Neutral Facilities: Context Matters!	
 Enhanced crosswalk with median	8.0
 Sidewalk with boulevard	7.7
 High traffic street, trail shared with pedestrians, adjacent to street (side path)	7.1
 Low traffic street, unmarked route	7.1
 Medium traffic street, traditional bike lane	7.0
 High traffic street, sidewalk without boulevard	7.0
 High traffic street, traditional crosswalk	6.9
 Low traffic street, sidewalk without boulevard	6.5

FINDINGS VIA ROUTES I WOULD RIDE STATION AND WIKI MAPPING

In the Routes I Would Ride Station, open house participants were asked to identify barriers to bicycling and walking in Bismarck and Mandan and new routes they would prefer to ride (see Figures 8-11). Common barriers included dangerous intersections and crossing, trail maintenance, and roads lacking shoulders to bike in. Participants identified pedestrian routes in the eastern part of Bismarck along as a preferred route. For cycling, participants identified the need for a north-south route through Bismarck and facilities northwest of the city.

The public was also able to identify barriers and preferred routes online through the project wiki map (Figure 12). This process allowed the public to tag routes and comment on issues they have experienced. All comments from the public open house and wiki mapping process have been documented and incorporated into a new preferred route map which will guide the planning process.

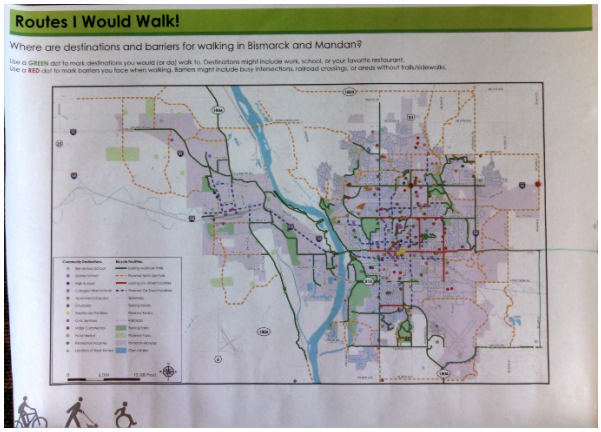


Figure 8: Barriers to Walking

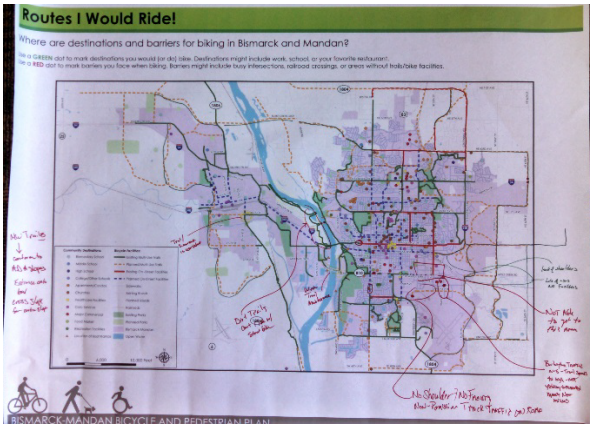


Figure 9: Barriers to Biking

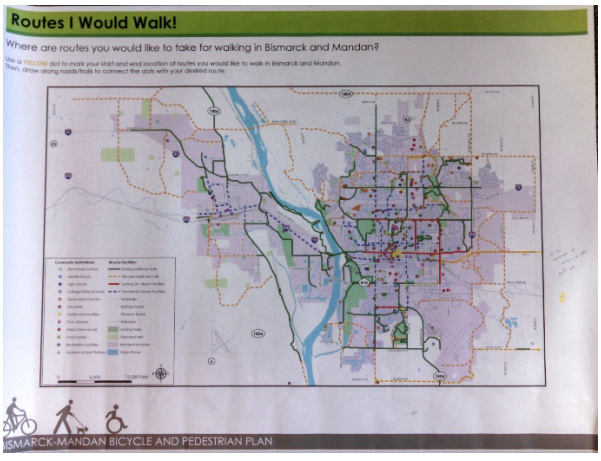


Figure 10: Routes I would Walk

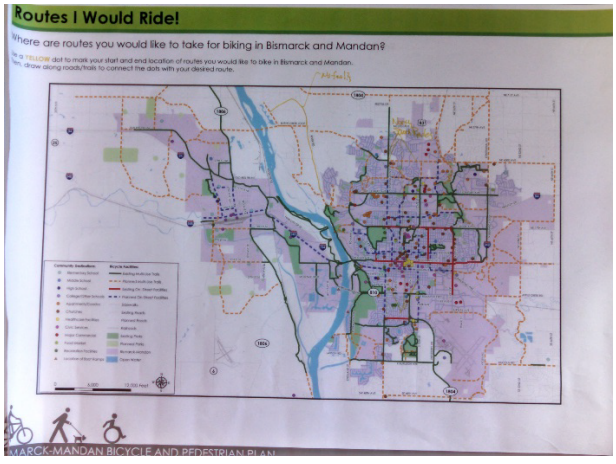


Figure 11: Routes I would Ride

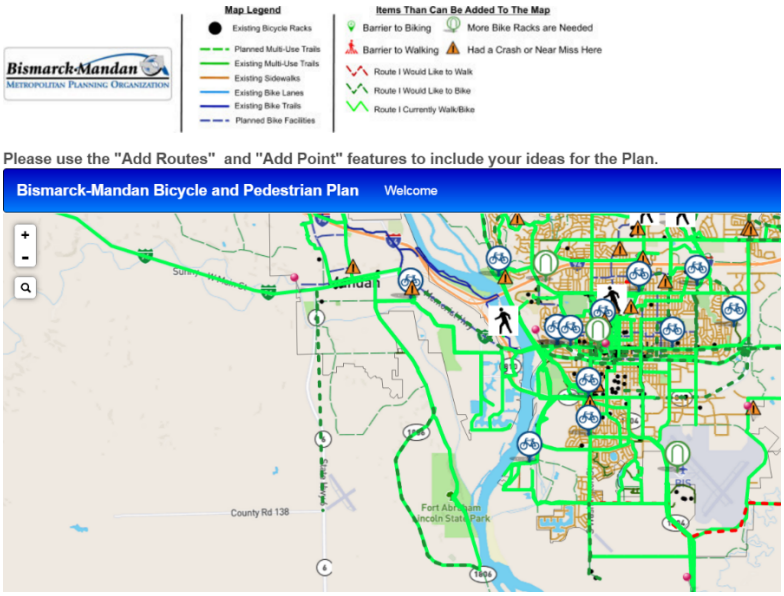


Figure 12: Wiki Map

FINDINGS VIA BIKE PARKING IN BISMARCK & MANDAN STATION

Participants were shown a map of current known bicycle parking (racks) around Bismarck and Mandan and were asked to add any additional locations they would like to see (Figure 13). No comments were submitted at this station. Many participants in the online survey identified the importance of additional bike parking in Bismarck and Mandan. These comments are included in the following section.

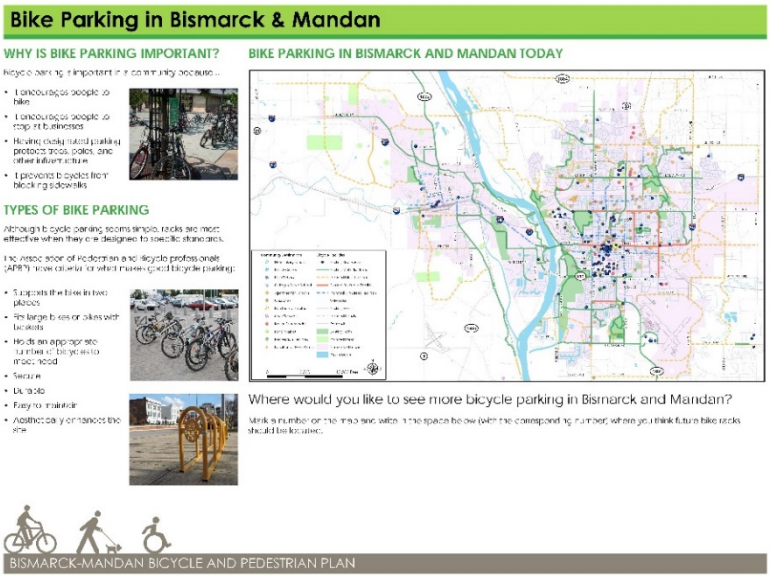


Figure 13: Future Bike Parking Map

ADDITIONAL COMMENTS

General comments were solicited at the public open house through comment cards and a large idea board (figure 14). Participants were prompted to comment in three areas: What are the benefits of biking and walking, what are the challenges you face when biking and walking in Bismarck and Mandan, and what do you hope to see in the future for biking and walking in Bismarck and Mandan.

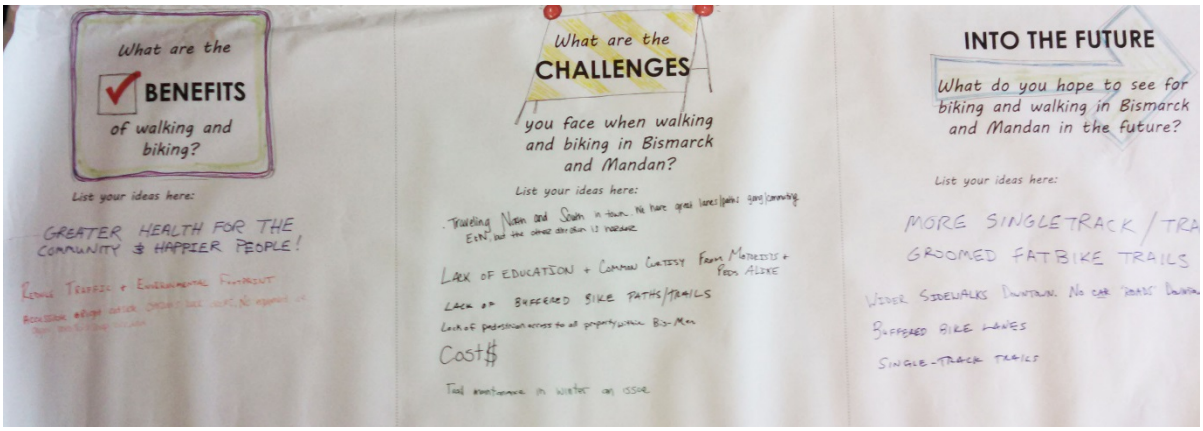


Figure 14: Open Comments Board

Comments were also solicited online through the website and the comfort continuum survey. All these comments can be divided into different general themes. These themes and a representative comment for each are listed below.

Education

- Trail Etiquette: "When bikers share the path with walkers there are some bikers who do not announce that they are behind you and passing you. This can be dangerous."
- Driver Behavior: "Education to motorists to watch for bikers and walkers."
- Other (education related): "Safety awareness for everyone."

Engineering

- Safety AND Comfort: "Anything that can be done to separate bikes from vehicles."
- Long-term Maintenance: "Keep trails well groomed, fix large cracks, control weeds growing through, good lighting"
- Network Connectivity: "Increase number of biking/walking trails and have them be more connected."
- Other (engineering related): "Hard to cross major streets as lights can turn quick."

Encouragement

- Winter Maintenance: "Better sidewalk and trail clearing during the winter months - snow and ice on major trails make it very difficult to exercise outside."
- Bike Parking: "More bike stands outside shops."

- Programming/events: "More advertising/awareness of the trails we do have. Maybe highlighting a week annually to raise awareness and encourage people to walk to work"
- System Amenities: "Make sure all trails are safe/lighted/in an open area with water fountains and restrooms."
- Other (encouragement related): "Plan neighborhoods and commercial developments around walkability and bikability."

Enforcement

- Pedestrian and Bicycle Rights: "More police and higher fines for traffic violations. People in this town don't pay attention or obey laws when driving which makes it frightening to walk or ride bike."
- Other (enforcement related): "It would be nice to see trails policed so more people feel safe. Officers on bike would be very cool!"

Other (no specific category): These comments typically included support or opposition to the Plan and the construction of additional facilities in Bismarck and Mandan.

All comments from these different engagement opportunities are listed on the following pages.

EDUCATION

Trail Etiquette

- Centerline painted on trails so walkers know to stay to the right ... not right down the middle or not to take the full width of the trail.
- Get rid of bicycle riders on the paths!
- I would love to bike more. As an avid walker, sharing the path particularly with young children and bikers, seems to me a safety hazard. Bikers come up on you so quickly and young children are so unpredictable in their excited behavior. It seems increased numbers of bikers on the paths may potentially be a problem.
- teach walkers not to jump when a bike rider says passing on your left. . teach walkers not to jerk their dogs when a bike rider says passing on your left - dogs will see and move but when jerked will seek to defend - as they should from my decades of experience walking a large dog 3-4 miles year around
- It is confusing for cars when bikers, who are supposed to follow the same rules of the road as vehicles, will ride to the right but then randomly come into the center of the lane. Also at stoplights, they will fly up beside all the cars on the right to get to the head of the line. Other cars cannot do that....so why can bikes?
- when bikers share the path with walkers there are some bikers who do not announce that they are behind you and passing you. This can be dangerous when I am walking my dog because she does not always stay to the right and I'm afraid she will get hit by a biker. I just wish that all bikers alert walkers in some way to let them know they are there.
- I'd also like to see improvement in how walkers and cyclists use the trails together. The "slow-moving traffic" of walkers tend to clash and cause issues with the "fast-moving traffic" of cyclists. Maybe it's more signs to encourage everyone to keep to the right half of the trail to allow faster-moving traffic to pass more easily. Or maybe it's a painted line down the middle of the trail to divide the "lanes". I don't think people walking realize that because of how much faster cyclists are traveling, they pass a lot of walkers. And it can be very frustrating for the cyclist to have to yell out "passing on your left" to every group of walkers, and then also wait for them to move out of the way. Typically this requires the cyclist to at minimum slow down and sometimes come to a complete stop waiting for the walkers to realize they are not the only ones on the trail. Could new trails be wider? So that two people could comfortably walk next to each other and still allow room for a cyclist to pass to the left of them? (Currently, two people walking comfortably next to each other tend to take up 3/4ths of the trail instead of 1/2 or 2/3rds) Thanks!
- Encourage pet owners to pick up after their pets. This winter was one of the worst for leftover poop piles left on the path. There were also occasions where the owner had bagged the pile and left the bag behind instead of disposing of it properly. It is unsightly and there isn't any real excuse other that laziness on the part of the pet owner not to clean up after their animals.
- Education to those who don't use the trails to bike or walk on a regular basis what the rules and etiquette.

- educating the public more on how bicyclists can ride in the road. Many people think they should stick to sidewalks.
- More awareness from drivers that bicyclists and walkers/runners are on trails and to look for them at intersections

Driver Behavior

- It's ultimately a personal decision, but enhance the bike/walking paths we have now, bike/walk lanes on streets are a waste of money. I ride a lot and would never use them as you can't trust drivers as many are distracted with their cellphones.
- Inform the public. Most of the reason I don't walk or especially that I don't bike on the roadways is because I don't trust people to watch for me. I know numerous people and have had it happen myself that they've been hit in a crosswalk or I have been cut off by a car while riding bike. Sometimes it feels like drivers are either annoyed or shocked that people are actually walking or biking."
- Bisman drivers do not pay attention to people on bikes
- Get drivers to watch for pedestrians and bikes! Most don't even in cross walks.
- Educate motorists on bicycle and pedestrian laws, to promote safety.
- Educate drivers to slow down and yield to pedestrians. Bismarck Mandan drivers ignore pedestrians in designated cross walk areas rather than yielding. It is dangerous and scary if you walk/ bike often.
- Create awareness for drivers to check before they open their doors into traffic.
- Train motorists and dog walkers to respect bikers and other walkers. Drivers don't respect bicycle riders.
- Education to motorists to watch for bikers and walkers
- Educate drivers to watch for bikers and walkers
- Education and awareness of drivers for bicycles on the road
- If drivers would actually stop at crosswalks, that would help too. I've noticed if there are flashing lights, they are more apt to stop. Even then, it is scary to walk on busy streets and hope drivers see you at lights. I run.
- Better crosswalks and driver education. I run outside, and have had at least one or two close calls by drivers not paying attention to crosswalks a year. Most of these relate to drivers making right hand turns on a red light, or drivers not paying attention in the dark.
- Better education for drivers, respect from drivers towards bicyclists and peds
- Educate the drivers about bicycle laws
- Bicycle education to drivers
- I often see cars go right by even when a walker is in the crosswalks. It is very dangerous in Bismarck to ride your bike on city roads. I do not feel comfortable at all. I often ride on the sidewalk even though I know I should be using the road. The traffic is in way too big of a hurry and they are crowding the bikes. I tell my children to avoid the streets. This needs to be addressed.
- education/awareness for drivers
- Public service announcements informing people about bicyclists on the road
- driver education

- Inform motorists of bike safety and laws
- Increased driver awareness
- More Public Safety Awareness ads
- Drivers don't look for bike when they are turning right. They look left for traffic, not right for walkers or bikers.
- Educate drivers that bicycles have a right to use the roadways
- It's more about the behavior of vehicle drivers. Everyone seems to be in such a hurry. . .
- teach drivers of autos bicycling hands signals. They think R hand signal means stop. And who knows what they think hand stop signal means
- Also, those bike lanes can sometimes be dangerous...for example on Divide....the bike lane is going along, but all of the sudden the one lane splits into a turn and straight lane and the bike lane is just gone. And what about people turning right off roads....I would likely not check for a biker before turning right off Divide onto a side street - but those lanes are there and just unmarked through those intersections - dangerous!
- More education for drivers
- Slow traffic down
- Knowledge is power. We need the general public to understand that cyclists have the same right of way as a motor vehicle. A public awareness campaign would be nice.
- Driver education efforts.
- There is no vehicle respect for walkers or bicycles riders. If we share the road with vehicles we feel like targets.
- If peeps would stop texting while they drive, I would feel much safer on foot and on a bike.
- Education for drivers. The people in this town drive like maniacs (obviously a generalization and not everyone drives terribly).
- More options away from traffic given the high rate of distracted drivers.
- public and driver education on bicycle riding
- I would like to see an education campaign for drivers on pedestrian awareness. I myself am wary of walking/cycling sometimes because it seems like drivers aren't aware of, or just don't look for pedestrians. It's really scary sometimes trying to cross the road at an intersection when someone (usually turning left) is only waiting for a break in the traffic, and just doesn't look for pedestrians. It's like they have blinkers on.

Other

- Education
- education for walkers, bikers and drivers to keep everyone safe
- Safety awareness for everyone.
- Public education for both Drivers AND cyclists on how to share the roads safely and courteously
- Lack of education & common courtesy from motorists & peds alike
- Education on laws of the road.
- Education on DOT license.

- I really feel that in addition to marking the lanes, we need a public information campaign that explains to the residents that 1. This is a normal thing to see in a city. 2. Yes fast-moving bikes DO belong on the road and not on sidewalks with pedestrians. 3. The rules that motorists must follow with regard to these marked bike lanes. Thanks for accepting input. I think it will take several years for the people from around here to get used to bike lanes and sharing the road with bicycles, but it is an important addition to our town and I believe an educational campaign is in order for the sake of safety.

ENGINEERING

Safety and Comfort

- better buffered bike lanes, maintaining the paint on the streets that designate bike lanes, more landscaping on boulevards to protect peds from vehicles, noise, and pollution
- Designing for comfort and safety
- More bike lanes or allow bikes to ride on the sidewalks. There needs to be more protection for walkers and bikers and I don't see any reason why they can't share the same areas as walkers and bikers like they do on the park trails.
- Anything that can be done to separate bikes from vehicles. Drivers in this community do not see and/or respect bike paths painted on the road. I would love to bike more with my family, but won't bring my kids on the paths marked on streets. I have seen way too many close calls in this community to bike on the streets.
- better marked bike lanes
- separate bicycling and walking Lanes. Not every bike rider goes as slow as walkers
- Definitely let bikes ride on sidewalks. Bigger trails/wider blacktop paths
- Just having signs seems to give drivers the impression that it's completely optional/not necessary for them to stop or for a pedestrian waiting to cross.
- More protected bike lanes.
-

Long-term Maintenance

- Expand the path north of pioneer park and keep up the maintenance.
- Keep trails well groomed, fix large cracks, control weeds growing through, good lighting
- Just better protection from traffic
- Making sure safety will always be first with riders/walkers other than trying to make vehicles have more roadway.
- Better maintenance on bike/walking trails
- fix the Sidewalks - so many have cracks and or raised sections of raised water pop ups. These decrease walking for the less stable and create hazards when passing others is needed
- Perhaps more maintenance of sidewalks?
- Just continue to keep the trails in good condition, safe and clean.

- Don't put street lights or utility poles in the middle of the sidewalk (see Boulevard Ave between Washington and 3rd St.). Better enforcement of sidewalk maintenance. Or, the city should take over sidewalk maintenance to keep them clear in the winter and repair tripping hazards on a timely basis.
- Develop an on going maintenance plan for up keep on existing trail system. I know we are currently doing some maintenance, but we are falling behind

Network Connectivity

- Inspect and recommend improvements to current lack of sidewalk such as on 4th in front of Governor's residences
- more sharrows, more share the road signs. Suggest making roads like B or C st bike boulevards, where car traffic is diverted to other streets at intersections
- Connect more trails like one from east divide along railroad tracks to volk street.
- Having sidewalks on both sides of the street; there are a number of streets where there is just one side walk i.e. just on the west side vs. both the west and east sides of a street.
- More bike trails throughout city. Driving on the street is dangerous.
- I do NOT like the current bike lanes and would not use them. I think they make the road too narrow when added to an existing roadway.
- I don't care for the bike lanes at all, won't ride in them and think they narrow the driving area too much when added as an afterthought.
- More trails! Especially between Bis and Mandan
- Have a bike trail that connects and goes around the city
- Increase number of biking/walking trails and have them be more connected
- I think some of the marked bike lanes only last for a couple of blocks before the marking ends. I feel much less protected when the marking ends so I get on the sidewalk, which is a problem where sidewalks are narrow. I'm thinking specifically of Divide Ave east of 19th Street. Also, in this location there are lots of trees and bushes that overhang the sidewalk. Trimming some of these would help.
- Bike lanes please
- More rural trails for bikers and walkers. We live north and the trail quits on north part of Washington.
- I think having more bike/walk trails as well as protected areas to walk along the street would help tremendously.
- Build a walking/biking path on the east side of Bismarck! Could start with building a trail from Lincoln around the airport to connect with existing trail on University Dr. Need something east of town along HWY 10 also. This part of town is so very isolated for walking and biking. Roads have too much traffic to walk/ride along nonexistent shoulder of roads.
- Connect the trail from double ditch all the way to pioneer park
- It would be nice if more of the trails were connected together
- Additional route across the river further north, even utilizing the interstate bridge if something can be added to be safe to bikers, runners, and walkers. Bismarck side could

come right off the trail right there (sidewalk over the interstate), Mandan side would just dump the trail off into the Ski Trail, the Missouri Natural Trail.

- More safety features and more designated sidewalks/paths. I've seen multiple people walking in the street at 9th and Bowen because of lack of walking space especially with added snow. I would LOVE a trail all the way into Lincoln. There's a few daily bikers and kids riding bike on a very narrow roadway.
- Make sure bike lanes go through busy intersections. That is were they are needed most. Wide streets with bike lanes and sharrows aren't really needed. It is the busy and narrow streets were they are needed most. I would like to see a strong North/South route somewhere with decent grade. 26th street is a bad joke. 4th street is the best route and could use some improvement in the narrower busy parts and through downtown (switch to 3rd or maybe 5th).
- Make sure all walking/bike trails are connected with safe crossings. I use the pedestrian cross lights every time they are available. I would like to see more of them where you have to cross traffic.
- The bike paths in Bismarck and Mandan are wonderful. I've ridden them since they were first developed ~30 years ago. More paths would be great. I see a need for designated/marked paths to get from State Street at Puklich over to the Pebble Creek loop. Also from the bus depot to the Airport Rd loop to U of Mary. With these additional loops a complete loop of Bismarck would be complete. It would be so nice to have a bike path from Pioneer Park along 1804 going north toward Wilton; even a full sized road shoulder would enhance that route. A number of years ago there was talk of such a route, but I've not been able to find it. I'm not as familiar with Mandan, but the southeast and south Mandan paths from the river to Ft. Lincoln are wonderful. Is there connecting routes to the north Mandan paths? I miss the route along the west side of the river from Memorial Bridge to near the refinery; sand from the 2011 flood blocked that very nice route. I'd appreciate more 'wilderness' type paths that aren't so close to traffic; like along the river on either side. Is there a way to get out to McDOwall DAm?
- Connect existing bike trails and improve trail access through down town area, maybe run rec trail adjacent to railroad track in down town Bismarck. Install bike lanes on the strip between Bismarck and Mandan. Extend existing bike trails south to desert, east to McDowell Dam south of Mandan to Graner Bottoms or Huff using old railroad bed, and north of Pioneer Park along River Road and river bottoms.
- Walking 🚶 trail from Lincoln rd around prairiewood subdivision. There is nothing for us out here farther south.
- Widen all hiways within 30 mile radius of Bismarck so shoulder is safe and smooth for bike travel. I live 35 miles from Bismarck and bike in regularly. The Moffit road is very rough and has no shoulder and I consider it very unsafe. I'm very paranoid of the rural highway texter that will pick-off me on my bike while riding on a narrow shoulder. This needs to be addressed.
- The dedicated trails in this town are one of the reasons I moved here for a job. Had it not been for them I probably wouldn't have considered this place. Please keep building

them. Build more. Dedicated trails, separate from texting motor vehicle drivers, are the way to go.

- More trails that are not glorified sidewalks. The trails can follow their own, direct route between destinations. The hay creek trail is a good example. The gravel mills trail is another good example. Mills trail is special since it is gravel. More gravel trails would be appreciated and I'd have to assume would be cheaper install and maintain. Something that goes west from Pioneer out to Christmas Tree island would be fantastic.
- Connect your trails a little better, add more bike lanes like we have on Rosser. We have some pretty good separated bike and walking trails on the extremities of Bismarck / Mandan. But I feel like it's tough to get from the north side to the south side in both towns unless you want to ride on the street without a bike lane.
- More trails would be great. I do not feel comfortable riding "in town" with my children due to not being able to ride on sidewalks.
- More trails!
- Honestly as a bike rider, make wider sidewalks for bikes to go on. Cars don't pay attention to bikes on the street and it's dangerous for bikers. Make more paths for bikers to go on and people would bike more.
- Connectivity of the current multi-use trails and bike routes. Better coordination between city routes and park/rec trails. Bicycle/walking consideration of roadways and connectivity of new land development.
- Many areas on south side town not connected with sidewalks. Need to fill in gaps. Paths off from the roads that are quieter and have trees encourage more walking and biking. Love the trails.
- There needs to be more connected trails through out the city to parks and connecting to trails going outside the city. Several people ride bike long distance on highways outside of bismarck and it isn't safe. There would be more commuting if there were trails along side highways. For example, out on highway 10 to McDowell Dam, no trails for walking or riding bikes.
- Build more bike and walking trails off the road. If a new park gets built down by sibley, there should be a walking trail continued from burleigh on s Washington to 48th Ave SE.
- With all the walking/biking trails Mandan has, you would think Bismarck would get on board. There should be long-distance trails of similar sort, like a trail out to McDowell Dam. It would be a great exercise plan for many in our community. I'm sure there are other "destinations" that could be incorporated around the city as well. . . maybe out to University of Mary, for instance?
- If there were sidewalks from 12 Street to Walmart I would be able to bike to Walmart rather than take the bus
- The two cities need to have more connectivity with paths and trails that are accessible for walkers and bikers alike. Some areas (of either city) are not accessible to one or both, so it makes travel/commute/exercise options limited at times.
- More permanent bike lanes and shared paths.
- More walkways and bike paths.

- We need more bike lanes and less on street parking on narrow streets. My street is difficult to bike down because of unmarked intersections and on street parking making it unsafe to be seen by traffic.
- expansion of multi-use trails
- More trails on the north side of Bismarck
- More bike trails, specifically on 43rd avenue by the new high school
- More sidewalks and pedestrians friendly refuge at large intersections
- Bike paths and sidewalks that reach a destination. Too many end before reaching a main road putting pedestrians in danger as forced to walk on the shoulders of the road, many of which are too narrow, etc. 19th street south of 43rd is prime example & a road used by wheelchairs forcing them to ride in the main lane. You have to consider handicap in this review. 43rd in general and north state street are frequent walk & bike routes but dangerous due to high traffic, high speeds with limited shoulders. We need to look into more northbound safe pedestrian routes with more growth in business and housing.
- more connected bike paths to create longer distance rides in a safe environment. Adults may be fine riding on the road but my kids are not and they would be interested in riding further distances if we could string more bike paths together.
- More trails! we are a big user of the Bisman trail system
- Continue connecting the trails to each other with safe transitions so we can bike (and walk) for miles all over the Bismarck/Mandan area without having to fight with traffic that, sadly, isn't so accommodating most of the time. Thanks for work you have done and continue to do!
- There could be more pedestrian paths in neighborhoods. Bismarck has done a great job allowing cyclists and walkers to get to different areas of town, but once you get to that area, it's hard to get to a specific spot. The connector trails are great though.
- More connected walks with family destinations
- More side walks and/or riding trails
- Better bike paths off of main/busy roads!
- I'd like to see a trail extending from the path that parallels Washington street to Sibley park.
- better system connectivity
- We need clear 3-season bikeway to and around downtown
- Safer bike facilities along highways. More trails and protected bike lanes. The Parks and Rec system is a good start, but it is not connected enough.
- Traveling north and south in town. We have great lanes/paths going/connecting E + W but the other direction is harder.
- Lack of pedestrian access to all property within Bis-Man
- Need buffered bike lanes
- Wider sidewalks downtown. No car ‘roads’ downtown (peds only)
- Lack of buffered bike paths/trails
- Bismarck Expressway needs a continuous bike path from Main St to Expressway Bridge.

- Per the request for plan input, I offer the following thoughts: Both North - South and East - West bike travel through downtown is difficult and dangerous. Turn lanes force cyclists into the middle of the road and motorists don't understand this. This is a main shopping/dining area and should be more bike friendly. Bike access to the mall is poor except from the north.
- I live on Sumter Circle in Century Park. We only have one block of bike/walk path on Century Ave. between Roosevelt Dr. and British Dr. This is unacceptable. There are so many children that walk to school (both Sunrise and Legacy). Century Ave. is very narrow east of Patriot Dr. and there is no place but the ditch for people to walk. This makes riding a bike impossible. I have no idea why a path hasn't been a priority the whole way from Centennial east until Century ends but I sure hope it becomes one soon.
- Just remembered, it would be very helpful if there was a sidewalk to Walmart past Expressway/South 12th intersection. It is semi dangerous as it is now to go by bike.
- River Road north of Burnt Boat is a popular route which I take on Sunday mornings only because of no shoulders. Many bicyclists do ride this route and it is extremely dangerous without shoulders.

Other

- Also, has ANYONE from the city ever tried to cross State Street at Divide on foot? I bet if you did, you'd give pedestrians more time to cross.
- Better traffic signal control timing, cars stop for red but get tired of waiting and they go minutes before light turns green all night long. Bikes don't wait either too long of a wait.
- Safe walking/ riding areas
- Since this is the only place to comment I will give you my thoughts on the bike lanes on our streets. They are a joke and total waste of money. You are giving people a false sense of security and very few people use them because they are dangerous. Intersections are especially dangerous, especially where there are turning lanes. This is coming from someone who rides 20 to 30 miles everyday. Not one of my biker friends ride on the streets. There is no room on our streets to put in safe bike lanes and if you do so, you're only going to impede traffic on already congested streets. This town needs to be more concerned about traffic flow then bike lanes. Our traffic department need to figure out how to better time the traffic lights. There are sidewalks all over town for pedestrians so I don't know why that's even a part of this survey. If you want bikers to feel safe, put in more bike and pedestrian paths and quit wasting our money on the bike lanes on the streets. For the number of people who use them it's not worth it.
- I do not believe that the there is a need for bike lanes in Bismarck. The current roads, sidewalks and trails are more than sufficient. I am not a fan of existing bike lanes that have been added. I think they give bicyclists a false sense of security. A right to be on the road isn't going to keep them safe in an accident with a vehicle, I don't think bicyclists should be on the road. Just a note, I'm an avid bycylist, I utilize trails/paths that are not also roads
- Don't take away driving lane space. The trails parks and rec has are enough. Too many bike riders are on the streets NOT following the traffic rules.

- Hard to cross major streets as lights can turn quick.
- Less wait to get a walk signal at a busy intersection. And more time allowed to cross (for people walking). More protection from cars turning since even though the light says "walk", cars turning (right or left) have a green light and many ignore pedestrians trying to cross. More yellow flashing lights at locations that the bike trail crosses a road (that isn't at a stoplight.)
- Intersection improvements that make it safer for people walking and biking. Most traffic lights don't recognize bicycles so often have to push the pedestrian walk button or wait for a car to come and trigger the green light.
- Please put a pedestrian bridge across south Washington near solheim elementary. It is very dangerous and I see high speeds and passing constantly. After the walking light near the school cars seems to accelerate like it's a race track. I lived in Minneapolis for 10 years and I have never witnessed something so dangerous at all hours of the day and night.
- Some lights seem only to be triggered by mass of a vehicle- for instance, the five way at C and Ward Road....very difficult for a bike to get through legally without a car coming along. And no, I will not get off my bike to push a button and pass as a pedestrian.

ENCOURAGEMENT

Winter Maintenance

- Also, snow removal along sidewalks often makes corners difficult to navigate on foot.
- Better snow removal on major bike routes, and around schools.
- Ensuring use during winter months as well, meaning snow removal
- keeping some paths clean during winter months
- Better sidewalk and trail clearing during the winter months - snow and ice on major trails make it very difficult to exercise outside - we typically choose to run in the streets due to safety concerns on the sidewalks and trails
- better snow removal
- If the city is serious about this then they need to get serious about snow removal. This is all well and good for summer months but I want to bicycle commute in the fall and spring and on nice winter days. They cannot just do snow removal in the bike lanes when they get around to it. For example this past winter it took months before the Expressway Bridge bike/walk lane was cleared of snow. The routes with a dedicated bike lanes like Divide Avenue were narrowed and with parked cars there was no longer a bike lane. Likewise, the city has commitments to clear snow off the sidewalk on the north side of Century Ave and did a poor job of getting to it. When they finally did they went around the light poles creating a barrier to both walking and biking that rendered the snow removal useless. This has to be more of a priority if they are serious about this. I want to ride bike and other people want to walk in the winter and you can't do it in many places because the city's resources are stretched to thin. In my experience the city is worst offender of the the city's own ordinances about snow removal in a timely manner. Cannot use the excuse that

the snowfall was extreme and then have the commission relax the ordinances to give themselves a break. That just shows they are not serious about it and are just doing this to pat themselves on the back and declare the city bike friendly when it is not. They need to dedicate more resources and money or this is pointless.
- Clear the paths of ice in the winter
- For walking, maybe more protected paths for winter months or for bad weather days? Or more indoor facilties with free walking tracks. A lot of people go tog the mall during the winter to walk but that gets old after a while and there is no indoor place to walk in mandan.
- Keep the biking/running, walking paths clear as much as possible in the winter. The Bismarck Parks Dept does a pretty good job, but I have notice once you get over the bridge to Mandan, it normally hasn't been cleared.
- Keep walkways clear of snow.
- Mitigate Winter!
- Get rid of Winter!
- Encourage and enforce city snow removal policies. Early this winter we had a lot of snow and while it was unusual, snow removal policies were not enforced even a week or two after all of the snow had already fallen. Pedestrians we're walking in the street, even busy streets like Washington, and it was impossible to take an electric wheelchair out to go anywhere.
- Clearing snow from sidewalks and walking/biking trails. We had weeks of no access on major sidewalks adjacent to schools and other high traffic areas this year that made walking and riding unsafe.
- Trail maintenance an issue in winter

Bike Parking

- More bike parking, covered bike parking (in the winter)
- There is a real shortage of bike racks throughout both cities
- More bike stands outside shops
- More bike racks
- more bike racks at businesses out front
- More bike parking
- Build more bike locks.
- covered bike racks
- more bike racks
- More public benches and bike racks in frequently trafficked areas
- And bike racks when you get there are scarce except for Target.

Programming/events

- Walk events to encourage everyone to get out there
- More accessible maps
- programs (or incentives) to discourage driving and/or encourage walk/bike
- Offer bike rentals

- Adding bike shares around town on the current bike path
- Crossing guards on the way to schools so you could send your kids without worrying about them crossing busy streets like Washington or Century.
- More advertising about using the trails! Also talking about how safe they are. City activities that bring awareness.
- have the trails better marked and showing on the maps and trail system. Showing the trail path just not the location.
- A bike share program
- Tout the health benefits.
- Share cost of printing a trail map for both communities.
- Create a bike-share program
- Get some events together. Like a bike meetup and just bike all over Bismarck. would be sick!!!
- More advertising/awareness of the trails we do have. Maybe highlighting a week annually to raise awareness and encourage people to Rosen or walk to work.
- "Produce city-wide bike map similar to City of Madison's."

System Amenities

- Keep trails mowed and spray for mosquitoes
- More parks and accessible wild areas that aren't private property or lifeless plots of land, with more emphasis on nature and less emphasis on "outdoors". They're not the same concept.
- Lighted bike/walking paths
- Better lighting and clear visibility for safety.
- I think lighting and clear visibility for safety needs to be considered.
- Bathrooms, drink vending, and post 5pm weekday and weekend snack kiosks along walk/bike trails. People have kids. Kids go to the bathroom all the time and get thirsty. Wining kids are a HUGE deterrent from doing anything.
- Rest facilities- shaded areas, benches, pet water, waste recepticals, play areas. Restroom facilities. Safety. A couple walk paths are a bit scary and isolated if you are alone. I'm glad I have a large dog and my husband usually with me.
- Maintain single track mt. Bike trails as part of the city budget
- Provide more (covered?) benches and waste receptacles along paths, mile markers would be a nice addition
- Make sure all trails are safe/lighted/in an open area
- rest stops, vending machines especially for families with small children who decide they are hungry or thirsty but also to use the restroom
- keeping some paths lit during evening/dusk hours
- We need more water fountains! Take a look at how many water fountains are around the Red River trails in Grand Forks, for example. If we had more water fountains on our Bismarck multi-use trails, I'd go for more/longer walks and not worry as much about the time of day due to heat.

- List of routes....better crosswalks....how about some walk/bike bridges over high traffic streets...better lighting along paths. Bike rentals in parks.
- Better lighting
- good lighting in the evening
- Plant more trees along trails. Replace trees that have blown over in past wind stormes along River Road trail.
- More streetlights
- Better trails with NO CARS able to disrupt them, like on Burnt Boat road and along the river.
- On paths that go under railroad and traffic bridges make awnings or something so you do not have to ride, run or walk through a layer of pigeon poop. Also no fun to worry about being pigeon pooped on either. Thanks!
- Some paths could be better lighted at night.
- Illuminated crosswalks
- If you want to spend a bunch of money, because that is really all you are looking to do, spend it on lighting up the bike trails. Those of us that ride bike and run early in the morning would sure appreciate some light.
- I would also like to suggest some watering stations on the beautiful trails we have. I love to walk/run with my dog but find we need water stops.
- More off road dirt trails for mountain biking/hiking.
- Particularly in Mandan we need trees/shade, basic restrooms similar to the ones along the Sertoma trail. The trail south toward Fort Lincoln would be more useable with some relief from the sun and bathroom access. Drinking water fountain/availability along the bike trails would be a bonus.
- Better rest rooms and drinking fountains on trails especially pet fountains
- More outdoor seating encourages more outdoorsy, healthy living.
- I wish there were more bathroom facilities and garbage cans along the trails in town but that's about all I can think of.
- More trash receptacles on non residential paths, more dog bags, lighting enhancements, emergency phones
- Single track trails
- More single track/trail groomed fat bike trails
- How about some trees for shade? The existing paths are good, but no one wants to get skin cancer from exercise. Trees would cut down wind as well. Ever go up the U. Mary path on a windy day?

Other

- You can't control the weather!
- Take the time to enjoy you ride or walk to work, if you want take a friend.
- Take time to enjoy the trip by yourself or with a friend
- Nothing. The weather dictates how much we walk or use a bike.
- Just make it more publicized and talked about and encouraged
- The culture of the area is to drive a vehicle to where you need to be!

- Provide walkable destinations (parks, neighborhood commercial) near residential development
- In town safer biking to work, errand and enjoyment. As an adult I would not feel safe riding bike to the grocery story or the coffee shop.
- Promote bicycle commuting and create signage at a bike-friendly height showing bike paths to downtown, schools, Event Center, rural pathways, bridges, etc. Build more mixed-use communities where you don't have to drive to 'get the milk' and you can send your kids to go get it.
- Plan neighborhoods and commercial developments around walkability and bikability, especially favoring street grids and direct routes over windy roads and culs-de-sac.

ENFORCEMENT

Pedestrian and Bicycle Rights

- Occasional efforts to remind motorists of pedestrian crossing respect. St. Paul community activists volunteered to cross busy streets with flags to remind motorists of their responsibility.
- Drivers that speed or ignore traffic laws in regards to pedestrians/cyclist are a major issue in this area.
- More police and higher fines for traffic violations. People in this town don't pay attention or obey laws when driving which makes it frightening to walk or ride bike.
- Enforcement laws, for example red lid lights speeders
- And speaking of texting, enforce no-texting laws. The number of texting drivers I see every day is ridiculous (I walk about 4 miles/day).
- Ticket car drivers who won't give bikers one inch
- better enforcement of laws already in place, for vehicles and bicyclists and pedestrians. You see people running red lights everyday, come to a stop in crosswalks (police included), jaywalkers and bicyclists not obeying rules of the road.
- Laws or ordinances to further protect pedestrians and bikers.
- Get a handle on the speeders and red light runners in our community.
- Enforce pedestrian cross walk right of way for pedestrians
- Start fining drivers for not yielding to pedestrians in crosswalks. Encourage bike riders to follow the law. Most around here do not, and it's dangerous for everyone.
- Police enforcement needs to include both clueless drivers and cyclists that don't obey the law. Without developing a culture of bike tolerance safe cycling will never be a fact.

Other

- More cop patrols on the walking/bike trails along River Road - there are too many drunks and drug transactions taking place in broad daylight, which makes us avoid this beautiful path.
- Police officer bike patrol regularly

- Sometimes bike patrol paths near sertoma and the Riverwood loop / along the river in the mornings - and evenings occasionally not comfortable there - unstable people
- Better enforcement of leash laws and cleaning up after pets.
- It would be nice to see trails policed so more people feel safe. Officers on bike would be very cool! "Bike the Blue" campaign ☺
- Enforce vehicle noise ordinances! Very unpleasant when loud vehicles roar by.
- heavier penalties for distracted motorists.
- More Police presence with bicycling officers would also be greatly appreciated.

OTHER (NO SPECIFIC CATEGORY)

- For the most part all is good. I ride 900 miles per summer on bike throughout bismarck on and off the trail for last 15 summers. I really think it's pretty darn good over all I have NO issues.
- Love the trail system
- fewer trails along roads! I would like to go for walks without the vehicle noise or exhaust pollution. I'd like more park trials away from traffic so I can hear and breathe. Also, enforce no smoking policies on public trails. They should be considered a public place where people deserve fresh clean air.
- Allow them to walk and bike if and when they want to. Bismarck and Mandan should use these funds for other, more important, projects, such as repaving roads and flood protection.
- I would like trails that are not along busy roads. I much prefer to walk along a route with some nature- not cars rushing by.
- I personally like to bike on dirt trails. there could be more nature trails That are not along road ways
- We already have fantastic shared use paths. Please use our taxpayer dollars on needed infrastructure maintenance!
- Otherwise, I applaud your efforts to make this area more cycle/walk friendly. Thankyou.
- stop assuming half of the residents ride bicycles! I NEVER see anyone on our striped bike lanes, waste of money and you think you should do MORE?
- Leave my tax dollars out of it.
- Get more aggressive in the design and implementation of pedestrian planning. Keep up the good work MPO!
- Obviously adding bike lanes and associated expenses has been an epic expensive fail. Quit wasting tax payer money and let Bismarck Parks and Recreation encourage people to walk and bike. It is quite obvious that the current Mayor has a bike lane agenda, don't be a following sheep! Thank You!
- People are just too lazy
- I bike a lot and am not considered "in shape", I think Bismarck Mandan has a great set up for biking and walking. I enjoy the trails and paths. Full disclosure, I haven't spent a lot of time riding through the city for transportation so I am often on the trails.

- Greater health for the community & happier people!
- Reduce traffic & environmental footprint
- Accessible right outside citizens' back doors. No equipment or membership needed.
- Awesome!
- I appreciate the work your trying to do. I am disabled and get everywhere by bicycle, year round. I think bike lanes and more trails would be very beneficial. I hope you succeed in your mission goals.
- Hello, I was one of the folks who was VERY happy to see bike lanes painted on the "do-able" roads in Bismarck. I have lived in much larger cities and they are the NORM there, so I was really surprised at how much "flak" and negativity these painted bikes lanes received from the residents here. (I have lived here since 97)
- Hi Michelle; I am a commuter bicyclist since 1975. Worked for city of Bismarck Engr. Dept so aware of plans and design standards Currently retired yet ride around city a lot. Also am an avid long distance rider that always needs safe ways to get out of town to the paved shoulders of highways. I would be interested in helping planning or design elements so if you need someone to ride routes or areas let me know.

RECEIVED

FEB 15 2017

PUBLIC MEETING

BISMARCK-MANDAN BICYCLE AND PEDESTRIAN PLAN

Over half of Bismarck-Mandan residents ride a bicycle and everyone uses our city sidewalks.
The Bismarck-Mandan Metropolitan Planning Organization is developing the **Bismarck-Mandan Bicycle and Pedestrian Plan** to guide policies and future development of sidewalk, bicycle lanes, and trails in our cities for the next 5 years.

We need your input. Open house activities will include:

- Presentation of plan purpose and existing conditions
- Opportunities for your input:
  - Where would you like to be able to walk or bike more comfortably?
  - Where are barriers? Where are more connections needed?
  - How can we better-support bicycling and walking?

Thursday, March 2, 2017
5:30 - 7:30 PM
Presentation at 6:00 PM
Bismarck Parks and Recreation Community Room
400 E. Front Ave., Bismarck

Comments and route input can also be submitted at www.bismanbikewalk.com

Written comments should be mailed to Fay Simer; Stantec Project Manager; 2335 Highway 36 West, St. Paul, MN 55113.

To request accommodations for disabilities and/or language assistance, contact Title VI/ADA Coordinator at 701-355-1332, MPO@bismarcknd.gov, TTY 711 or 1-800-366-6888 at least five (5) days in advance of the meeting.

Bismarck Tribune 2/15/17

2C x 6"
180.36

Mandan News, Friday, February 17, 2017

PUBLIC MEETING

BISMARCK-MANDAN BICYCLE AND PEDESTRIAN PLAN

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2C x 8"
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$8.-

PUBLIC OPEN HOUSE
Bismarck Parks and Recreation Community Room
400 East Front Avenue, Bismarck, ND
Thursday, March 2, 2017 ● 5:30 P.M. TO 7:30 P.M.

The Bismarck-Mandan Metropolitan Planning Organization is seeking input on bicycling and walking in the region. Please let us know your thoughts!

To learn more, visit our website at **www.bismanbikewalk.com**.

Name: _____

Address: _____

_____

Phone: _____

E-mail: _____

Comments:

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Bismarck-Mandan MPO
Bicycle and Pedestrian Plan
PUBLIC OPEN HOUSE

COMMENT FORM

Bismarck-Mandan
Metropolitan Planning Organization

Stantec

Ms. Fay Simer
Stantec
2335 Highway 36 W
St. Paul, MN 55113

Fold Here

Contact Information:

Fay Simer, AICP

Stantec

Phone: (651) 967-4552

E-mail: fay.simer@stantec.com

To:	Steve Saunders Bismarck-Mandan MPO	From:	Peggy Harter, Katrina Nygaard Stantec
File:	Bismarck Mandan Bicycle and Pedestrian Plan Public Open House 2 and Engagement Summary	Date:	November 29, 2017

BISMARCK-MANDAN BICYCLE AND PEDESTRIAN PLAN PUBLIC OPEN HOUSE 2 SUMMARY

OVERVIEW

On Thursday November 2nd from 5:30 to 7:30pm, the Bismarck-Mandan MPO hosted the second public open house for the Bicycle and Pedestrian Plan at the Ed "Bosh" Froehlich Meeting Room in Mandan City Hall. Eighteen people, not including children of attendees, attended the workshop and gave input on the draft Bismarck and Mandan Bicycle and Pedestrian Plan. Meeting attendees provided feedback through verbal Q & A, comment cards, online/website comments, and conversing with staff. Sign-in sheets documenting meeting attendees are attached to this memorandum for reference.

ADVERTISEMENTS

The Public Open House was advertised through a variety of media including:

- Advertisement in the Bismarck Tribune (October 18, 2017)
- Advertisement in the Mandan News (October 20, 2017)
- Press Release
- Facebook event

All newspaper advertisements are attached to this memo for reference.

MEETING SUMMARY

Meeting attendees were presented the process and results of the Plan, through a series of boards and a presentation. They were asked to provide their comments and questions on changes that should be made to the Draft Plan before final adoption.

In addition to the presentation, the meeting included a variety of printed boards which educated attendees about the planning process and work done to date. The boards included:

1. Welcome
2. Vision and Goals
3. Future Bicycle Network
4. Engineering: Top 5 Routes
5. Engineering: Top 5 Intersections
6. Education Opportunities and Priorities
7. Encouragement Opportunities and Priorities
8. Enforcement Opportunities and Priorities
9. Evaluation Opportunities and Priorities

Meeting attendees were first asked to identify what type of cyclist they were and learn about the plan process and 5 E's. They then were presented with the vision and goals for the plan (board 2), proposed bicycle network (board 3), and implementation priorities for each of the 5 E's (boards 4-9). PDF versions of these boards are attached to this memo for reference.

PRESENTATION QUESTION AND ANSWER

Peggy Harter gave a presentation to meeting attendees at 6:00 PM. The presentation lasted approximately 40 minutes and covered:

- Plan process and updates
- Community engagement and results of survey, website, and open house 1
- Vision and Goals of the plan
- Determining the proposed bicycle network
- Priorities for each of the 5 E's and implementation
- Next steps in the process

In addition to the live presentation, the session was taped and available live through Dakota Media Access. A recording of presentation is available on the organization's website.

Next, members of the public could ask questions and share their feedback on the Plan. The questions and comments and Ms. Harter's responses are included below. These comments, with written comments received during the public comment period, will be incorporated into the final version of the Plan.

Comment 1: I think that community density and planning has to do with how safe it is to bike or walk around the community. If you travel around the country, higher density communities where things are more interconnected, makes it easier and safer to have those facilities in place. Because, if it is easy to walk with your family to the school, grocery store, day care center, there are a lot of connections with density and what's walkable and making it safer. My encouragement would be to promote city planning that encourages density and infill development, which really creates Bismarck-Mandan as a smaller footprint which makes it easier to "hit a home run" with bicycle and pedestrian safety. Other communities have done this and this makes infrastructure more affordable. If you are not way out on the edges to get your day-to -day services, it will be safer. We need to think about this from a planning and density perspective.

Response 1: Thank you.

Comment 2: The implementation of this plan: how long will it take?

Response 2: We don't have an exact timeline. When we were looking at this project, we were thinking the 5 for 5 so this will happen in a 5-year timeline. However, none of these priorities has funding, just completing the plan gives them an excellent opportunity for grant applications for projects. We don't have an identified date, particularly for the engineering items, however, if we

have our bicycle and pedestrian committee kick off right after this plan is adopted, I think we could have a lot of projects implemented or started in the next 5 years. This is the first plan for the region, lots of plans are updated, when you do an update, we evaluate what was done and which recommendations need to change.

Comment 3: I live along some open space that is not incorporated into the City of Bismarck, but I see the area in a lot of planning maps. Already, I see a lot of bicyclists and pedestrians using that space on trails that aren't paved. Personally, I like unpaved trails; I ride a mountain bike and my kids like to hike on the trails. I think there are a lot of other users, the cross-country team uses it. When I go into the bike shops here, most of the bikes for sale are mountain (not on-street). I have a few neighbors who practice walking up and down the hills to get ready for hunting in the fall. There are a lot of bicyclists and pedestrians who look for and use unpaved trails and I just see the MPO encompassing so many organizations but I wonder if it is directing itself to do this plan. I wonder if there can be an addendum to discuss unpaved trails. This is a question and a comment. I was hoping to see something about unpaved trails. Some of the future paved trails are where the unpaved trails are now. Will the plan allow for preservation of unpaved trails, especially if unpaved areas become paved in the future?

Response 3: We talked about that earlier. A few thoughts: none of those future trails are prescribed facility types yet. If we go through the process and determine that an appropriate facility type is an unpaved trail, then when they get into the details of planning and design they would look at that as an option. Each of these future network project, because they're not engineered, as new facilities get constructed, there will be more public involvement, particularly with the neighborhood what that facility will look like. That's why tonight we couldn't prescribe what these bicycle networks will look like because this is a higher-level planning document. When you get to the detail of what exactly this future facility will be, you do a lot of public input with the nearby residents. I think that in the specific connection you're interested in, if they ever looked at constructing a paved trail in that location, they would work with the residents to identify the proper location to do so and if the current residents support the existing unpaved trail they would likely look to a different alignment.

Comment 4: On page 40, the plan states that the region hosts one active cycling group, Central Dakota Cyclists. On the next page the plan mentions the mountain biking group. I am part of the group with events. They are the Burleigh County Bike Club and turn out hundreds of people for their events. They advocate for safe biking and promote the activity in the region.

Response 4: Thank you.

MAILED COMMENTS

Participants were also asked to provide written comments via comment cards provided at the meeting. To date, the team has received one written comment in the form of a letter to the MPO. That comment is included following this report.

WEBSITE COMMENTS

Since publishing the Draft Plan online, the project team has received five comments via the project website. These comments include questions, points of clarification, and recommendations for implementation. Common themes include roadway safety, mountain biking and unpaved trails, and connections throughout the community. These comments are included below. Comments have all been responded to individually and will be addressed in the Plan if applicable.

> I live on Normandy St near 43rd Avenue. People walking along 43rd Avenue was a common thing throughout the summer. This road is narrow and heavily traveled. I hope this pedestrian trail is in the works for next summer as this could lead to a dangerous situation as the foot traffic inevitably increases. Thanks! – Scott Strahm
>
> I was able to attend a public meeting on November 2. The plan was very comprehensive and communicated clearly to the audience. I appreciate that the planning group is using multiple viewpoints when considering this plan (i.e. motorists, bicyclists, pedestrians). Thank you to the committee for all the dedicated time and effort that has going into this. It will surely be an asset to connect our growing community! Please move forward with this project to encourage Bismarck and Mandan to become more bikeable and walkable for all citizens! – Tanya Smith
>
> Hello, I heard an ad on the radio today relating to the photo contest. The website reflects what seems to be last year's contest. Is the photo contest on-going, or is there new information available? I would love to submit a few images for consideration. Thanks! – Mike Renner
>
> Hello, I have a few comments:
> - Riding on the road with cars is always nerve racking. Cars in Bismarck do not pay enough attention to bikes, even if well marked with lights and reflective clothing.
> - I bike quite a bit around town. I typically like to make a loop around the outskirts of town. The main area that gets interesting is around the airport. There are good paths on the west side of the airport, but getting from the west side of the airport to the north side of the Expressway is quite interesting at times.
> - It would be nice if there were more east-west paths throughout Bismarck. There are a lot of good multi-use trails running north-south, but dedicated multi-use paths running east-west would help with commuting. The share the road lanes are not always a good solution. I have kids and pull them in a trailer behind my bike and would never take them on the shared path with cars.
> - I really like the idea and cost savings of the dirt path ideas discussed at last night's (11/2/17) meeting.
> - Maintenance of existing paths was mentioned as being a suggestion to incorporate into this plan.
>
> I would like to add my recommendation to have this as part of the plan moving forward. Thanks for taking my comments – Zach Glueckert
>
> Dear Bismarck-Mandan Area MPO, I have read the draft of the Bicycle and Pedestrian Plan and wanted to express some thoughts on the topic. The action items proposed,

including 3 new bike lanes in Bismarck and 2 new bike lanes in Mandan, would be welcome and would improve my and others' experience on the area's roads. My family enjoys frequent hikes and bike rides on unpaved trails in the region. While we also visit the paved Multi-Use trails in the area, frequently we seek the more primitive natural areas serviced by unpaved trails. The plan seems to do a good job of making inventory principally of current paved trails in the Bismarck-Mandan area, without addressing the many, and heavily used, unpaved trails in the region. I feel there are some inconsistencies and omissions that, if addressed, could make the plan more comprehensive and inclusive of the entire bicycle and pedestrian community in the area, with relatively little additional effort. On page 40 of the draft, Central Dakota Cyclists are listed as the "one active bicycle group" in the region, however on page 41 the BCBC MTB series is mentioned. Indeed, the BCBC is a very active group attracting hundreds of participants to their events throughout the year. One of the trails inventoried and mapped on the Mandan side of the river is the Missouri River Nature Trail in the Missouri River Nature Area, a fantastic year-round resource for hikers, runners, bikes, and even cross-country ski users. Many use that trail for commuting. I feel the MPO Bicycle and Pedestrian plan, as drafted, does a disservice to the community by omitting future consideration for these types of facilities with unpaved trails. In Bismarck, a network of unpaved off-road trails between Pioneer Park and BSC serves as a well-used example of desirable trails serving for recreation and, for many seeking to avoid the busy paved bike paths along the river, for commuting. An additional area receiving very high numbers of users is Harmon Lake, which has been built expressly as a recreational facility for bicycles and pedestrians, rather than as a transportation throughway. I feel Bismarck and Mandan, with their varied terrain and many spaces dedicated to Conservation/Open Space (which are generally unsuited for development due to terrain/drainage/erosion issues), would be well-suited for expanded facilities of this type, within existing city boundaries and especially within the immediate vicinity around the cities. It would be easy to envision the establishment of nature areas similar to the Missouri River Nature Trail, in Bismarck and Mandan, with a combined planning effort by parks, engineering, and other groups. Unpaved trails are popular and desirable, and can be built and maintained for a fraction of the cost of paved multi-use trails. There is a ready community of passionate trail users, ranging from hikers, mountain bikers, and cross-country running teams with strong interest in expanding these types of facilities in our area, who could be mobilized to create these trails for free, or to support funded projects such as RTP grants with volunteer labor. I would like to propose the MPO partners establish an ongoing collaboration with an established non-profit trails advocacy group such as Central Dakota Cyclists, in order to receive guidance and updates on current trails and to identify areas that may serve for future trails. Hopefully, the MPO draft could make some consideration to recommend a very tiny portion of public budgets be used for maintaining these unpaved trails as well. Many of the best Missouri River vistas in the area are available from the unpaved trails on the Bismarck side of the river; these trails simply require mowing/trimming a few times each year to stay passable, which could be performed at minimal cost to the cities, counties, and state entities which list these types of facilities in their inventories and advertising. As the MPO informs future expansions of the trails system, it would be important to consider that future paved Multi-Use trails may be planned for areas that are currently enjoyed as unpaved recreation sites. A partnership with community unpaved trail users might be able to maximize the use of lands/areas used for these purposes and seamlessly expand unpaved trail resources as the cities expand. I sincerely hope to see our unpaved trails given more formal consideration as they are a valuable resource in adding to the variety of recreational

activities available to bicyclists and pedestrians in the area, which is all of us. Thank you – Nick Bradbury

EMAILED COMMENTS

The project team received one comment via email regarding the draft plan. The email is below for reference.

> Ms. Carter:
>
> I have reviewed the Bismarck - Mandan Bicycle + Pedestrian Plan Draft dated October 23, 2017, I was appalled by its content. This includes because of both the omission information and what I consider to be misrepresentation of information.
>
> For example, nowhere in the 176 pages of that Draft did I find an address for Stantec Consulting Services Inc and I do not understand why a physical address was not provided.
>
> I noticed that certain state laws and city ordinances specific to the Plan were omitted and I have to question if those omissions were deliberate to hide what the truth really is.
>
> Additionally, on Page 160, regarding Draft Plan Review, this information is stated: "• Page 41 – Winter maintenance for Mandan – Left Column – 2nd paragraph. Justin Froseth will send a recommendation to clarify that the only time they address snow on the sidewalk is when they receive a complaint is not the case. He will send updated text."
>
> This could be interpreted one of two ways and one way is that Mr. Froseth is stating that the City of Mandan (City) also acts without complaints to "address snow on the sidewalk" or the other way would be that the City fails to act "address snow on the sidewalk" even when complaints are received by the City.
>
> Therefore, I request a copy of any and every update that was provided related to what is stated in the second paragraph before this paragraph and I request notification if no update was provided by Mr. Froseth or anyone else with the City.
>
> In closing, I am very concerned about the Plan; not only because it is publicly funded but also because it appears that it may be used to mislead the public.
>
> Sincerely,
>
> S. Paul Jordan

Ms. Harter:

I wanted to keep this matter simple and without any conflict but it does not appear that Stantec Consulting Services Inc (Stantec) is willing to do the same.

When I contacted you on November 14, 2017, I was submitting a request for records under North Dakota Century Code (N.D.C.C.) § 44-04-18 because I believed records I requested concerned a publicly funded project that made such records public under both N.D.C.C. § 44-04-18(1) and Article XI, § 6, of the North Dakota Constitution.

What I requested was what Justin Froseth with the City of Mandan (City) submitted associated with what was stated on Page 160 of the Bismarck - Mandan Bicycle + Pedestrian Plan Draft (Plan Draft) dated October 23, 2017. N.D.C.C. § 44-04-18(2) requires the release of one copy upon request and N.D.C.C. § 44-04-18(7) requires written notification if the records requested do not exist or the legal authority used to withhold the records or information in any records.

In the response I received from you on November 19, 2017, you did not state that Mr. Froseth did not provide an update or clarification regarding City snow removal policies and practices but you only included text within an email repeating that update or clarification and the record that such information came from still needs to be released to me.

Whether that record is an email, a fax, a letter, a PDF file or another type of record containing the information then that is what needs to be released to me in response to what I requested on November 14, 2017. Additionally, not releasing the record becomes a criminal offense under N.D.C.C. § 44-04-21.3 and N.D.C.C. § 12.1-11-06, while the person who failed to receive the requested records can bring a civil action under N.D.C.C. § 44-04-21.2 to request the court issue a Writ of Mandamus to compel the release of the records while receiving court costs, attorney's fees and can also request that a $1,000 fine be issued for not releasing requested records.

As for other issues of concern you discussed in your email on November 19, 2017, you stated Stantec "did a thorough search of city and state ordinances related to bicycling and walking. No ordinances were purposefully omitted." More than one applicable state statute and more than one applicable City ordinance failed to be included, which I find very troubling, and I am now in the process of preparing information that not only identifies the applicable state statutes and City ordinances but will also establish why they are applicable.

Then there is the matter of your stating that "The content of the plan was driven by public input received through the public open houses, community kiosks, and the project website." So, where were the "community kiosks" located, if any, for Mandan? And, the fact that you stated that "the plan was driven by public is" is why I am very concerned that N.D.C.C. § 44-04-20(5) was not complied with even though information on the Stantec website establishes that the meetings in Mandan were held inside publicly funded buildings.

Though you stated that "All options for public input opportunities were advertised via Federal requirements," and federal funding was involved, other funding was also used

and that includes City funding. As such, appropriate state statutes also needed to be complied with but that did not occur and this includes the City's failure to comply with N.D.C.C. § 44-04-20.

If the City was competent, not incompetent and corrupt, the City should have notified Stantec of all appropriate state statutes and City ordinances for Stantec to consider and not just what is in the Plan Draft. Surely, the City would have reviewed the Plan Draft along the way and informed Stantec that certain state statutes and City ordinances needed to be included.

If the City failed to do so, then that is of concern because the failure to provide that information is an indication that the City did not want certain state statutes and City ordinances included if including that information in the Plan Draft would expose where the City is not doing what it is either mandated or what should be done.

Therefore, I request a copy of any communications received from anyone with the City listing the state statutes and City ordinances needed to be included in the Plan Draft. I request written notification if no records exist and if any information is withheld.

Sincerely,

S. Paul Jordan

November 5, 2017

Dear Bismarck-Mandan Area MPO,

I have read the draft of the Bicycle and Pedestrian Plan and wanted to express some thoughts on the topic. The action items proposed, including 3 new bike lanes in Bismarck and 2 new bike lanes in Mandan, would be welcome and would improve my and others' experience on the area's roads. My family enjoys frequent hikes and bike rides on unpaved trails in the region. While we also visit the paved Multi-Use trails in the area, frequently we seek the more primitive natural areas serviced by unpaved trails. The plan seems to do a good job of making inventory principally of current *paved* trails in the Bismarck-Mandan area, without addressing the many, and heavily used, unpaved trails in the region. I feel there are some inconsistencies and omissions that, if addressed, could make the plan more comprehensive and inclusive of the entire bicycle and pedestrian community in the area, with relatively little additional effort.

On page 40 of the draft, Central Dakota Cyclists are listed as the "one active bicycle group" in the region, however on page 41 the BCBC MTB series is mentioned. Indeed, the BCBC is a very active group attracting hundreds of participants to their events throughout the year.

One of the trails inventoried and mapped on the Mandan side of the river is the Missouri River Nature Trail in the Missouri River Nature Area, a fantastic year-round resource for hikers, runners, bikes, and even cross-country ski users. Many use that trail for commuting. I feel the MPO Bicycle and Pedestrian plan, as drafted, does a disservice to the community by omitting future consideration for these types of facilities with unpaved trails.

In Bismarck, a network of unpaved off-road trails between Pioneer Park and BSC serves as a well-used example of desirable trails serving for recreation and, for many seeking to avoid the busy paved bike paths along the river, for commuting. An additional area receiving very high numbers of users is Harmon Lake, which has been built expressly as a recreational facility for bicycles and pedestrians, rather than as a transportation throughway. I feel Bismarck and Mandan, with their varied terrain and many spaces dedicated to Conservation/Open Space (which are generally unsuited for development due to terrain/drainage/erosion issues), would be well-suited for expanded facilities of this type, within existing city boundaries and especially within the immediate vicinity around the cities. It would be easy to envision the establishment of nature areas similar to the Missouri River Nature Trail, in Bismarck and Mandan, with a combined planning effort by parks, engineering, and other groups.

Unpaved trails are popular and desirable, and can be built and maintained for a fraction of the cost of paved multi-use trails. There is a ready community of passionate trail users, ranging from hikers, mountain bikers, and cross-country running teams with strong interest in expanding these types of facilities in our area, who could be mobilized to create these trails for

free, or to support funded projects such as RTP grants with volunteer labor. I would like to propose the MPO partners establish an ongoing collaboration with an established non-profit trails advocacy group such as Central Dakota Cyclists, in order to receive guidance and updates on current trails and to identify areas that may serve for future trails.

Hopefully, the MPO draft could make some consideration to recommend a very tiny portion of public budgets be used for maintaining these unpaved trails as well. Many of the best Missouri River vistas in the area are available from the unpaved trails on the Bismarck side of the river; these trails simply require mowing/trimming a few times each year to stay passable, which could be performed at minimal cost to the cities, counties, and state entities which list these types of facilities in their inventories and advertising.

As the MPO informs future expansions of the trails system, it would be important to consider that future paved Multi-Use trails may be planned for areas that are currently enjoyed as unpaved recreation sites. A partnership with community unpaved trail users might be able to maximize the use of lands/areas used for these purposes and seamlessly expand unpaved trail resources as the cities expand.

I sincerely hope to see our unpaved trails given more formal consideration as they are a valuable resource in adding to the variety of recreational activities available to bicyclists and pedestrians in the area, which is all of us.

Thank you,

Nick Bradbury
2401 Del Rio Drive
Bismarck, ND

SIGN-IN SHEET

Page _____ of _____

(Rev. 03-2012)

Bismarck-Mandan

METROPOLITAN PLANNING ORGANIZATION

Meeting Location	Meeting Type	Meeting Date
Mandan City Hall - 205 2nd Ave NW		11/2/2017
Project Number		**PCN**
Project Description		
Bismarck-Mandan Bicycle & Pedestrian Plan		

Name (Please print)	Title/Representing			
Jason Doerr	self			
Address				
3305 Valley Dr.				
City	**State**	**Zip code**	**Email**	
Bismarck	ND	58503	jdoerr@midco.net	

Name (Please print)	Title/Representing			
MIGUEL ANDREWS	—			
Address				
531 QUARRY LN				
City	**State**	**Zip code**	**Email**	
BISMARCK	ND	58503	miguel.andrews@stantec.com	

Name (Please print)	Title/Representing			
Peggy Harter	Stantec			
Address				
3453 Interstate Blvd S				
City	**State**	**Zip code**	**Email**	
Fargo	ND	58103	peggy.harter@stantec.com	

Name (Please print)	Title/Representing			
Will Hutchings	Planner - City of Bismarck			
Address				
221 N Fifth St				
City	**State**	**Zip code**	**Email**	
Bismarck	ND	58501	whutchings@bismarcknd.gov	

Name (Please print)	Title/Representing			
JUSTIN FROSETH	CITY OF MANDAN			
Address				
City	**State**	**Zip code**	**Email**	

Name (Please print)	Title/Representing			
Allen Thompson	Central Dakota Cyclists			
Address				
110 10th Ave NE				
City	**State**	**Zip code**	**Email**	
Mandan	ND	58554	athomp@bis.midco.net	

Name (Please print)	Title/Representing			
Roy Rickert	Bis-Man Transit			
Address				
City	**State**	**Zip code**	**Email**	

SIGN-IN SHEET

Page _____ of _____

(Rev. 03-2012)

Bismarck·Mandan

METROPOLITAN PLANNING ORGANIZATION

Meeting Location	Meeting Type	Meeting Date
Project Number		**PCN**
Project Description		

Name (Please print)	Title/Representing
Gabe Schell	City of Bismarck
Address	
City	**State** / **Zip code** / **Email**

Name (Please print)	Title/Representing
Kate Herzog	Fountains
Address	
City	**State** / **Zip code** / **Email**

Name (Please print)	Title/Representing
Eric Schwingler	
Address	
~~[illegible]~~	
City	**State** / **Zip code** / **Email**
Bismarck	

Name (Please print)	Title/Representing
Amber Schwingler	
Address	
City	**State** / **Zip code** / **Email**
Bismarck	

Name (Please print)	Title/Representing
Zach Glueckert	
Address	
City	**State** / **Zip code** / **Email**
Bismarck	ND

Name (Please print)	Title/Representing
Tanya Smith	Go! Bismarck Mandan Coalition Coord.
Address	
1811 E Ave E	
City	**State** / **Zip code** / **Email**
Bismarck	ND / 58501 / smith.tanyajo@gmail.com

Name (Please print)	Title/Representing
Craig Ruhland	C-TLIST
Address	
1919 Santa Genevois Dr	
City	**State** / **Zip code** / **Email**
Bismarck	ND / 58503 / craig_ruhland@hotmail.com

SIGN-IN SHEET

Page _____ of _____
(Rev. 03-2012)

Bismarck-Mandan
METROPOLITAN PLANNING ORGANIZATION

Meeting Location	Meeting Type	Meeting Date
Project Number		**PCN**
Project Description		

Name (Please print)	Title/Representing		
CANDICE CRICHLOW	self		
Address			
531 QUARRY LN			
City	**State**	**Zip code**	**Email**
BISMARCK	ND	58503	

Name (Please print)	Title/Representing		
Mandy Persson			
Address			
208 W Broadway Ave			
City	**State**	**Zip code**	**Email**
Bismarck	ND	58501	mmwagner23@gmail.com

Name (Please print)	Title/Representing		
John Persson			
Address			
Same as above.			
City	**State**	**Zip code**	**Email**

Name (Please print)	Title/Representing		
Keith Johnson	Custer Health		
Address			
403 Burlington Ave SE			
City	**State**	**Zip code**	**Email**
Mandan	ND		Kjohnson@custerhealth.com

Name (Please print)	Title/Representing		
Address			
City	**State**	**Zip code**	**Email**

Name (Please print)	Title/Representing		
Address			
City	**State**	**Zip code**	**Email**

Name (Please print)	Title/Representing		
Address			
City	**State**	**Zip code**	**Email**

PUBLIC MEETING
BISMARCK-MANDAN BICYCLE AND PEDESTRIAN PLAN

Over half of Bismarck-Mandan residents ride a bicycle and everyone uses our city sidewalks. The Bismarck-Mandan Metropolitan Planning Organization is developing the **Bismarck-Mandan Bicycle and Pedestrian Plan** to guide policies and future development of sidewalk, bicycle lanes, and trails in our cities for the next 5 years.

We need your input. Open house activities will include:

- Presentation of the planning process and Draft Plan
- Opportunities for your input:
  - Changes to the Draft Plan
  - Questions about the process and outcomes
  - Any additional feedback you might have!

WHEN AND WHERE?

Thursday, November 2, 2017
5:30 – 7:30 PM
Presentation at 6:00 PM
Ed "Bosh" Froehlich Meeting Room
Mandan City Hall
205 2nd Ave NW, Mandan, ND 58554

If you cannot physically attend the open house the presentation will be aired live on the Government Access Channel (Channel 2 or HD Channel 602) and http://dakotamediaaccess.org/ch-2-home/ beginning at 6 pm. The Draft Bicycle and Pedestrian Plan is also available for you to review on the project website at www.bismanbikewalk.com.

Representatives from the Bismarck-Mandan MPO and Stantec will be on hand to answer your questions and discuss your concerns.

Comments will be accepted through November 17, 2017. Written comments about this project should be mailed to Peggy Harter; Stantec Project Manager; 3453 Interstate Boulevard South, Fargo, ND 58103. Comments can also be directed through the project webpage at www.bismanbikewalk.com

To request accommodations for disabilities and/or language assistance, contact Title VI/ADA Coordinator at 701-355-1332, MPO@bismarcknd.gov, TTY 711 or 1-800-366-6888 at least five (5) days in advance of the meeting.

Bismarck Tribune Wednesday 10/18/17

Mandan News 10/20/17

PUBLIC MEETING
BISMARCK-MANDAN BICYCLE AND PEDESTRIAN PLAN

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Ed "Bosh" Froehlich Meeting Room ● Mandan City Hall
205 2nd Avenue NW, Mandan, North Dakota 58554
Thursday, November 2, 2017 ● 5:30 P.M. TO 7:30 P.M.

The Bismarck-Mandan Metropolitan Planning Organization is seeking input on bicycling and walking in the region. Please let us know your thoughts! Comments will be accepted by mail or online until November 17, 2017.

To learn more, visit our website at **www.bismanbikewalk.com**.

Name: _____

Address: _____

_____

Phone: _____

E-mail: _____

Comments:

_____

_____

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Bismarck-Mandan MPO
Bicycle and Pedestrian Plan
PUBLIC OPEN HOUSE

COMMENT FORM

Bismarck-Mandan
Metropolitan Planning Organization

Stantec

Ms. Peggy Harter
Stantec
3453 Interstate Boulevard S
Fargo, ND 58103

Fold Here

Contact Information:

Peggy Harter
Stantec
Phone: (701)566-6020
E-mail: peggy.harter@stantec.com

Welcome!

Welcome to the Bismarck-Mandan Bicycle and Pedestrian Plan open house!

We're excited that you're here to learn about the plan and share your ideas about biking and walking in Bismarck and Mandan.

Use a dot to mark what kind of bicyclist you are in the space below:

 **STRONG AND FEARLESS** *I ride everywhere and on any road type!*	
 **ENTHUSIASTIC AND CONFIDENT** *I like riding on marked trails and bike routes*	
 **INTERESTED BUT CONCERNED** *I would like to bike more, but am worried about safety*	
 **NOT ABLE OR INTERESTED** *I am not able to bike or do not like riding*	

What does the Bismarck-Mandan Bicycle and Pedestrian Plan involve?

This plan includes recommendations and policies in 5 key areas:

Engineering

- Infrastructure improvements
- Key intersections
- Design guidelines for future facilities

Encouragement

- Build on Plan momentum for implementation
- Policies, ordinances, and maintenance standards

Enforcement

- Safe biking, walking, and driving

Education

- Programs regarding safety and traffic laws
- Walkability audit

Evaluation

- Bicycle and pedestrian counts

Plan Process

The Bismarck-Mandan MPO is leading this planning effort with support from City of Bismarck, City of Mandan, NDDOT, FHWA, FTA, Bismarck Parks and Recreation, and Mandan Parks and Recreation.

Throughout the planning process, our consultant team (Stantec) will work with a steering committee and the public to identify goals and a planned network to support safe, comfortable, and reliable choices for bicycling and walking in Bismarck and Mandan.

A steering committee of local representatives will review existing conditions, best practices from other regions, and possible implementation strategies to provide practical advice on meaningful policies for Bismarck-Mandan.

Vision + Goals

Vision for Walking and Bicycling

The Bismarck-Mandan Bicycle and Pedestrian Plan's vision is to convey that bicycling and walking are safe, comfortable, and convenient choices for all people. In hopes of creating an environment in which people feel comfortable and safe to bicycle and walk in Bismarck and Mandan.

Plan Goals

The five goals described in the below help to promote the vision for the Plan. They serve as pillars which will support the development of the proposed network and implementation strategies.

Goal 1: Network Use

Increase the number of bicycling and walking trips made by people in Bismarck and Mandan.

Goal 2: Connectivity

Develop a connected network of bicycling and walking routes throughout both communities in partnership with local, regional and state partners. Connect bicycling and walking routes to community destinations and other transportation systems, including transit.

Goal 3: Safety and Comfort

Build and maintain safe and comfortable bicycling and walking facilities for people of all ages and abilities. Support driving, walking and bicycling behaviors that increase the safety of people who walk and bicycle.

Goal 4: Maintenance

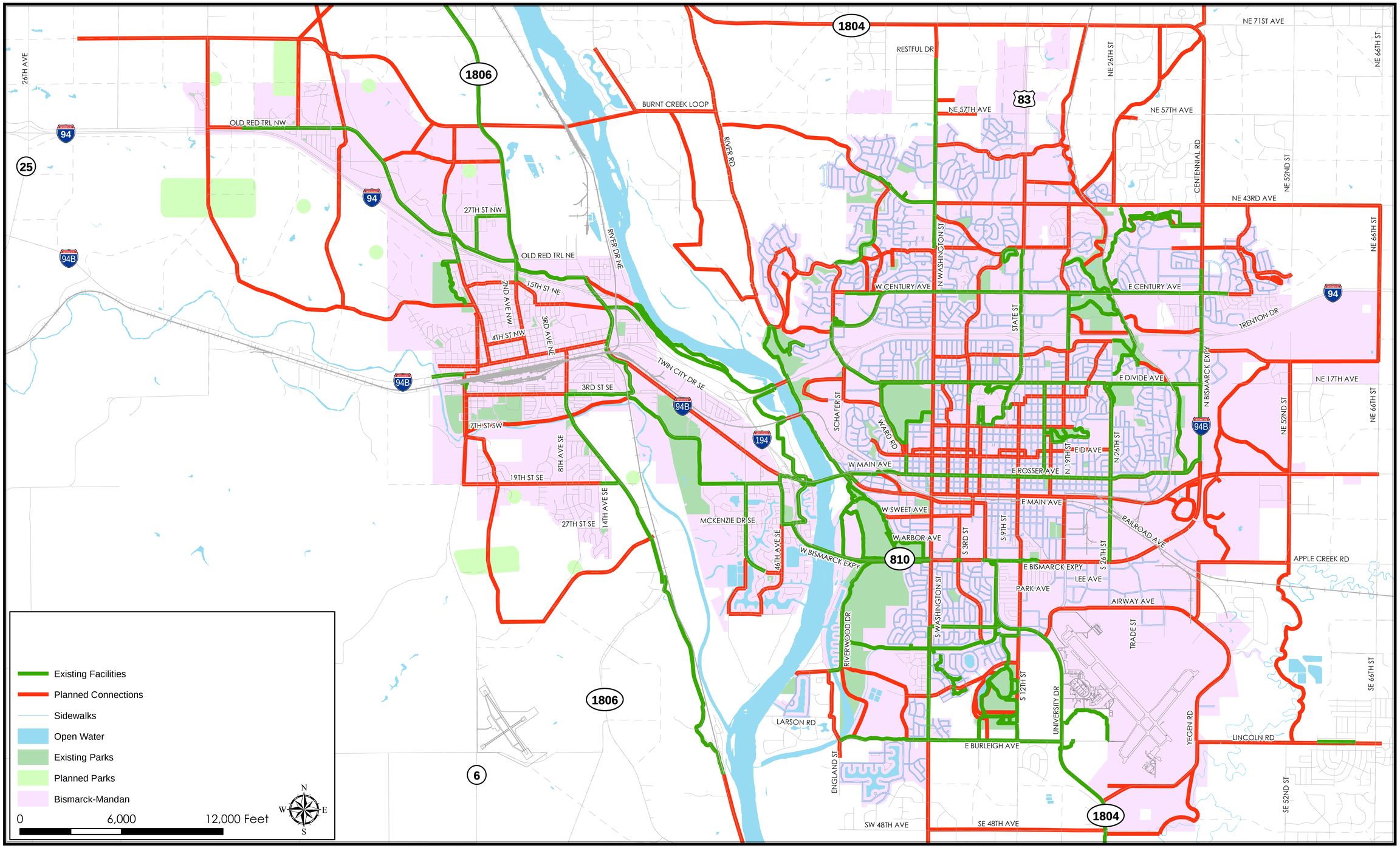
Protect the public's investment in the bicycling and walking system over the long-term and ensure system accessibility all year round.

Goal 5: Planning

As new commercial and residential projects are planned, integrate bicycle and pedestrian facilities with project designs during the development review process.

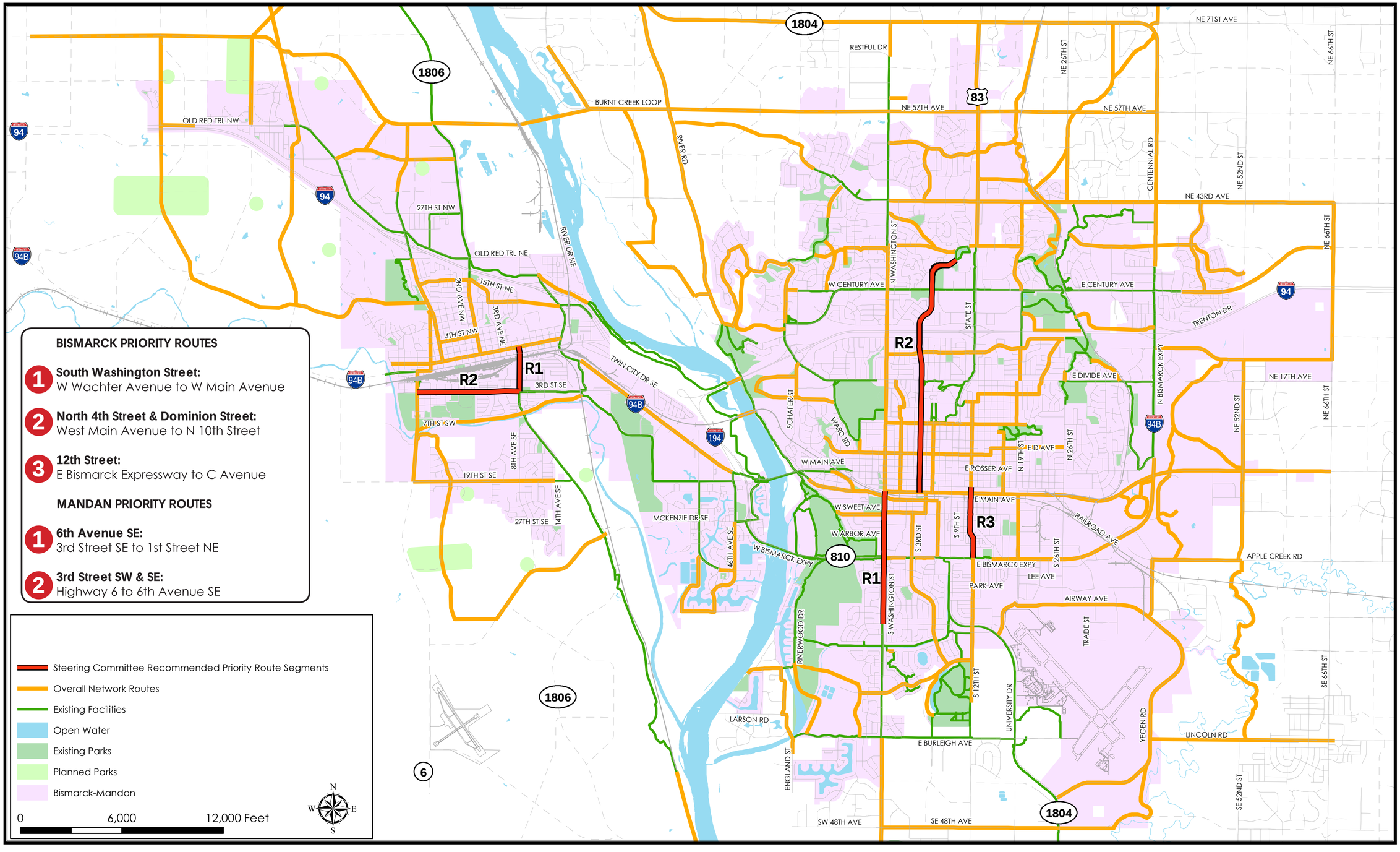
Future Bicycle Network

The new connections for this bicycle and pedestrian plan were determined by several factors. These factors included public input for desired routes, roadway analysis, routes that would increase connections, routes that would improve equity, and routes proposed in the Long Range Transportation Plan. The Steering Committee reviewed a draft of the planned network and identified additional connections for a full build out network that would further connect both existing and planned facilities.



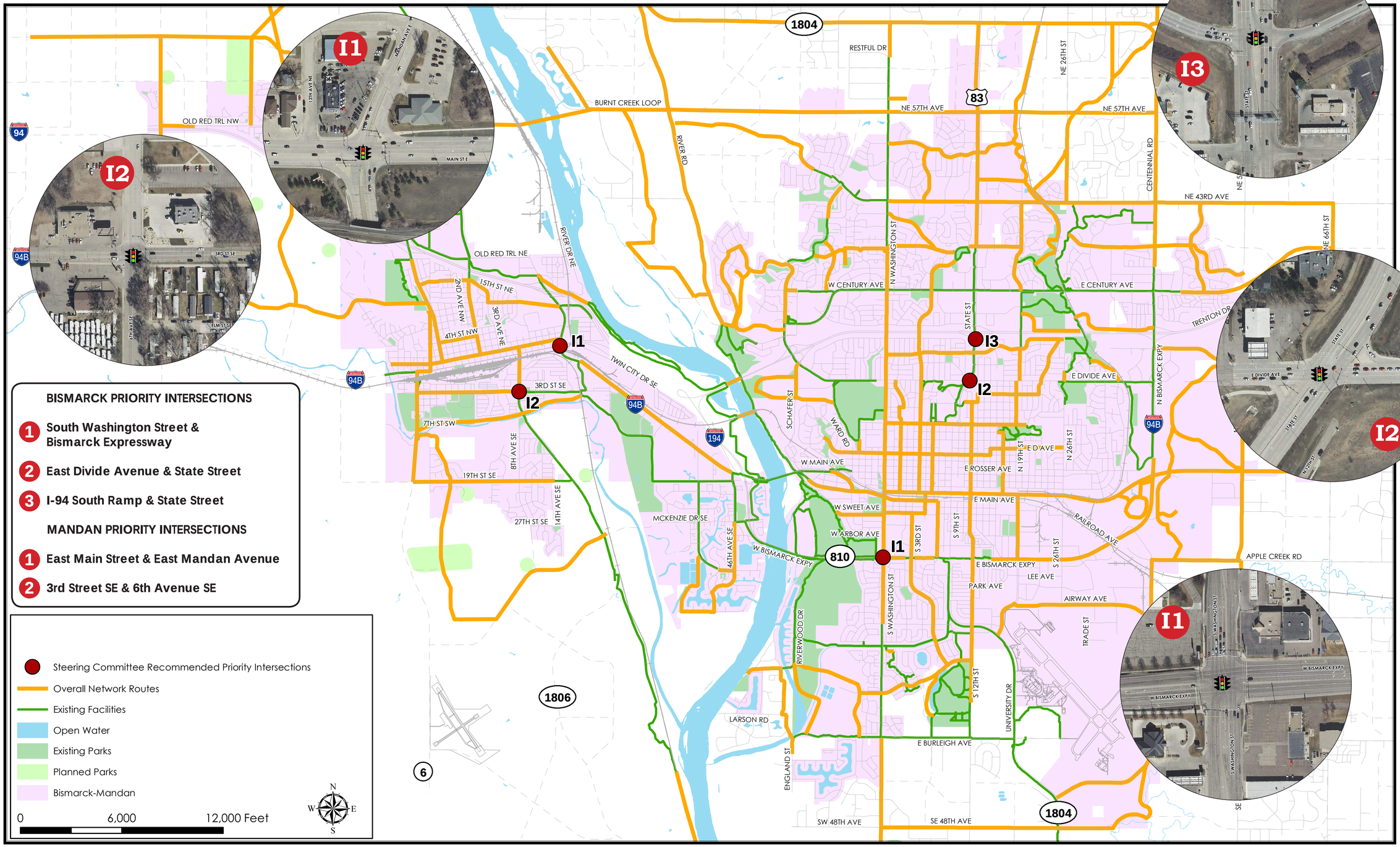
Engineering: Top 5 Routes

The top 5 routes (3 in Bismarck and 2 in Mandan) were selected as key implementation priorities to complete in the next five years. The maps below identify opportunities and constraints provided by each route. Further preliminary and detailed engineering will need to be completed with the development of each route as part of the final implementation.



Engineering: Top 5 Intersections

The top 5 intersections (3 in Bismarck and 2 in Mandan) were selected as key implementation priorities to complete in the next five years. The maps below show the intersections that were identified. Further preliminary and detailed engineering will need to be completed with the development of each route as part of the final implementation.



Education Opportunities + Priorities

Determining Top Education Opportunities + Priorities

Top 5 educational policies and programs were determined by Steering Committee members and the project team. Because safety is identified as our number one priority in the Plan, most education programs are focused on road safety for drivers, bicyclists, and pedestrians. The educational programs were developed from Steering Committee members and community members at public meetings, issues and concerns raised in the background report, the League of American Bicyclists (LAB) report, and best management practices for bicycle education.

"Road Safety" Campaigns Using Local Media

"Road Safety" campaigns using local media such as, television and radio stations, periodically throughout the year can serve to be friendly reminders for people to stay safe when driving, walking, or bicycling. With a focus on school-related issues at the start of the school year, campaigns through local media can also be a good resource to get informed about preventive measures. Social media platforms such as Twitter, Facebook, Instagram, etc. can all be used to promote "Road Safety" campaigns as well.

Safety Educational Programs at Schools

While some road safety rules and laws seem obvious, children aren't as aware of these rules as adults. Therefore, it is crucial to educate children, teenagers, and even parents on how to be safe. Road safety programs shouldn't be limited to just elementary, middle, and high schools but should be available at upper level educational institutions as well.

Inviting Law Enforcement to Talk About Road Safety

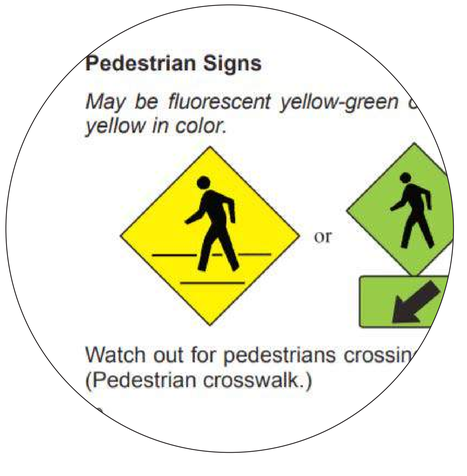
School visits by law enforcement to educate children about bike safety may be one of the best ways for children to learn about road safety. With law enforcement visits to schools, children will be properly informed about how to stay safe when they are walking and biking.

Improve Signage for Bicyclists and Pedestrians

Signs printed by the City, advocacy groups, or school district to place on yards along popular walking or bicycling routes can be friendly reminders for drivers. With signs on bicycling routes and known problem areas, drivers may be more inclined to reduce their speed or be more aware of the possibility of pedestrians and bicyclists on the road.

Media Blitz and More Emphasis On Bike Safety On Driver's License Exams

Media blitz of "Streets of the Future" to showcase existing or future streets that are great example of complete streets can be very informative. It'll allow for community members to have a better visualization of the multimodal transportation system. In addition to media blitz, driver's license exams and renewal processes should cover more content on bike and pedestrian safety.



Encouragement Opportunities + Priorities

Determining Top Encouragement Opportunities + Priorities

Of the 5 E's, Encouragement is the topic that most relates to all of the Plan goals of increasing network use, connectivity, safety and comfort, maintenance, and planning. Future pedestrians and bicyclists will be the most encouraged to begin walking and biking on a regular basis by seeing others do it as part of a safe, convenient, and well-planned system. A major component to encouraging the use of alternative modes of transportation such as walking and biking is to make it more visible and accessible.

Complete Streets Policies

The policy addresses the many uses and modes of transportation in our roadway including walking, cycling, riding transit, and driving. It also identifies opportunities for greening and stormwater management through the inclusion of tree trenches and boulevard gardens. The roadway sections to the right illustrate how a "complete street" might be designed.

Bicycling and Walking Events

Many communities host themed races and cycling events. Cities close off main streets to motor vehicles, transforming them into pedestrian-friendly areas in which children and adults can safely participate in the event. On-street farmers' markets have become one of the best ways to not only encourage community engagement but as a way to make roads multifunctional. Roads can be multipurpose area for social gatherings and events.

Ordinances for Snow Removal

Even with snow tires, roads covered in snow or sleet can result in serious injuries – accidental crashes and falls. Making it a priority to remove snow off bike lanes and sidewalks can improve winter road and sidewalk conditions. Neighborhood shovel networks or friendly reminders can be ways to make sure the entire network is clean and safe.

Ordinances for Sidewalks

To create a sidewalk network that is less disconnected, ordinances mandating that sidewalks are constructed at the time homes are built are common. However, this doesn't address the "patch" issue. This can be solved by requiring that sidewalks are built at the same time as roadways in a new subdivision. In a typical site plan review process, a city might examine how roadway networks connect to existing development.

Bicycle and Pedestrian Committee

This committee will supervise implementation of the Bicycle and Pedestrian Plan across all five E's and guide future planning going forward. While the development of a Bicycle and Pedestrian Committee will not be easy, it is a top priority to ensuring the success of the Plan and should be established immediately. The Committee can be made up of current Steering Committee members and be hosted under the Bismarck-Mandan MPO.

Enforcement Opportunities + Priorities

Determining Top Enforcement Opportunities + Priorities

Law enforcement phone interviews were conducted with two law enforcement officers on June 29, 2017. Lt. Jeff Solemsaas represents the Bismarck Police Department and Chief Jason Ziegler represents the Mandan Police Department. Both Lt. Solemsaas and Chief Ziegler have been interactive with the Bismarck-Mandan Bicycle and Pedestrian Plan as well as the on-going School Safety Crossing Study. Based on the interviews, it is clear that the top five educational policies and programs selected by the Steering Committee members were supported by the interviews. Education is highly tied to the enforcement component of road safety.

Interview Questions and Findings

What are some obstacles law enforcement encounters regarding daily practice concerning bicycles and pedestrians?

It is the lack of proper knowledge about road safety. Some bicyclists aren't aware that they must abide by the same rules as cars. Most of the bicycle accidents are equally mixed to who are at fault; bike riding on sidewalks or going through lights are primary examples. Law-breaking is an issue.

What are some improvements that can be made to better enforce road safety?

Even though officers can, they won't usually cite bicyclists. Interviews with officers indicated that the main citation given to bicyclists in riding while intoxicated. Patrolling officers aren't usually looking for bicycle violations compared to other issues. If officers were stricter about citing bicyclists, perhaps this could help prevent accidents and send a message. Another improvement can be made by encouraging more children to come out to bicycle rodeos with bike patrol officers.

What would help facilitate law enforcement officers in the process of enforcing/ensuring safety for all?

While there are opportunities out there to get law enforcement officers educated on safe bicycling, there often isn't enough resources; the police department doesn't have the capacity to pay for officers to attend classes or programs that could help them get educated on bicycle safety. Therefore, it would be nice to apply and receive grants to make these opportunities available for law enforcement officers.

What are some things that are already being done to encourage and safe guard bicycle and pedestrian traffic?

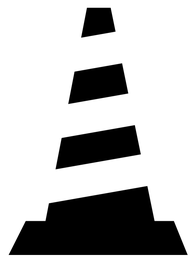
There are various programs and events. Not only was there a "Traffic Tip Tuesday" as a press release to talk about the rules of the road -mainly aimed at drivers- but bike patrol officers also hand out helmets to kids at the Bike Rodeos. School resource officers who are bicycle certified will go speak at schools to help educate children about road safety.

What coordination or changes could be made to make enforcement more effective for bicyclists and pedestrians?

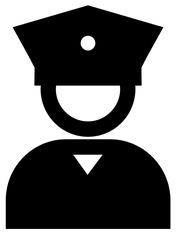
Better markings on the roadway could help along with education for law enforcement on bicycle laws. It would be nice to receive grants that would help law enforcement officers get bicycle certified. This would allow law enforcement officers to have more knowledge on fitting bicycles, proper bike postures, etc.

Implementation Strategies

1. Support the communities traffic grant application



2. Promote the Strategic Traffic Enforcement Program (STEP)



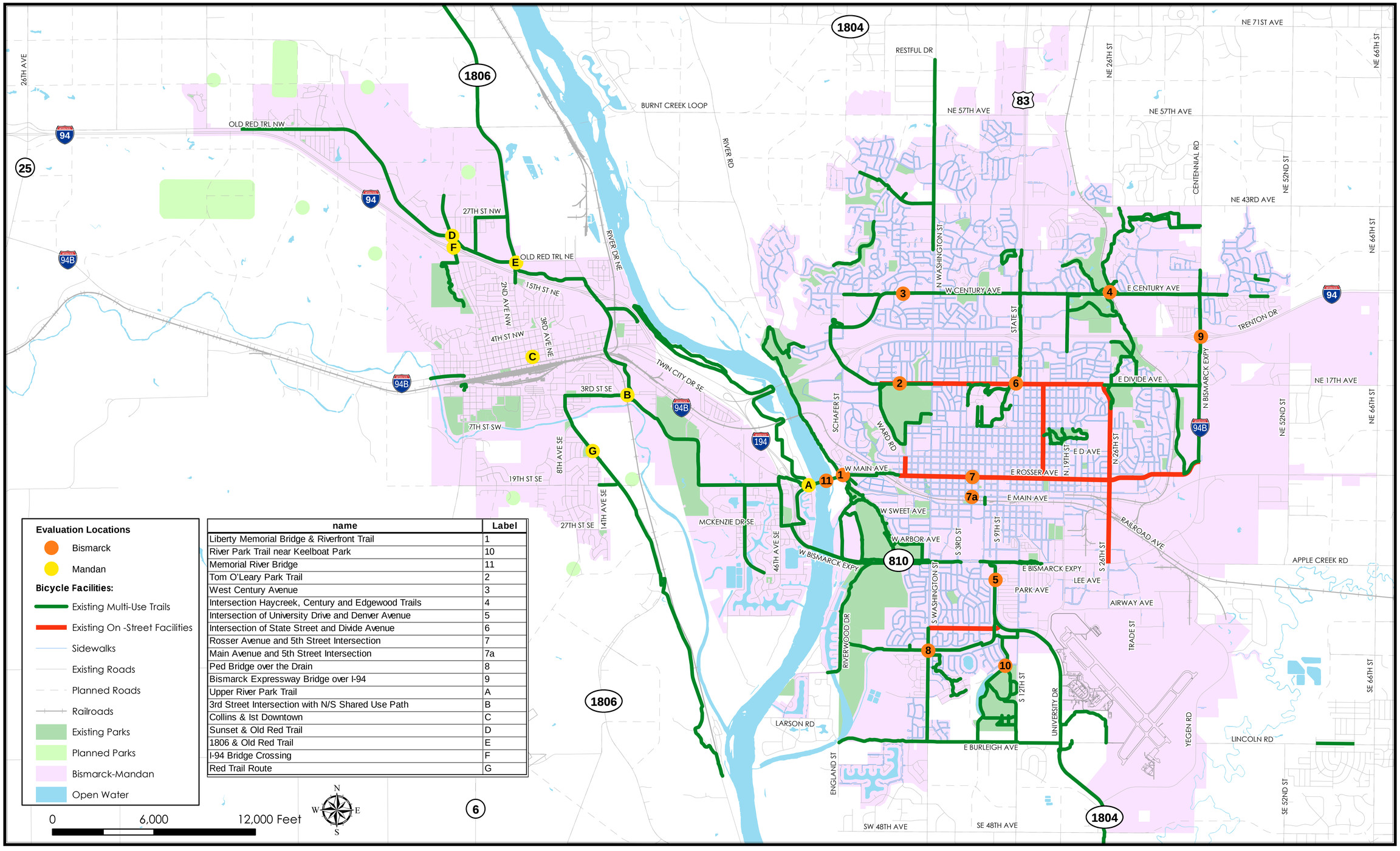
3. Increase the number of law enforcement officers that are bicycle certified

4. Encourage 20-30 hours a week of patrolling on the existing trail systems

5. Patrol shifts could use additional training to enforce laws equally between bicycle/ pedestrians and motor vehicles.

Evaluation Opportunities + Priorities

Evaluation is a critical component to understanding the efficacy of the bicycle and pedestrian plan and the success of implementation of different engineering and policy solutions. The Steering Committee and project team have developed a preliminary evaluation program which would monitor bicycle ridership on 19 different existing facilities in Bismarck and Mandan. Evaluation locations reflect urban, rural, recreational and neighborhood areas. Monitoring will include in-person counts, pneumatic tubes, and induction loop counters.



name	Label
Liberty Memorial Bridge & Riverfront Trail	1
River Park Trail near Keelboat Park	10
Memorial River Bridge	11
Tom O'Leary Park Trail	2
West Century Avenue	3
Intersection Haycreek, Century and Edgewood Trails	4
Intersection of University Drive and Denver Avenue	5
Intersection of State Street and Divide Avenue	6
Rosser Avenue and 5th Street Intersection	7
Main Avenue and 5th Street Intersection	7a
Ped Bridge over the Drain	8
Bismarck Expressway Bridge over I-94	9
Upper River Park Trail	A
3rd Street Intersection with N/S Shared Use Path	B
Collins & Ist Downtown	C
Sunset & Old Red Trail	D
1806 & Old Red Trail	E
I-94 Bridge Crossing	F
Red Trail Route	G

APPENDIX B:
Steering Committee Meeting Minutes

Steering Committee Meeting 1

Bismarck Mandan Bicycle and Pedestrian Plan / 193803697

Date/Time:	March 2, 2017 / 2:00 PM
Place:	Bismarck Parks and Recreation District
Next Meeting:	April 6, 2017
Attendees:	Steve Saunders, Rachel Drewlow, Roy Rickert, Richard Duran, Michael Johnson, Gabe Schell, Mark Berg, Will Hutchings, Bob Decker, Wendy Berg, Dave Mayer, Cole Higlin, Craig Schaaf, Craig Ruhland, Jeff Solemass, Katie Johnke, Keith Johnson, Kate Herzog, Ben Kubischta, Natalie Pierce, Ben Ehrith, Joey Roberson Kitzman, Fay Simer, Wendy Van Duyne
Distribution:	Steering Committee members

Welcome and Introductions

Steve Saunders welcomed steering committee members to the meeting. Members introduced themselves by sharing their favorite place to walk or bike in Bismarck-Mandan.

Process Overview

Fay Simer oriented steering committee members to the planning process via a PowerPoint presentation. Ms. Simer reviewed the reasons for initiating the plan, the benefits of bicycling and walking to communities, and the project scope and schedule. Ms. Simer outlined roles and expectations for steering committee members, asking that they help share information about the plan in their organizations, review materials ahead of meetings, and come to meetings prepared to discuss implementable options in Bismarck-Mandan.

Review Existing Conditions Memo

Ms. Simer shared highlights from the existing conditions memo documenting engineering, education, encouragement, evaluation, and enforcement activities currently underway in Bismarck-Mandan. Steering committee members shared comments on and corrections on the document. These were shared with Ms. Simer via e-mail and incorporated into the final version of the report.

Outreach Initiatives

Ms. Simer presented an overview of ways community members can participate in the plan, and asked for assistance from the steering committee in promoting these to their contact lists. Opportunities include:

- *On-line survey and wikimap*
- *Community kiosks*
- *Open house 3.2.17*
- *Bismanbikewalk.com*

Walkability Audit

Steering committee members will participate in a walkability audit. The project team will likely host one in Bismarck and one in Mandan. City elected officials may be invited to participate. The audits have not been scheduled yet, but will likely take place in May.

Discussion
Ms. Simer asked the committee to divide into small groups to discuss the following questions:
What are three phrases that describe how you'd like bicycling and walking to be in BisMan's future?
How can we achieve more with regard to bicycling?
How can we achieve more with regard to walking?

Following the small group discussion, the large group discussed the following responses, recorded below:

1. *What are three phrases that describe how you'd like bicycling and walking to be in the future?*
    - Safe, accessible, connected, more amenities such as bike racks, etc., more enjoyable amenities such as trees, landscaping, etc.
    - Predictable system—more familiarity of the "rules of the road" between users and motorists, consistent crosswalks, safe "flow", feeling of safety, etc.
    - Safety concerns, existing geometry (existing walkways not being close to crossings, etc.), visual issues (can't see where the sidewalk comes out into the streets, motorists have difficulty seeing pedestrians, etc.), Ex: sidewalks in Mandan sometimes sit 20' back which limits visibility at intersections. Plowing responsibilities of sidewalks? Whose responsibility is it to keep sidewalks clear, safe—is it neighborhood, City? How are repairs addressed--- timeliness of repairs. Potential opportunities to improve maintenance.
    - "Phases/Phrases" Understanding, Acceptance, Implementation. Phase One- baseline understanding of system and where challenges exist, provide some cultural understanding of benefits of walking/biking, Phase Two—political acceptance of bicycling and walking throughout the community to promote acceptance. Phase Three—implementation of phases and cost of implementation, adopting policies and practices of local municipalities
    - Educate the population more about benefits of these systems, provide guidance on safety practices for cyclists and pedestrians, connectivity for sidewalks—safety concerns where gaps in infrastructure create issues. Get more people using it
    - Safe and enjoyable experience, well-maintained and connected system, engaged and informed community

2. *How can we achieve more with regard to bicycling?*
    - More integration between all agencies involved in trail development, maintenance (Cities, NDDOT, MPO)
    - Socioeconomic considerations for status of bikes, "donut" in the middle of the community, serious cyclists vs. invisible cyclists. Connectivity between various socioeconomically similar neighborhoods with destinations, "help fill in the donut"
    - Address employers to provide facilities support for cyclists at location of employment, changing facilities, etc.

3. *How can we achieve more with regard to walking?*
    - Local destinations that are walkable, in good repair, Utilize the City's gap system to identify and address existing infrastructure gaps (backfilling some areas)
    - Etiquette—get more people accustomed to utilizing proper procedures, "super blocks" where it is uncomfortable to walk—better addressing these issues to make it more comfortable. More awareness of transit and facilities (transit hub). Less focus on parking lots and more focus on bike racks and amenities to support walking/biking (at intermodal locations). Encourage new development to incorporate building to include the public realm and providing facilities for biking/walking.
    - Healthy Choices—promote the differences that these make for healthy behaviors (i.e. parking locations, parking in the ramp, walking distance from car to destination, etc.) Same could be said for cyclists—want to park right in front of destination
    - Smooth sidewalks (maintained, cleared, etc.)
    - Competing consumer demands for various neighborhoods.
    - Complete streets—policies to promote development of infrastructure. Are we connecting trails with destinations. The experience between destinations is also important. Developer community doesn't regularly integrate "destination lots, opportunities for destinations" within neighborhoods.
    - Liberty on the Lakes (Minneapolis neighborhood, very walkable) good example of small lots and walkable community. Developers are reluctant to approach this model in our local community. A lot of small towns in ND are traditionally very walkable—how do we come full-circle again?

The meeting adjourned at 4:00 PM.
The foregoing is considered to be a true and accurate record of all items discussed. If any discrepancies or inconsistencies are noted, please contact the writer immediately.

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Fay Simer
Planner
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Steering Committee Meeting 2

Bismarck Mandan Bicycle and Pedestrian Plan / 193803697

Date/Time:	April 6, 2017 / 1:00 PM
Place:	Mandan Prairie West Golf Club
Next Meeting:	April 6, 2017
Attendees:	Steve Saunders, Rachel Drewlow, Roy Rickert, Stephanie Hickman, Michael Johnson, Gabe Schell, Mark Berg, Will Hutchings, Wendy Berg, Bob Decker, Cole Higlin, Craig Schaaf, Jeff Solemass, Katie Johnke, Kate Herzole, Ben Kubischta, Natalie Pierce, Ben Ehreth, Fay Simer, Peggy Harter, Wendy Van Duyne
Distribution:	Steering Committee members

Welcome and Introductions

Steve Saunders welcomed steering committee members to the meeting. Members introduced themselves by sharing what makes people ages 8 to 80 feel safe to walk and bicycle in Bismarck-Mandan.

Fay Simer shared a safety moment: bicycle riders are statistically less safe when they are on the sidewalk than when they are on the street, because they are out of drivers' line of sight. Fay then shared the agenda for the day including covering the Plan Process, What We've Heard, the Draft Vision and Goals, Planned Bicycling and Walking Network and reviewing the Next Steps.

Process Review

Fay Simer reviewed the project schedule including the first SC and Community Open House in March. Over the past six weeks we have collected a lot of data from the public through the project wikimap, on-line survey, and community kiosks stationed throughout Bismarck-Mandan. Today's SC Meeting will cover Network and Goals and the next SC Meeting will cover Engineering and Encouragement.

Review Feedback to Date

Ms. Simer noted that 35 to 40 people attended the Public Open House. The project website has had 75 visitors; 285 people have responded to the survey, 160 unique comments were made via the wikimap, and the community kiosks have been stationed at 14 locations throughout the community.

What have we heard:

Survey results – over 50% our survey participants bicycle and walk on a regular basis. The survey also asked participants if they are aware of the bicycle rules of the road. Over 80% of respondents noted that they do know the law with only 7% responding that they did not know this law. About 3% know the law but admitted to not always following the laws as a cyclist. About 11% know the law but admitted not always following the law as a driver.

Survey respondents were asked which type of facilities make them feel comfortable and which would encourage them to walk or bike more. The most successful facilities for walking and bicycling included a protected bike lane, an off-road trail, and a sidewalk with a furniture zone. Facilities with

greater levels of separation from vehicular traffic are clearly the types that are most comfortable for users. The types of facilities that the public feel least comfortable include a marked bicycle boulevard, high traffic street buffered bike lanes and signed routes. Survey respondents in turn feel the least comfortable without a buffer from traffic and say they are less likely to use these facilities. Ben Kubishta added that experienced bicycle riders might be comfortable riding on a signed rural low volume route based on experience with a project.

Engineering public input themes included the following:

Safety and Comfort: Anything that can be done to separate bikes from vehicles.

Long-term Maintenance: Keep trails well groomed, fix large cracks, control weeds growing through and good lighting.

Network Connectivity: Increase number of biking/walking trails and have them be more connected.

Other: Hard to cross major streets as lights can turn quick.

Encouragement public input themes included:

Winter Maintenance

Bike Parking: More bike stands outside shops.

Programming/events:

System Amenities: Make sure all trails are safe/lighting/in an open area with water fountains and restrooms.

Other:

Education public input themes included:

Trail Etiquette:

Driver Behavior: Education to motorists to watch for bicyclists and walkers.

Enforcement public input themes included:

Bicycle & Pedestrian Rights

Draft Vision and Goals

Ms. Simer presented the Draft Vision and Goals that she had developed based on public input received to date. The Long Range Transportation Plan (LRTP) provides the overall direction for the transportation system, and Ms. Simer explained the importance of aligning the Bicycle and Pedestrian Plan goals with those established in the LRTP.

Four goals from the LRTP link well with walking and bicycling and have shaped the development of the four draft goals. As we develop these goals, we need to keep in mind that the goals should be made SMART – Specific, Measurable, Attainable, Realistic and Time based. The four goals are as follows:

Network Use (Demand): Increase the number of bicycling and walking trips made by people in Bismarck and Mandan.

Connectivity (Accessibility): Develop a connected network of bicycling and walking routes throughout both communities in partnership with local, regional, and state partners.

Safety and Comfort (Safety & Equity): Build and maintain safe and comfortable bicycling and walking facilities for people of all ages and abilities.

Maintenance (Accessibility): Protect the public's investment in the bicycling and walking system over the long term and ensure system accessibility all year round.

Ms. Simer then asked the committee for their reactions to the goals.

Ben Ehreth asked if these goals are only referencing connecting the network and not considering the non-engineering "E's" that should be part of the plan. Ms. Simer responded that the ultimate outcomes of encouragement, education and enforcement efforts is to increase overall use of the network and the safety of its users, which is reflected in the first and third goals statements.

Gabe Schell asked how we are measuring whether we are meeting these goals. Ms. Simer responded that during our evaluation steering committee meeting, we will look at ways to measure and evaluate a baseline and how to measure whether we are meeting our goals. Also – our sub consultant Greg Lindsey is with the U of Minnesota and will be advising on how to develop a count program for the community.

Stephanie Hickman noted that FHWA has recently come out with data on how to develop a bike/ped counting program.

Kate Herzole noted that it would be nice to get feedback from the private developers regarding the importance of bicycle and walking facilities for their developments.

Ben Ehreth – we should discuss connecting differing modes including bicycling, walking, transit, etc.

Gabe Schell – also look at connecting the routes to destinations.

Bob Decker – from the standpoint of a subdivision development – we are only paying attention to cars. We aren't giving merit to cyclists and walkers. We need to ask ourselves how to develop a subdivisions to serve more than just vehicles.

Ben Kubischta noted that we need to consider commercial developments in addition to residential developments.

Bob Decker – discussion regarding needing to plow snow and where to place the sidewalk where they are right along the curb v. 20-foot offset. Consideration of where there is a parking lane in

relation to sidewalk placement needs to be considered. We should develop cross-sections based on varying conditions.

Fay noted support for a new goal that includes land use planning and design for new residential and commercial spaces.

Planned Bicycling & Walking Network
Ms. Simer noted that the foundation for this plan was the LRTP. The Bicycle and Pedestrian Plan starts with the planned routes identified in the LRTP for bicycling and walking and intersections in the LRTP identified for bike and ped improvements. In addition to the base network from the LRTP, we asked the public what additional connections they feel are needed. Ms. Simer asked the steering committee to evaluate these additional connections to determine whether they should be included in the planned network presented in the Bicycle and Pedestrian Plan. The additional connections can be categorized as serving four general needs: neighborhood connections, regional connections, river crossings, and downtown through-routes. Steering committee members broke into small groups and assessed the merits of the potential additional connections. Ms. Simer will update the planned network map based on the group's feedback and share it with the group for further discussion and concurrence.

Additional routes suggestions submitted via e-mail by Bob Decker:
Look at 3rd Avenue NE and Division Street NE

- From Collins Avenue to 15th Street NE on 14th Street NE widen the sidewalk on the north side to a two-way multi-use path (playground)
- From 15th Street to Division Street NE on 14th Street NE and then 3rd Avenue NE widen the sidewalk on the north side to a multi-use path and put an eastbound bike lane next to the south parking lane in the street.
- Change the south parking lane on Division Street NE to a two way bike lane from 3rd Avenue NE all the way to Mandan Avenue. New development east of 8th Avenue NE is being designed so we could require a bike lane through the new development. No lots front on the south side of Division Street NE in the first phase of the new development. Width of street in new development can be wider than existing Division Street NE if needed. Division Street NE at 8th Avenue NE is 42' and they used 44' when drawing their preliminary water and sewer plans for the new development. Let me know if you think we should widen it beyond 42'.

There is an existing multi-use path at each end of this route.

Route Prioritization
Ms. Simer reviewed the criteria that will be used to evaluate the planned network to understand high priority routes that most meet the values established by the plan's goals. Routes and intersections will be evaluated for their ability to support the following areas: safety, equity, accessibility, and demand. There are several sub-categories of evaluation within each of the four main topic areas. However, the steering committee concurred that each of the four main topic areas should be weighted the same in the evaluation system.

Gabe Schell – does the length of a routes affect its weighting? Ms. Simer explained that the rating system will look at route segments on a per mile basis, so as not to bias the system toward longer routes.

Gabe Schell – Should we rank any of the four main topic areas higher based on availability of better data in those areas? Ms. Simer responded that the Stantec team has reviewed all of the criteria in detail and presented only those for which there is reliable, measurable data. This is why some of the main topic areas are evaluated based on two criteria and some are evaluated based on three.

Ben Ehreth- What about zero-vehicle households? Will Hutchings responded that Census data on zero vehicle households is aggregated to large areas and my not be useful. Peggy Harter responded that equity criteria were established based on the MPO's environmental justice plan.

Kate Herzole - What about employment density? Peggy Harter responded that the origins/destinations data presented includes major employers. Ms. Simer responded that Stantec will investigate the feasibility of adding that data.

Will Hutchings - Are the origins and destinations current? Fay Simer responded that the origins/destinations used are taken from the Long Range Transportation Plan. Will Hutchings will review this list and add additional destinations that have been constructed since the LRTP.

Walkability Audit
Ms. Simer stated that a walkability audit will be scheduled with the steering committee in early June.

The meeting adjourned at 3:00 PM.
The foregoing is considered to be a true and accurate record of all items discussed. If any discrepancies or inconsistencies are noted, please contact the writer immediately.

Stantec Consulting Services Inc.

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Steering Committee Meeting #3

Engineering Review Meeting

Bismarck-Mandan Bicycle and Pedestrian Plan/ 193803607

Date/Time: May 23, 2017 / 1:00 PM

Place: **Hillside Aquatics Complex Community Room**
1719 E Boulevard Avenue, Bismarck, ND

Next Meeting: May 24, 2017

Attendees: Steve Saunders – Bis-Man MPO
Rachel Drewlow – Bis-Man MPO
Al Thompson – Central Dakota Cyclists
Jeff Solemsaas – City of Bismarck PD
Bennett Kubischta - self
Dave Mayer – Bismarck Parks
Craig Ruhland - Central Dakota Cyclists
Will Hutchings – City of Bismarck Planning
Kate Herzog-Downtown Bismarck
Mark Berg – City of Bismarck Engineering
Ben Ehreth – self
Bob Decker – City of Mandan Planning
Natalie Pierce - Morton County Planning
Wendy Van Duyne – Bartlett & West
Carron Day – Stantec
Peggy Harter – Stantec

Distribution: Steering Committee Members

Action Item	**To Be Completed By**	**Completion Date**
Peggy – Send out SC #4 Minutes	**Stantec**	
Develop Preliminary Engineering Concepts for top 5 intersections and routes	**Stantec**	

Welcome and Introductions
Everyone introduced themselves and responded to Peggy's question "Where did you walk today?"

The meeting started with a Safety Moment:
"After a crash or any impact that affects your helmet, replace it immediately."

Peggy then reviewed the agenda for the meeting and material that would assist the Steering Committee in their prioritizing network segments and interchanges to study further.

Plan Process - The presentation included a graphic schedule and Peggy gave an overview of what was addressed at each previous Steering Committee meeting and the timeframes for the draft and final plans.

Existing Network, Goals and Vision - The first graphic, included in the handouts, illustrated the recommended overall connections. The routes colored green = existing facilities; the red are the future facilities. Peggy discussed the confusion she'd heard regarding whether the study was looking at bike or pedestrian facilities. She said that the routes are where we know we need bicycle facilities. In studying the bicycle facilities prioritized today, we will also address how or if the pedestrian needs are met in those areas. Next she showed the initial and revised vision and goals for the project (Network Use, Connectivity, Safety and Comfort, Maintenance, Planning) reminding the group that these factors were used to prioritize the preliminary list of intersections and network segments to those presented today.

Map of Routes Considered – This graphic illustrated all of the routes considered and the process to narrow down the list. Peggy reviewed the process since the last Steering Committee. The team knew it made sense to prioritize the routes so they broke the routes into segments of how you would build the routes. They then sent the revised map to the Bismarck and Mandan planning and engineering representatives for review. The next map in the handouts (the one with routes marked orange and red) is the adjusted map. Peggy asked for questions on the process or the maps and there were none.

Peggy noted that the purpose of today's meeting and action items following today's meeting are as follows:

- Prioritize "five in five" improvements
- Identify preferred facility types for priority links
- Review five intersections and prepare conceptual designs for safety improvements
- Identify best practices for roadway and bikeway design

In evaluating routes for prioritization, Stantec considered the entire length of the route (defined as an on-street bicycle facility or a shared-use trail, not a sidewalk. Elements considered in the score were: collision history, context and suitability; equity (children, older adults and population in poverty). US Census block data and the MPO environmental justice information was used for this. The accessibility and mobility scoring addressed bicycling network connectivity, multimodal connectivity and physical barriers (railroad, bridges and arterials). Network demand addressed destinations served, community acceptance and input through this process. Each segment was scored 0-5 based on these criteria, with the highest potential score being 25. When each route was

scored, the total score is then divided by the length of the route to eliminate bias toward longer routes.

In evaluating intersections for prioritization, Stantec utilized the Long Range Transportation Plan plus any issues identified by the public. All four corners of an intersection were considered. Intersections were evaluated for both bicycling and walking. For intersections, safety addressed collision history and intersection conflicts. Equity used the same criteria as for the routes; accessibility and mobility considered intersection connectivity. Demand factors included destinations served; community acceptance and input; plus bicycle and pedestrian user counts.

Networks and Intersections to Move Forward

The next two graphics, which were handouts to the committee members, illustrated the preliminary list of highest-ranking route segments and intersections. The Steering Committee was asked to review the graphics and provide feedback based on members' local knowledge of routes. They were also asked to consider potential opportunities for coordination with other capital projects, how each route connects to destinations, other on-road bicycle facilities, trails and transit. Finally cost/feasibility were to be addressed focused on what routes are feasible and affordable to implement?

The handouts for the highest-ranking routes and intersections included the top 10 preliminary routes for Bismarck and top 5 for Mandan to consider. The sheets included an aerial photo with the route shown in red plus a table that include the route's ranking, total score (some of the scores were very close), Average Daily Traffic, Speed Limit, Suggested Facility type and an indication of whether the cost would be "higher" or "medium".

The graphics for the intersection consideration were similar to those for the routes. They included an aerial photo with the subject intersection circled in red shown in red plus a table that include the ranking, ADT and control type (signal, all stop, no stop) Bismarck had 10 intersections to consider and Mandan had 5.

Peggy reviewed each of the candidate segments and intersections and asked the Steering Committee to break into a Bismarck group and a Mandan group to narrow down the highest-ranking routes and intersections to those that will be studied further.

In their review the Steering Committee were also asked to discount the previous numeric rankings between the various segments and intersections and to start fresh in considering these segments and intersections. From Bismarck 10 candidate route segments the Bismarck group will identify their top 3 in priority order; the Mandan group will identify their top 2 to reach a total of 5 segments.

Steering Committee Input on the Routes and Intersections

Wendy Van Duyne took notes for the Bismarck group and Rachel Drewlow did the same for the Mandan group.

Bismarck Routes: Priority #1 = R4, Priority #2 = R7, Priority #3 = R10

Priority #1 – Route 4: South Washington Street (W Wachter Avenue to W Main Avenue)

- Shared use path would be right facility.
- Connects existing trail to the south and brings pedestrian and cyclists to the downtown.

- The connection between Indiana Avenue and Bowen Avenue will be the biggest obstacle with connecting this route.

Priority #2 – Route 7: North 4th Street and Dominion Street (W Main Avenue to N 10th Street)

- Protected bike lane gives good connectivity. This could be accomplished with resurfacing improvments

Priority #3 – Route 10: 12th Street (E Bismarck Expressway to C Avenue)

- Shorten this route to remove the link from Broadway to C Avenue. North of Broadway, the right of way is only 30-feet wide. Keep the link from Broadway to E Rosser Ave as a future facility as its own segment but not part of this route.
- This still takes people up to the hospital at Broadway
- The southern portion of the route has terrain issues that will make it a challenge.

Priority #4 – Route 9: East Main Avenue (S 26th Street to E Bismarck Expressway)

- If Bismarck could have picked a fourth route this would have been the one.R9
- Extend segment to the north connecting into the existing path along E Bismarck Expressway.

Bismarck Intersections: Priority #1 – Intersection #2, Priority #2 – Intersection #5, Priority #3 – Intersection #3

Prioirity #1: Intersection 2 – West Bismarck Expressway & South Washington Street

- This route is part of the chosen segment to improve for South Washington Street. Improvements could be completed as part of the same project.

Priority #2: Intersection 5- East Divide Avenue & State Street

Priority #3: Intersection 3 – I-94 South Ramp and State Street

Mandan Routes: Priority #1 = R1, Priority #2 = R2

Priority #1: Route 1 – 6th Avenue SE (3rd Street SE to 1st Street NE)
This was considered to be the most important segment to consider for improvements. It is a critical link but it does not feel safe today even for experienced riders.

There are sidewalks on either side of the road. It is a critical link but avoided because it does not feel safe. The street is too wide at the Dan's Grocery. The intersection at 3rd is confusing and congested. The road meanders; it is difficult to navigate as a pedestrian because the buttons don't align with the crosswalk (a pedestrian is not sure which buttons go with what crosswalk). A road project is expected at Main Street for traffic signals. The connection at 6th and 1st could use special treatment.

There is a stop sign by A&B Pizza (1st Street SE and 6th Ave SE) but maybe a 4-way stop would help slow the traffic.

Priority #2: Route 2 – 3rd Street SW and SE (Hwy 6 to 6th Ave SE

This segment addresses some of the scoring criteria well, but it moved up to second, primarily because the group thought that the other options were further out in time. Currently this is a popular route. This route has Mary Stark Elementary School, a ball field and a golf course nearby. It provides connectivity to Hwy1806 and provides a connector from Hwy 6 to the Memorial Hwy strip.

Minimal changes could improve visibility. Facility near the school could help with student movement.
There is no good link to the school. The remainder of 3rd Street might not need as much.
There is the school and Traffic on 3rd Street is not very fast but the street is narrow.
Lane sharrows could help. Park is well used; consider adding stop signs to slow traffic at the municipal ball park.

Additional comments about 3rd Street further east:

- The east end of 3rd Street, near the railroad and Riverwood is a popular connector. There are Share the Road signs at either end but it is a long stretch and it would help to add Share the Road signs in between.
- In this same area, the trail crossing at the Fort Lincoln trolley station and 3rd Street SE is very challenging. This may be a good candidate for a HAWK signal.

Mandan Intersections: Priority #1 = Intersection #3, Priority #2 = Intersection #1

Priority #1: Intersection 3 - Mandan Ave East and Main Street East
This is a scary intersection. This is more of a priority than Sunset. Speeds seem faster than Sunset. It is a steep slope and sight distance is not good. The slip lane makes crossing the street and riding through it that much more dangerous. This intersection feels so challenging for almost any mode. Issues with right turn slip lane. Intersection = similar in size to Sunset but this feels more dangerous because of the speeds (much faster than Old Red Trail and Sunset). Because of the curve the sight distance is a challenge. The slip lanes are used heavily and that creates an issue for pedestrian and bike. There is a lot of opportunity to make improvements. A viable refuge island might help.

Priority #2: Intersection 1 - 3rd Street SE and 6th Ave SE
I1 connects the top 2 route priorities. The intersection west bound to south bound DOT has looked at the traffic light and the lanes. There is an opportunity for road diet past Dan's Grocery. Changing the roadway from 4 to 3 lanes would improve safety to vehicles. Avoid the merge issues (at the curve). Part of the roadway could use the turning lane for the grocery as traffic backs up there.
It is common for cyclists to cut thru the trailer park – a safer option might be an alternative route thru trailer park – there are some(not all) city streets within it.

Design Guidance for Future Networks

Peggy ended the meeting talking about the team's desire to leave the group with design guidance, a framework for the future through a 3 page memo, "Overview of Bikeway Selection Framework". The document summarizes the range of speeds and volumes at which each bikeway facility is most likely to be suitable for the design user group of the "Interested but Concerned" proportion of the population and it cites information sources.

With this information, the cities and park departments have criteria to identify facilities for streets. If you have a route where you say 25 mph BUT speeding is a problem might want to do a speedy study before select facility type

Peggy reviewed hand out examples. A protected bike lane, for example, is comfortable at a higher speed and with a range of users. This option can be considered even with parked vehicles (lane on passenger size) but you need space.

Bicycle Boulevard. Identify those locations. Identifying them, developing a map including what the different path types are. On existing map shows the dirt trails (need to be identified as such). Users would know the existing routes and type. With a bicycle boulevard, the message is that we are putting you on a road that you should feel safe on.

Steering Committee member comment: Transition to multi use path to regular roads and from cycle paths are always a big issue. Peggy responded that you may have to identify the existing facility you are tying into and how to make those transitions.

Another member asked if civil engineering programs today were teaching about the importance of alternative modes of transportation.

Next meetings
Tomorrow – encouragement
SC #4 – will cover enforcement and education – July 12, 2017
SC #5 – will cover evaluation and follow up on today's meeting for engineering
Draft plan will be completed in mid-September

The meeting adjourned at 4:00 PM
The foregoing is considered to be a true and accurate record of all items discussed. If any discrepancies or inconsistencies are noted, please contact the writer immediately.

Stantec Consulting Services Inc.

Peggy Harter
Project Manager
Phone: (701)
Peggy.Harter@stantec.com

Attachment: Meeting Sign In Sheet

cc. Steering Committee Members

MEETING SIGN-IN SHEET

Project Name: Bismarck- Mandan Bicycle and Pedestrian Plan		
Client Name: Bismarck-Mandan MPO		
Stantec Project No. 193803697	Date of Meeting: May 23, 2017	Time of Meeting: 1:00 PM
Project Manager: Peggy Harter		

Name	Representing	Phone
Steve Saunders	MPO	Phone: 355-1848 Cell: Email: ssaunders@bismarcknd.gov
Rachel Drewlow	MPO	Phone: 355-1852 Cell: Email:
Allen Thompson	Central Dakota Cyclists ND active TRANSPORTATION Alliance	Phone: 701-471-4207 Cell: Email: athomp@bis.midcoast.com
Jeff Salemsaar	City of Bismarck P.D.	Phone: ~~701-471-7~~ Cell: 701-355-1914 Fax: Email: jsalemsaar@bismarcknd.gov
Bennett Kubischta	Self	Phone: 701 258 5012 Cell: Email: Kubischta@Bis.Midco.Net
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CRAIG RUHLAND	DAKOTA CENTRAL CTCIST.	Phone: 701-390-3424 Cell: Email: cruhland@JGARCHITECTS.com
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MEETING SIGN-IN SHEET

Kate Herzog	Downtowners Bismarck	Phone: 701-223-1958 Cell: Email: Kaherzog@gmail.com
Wendy VanDuyne	Bartlett & West	Phone: Cell: Email: wendy.vanduyne@bartwest
Natalie Pierce	Morton County	Phone: Cell: Email:
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BEN EHRETH	PRIVATE RESIDENT	Phone: Cell: 701-471-5186 Email: behreth@nddot
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Carter Day	Stantec.	Phone: Cell: Email:
		Phone: Cell: Email:
		Phone: Cell: Email:
		Phone: Cell: Email:

Steering Committee Meeting #3

Encouragement Review Meeting

Bismarck-Mandan Bicycle and Pedestrian Plan/ 193803607

Date/Time: May 24, 2017 / 8:00 AM

Place: **Hillside Aquatics Complex Community Room**
1719 E Boulevard Avenue, Bismarck, ND

Next Meeting: TBD

Attendees: Steve Saunders – Bis-Man MPO
Rachel Drewlow – Bis-Man MPO
Joey Roberson-Kitzman, - MPO
Al Thompson – Central Dakota Cyclists
Katie Johnke – Public Health
Wendy Berg DO Bismarck and Mandan, Bismarck Parks
Bob Decker – City of Mandan Planning
Ben Ehreth - self
Mark Berg – City of Bismarck Engineering
Kate Herzog - Downtown
Will Hutchings – City of Bismarck Planning
Bennett Kubischta - self
Wendy Van Duyne – Bartlett & West
Carron Day – Stantec
Peggy Harter – Stantec

Distribution: Meeting Attendees and Absentees

Action Item	**To Be Completed By**	**Completion Date**
Send out SC #3 Meeting Minutes	**Stantec**	
Develop Implementation Steps for top 5 Encouragement Items	**Stantec**	
Replace the top 5 Map of Network Encouragement Item with Development of a Bicycle and Pedestrian Committee	**Stantec**	

Welcome and Introductions
Everyone introduced themselves and responded to Peggy's question "When do you like to bike or walk? Do you bike or walk as a mode transportation or recreation?"

The meeting started with a Safety Moment:
"When walking, look across ALL lanes you must cross. Even if one motorist stops, do not presume drivers in other lanes can see you and will stop for you."

Peggy then reviewed the agenda and the progress made on the 23rd when the Steering Committee narrowed down the highest-scoring route segments and intersections to 5 intersections and 5 route segments.

The date of the next Steering Committee is not set yet but between now and then we will hold a Walkability Audit. Information on that will be sent to the Steering Committee members.

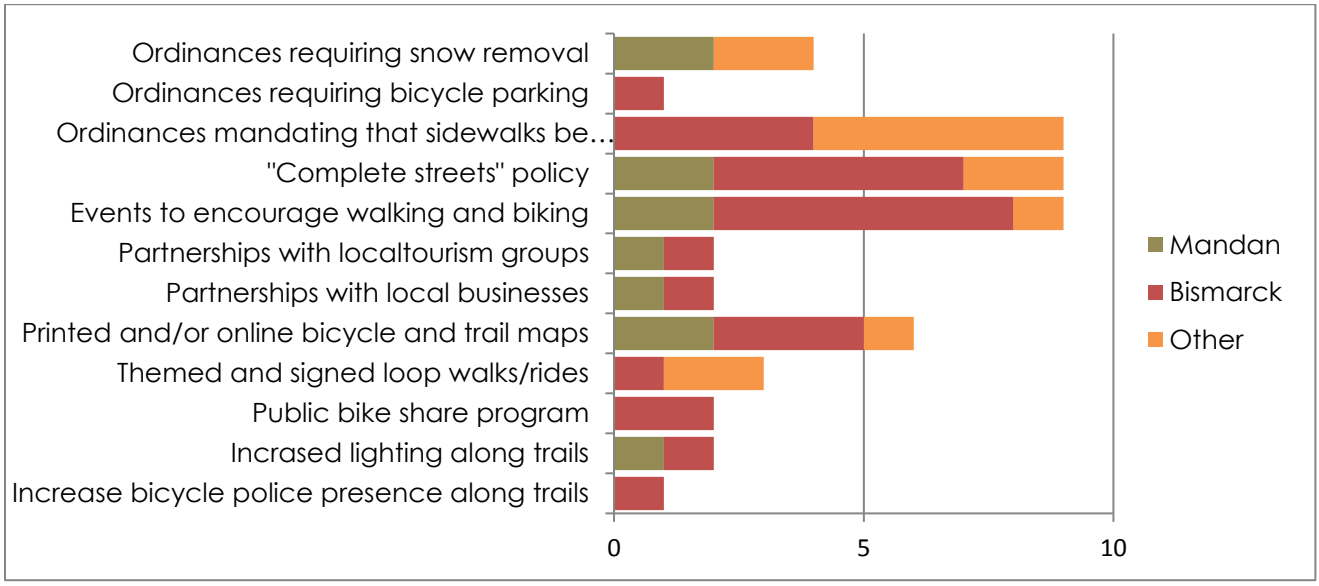
Encouragement Overview and Identifying Encouragement Issues

We can think about encouragement in two ways:
- Encouragement to build a safe, comfortable bicycling and walking network or
- Encouragement to use a safe, comfortable bicycling network

Peggy reviewed how we identified the encouragement issues to move forward to today's meeting. Information sources included
- Existing code language (City of Bismarck, City of Mandan and the ND Century Code)
- Conversations with public works staff and engineers
- League of American Bicyclists Bicycle Friendly Community report
- Issues identified in the ongoing School Safety Crossing Study
- Research of local advocacy groups and events
- Review of policy reports including Move this Way (2013) by ChangeLab Solutions and Guide for the Development of Bicycle Facilities (2012) by AASHTO

Public input themes were drawn from the Survey Monkey priorities and previous input from the public meetings and survey. Typical comments were:
- "Better sidewalk and trail clearing during the winter months - snow and ice on major trails make it very difficult to exercise outside."
- "More bike stands outside shops."
- "More advertising/awareness of the trails we do have. Maybe highlighting a week annually to raise awareness and encourage people to walk to work"
- "Make sure all trails are safe/lighted/in an open area with water fountains and restrooms."
- "Plan neighborhoods and commercial developments around walkability and bikability."

Steering Committee Survey Results
Participation in the survey included 53% from Bismarck, 24% from Mandan and another 24% from elsewhere. When asked "What are the top encouragement issues to address?" the results were as shown in the chart below.



Overall Top Encouragement Issues

- Ordinances requiring that sidewalks be built in new subdivisions when roadways are built. Is there another timeframe that would work better?
- Ordinances requiring snow removal and winter maintenance on sidewalks and bicycle facilities
- "Complete Streets" Policies
- Printed and/or online trail maps for the entire region. This issue weighed heavily in the polling and input from the public meeting.
- Events such as "Open Streets" or "Cyclovia"

To be successful, a champion and funding need to be identified for each.

For the discussion, the Steering Committee split into two groups. Each Encouragement issue had a facilitator and the same six questions were used to guide the discussion.

ORDINANCES REQUIRING THAT SIDEWALKS BE BUILT IN NEW SUBDIVISIONS WHEN ROADWAYS ARE BUILT.

In what ways can agencies coordinate better?

- This issue has been related to residential subdivisions in previous discussions but there is a comparable issue with commercial developments too. Bismarck's Hay Creek Shops, for example, has sidewalks in front of all of the stores but there are no sidewalks between the shops and State Street. The Walmart on the north side of Bismarck has a similar situation except that there the sidewalks extend to the State Street right-of way.
- The group agreed that today State Street in this location is not a candidate for complete streets.
- This issue was not discussed in great detail (because the Complete Streets issue was a more compelling topic) but no one in either group expressed support of constructing all of the sidewalks in a plat with adjacent road construction. The main reason given was that nobody knows where the driveways will be located before the building permit is issued.
- Many examples of building permits that show driveways located where existing power poles and hydrants are located.

What would make information sharing easier?

- The public could be better informed about the sidewalk requirements. The groups heard examples of both cities, often in response to complaints regarding missing sidewalks, constructing a sidewalk and charging the property owner for the work.

Easy opportunities regarding policy change include:
- No easy opportunities regarding the sidewalks

Barriers to policy change
- Change is always difficult
- Developers will complain about the additional early cost of sidewalk construction
- Sidewalks are usually constructed with 4" of concrete except that the driveways are constructed with 6" of concrete. If the sidewalk is constructed with the roads they are likely to be damaged with construction of the house and if the sidewalk is constructed at 4", the developer will need to tear it out and install a sidewalk 6" where the driveway crosses it. An alternative would be to construct sidewalk at 6" deep across the entire frontage (not a realistic option).
- An option would be to add sidewalk costs to the street assessments.

Next Steps
- Research the Bismarck street lighting process – when the development reaches a certain percentage of completion (the city reviews this progress once a year) the city installs the street lights throughout the development and assesses the landowners. This might have application to the sidewalks.
- An alternative would be Mandan's approach to require that all sidewalks be in place within a certain timeframe after platting but to allow few waivers and yearly check on compliance.
- Waivers are given when a home is constructed just before the winter or where there is little development in the area at the time of construction.

What recommendations for encouragement do you want to see in the plan?
- Consideration of alternative approaches to ensure timely sidewalk construction.

Who are responsible parties?
The local governments (Burleigh County, Bismarck, Morton County and Mandan) are responsible for adoption of the sidewalk policies

Timeline for implementation?
Consideration of alternatives would be completed in 2018 with adoption of amendments to the current ordinances or city practice accomplished in 2019.

What are our five-year initiatives related to bicycling and walking?

ORDINANCES REQUIRING SNOW REMOVAL AND WINTER MAINTENANCE ON SIDEWALKS AND BICYCLE FACILITIES

During the winter of 2016/2017, the Bismarck-Mandan area experienced more snow than it had for years. In many locations people were required to walk in the streets for days because the sidewalks were not cleared. The City of Mandan is currently revisiting their snow removal practice. Snow removal on city streets (including unprotected bike lanes) is done by the cities,

snow removal on public trails is done by the parks departments and snow removal on sidewalks is the responsibility of the property owner.

The parks departments have established priorities for snow removal on the trails. Priority is given to heavily used trails like the Century Ave trail. They provided notice on their web site which trails were open and which were closed. Last winter a lot of sidewalk trails never opened while there was snow on the ground.

Both Bismarck and Mandan require property owners to remove all snow and ice from their sidewalk within 24 hours after its deposit. Generally (exceptions were made during the winter of 2016/2017) if is not removed it may be removed by each city and the cost charged to the property owner. This process is driven by complaints. Mandan has additional penalties. Bismarck includes a reminder about the snow removal requirements in their water bills at the beginning of the season.

Last winter complaints regarding street snow removal were focused in the Central Business District, bridges and near the schools. Downtown people cleared the sidewalks in front of their buildings moving the snow onto the street and loosing parking spaces.

In what ways can agencies coordinate better?

What would make information sharing easier?

- The door hanger, depicted in the handout, describing the snow removal policy, was viewed as a good idea by Steering Committee members. This is better than having neighbor complain about neighbor to the cities.

Easy opportunities regarding policy change include:

- Prioritizing snow removal from sidewalks and including that information in all educational material (water bill inserts, city websites and public service announcements. Priorities would be given to heavily used sidewalks.

Barriers to policy change

- The policies generally seem adequate but in practice the property owners were not clearing their sidewalks in the winter of 2016/2017 and people were walking in the street in both cities, including heavily traveled streets.
- Since the cost of removing snow from the sidewalks of non-complying landowners is passed on to them, the issue is equipment and manpower.
- During a snow event, the cities do not have the manpower to inspect all of the city sidewalks to see who is in compliance and who is not. In both cities their actions are driven by complaint
- Using part-time city workers and/seasonal employees for this work has been discussed. One barrier to a commitment to this practice is the possibility that future winters will not be like this winter of 2016/2017. There would be some equipment needs and training. Last winter Bismarck hired additional personnel from December to February and paid 150,000 per day for snow removal. Mandan used some volunteer firefighters and pulled people from the dump to assist with snow removal.
- There are some locations where existing snow removal equipment doesn't do the job. Example of a paved median that was not cleared.

Next Steps

- The policies could be tweaked to indicate that the cities "will" (not "may") remove snow from the sidewalks which, in the city's opinion, have a high priority. Like their snow removal priorities on the streets, a priority system would then be applied to the sidewalks.

What recommendations for encouragement do you want to see in the plan?
- Recommendations for encouraging timely snow removal to include continuing the water bill insert regarding snow removal and public service messages on the importance of snow removal.
- A public service announcement and messages on the websites about neighbor helping neighbor in time of need – help your neighbor with their snow removal instead of complaining about him.

Who are responsible parties?
Landowners, City leaders including public works personnel. Community leaders to encourage neighbor helping neighbor.

Timeline for implementation?
The sidewalk clearing priority information should be in place before the winter of 2017/2018

What are our five-year initiatives related to bicycling and walking?

"COMPLETE STREETS" POLICIES
The concept of "Complete Streets" has been presented here before but never gained traction. Since there was pushback, the advocates concluded that it was pointless to push.

In what ways can agencies coordinate better?
- Trickle down from government mandates
- Complete streets are more than just within the right-of-way and include mixed land uses.
- People want different things; allowing a range of housing types, for those who choose this option, would be positive.
- The geometry of a complete street is different depending on where it is located. In a low density residential area there is usually no need for a bike lane.
- Locate schools in more dense areas
- Decision makers involve more people, more views when purchasing land for uses that will draw the public (schools, parks, recreation, etc.)
- Planning Commission should include school representatives and others
- Downtown amenities should be geared toward the very young and old
- NDDOT should have more planning emphasis as opposed to strictly moving traffic better
- In prioritizing roadway construction funding, consideration (and points if the road priorities are scored) could be given to complete streets.
- Complete streets could be considered by the cities in their development review process.
- Develop corridor guidelines (not local roads) and for local roads consider interconnectivity (road and trail).

What would make information sharing easier?
- Make more agencies part of the street planning and decision-making process
- When agencies get involved – get them together early
- Education disconnect between complete streets and citizens, have citizens more planning conscious
- Start education in early grade school

- Change conversation of "winners" and "losers"
- Use city and park linkages more effectively
- Message of complete streets are better received through education than from the government
- People want assurances money won't be wasted – little things help a corridor
- Consider adjusting front setbacks to accommodate bigger setbacks where additional room is now or will be needed.

Easy opportunities regarding policy change include:
- Establishment of guidelines
- Use "will", "shall" and "may"
- The first step is Education, starting in the grade schools.
- Make policies flexible for different types of housing needs
- Countdown for walkers
- "No right turn" light activated when crosswalk activated
- Use "bright" big ideas for bike lanes – build it and they will come – then "promote"
- Deal with snow better and manage snow better
- Bike box development
- "All walk" at crosswalks – maybe 5th and Main in Bismarck
- Add consideration of streetscape to roadway construction RFPs.
- Develop guidelines to give to contractors regarding streetscape (# of trees, canopy, setbacks)
- Initiative to present positive alternatives to those involved in real estate.

Barriers to policy change
- Time
- Money
- Attitude
- Politics
- Idea that change is bad
- Money or might cost money
- No life cycle costs estimates , more financial evaluation of alternatives
- Even if staff or advocacy group wants complete streets, still need a champion
- Consideration of complete streets in roadway funding priorities is counter to current practice which the group thought would be difficult to change since the MPO, for example, uses performance measures to determine priorities.

Next Steps
- Start conversations
- Gain flexibility in design standards
- Consider what is desirable in different locations/situations. Complete streets in a low density residential area is very different from a complete street downtown. What is recommended form a bridge – bike lanes and sidewalks?
- Recruiting and finding a local champion
- Using Portfolio Commissioners
- Use better terminology or label – road diet is bad
- Don't let local fears deter you, bigger cities are doing it.

What recommendations for encouragement do you want to see in the plan?
- Education – multifaceted

- Identify advocacy groups for complete streets
- Demonstration project – make sure that it is successful – then promote
- Don't use "complete streets" term put convention in better frame of "safety", "better driving experience?"
- Promote livability, document successes

Who are responsible parties?
- From the public (advocacy groups and citizens) GO Bismarck
- Must be sold
- Find downtown developers
- Advocacy group – GO! Bismarck-Mandan
- MPO, city government – more revisiting of studies

Timeline for implementation?
- Begin now and work for the next 3-5 years
- Keep project in front of public

What are our five-year initiatives related to bicycling and walking?
- Start Advocacy and Education
- More complete streets in appropriate locations
- Look for opportunities
- Paint lanes and delineation
- Education – talk to kids in grade school

PRINTED AND/OR ONLINE TRAIL MAPS FOR THE ENTIRE REGION

In what ways can agencies coordinate better?
- Bismarck Parks has an online map
- Existing maps are currently championed by the Parks District and somewhat the MPO
- Different agencies are developing the information differently
- City of Bismarck uses GIS; Mandan Parks & Rec and City of Mandan – not sure of the format

What would make information sharing easier?
- Get Parks & Rec on both sides of the river working together
- City of Bismarck has a "Maps Gallery" that is significantly interactive.
- Would be better to have one map for the entire area
- Have all information in GIS for map input
- Map should be easy to access on the web
- Who is the audience – everyone (cyclists and pedestrians
- Map should show all trail types: paved, off-road, on-street, etc. It's hard to know where the unpaved trails are.
- All information is public not proprietary, just someone needs to manage it.
- Might be easier with a 3rd party independent resource that is responsible for updating date once a year.

Easy opportunities regarding policy change include:
- Utilize ATAC for lower cost data collection
- Mandan used a student intern to do this work

- Putting an on-line informative map through Google Maps. Can we ask Bismarck Parks & Rec and GO if they're managing their Google locations currently? Can multiple people take ownership of a large area?
- Google Maps is a goof interface to use, easy to update site information, interface is widespread.
- Search results – think about Google analytics, how people search for information. What site comes up first when you search for this information?
- Different platforms could provide greater levels of detail for cyclists/pedestrians
- Where do you house the map – look on everyone's site.

Barriers to policy change
- Staffing – can provide information but time is not available to put it together
- Only showing those connections necessary to connect trails/lanes
- Two cities, two park districts = needed coordination to do this
- Collect all trail information in GIS and code each trail for both cities
- Include "amenity" layers for bike parking, transit, origins/destinations
- How do you make a layer for sidewalks that you need to zoom in on before it shows up
- Difficult to continuously monitor the map with sidewalk updates

Next Steps
- Does Google Maps actually offer this already?
- The consensus for this encouragement items was to remove it from the top 5 and replace it with an encouragement item to develop an area wide Bicycle and Pedestrian Committee that will meet to carry forward the implementation steps of the Bike Ped Plan.

What recommendations for encouragement do you want to see in the plan?
- One group was not very excited to carry this idea forward
- Are the Parks Departments managing their Google locations?
- Open streets map – has a lot of existing information on trail systems – use their data. Is there information on our area?
- Does not include sidewalks. Too difficult to maintain
- Could cover the sidewalk piece with a general note to indicate that sidewalks are adjacent to all city streets
- Bismarck Parks & Rec has the trail names on their site and on some streets
- What is Mandan Parks doing? Only pdf maps – issues with the data

Who are responsible parties?
- Bring City of Bismarck GIS into the conversation
- MPO is the agency that can coordinate everything Metropolitan-wide
- Whoever manages the Google map site should manage the internal data. This could be the MPO- UPWP project
- The state could possibley house th data once collected
- Go Bis-Man could house the map – all volunteer. It would be costly to add the map to their site.

Timeline for implementation?
- Wait until Mandan has the data available
- 2019 MPO UPWP – project for an area-wide trail map (static and GIS
- Utilize ATAC for data collection

- Determine if D.O.H grant funds could be available for the project. Determine how to maintain the map

What are our five-year initiatives related to bicycling and walking?

Other comments
- Is it realistic to create a map for everyone?
- Information is buried – hard to find. The information is not the issue – it's the access to it that is
- A bicycle/pedestrian coordinator is needed
- GO can't get an Executive member in Mandan
- Mandan Progress Organization – one shop with Mandan projects.
- There are a number of smaller groups in Mandan running the different organizations.
- Mandan events have more community focus than bike/pedestrian focus
- On-street physically signed route system should be a long-term goal.
- Currently both park districts have an online map
- Bismarck has a Google Map and a printed map
- Paper copies are available at kiosks at trailheads
- Static paper maps can be difficult to read fine levels of detail
- Maps should include facilities including bike racks, public restrooms
- In addition to the maps it would be good to considered numbered bicycle routes through the community. It's easy to identify and navigate. Bismarck Parks & Rec has already done this to some degree (labeled specific routes) Identified on their app /online maps.
- Do you start with routes that are already in place? Cost implications?
- Standard signage is an option but maintenance if the signs could be an issue if nobody has claimed maintenance.
- Wayfinding signage has somewhat been done
- Uniform wayfinding standards – not consistent in the City of Bismarck
- How do you brand the identity of wayfinding consistency across multiple jurisdictions?

EVENTS SUCH AS "OPEN STREETS" OR "CYCLOVIA"

In what ways can agencies coordinate better?
- Mandan receives a lot of volunteers as U of Mary football team to help at events
- Main Street closure for St. Patrick's Day would be nice
- Mandan has been very successful in closing Main Street. Closure happens routinely for ½ dozen or so regular events that are held each year. Adjacent greenspace is helpful
- Bismarck Farmers Market (Main Street in Bismarck – wish it were easier to close the street.
- Dog-friendly events – Slide the City, Buggies and Blues, Touch a Truck
- Bike events themed for …
- Different entities coordinate these events
- Getting people to show up at events is always difficult; marketing/perception is difficult. Everyone is supportive but it is difficult to coordinate.
- Hard to pinpoint/key into specific attendee groups. Currently it's a shotgun strategy
- A lot of independent groups – Larson's, Epic, Street Cyclists, etc.
- Go! Will do an open streets event next year. This year is a semi open street with the farmers market.
- Few champions (individuals) with large extended support. Need more for marketing and event planning. Need more pinpointed/targeted
- Hard to build momentum from our bike groups

- Community needs more coordination Perhaps a permanent bike/ped committee
- GO Bis-Man had to step back on a full open street this year will be more of an expanded farmers market. Next year – more of an open street- Intent similar to "Street Alive" in Fargo-Moorhead
- Overall coordination – everyone is supportive but need to coordinate police, water, stalls, planning, etc. – with a low turnout.

What would make information sharing easier?
- Having an event coordinator
- A lot more coordination needs to happen amongst the groups. Several core groups are doing their own thing.
- A lot of effort gets delegated to one or two individuals, but it gets to be burdensome. Is there a way a group could be assembled with decent ties to the municipal agencies?
- A lot of technical expertise required for putting on events. Not all volunteers are familiar with the steps to coordinate. Downtowners field a lot of these calls.
- Street closures are available for everyone – you just need to know how to do it.
- Develop a bike/ped Steering Committee
- Have one location for information at community events, perhaps Bismarck-Mandan Visitors and Convention Bureau, could also utilize community access tv, Dakota Media Access to house a public calendar along with advertising events. The Chamber of Commerce only lists their member events
- Approach existing events to help dovetail safety and awareness opportunities
- Marketing has been a shotgun approach and may need to be more targeted/focused events

Easy opportunities regarding policy change include:
- Capitalize on the mountain biking group with cash prizes; also evaluate how much those individuals spend on this to highlight the economic benefit to the communities
- Getting sponsors for bike events, like Krolls for the marathon
- Safety concerns and getting city commission approval
- Type of event – bicycle perimeter of City, St Patrick's Day (can bring in $$), mountain biking events
- Always need to find volunteers and sponsors
- A user guide for hosting an event would be helpful
- Events need city commission approval
- Marathon – tie in events
- Mountain biking – organized rides
- MPO – Mandan Progress Organization
- Add bike parking to the events – identify opportunities for offering bike parking at the events – i.e. bike corral, bike valet, temporary bike racks, etc.

Barriers to policy change
- Following the proper requirements – making the public aware of the process
- Events for profit vs. events for community/neighborhood benefit.
- Alcohol policy for street closure are cost prohibitive for events. Food/alcohol is not much of an issue on the Mandan side due to set up of the park adjacent to Main Street. Current policies require complete fenced off area to have alcohol at a closed street event
- Difficult to get people out to a closed street event

Next Steps

- Increase coordination between groups
- Develop bike parking opportunities for existing events
- Utilizing Dakota Community Access, perhaps to house the community calendar and advertise events.
- Is it possible for any of the cities or the MPO to hire a full-time bike/ped coordinator?
- We need an advocacy group that brings all of the groups together
- Can a bike/ped committee come out of the MPO?
- If you could have some paid staff it would be easier due to the amount of work.

What recommendations for encouragement do you want to see in the plan?
- A regular event that is re-occurring in the community, not necessarily booze but food.
- Assemble a cohesive group/committee to take this on.
- Possibly an economic development coordinator job – help link to events coordinator and get private funding for events
- Need a funding source such as Dakota Medical Foundation (DMF). No luck with hospitals
- An economic incentive event helps fund and keep the events on-going
- Guidebook for conducting events, sponsorship and volunteers
- Looking at what can be offered off of existing events
- Develop one committee
- Provide bike parking at these events
- New event types 5th Street from Broadway to Main Street closed to traffic one night each week just to gather – weekly, monthly, etc.
- Independent committee to champion all things we are discussing
- Resume summer event – similar to Urban Harvest
- If Bismarck should shut down Broadway for street festival/Cyclovia events or even just strategic "closed to all car traffic this week" events, once the public gets used to it being closed it won't be such a shock when it gets turned into a permanent bike-only street (or at least an east-bound only lane for cars and a dedicated bike-only two-way on the north side).

Who are responsible parties?
- Develop a Bike/Ped Committee to meet on a regular basis
- Larger community service groups – Lutheran Social Services (LSS), Ruth Meiers (homeless population), Special Needs Groups
- Have a bicycle rodeo

Timeline for implementation?
- Look for a grant fund for a bike/ped event coordinator (federal or private grants)
- End of year 2017 early 2018 Bike/Ped Committee
- Recurring summer event – 2018 (movie – shine it on the Provident Life – City County Building

What are our five-year initiatives related to bicycling and walking?
- Bike/Ped Champion (YMCA possible, Bis-Man Bureau) and members
- Means for bike/ped coordinator for the metropolitan area (? Funding, where do they sit)
- Commission buy-in and acceptance on needs for active transportation
- Identify the Committee leadership and champions

Other Comments
- Mandan's current bike-friendly events:" Touch a Truck and "Slide the City".
- Food is critical – requires a permit/fee/electricity/running water"

- Family friendly bike rides are possibly more ideal.
- Potential for business owners to champion events
- Not a bad idea to do family geared events w/o alcohol
- New Americans/homeless folks are major users of the network

Current Successful Events

- Mandan closing Main Street (traffic is rerouted to 1st or 2nd with temporary traffic control put out
- Touch a Truck event – 65 pieces of equipment (Collins to 4th Ave NW)
- Buggies and Blues event _ larger longer street closing. Park hosts food vendors as part of the event
- Events are dog, ped, bike friendly – but need to advertise as such.
- Slide the City event
- Bismarck Farmers Market – give out bucks for those biking
- Street Fair
- Urban Harvest
- Burleigh County Consumptive Use Permit (CUP) brings in revenue

Next Steps

- Summary and notes from Engineering and Encouragement meetings
- Moving forward with selected engineering routes
- Photo Contest: spread the word and view/upload photos on the project website!

Upcoming Dates

June: Walkability audits in Bismarck and Mandan – Date TBD
Steering Committee Meeting #4 - addressing education and enforcements – July 12, 2017
The draft plan will be completed in mid-September.

The meeting adjourned at 12:00 PM
The foregoing is considered to be a true and accurate record of all items discussed. If any discrepancies or inconsistencies are noted, please contact the writer immediately.

Stantec Consulting Services Inc.

Peggy Harter
Project Manager
Phone: (701)
Peggy.Harter@stantec.com

Attachment: Meeting Sign In Sheet

cc. Steering Committee Members

MEETING SIGN-IN SHEET

Project Name: Bismarck- Mandan Bicycle and Pedestrian Plan		
Client Name: Bismarck-Mandan MPO		
Stantec Project No. 193803697	Date of Meeting: May 24, 2017	Time of Meeting: 8:00 AM
Project Manager: Peggy Harter		

Name	Representing	Phone
Steve Saunders	MPO	Phone: 701-355-1848 Cell: Email: ssaunders@bismarcknd.gov
Al Thompson	NDDOT	Phone: 701-477-4307 Cell: Email: athomp@b.s.mi[illegible]
Rachel Drewlow	MPO	Phone: 701-355-1852 Cell: Email: rdrewlow@bismarcknd.gov
Katie Johnke	Public Health	Phone: Cell: Fax: Email: kjohnke@bismarcknd.gov
Wendy Berg	Go! Bismarck Mandan Bismarck Parks & Rec.	Phone: Cell: Email: wberg@bisparks.org
Bob Decker	Mandan Planner	Phone: ~~701 9~~ Cell: 701 955 4001 Email: rdecker@cityofmandan.com
Carter Day	Stantec	Phone: Cell: Email:
Jacy Robertson-Kitzman	MPO	Phone: 701 355 1849 Cell: Email: jrobertsonkitzman@bismarcknd.gov

MEETING SIGN-IN SHEET

BEN EHRETH		Phone: Cell: 701-471-5186 Email: behreth@nd.gov
Mark A Berg		Phone: 355-1505 Cell: Email: mberg@bismarcknd.gov
Wendy Van Duyne		Phone: Cell: Email: wendy.vanduyne@bartwest.com
Kate Herzog	Downtowners	Phone: Cell: Email: Kate@downtownBismarck.com
Will Hutchings	City of Bismarck	Phone: whutchings@bismarcknd.gov Cell: Email:
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Peggy Harter	Stantec	Phone: Cell: Email:
		Phone: Cell: Email:
		Phone: Cell: Email:
		Phone: Cell: Email:

Bismarck Mandan Bicycle and Pedestrian Plan

Steering Committee Meeting #4

Education and Enforcement

Date/Time: July 12, 2017 / 1:00 PM
Place: Mandan Parks and Recreation Office
2600 46th Avenue SE, Mandan, ND

Next Meeting: TBD

Attendees: Jeff Solemaas – Bismarck P.D.
Will Hutchins - Bismarck Planning
Keith Johnson - Custer Health
Roy Rickert - Bis-Man Transit
David Mayer - Bismarck Parks and Rec Department
Wendy Berg - Go! Bismarck-Mandan
Steve Saunders - Bis-Man MPO
Joey Roberson-Kitzman - Bis-Man MPO
Gabe Schell - City of Bismarck Engineering
Al Thompson - ND League of American Bicyclists
Mark Berg - City of Bismarck Engineering
Craig Schaaf - Central Dakota Cyclists
Natalie Pierce - Morton County
Bob Decker - Mandan
Cole Higlin - Mandan Parks
Bennett Kubischta - NDDOT retired
Wendy Van Duyne – Bartlett & West
Ben Ehreth – self
Katie Johnke – Public Health
Carron Day – Stantec Consulting Services, Inc.
Peggy Harter – Stantec Consulting Services, Inc.

Distribution: Steering Committee Members

ACTION ITEMS

- Verify with Mandan's Chief Ziegler whether Mandan has bike patrols on their trail system in Mandan
- Include in the report a compilation of existing bicycle and pedestrian ordinances and current fines in place. Stantec to review ND Century Code to identify this information.
- Stantec will look at bicycle and pedestrian gym week curriculum.
- Jeff Solemaas will provide Stantec with contact information for Bismarck/Mandan private schools.
- Jeff Solemaas will confirm the name of the" What Do You Consider Lethal" program
- Stantec will revise the handout to indicate that the "Watch for Kids" and similar boulevard signs would need to be located outside of the right-of-way
- Stantec to contact the two driving schools in Bismarck
- Stantec to update the enforcement handout to remove the statement that citations can be given to bicyclists not wearing a helmet as this is not the case.

- Ben Ehreth will consider statewide policy items that could be included as part of the Statewide Active Transportation Plan – violations and fines in the century code, statewide educational/safety messages through programs such as code for the road, inclusion of bicycle/pedestrian information on the statewide driver's license exam, consideration of 3-foot rule, others?
- Stantec to develop a spreadsheet in which the walk audit scoring results for multiple intersections and multiple segments can be tracked on one sheet.

MEETING DISCUSSION ITEMS:

Welcome and Introductions
Steve Saunders opened the meeting and all present introduced themselves.

Review SC Meeting #3 Minutes
Peggy Harter began the meeting with a Safety Moment and then reviewed the project schedule, progress to date and the minutes from Steering Committee #3. The meeting today will focus on enforcement and education. The next Steering Committee meeting, the date will be decided after today's meeting, will address evaluation and serve as a follow up to the preliminary engineering concepts for the top 5 intersections and segments to focus on for improvements. The project will have one more Open House. The draft plan is scheduled for completion in mid-October with agency review and approval in November.

Survey and Interview Key Findings of Law Enforcement Interviews

Interviews were held with law enforcement officers Jeff Solemaas (Bismarck) and Chief J. Ziegler (Mandan). After completing the interviews, it was clear that the top 5 Education policies were supported by the interviews and the basic guidance on driving and cycling. Peggy Harter noted that education and enforcement priorities are closely related. So much of the focus came out of the law enforcement interviews. A full technical memorandum of the interviews was distributed to the steering committee members for discussion. Ms. Harter noted that the interviews focused on the following 5 important questions to the law enforcement officers:

1. What are some obstacles law enforcement encounters regarding daily practice concerning bicycles and pedestrians?
2. What are some improvements that can be made to better enforce road safety?
3. What would help facilitate law enforcement officers in the process of enforcing/ensuring safety for all?
4. What are some things that are already being done to encourage and safe guard bicycle and pedestrian traffic?
5. What coordination or changes would be made to make enforcement more effective for bicyclists and pedestrians?

Ms. Harter noted that after discussing these 5 interview questions, the following five implementation themes were identified:

1. "Support for the communities traffic grant application."
2. "The Strategic Traffic Enforcement Program (STEP)"
3. "Getting all law enforcement officers bicycle certified."

4. "20-30 hours a week of patrolling on the existing trail systems."
5. "Patrol shifts could use additional training to enforce laws equally between bicycle/pedestrians and motor vehicles."

The following discussion occurred regarding each of the 5 identified implementation items:

1. Support for the Communities Traffic Grant Application

The traffic grant application is being done in Mandan and is proposing to include a focus on distracted driving and driving sober campaign.

- What other areas could this grant application include to help bicycle and pedestrian safety?
- While this is being done in Mandan, is a similar effort underway in Bismarck? If not, a similar grant application in Bismarck could be beneficial.

The group discussed opportunities on how this grant could be utilized to improve or better enforce bicycle and pedestrian safety. Peggy Harter asked Jeff Solemaas if these grants are being applied for in Bismarck as well. He noted that most focus on seat belt usage and other areas that have been highly related to behaviors that results in serious injury and fatal accidents. Traffic Grant Applications are available annually through NDDOT but they have a specific focus. To make this grant more available to "other", traffic items like bicycles or pedestrians there would have to be a change on a national level.

Jeff Solemaas noted that there are other grants available but you need to find them. He recommended checking with Pam Wenger of NDDOT (Safe Routes to School). Funding is really limited. The Transportation Alternatives (TA) grant is specific to bicycles and pedestrians. Bismarck got $5,000 for two years from a Safe Routes to School non-infrastructure grant. Funding was limited to within ½ mile of a school. Two hours before and after school the officers could do some education at the schools and do 2 hours of additional enforcement. This allowed for four hours of overtime.

2. The Strategic Traffic Enforcement Program (STEP)

The STEP could include a specific focus on observing bicycle and pedestrian traffic and writing citations for bicyclists and pedestrians that are not following the law. This could be done like a blitz for bicycle and pedestrian offenders. Ms. Harter noted that STEP is currently underway in Mandan and questioned if a similar effort being coordinated in Bismarck?

Jeff Solemaas had not heard what Chief Ziegler is using in Mandan. He noted that the Bismarck PD has its traffic enforcement officers address the city's main concerns. A ticket for jay-walking will not be well received. The City of Bismarck is looking at a data-driven approach for enforcement but the records management system is 1979 vintage. The city is supposed to be getting something better soon. They do have crash reports, about 4,000 a year, and that data includes bicycles.

If the city sees a specific area with a lot of incidents, they patrol it more. When enforcement is present people don't commit crimes. If they blitz for two weeks and no crime is there. If nothing has been done since then, it is not clear whether the blitz was effective or if they are just pushing the problem somewhere else.

Jeff Solemaas noted that on average there are about 10 reported accidents with bicycles each year and approximately 20 accidents involving pedestrians. Jeff noted that in recent accidents where bicyclists are at fault, several were new cyclists that were riding because their licenses were revoked. Often the pedestrian accidents occur when pedestrians stumble into a car. In these instances, the pedestrian tends to be inebriated. Ben Kubischta saw this occur on St Patrick's Day last year with a pedestrian on 3rd and Main in Bismarck. Jeff Solemaas said he recalled this and there were 20 witnesses and about 20 different vehicle descriptions. Jeff noted that other trends in bicycle/pedestrian v. motor vehicle crashes are due to line of sight issues with the vehicles. Mark Berg – the safety officer at Sanford Hospital has forms for close calls. In downtown Bismarck, 6th and Rosser between the hospital and convenience store is a major issue for pedestrian safety. Al Thompson noted that nationally most people involved in bicycle accidents are male. The rarest accident is a bicyclist being overtaken from behind and hit. In Bismarck, most accidents are at intersections. Jeff Solemaas noted that most pedestrian problems are downtown (Front St, Washington crossing against the light or jay-walking) Hospital, bank and other employees need to make sure that the drivers see them.

Will Hutchins asked Jeff Solemaas about people using the bicycles because they have had a DUI or their license revoked. Is there a way to target that group to educate them on bicycle use? Could you require a bike education course? The group discussed that this is not currently being done but could be an area of focus.

3. Getting all Law Enforcement Officers Bicycle Certified

Mark Berg questioned if there are bike certification programs like the Game and Fish certification for other things? Al Thompson noted that the League of American Bicyclists has a certification program but nobody shows up. In Durham and Raleigh NC there is an active bicycle certification program.

Jeff Solemaas noted that some of the Bismarck PD is bicycle certified. The program involves the one-time completion of a 40-hour course. He added that an officer that wants to be on bicycle patrol can work with another officer that is already certified. Jeff noted that some officers have interest in being bicycle certified and others do not. The PD needs more officers certified but not all. Jeff Solemaas stated that getting law enforcement officers certified is a challenge with the constant hiring cycle. Currently the Bismarck PD is short on the street. Bismarck now has 20-25 certified and a core group of 10 officers actively doing bike patrol.

Jeff added that the Bismarck PD has a lot of issues to consider. Last year there was a lot of focus on suicide awareness, elderly abuse, etc. Sometimes it's overwhelming to meet all the needs. Resources are often limited and they sometimes must focus in specific areas.

4. Patrolling the Existing Trail Systems

Peggy Harter noted that Bismarck currently patrols about 20-30 hours a week on the existing trail systems -particularly by the river trails as funded by the park. She questioned whether a similar patrolling effort on the trail system occurring in Mandan? Cole Higlin responded that he did not know that there was bike patrol on the trails. He was aware of their use downtown especially

during parades. Jeff Solemaas noted that they patrol about 30-40 hours a week but more bike patrols are needed on the trails early in the morning and late at night when there are not as many people around and people feel less secure with low lighting. Jeff also added that bike patrols are used on occasion in downtown. You can go around easier on bike. They are currently patrolling on bike 5 days a week. Cole Higlin questioned how the community could fund lighting of the trails or a blue light phone system for increased security. In the summer when it is hot during the day, the trails are used more frequently early in the morning and later in the day.

A follow up item is needed to verify with Chief Ziegler if Mandan PD is patrolling the trails.

5. Enforcing Laws Equally between Bicycle/Pedestrians and Motor Vehicles

Peggy Harter discussed enforcing on both motorists and bicycles and pedestrians. She noted that we have heard complaints even from avid cyclists about cyclists not following the rules of the road. One item she noted is that her generation was taught to ride their bicycles against traffic – on the wrong side of the road. Those present agreed that the older generations learned that they should bike against traffic and they are passing that others are passing this incorrect information on to their children. This could be another area to focus on education to ensure that both adults and children understand the rules of the road when it comes to bicycling.

Jeff Solemaas noted that there are 0 citations issued in Bismarck for bicycle behavior. Peggy Harter questioned whether the law enforcement officers are aware that they can cite a cyclist or pedestrian in the wrong. Ben Kubischta added that just today he experienced a cyclist goes right through a red light. Jeff noted that training these officers on enforcement is easier today because the rules of the road for cyclists is all computerized, so it is easy for the officers to find the regulation. There are currently only 5 ordinances in Bismarck that relate to bicycle and pedestrian citations. Although blitz warnings are effective, Jeff suggested that a community safety approach for bicycles and pedestrians would go a long way.

The steering committee entered a discussion that low fines set for bicycle violations do not deter the behavior nor does it seem to make it worthwhile for an officer to issue the citation. Al Thompson noted that the ND Century Code sets a fine of $5 for bicycling violations. Al Thompson also suggested that what has been successful with motorists is the point system and diversion program but the point system does not apply to pedestrians or bicyclists. Wendy Berg suggested that even with the low $5 ticket or a warning being stopped by law enforcement can be effective.

A question was asked if there was a speed limit for bicycles. No speed limits are set for cyclists. All agreed that bicycle laws are very limited in North Dakota.

Gabe Schell noted that the in the handout there is the statement that a citation can be given to a cyclist for not wearing a helmet. This is incorrect and it should be updated in the handout. ND Century Code does not have a law requiring helmets (just for motorcycles)

Peggy Harter questioned if there is a way to support the legislative intent to create positive behavior. There was concern expressed in the group that the group should not be lobbying (the MPO can't lobby) but maybe there could be a general statement that could include increasing

fines. Would it be too much to identify the $5 fine does not deter anyone? Gabe Schell noted that the City of Bismarck does not lobby but can give their opinion. Jeff Solemaas added that during the last legislative session there was interest in raising the fines in school zones to be same as in construction zone. The idea was that children were as valuable as construction workers. The idea went nowhere. The group decided that this plan should note that existing bicycle and pedestrian ordinances and the current fines in place do not discourage law breaking as the point system does not apply to bicyclists and pedestrians. Support for a mandatory training program for bicycle and pedestrian offenders may even be more effective than a low fine.

Will Hutchins asked Ben about the status of the state's Active Transportation Plan. Ben's response was that the state has just signed the contract. This plan could help support the statewide plan. Ben will include a review of the century code regarding bicycle and pedestrian violations and established fines as part of the state's Active Transportation Plan. Peggy Harter and Ben Ehreth followed up after the meeting via email reviewing the ND Century Code **CHAPTER 39-10.1 BICYCLES** which is inclusive of applicable bicycle violations and maximum of five dollar fines for violations. Stantec will further review the Century Code to identify applicable pedestrian violations and fines.

Education

Peggy Harter presented the top 5 educational policies and programs voted by Steering Committee members through survey monkey from twelve items included within the survey. Because safety is identified as our number one priority in the plan, to ensure road safety, everyone who are on streets and roads should know how to stay safe. Peggy noted that the twelve educational policies and programs included within the survey to the steering committee were identified based on comments and inputs from SC members and community members at public meetings, issues and concerns raised in the background report, the League of American Bicyclists (LAB) report, and best management practices for bicycle education. The top 5 educational policies and programs are as follows:

1. "Road Safety" campaigns using local media
2. Safety educational programs at schools
3. Inviting Law Enforcement to talk about road safety
4. Yard signage in the neighborhood
5. Media blitz and more emphasis on bike safety on driver's license exams

A handout was provided for each of the top 5 educational policies and programs to assist in facilitating discussion as a group to identify ways in which they could be implemented in the Bismarck-Mandan area.

1. "Road Safety" Campaigns Using Local Media

Peggy Harter discussed all the options noted within the handout regarding ideas for road safety media campaigns in relation to bicycles and pedestrians. She discussed the NDDOT bike jingle that is already created as a means of looking for opportunities of already created material to get the message out at a low cost. Ben Kubishta noted that the jingle originated in Maine and the state asked for permission to change it to fit North Dakota. The jingle was used and broadcast by NDDOT in 2012 and 2013.

Peggy Harter opened discussion with the committee for local road safety campaign ideas.

Jeff Solemaas noted that the Bismarck police used to do safety program on the radio. KFYR provided time one Monday a month for "Safety Tips". The radio station is thinking of starting that up again. KFYR radio is receptive to having people come in one Monday a month. Law enforcement can talk about a topic for 10 minutes. Law enforcement could reach out to KXME television. The Bike-Ped Plan should develop a message in which law enforcement can bring forward that is specific to bicycle and pedestrian education that could have a focus at the start of the school year and in the spring when bicycle and pedestrian activity begins to increase. The group also suggested hitting up the television for news stories through both KFYR and KXMB. Focus on an evening news short story related to bicycle and pedestrian awareness or safety.

Gabe Schell suggested that community access television probably reaches more motorists. Dakota Media has City Current topics. There could be a live taping of a program that would be repeated.

Al Thompson noted that the League of American Bicyclist has pre-recorded PSA's that could be used. A focus in May (for summer), August (before school starts) and on the 3rd week in June (ND Share the Road week). Steve Saunders added that the MPO also has used pre-recorded messages. The pre-recorded messages that have already been developed can be a low-cost alternative to get the message out.

Will Hutchins identified Sandy Wilson as the NDDOT contact for "Code for the Road" messages. Peggy Harter stated that it seems that a lot of the focus for the "Code for the Road" messages is based on the top identified issues from the Strategic Highway Safety Plan.

Keith Johnson added that real estate companies are doing recordings and pushing them out to the Facebook pages. If the messages or stories that have been recorded are shared on all agencies Facebook pages and websites, an additional $15 to $35 with the message can significantly boost the Facebook posts and resultant views. Wendy Berg supported that boosting the Facebook views has been helpful with other plans/projects.

Peggy Harter questioned if the newspaper should be used as a media source to get the bicycle education message out. The group discussed that with electronic media, the newspaper may not be hitting the target audience and it is a lot more expensive compared to spending dollars to boost Facebook views. Peggy Harter did respond that although the older generation is more likely to read the paper, they are sometimes the least tolerant of cyclists in the roadway. Education that it is legal for cyclists to ride in the roadway can sometimes go a long way. The group suggested that letters to the editor are the most effective means of advertising within the newspaper.

Peggy Harter asked the group if they had any thoughts on the specific messages that should be presented to Bismarck and Mandan residents.

- Danger of cyclists riding on the sidewalks with speeds v. pedestrians
- Cyclists rights to ride in the roadway
- Cyclists riding on the roadway need to follow the same rules of the road as motor vehicles

- On-road cyclists should ride with traffic
- Watching out for one another at intersections – right hook, sight lines, stopping behind stop bars
- Wearing helmets saves lives
- Sharing the roadway

Mark Berg added that bicyclists are not always aware of what they are supposed to do at intersections and motorists don't know what to do with them. Share the road goes both ways. The messages should go to motor vehicles, cyclists, and pedestrians.

Mark Berg asked the group if there were complaints on trails about bicycle behavior. Dave Mayer responded that there is some info on the kiosks about sharing the shared use path. Issues/complaints about the shared use paths include:

- Pedestrians not understanding where they are supposed to move for an oncoming cyclist who says, "on your left", for example
- Pedestrians walking in groups that leave no room for cyclists to pass

Someone asked if centerline stripping would help with bike-pedestrian conflicts. Increasing the shared use paths to 12 feet in width was also mentioned but not discussed.

Peggy Harter suggested that hand signals might be a good topic to include in PSAs. Neither motorists nor bicyclists seem to know them. Al Thompson suggested that in North Dakota it is time to revise the hand signals. In Minnesota, it is acceptable to signal by pointing, but ND is still using the older version of bike signals. Many feel that it is more intuitive to simply point in the direction that the bicyclist is turning. This could be an additional item addressed by the Statewide Active Transportation Plan.

2. *Safety Educational Programs at Schools*

Peggy Harter reviewed the handout for educational programs at schools which identifies educating students at all levels and includes education to parents. Keith Johnson noted that education seems to be so haphazard. Half of the kids are riding on the wrong side of the roadway information about this doesn't seem to get out. Peggy Harter suggested a strong educational component for students and parents is to "walk against traffic and ride with traffic".

Peggy Harter noted that there are some recommendations from the School Safety Crossing Study that is currently underway that is working to help educate students and parents. One items to note is that the study is recommending the addition of school zone speed signs at all the schools. This will help educate all motor vehicle drivers of the school speed zones. The roadways adjacent to the schools classified as collector and above will also include a driver feedback sign to help keep people compliant with the school speed zone limits.

Peggy Harter wanted to discuss what Jeff Solemaas said earlier in the meeting – get them while they are young. If we educate our children, this will carry through to future generations. Some schools are dedicating a one-week bicycle and pedestrian education program as part of their gym curriculum. Brooking, SD has implemented this and has had a lot of bikes donated for use during this week. If you have a bike rodeo you are limited to the # of students that show up. Will Hutchins suggested that they could do a shortened version of what they teach at bike rodeos as

part of the education with school gym classes. Stantec will work to develop a curriculum for a one-week class to focus on bicycle and pedestrian education. Peggy noted that many of the schools are having a skating or ice skating week in gym now and this could be tailored in a similar fashion.

Will Hutchins - Go! Bismarck-Mandan is tracking bike to school participation. One teacher in Bismarck's Robert Miller Elementary School tried to get heightened participation from their school. He will provide contact information for Peggy to follow up with her. Peggy noted that finding these location champions makes a big difference. Although this teacher is "encouraging" students to participate – her methodology to relate her message to the rest of the school can be used for educational and encouragement.

Peggy Harter stressed the importance of promoting helmet use at the school age level and questioned if there is any local entity that does helmet donations. Katie Johnke mentioned that Public Health has funds available to offer helmets and fit them. Get the right fit – helmet fitting could occur as part of the education program. Encourage them to bring their helmets to class and they could offer helmets to those students who do not have them. Additional funds for new helmets could be requested through the Safe Routes to School program. Stomp out the idea that helmets are not cool – brain injuries are not cool.

Peggy Harter noted that Stantec has contacts with all the public schools through the School Safety Crossing Study but we have no contacts with the private schools to encourage the same program. Jeff Solemaas will provide the information.

Peggy Harter asked the question of how to reach out to the parents and when is that best. Joey Roberson-Kitzman suggested that the school newsletter might be a good way to reach parents. Friday Flier in Bismarck and Mandan's Brave Bulletin goes out electronically. Messages could include riding on the roads, sharing the road, sharing the trails and properly sized and fitted helmets.

The group then discussed how to reach high school and college students. Will Hutchins stated that at the University of Mary there are lots of bikes on campus but no bike group. BSC also has no group. This focus could be added to their orientation program.

Gabe Schell suggested the focus should be on safety education – not narrow the focus just to school-related issues. Peggy Harter responded that the focus is on safety education but this top 5 area of focus is related to sharing that message through the schools.

Jeff Solemaas shared about the" What Do You Consider Lethal" program and that it was effective at the high school level because it didn't come off as preachy. It was geared to the high school student audience. Wendy Berg noted that it is a more powerful message when the idea comes from the students/young adults instead of being preached down to them.

3. Inviting Law Enforcement to Talk About Road Safety

Peggy Harter - noted that a police officer stopped her son and gave him a sticker and an ice cream coupon for wearing a bike helmet. Natalie Pierce stated that Bismarck does the ice cream thing too as her child received one as well.

Clint Fuller of the North Dakota Safety Council has put on a Kids Bike Rodeo for over 5 years. The problem with police or other entities putting on bike rodeos is that they don't always get good attendance. The group discussed that to get a larger audience the bike rodeos put on by police should be coupled with other existing events or at the Park Department's after school programs where a larger audience is already gathered.

4. Yard Signage in Neighborhoods

Peggy Harter asked the group to identify Roads with Vehicle/Bicycle Conflicts in which additional signage could benefit the safety of the users. Mark Berg responded that River Road is a real point of contention between motorist and cyclist. You can't see and you can't pass. There was some discussion about other roads with similar conflicts. South 12th Street was mentioned but the group decided that the focus on South 12th Street was not needed. The street width was a consideration.

Jeff Solemaas added that some motorists don't think that cyclists belong on this road and many cyclists avoid the road.

Mark Berg noted that there should be continuity in the community's signage. For that reason, he would support using the "share the road" sign rather than adding something new such as the yard signs. In downtown Bismarck, there is no space for bike lanes but they do have "share the road" signs.

By Bismarck city ordinance signs like the "slow down" signs belong in a yard, not the right-of-way. These signs also need to meet the visibility triangle. Gabe Schell suggested that types of signs shown in the handout cannot be in the right-of-way. We need to show both signs that can be in the public and private rights-of-way as part of the plan.

In both Bismarck and Mandan boulevard signs are not permitted within the right-of-way except with specific approvals.

5. Media Blitz and More Emphasis on Bike Safety on the Driver's License Exams

There was some discussion about adding bicycle and pedestrian questions to the ND drivers' exam and/or adding bicycle and pedestrian related information to the driver's manual that would be specific to motorist behavior. Ben Ehreth suggested that this is worth exploring further and then bring it to the state as part of the statewide Active Transportation Plan.

Mandan still has drivers' education in school. Bismarck does not. It was suggested that materials could be developed and provided to those parents who teach their own children how to drive.

Jeff Solemaas noted that in other states there is an adopted 3-foot rule when a motorist passes a bicyclist. Six years ago, the ND Senate almost passed it. Before, according to Ben Ehreth, the cities were concerned with the exact distance. Jeff recommended that to get this idea adopted it would be important to get it through the state's cities first. Al Thompson suggested

that typically the rule is enforced if the car mirror hits a cyclist because then they know that the 3-foot rule was violated.

Walk Audit
Wendy Van Duyne presented an overview of the Bismarck and Mandan "train the trainer" walk audits held on the 27th. There was discussion about the scoring and the need for modifications to make the document more useful in future local walk audits. The recommended change was to develop a spreadsheet to track the scores of the audit for multiple intersections and segments along the same corridor. The full meeting summaries of the walk audit were provided for review and discussion.

Next Steps
Peggy Harter reviewed the next steps and meetings for the bicycle and pedestrian steering committee as SC Meeting #5 to review the 5th and final "E" for Evaluation. This meeting will also include a follow up to preliminary engineering concepts for the top 5 intersections and segments as identified during SC #3. Peggy Harter asked the committee what they would like to see as part of the Evaluation meeting and the group consensus was developing the baseline for a bicycle and pedestrian count program that could be maintained for years to come.

The meeting adjourned at approximately 5:00 PM.

The foregoing is considered to be a true and accurate record of all items discussed. If any discrepancies or inconsistencies are noted, please contact the writer immediately.

Stantec Consulting Services Inc.

Peggy Harter, PE
Project Manager
Phone: (701) 566-6020
Peggy.Harter@stantec.com

Attachment: Meeting sign in sheet

MEETING SIGN-IN SHEET

Project Name: Bismarck- Mandan Bicycle and Pedestrian Plan		
Client Name: Bismarck-Mandan MPO		
Stantec Project No. 193803697	Date of Meeting: July 12, 2017	Time of Meeting: 1:00 PM
Project Manager: Peggy Harter		

Name	Representing	Phone
Peggy Harter	Stantec	Phone: 701-566-6020 Cell: 701-371-4167 Email: peggy.harter@stantec.com
Jeff Solemsaas	Bismarck P.H.	Phone: 701-355-1914 Cell: Email: jsolemsaas@bismarcknd.gov
Will Hutchings	Bismarck Planning	Phone: 701-355-1850 Cell: Email: whutchings@bismarcknd.gov
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MEETING SIGN-IN SHEET

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Al Thompson	NDATA LAB	Phone: 701-471-4207 Cell: Email: athompe@bis.midco.net
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Natalie Pierce	Morton County	Phone: Cell: Email:
Bob Decker	Mandan	Phone: Cell: Email:
Cole Miglin	Mandan Parks	Phone: Cell: 220-1494 Email:
Bennett Kubischta	NDDOT Retired	Phone: 701 258 5012 Cell: Email: Kubischta@bis.midco.net
Wendy Van Duyne	Bartlett & West	Phone: Cell: Email: wendy.vanduyne@bartwest

MEETING SIGN-IN SHEET

Bismarck-Mandan Metropolitan Planning Organization

Stantec

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Bismarck Mandan Bicycle and Pedestrian Plan

Steering Committee Meeting #5

Evaluation

Date/Time: August 29, 2017 / 1:00 PM
Place: Frances Leach High Prairie Arts & Science Complex
1810 Schafer Street, Bismarck, ND

Next Meeting: TBD

Attendees: Will Hutchings - Bismarck Planning
Roy Rickert - Bis-Man Transit
Rachel Drewlow – Bis-Man – MPO
Kim Fettig – City of Mandan
Ben Ehreth – Interested Area Cyclist
David Mayer - Bismarck Parks and Rec District
Wendy Berg - Go! Bismarck-Mandan
Gabe Schell - City of Bismarck Engineering
Bennett Kubischta - NDDOT retired
Katie Johnke – Public Health
Peggy Harter – Stantec Consulting Services, Inc.

Distribution: Steering Committee Members

ACTION ITEMS

- Review and follow up of remaining action items from SC Meeting #4
- **Stantec & Greg Lindsey:** Update the evaluation memorandum including recommended addition by Gabe Schell for the monitoring objectives, specific count locations for a minimal baseline count program, recommended count devices to utilize for each count location and the direction and cost to begin a baseline "minimal" monitoring and evaluation program.
- **Stantec**: Update engineering concepts for routes and update Bikeway Facilities Selection Framework Table.
- **Stantec and Local Government**: Schedule and complete walk audits at five key intersections.

MEETING DISCUSSION ITEMS:

Welcome and Introductions
Peggy Harter opened the meeting and discussed the purpose of this meeting to discuss the fifth and final "E" for Evaluation and to follow up on the top five Engineering items from prior SC meetings. Peggy also shared photo contest winning photos with Steering Committee and thanked those who both participated and those who donated prizes for the contest. Each member in attendance then introduced themselves.

Review SC Meeting #4 Minutes
Ms. Harter reviewed action items from Meeting Minutes #4. Follow up with specific team members for discussion about items. Include the following:

1. **Stantec** – identify bicycle and pedestrian gym curriculum from a like school district where this is already in place and contact the two driving schools in Bismarck.

2. **Jeff Solemass** – provide Stantec with information for private school and confirm the name of the "What Do You Consider Lethal" program and provide additional information about the program.
3. **Ben Ehreth** – confirm that the ND Statewide Active Transportation Plan will address discussion items from SC #4 including violations and fines in the century code relating to bicycles and pedestrians, statewide educational and safety messages through program such as code for the road, inclusion of bicycle and pedestrian information on the statewide driver's license exam and consideration of the 3-foot rule.

Evaluation Methods

Peggy Harter noted that the focus for the meeting today is to discuss the 5th and final "E" for Evaluation of the Bicycle and Pedestrian Plan. The purpose of an evaluation or monitoring program is to create a base line usage of cyclists and pedestrians on different facility types. This in turn helps us to evaluate the success of projects and programs and supports future infrastructure projects. Stantec has sub-consulted with Greg Lindsey from the University of Minnesota. Stantec, MPO Staff and Mr. Lindsay held a conference call to determine the desired outcome of the Evaluation program for the Bismarck-Mandan Bicycle and Pedestrian Plan. The draft memorandum provided within the meeting packet is a start of the development of the evaluation program. Today's meeting will help to focus on specific areas the committee sees need to develop the baseline counts.

Ms. Harter noted that common monitoring or evaluation objectives often include the following:

- Gain a general understanding of volumes at particular locations
- Characterize traffic flows on particular elements of a transportation network
- Inform site-specific planning or engineering analyses such as installation of traffic controls
- Evaluate impacts of changes or improvements in bicycle and pedestrian infrastructure
- Provide data for funding requests for infrastructure projects. Impacts or changes of improvements can be used with the base line data to decision makers due to support improvements being made.
- Gabe Schell requested that on objective be added to the memorandum that the monitoring or evaluation program developed should be "Repeatable" or "Reproducible" on an annual basis.

Ms. Harter then noted that the different modes of traffic to be monitored or evaluated includes bicyclists, pedestrian and mixed modes of non-motorized transportation. Since the main point of discussion for today's meeting is to determine locations to begin the baseline counts, Ms. Harter noted the following criteria in identifying potential locations to gather counts:

- Divide up the entire network and place counters strategically
- Find locations in urban, rural, and recreational areas (near parks, schools/universities, fairgrounds etc.)
- Divide the network up into different types of existing facilities ensuring to include at least one bridge count over the river, major north/south and east/west shared use path, one on-road bicycle facility, one downtown count, one bridge count over I-94, etc.
- Rotate counters throughout the summer (spending approximately 10 days at each location)

Ms. Harter noted that once the count locations have been identified for a base count program, the types of monitoring or evaluation devices can be identified depending on the specific location and budget available. The differing types of devices to conduct the monitoring/evaluation program include the following:

- In-person counts – can include existing staff time, volunteers, existing interns, training lower cost temporary staff such as students
- Pneumatic tubes
- Infrared counters
- Inductive loops

The steering committee had the following discussion regarding different devices to conduct the counts:

- Ben Ehreth asked about the data collection company called Street Light Data in which they track mobile devices and claim that they can break the data down to bicycles, pedestrians, and transit users.

- The SC asked if all count equipment can differentiate between the modes of transportation – i.e. pedestrians v. bicyclists. Ms. Harter noted that the Infrared counters may not be able to differentiate between the differing modes.

- Could use video cameras or Miovision to conduct the counts. In a past instance, NDDOT paid for collecting the data and the City processed the data with both City and MPO staff. When previously used, it only caught a certain element (pedestrians in crosswalks vs. bike lane).

- Federal aid should be considered for funding the counts.

Ms. Harter noted that once the monitoring or evaluation program is developed, counts must be taken and data must be analyzed. The final steps of a monitoring program include:

- Implement monitoring program by collecting data on an annual basis. Ms. Harter noted that developed a bicycle and pedestrian committee that meets on a regular basis could be key to ensuring the counts are conducted on an annual basis.
- Evaluate and analyze data
- Use short-term counts to extrapolate Annual Average Daily Bicycle and Pedestrian counts

Ms. Harter then broke up the Steering Committee Members into two groups and provided maps of the existing networks to identify count locations to develop a baseline count program. The Committee noted that the locations identified should be the baseline for count data but an alternative for a more robust count program with additional locations should also be identified. The two sets of monitoring and evaluation locations should be identified as the "minimal" and "ideal" recommendations. The following locations were identified in Bismarck and Mandan for the basis of the monitoring and evaluation program:

Areas discussed to be included on counts for Bismarck:

1. Liberty Memorial Bridge & Riverfront Trail (underneath the bridge itself would best represent the river trail)
2. Tom O'Leary Park Trail – west of Washington Street – this is one of the busiest or highest utilized trails.
3. West Century Avenue – west of Washington Street – this is adjacent to residential and includes both recreational users and some users who walk or bike to work.
4. Intersection of Haycreek, Century Avenue and Edgewood Trails – intersection of the three trail counts could get a good utilization of all three trails where they come together
5. Intersection of University Drive and Denver Avenue – this is near Wachter Middle School and servers a lower income population.
6. Intersection of State Street and Divide Avenue – existing on-street bicycle facility on Divide Avenue
7. Rosser Avenue and 5th Street Intersection – Downtown location that is near the library, includes cyclists and a lot of pedestrians between parking lots and places of employment
    a) Main Avenue and 5th Street Intersection – Downtown location where the counts could be taken at the SW quadrant of the intersection if a camera were to be placed on the NE post of the traffic signal. This is a better location for downtown pedestrian usage and could also get the usage of the bike rack at this location.
8. Ped Bridge over the Drain just east of South Washington Street– near Solheim Elementary School
9. Bismarck Expressway Bridge over I-94 – I-94 Bridge Crossing with a good mix of residential and commercial users
10. River Park Trail near Keelboat Park
11. Count on the Memorial River Bridge between Bismarck and Mandan

Areas discussed to be included on counts for Mandan:

A. Upper River Park Trail – as you come off Memorial Bridge.
B. 3rd Street interesting with N/S Shared Use Path – includes an area with both N/S and E/W shared use path
C. Collins and 1st Street – Downtown Location
D. Sunset and Old Red Trail – Neighborhood Location near Red Trail Elementary and Middle School
E. Old Red Trail and 1806 – Destination Location
F. I-94 crossing at Sunset Interchange – I-94 Bridge Crossing
G. River Trail Route at 1806 between 19th Street SE & the Heart River

Now that the count locations have been identified, the evaluation program needs to decipher what types of count monitoring devices should be utilized to collect the counts on an annual basis.

The committee suggested that we look at cost of purchasing equipment and larger annual cost of analyzing the data, then looking at what the data will be used for when calculating cost for infrastructure improvements in the future. Sources for funding the program could be Federal Aid, local partners, and the Park Districts.

Conceptual Engineering

Ms. Harter noted that this meeting was also serving as a follow up to the top 5 engineering segments and intersection that were identified in need of improvements during SC Meeting #3. Ms. Harter noted that today we would be focusing on the top five route segment or connections that were identified to be made regarding bicycle connections. The following discussion occurred:

- Location of top 5 sites includes 3 Bismarck routes and 2 Mandan routes
- Stantec has identified the following for each of the top 5 routes:
    - Route location
    - Route features
    - Suitable bicycle facility type
    - Cross-sections for how the bicycle facility would fit within the existing right of way

- Ms. Harter noted that since this is a larger planning level study, the routes cannot be laid out in detail due to a lack of preliminary engineering information and a lack of specific public input and outreach regarding each route connection.
- The Steering Committee agreed that this level of study was not appropriate to go into the details or preliminary engineering but instead identify ideal facility types, opportunities for the route connections and obstacles/constraints for the route connections.

The steering committee began to have detail discussion on the three priority route connections for the Bismarck facilities. The following items were discussed:

- The Bicycle Facilities Selection Framework Table that was reviewed and approved at SC Meeting #3 should be updated to include Access as a criterion for suitable conditions. For example, many of the top five route facilities were considering a protected bike lane. However, some of these roadways have a lot of direct single family home driveway access that would not work well with a protected bike lane and therefore the recommended facility type should be reconsidered. If possible, consideration of adjusting the recommended vehicle volume parameters under the suitable conditions could be completed to better fit the volumes of roadways that have slightly higher volumes with a lot of direct vehicle access as a bike lane or buffered bike lane may be a better fit at these locations.
- Bismarck Priority Route #1: The group agrees that the Shared Use Path is the appropriate facility.
- Bismarck Priority Route #1: Washington Street from W Wachter Avenue to W Main Avenue – Where the notes show a 30-37 feet curb to curb at the Expressway intersection should be double checked. Is this the width for just one direction of travel? If so, specify.
- Bismarck Priority Route #1: On the overall map of opportunities or constraints for this connection – be sure to show the issue where restrictions are present for the cross-section between Reno Avenue and Main Avenue.
- Bismarck Priority Route #1: The cross-section shown is only representative of the roadway south of Reno Avenue and should be labeled as such.
- Bismarck Priority Route #2: North 4th Street & Dominion Street from West Main Avenue to N 10th Street – the note on the overall map should state "…in Downtown to **Menards** Pond." Instead of Gateway Pond.
- Bismarck Priority Route #2: It will be difficult to remove parking in residential areas simply to add the protected bike lanes. The City is considering making this roadway a 3-lane section

to allow for the left turn lanes with a continuous left turn lane south of Century. The committee feels that this should be a recommended bike lane or buffered bike lane instead of a protected bike lane.

- Bismarck Priority Route #2: We should be showing one typical section north of Century as a 2-lane roadway section and one typical south of Century as a 3-lane roadway section. Due to the right of way constraints, we should not be recommended a protected bike lane. We could consider an initial (low cost and easy to implement) facility and a long term ultimate bicycle facility.
- Bismarck Priority Route #3: 12th Street from E Bismarck Expressway to C Avenue – There are many homes in the area with no garage access so there is a high usage of the existing on-street parking.
- Bismarck Priority Route #3: The high number of intersections and direct driveway access points along this route do not support a protected bike lane as there would be a continuous break within the protection. A bike lane or buffered bike lane would be better considered at this location.
- Ben Kubischta discussed the option for delineator posts to be used instead of concrete barriers like a project that he worked on in Minot. The photo as follows was provided by Ben at 4th Street in Minot, ND.

Other general discussion regarding the different bicycle facility types includes the following:

- Still need to account for door swing in buffer lane for bicycles when there is parking present.
- Protected bike lanes would have to be 8-foot minimum width to allow for winter maintenance.
- Non-protected bike lanes get less complaints in winter since they are better up-kept.
- Would not recommend jumping back and forth between protected and not protected.
- Show what possible implementations would look like in future drawings. This would help show the feasibility of these being constructed as well.
- Not suggested to ride against traffic when not in a protected bike lane.
- Would be good to show additional criteria for facilities with home access.
- Possible to have delineators during summer months, taken down during winter months for snow plowing.
- Introducing bicycle facilities could be used as tactic to inform residents to have slower traffic speeds past their homes.

A follow up discussion was held between Ms. Harter and Mr. Hutchings post the Steering Committee meeting where they discussed how to properly identify facility types for the top 5 routes. Mr. Hutchings suggested that instead of showing cross-sections for each location, that cross-section

options could instead be shown for the differing facility types as part of the bicycle facilities selection framework. This would ensure that we are not going beyond our level of planning for the Bicycle and Pedestrian Plan for the Top 5 Routes identified.

Ms. Harter discussed with the group that to identify any areas for improvement at the top 5 identified intersections within Bismarck and Mandan, that a walk audit would be completed at each of the intersections to determine areas where improvements could be made to enhance walking or bicycling through that intersection.

Sales Tax Discussion
A discussion was held amongst the committee regarding the potential for a ¾ cent sales tax and utility fee that he been discussed by the City of Bismarck. The main question of the group was how to determine whether such a fee would also include improvements to bicycle and pedestrian infrastructure. Mr. Schell noted that if the Bismarck City Commission move forward, there will be a public outreach campaign to determine what this change would look like and what would all be included under improvements. This item does not specifically need to be part of the bicycle and pedestrian plan but could be an opportunity for a future funding source if the sales tax and/or utility fee go through.

Next Steps

- Complete SC Meeting #5 Minutes and Distribute
- Update and Complete the Evaluation Memorandum
- Update the Engineering Routes and Bikeway Facilities Selection Framework Table
- Complete Walk Audits at the 5 Intersections
- Prepare Draft Bike-Ped Report for SC Review
- Hold SC Meeting #6 to review the Draft Report on October 10, 2017
- Schedule and Hold the final Public Input Meeting to review the Draft Report in early November

The meeting adjourned at approximately 5:00 PM.

The foregoing is considered to be a true and accurate record of all items discussed. If any discrepancies or inconsistencies are noted, please contact the writer immediately.

Stantec Consulting Services Inc.

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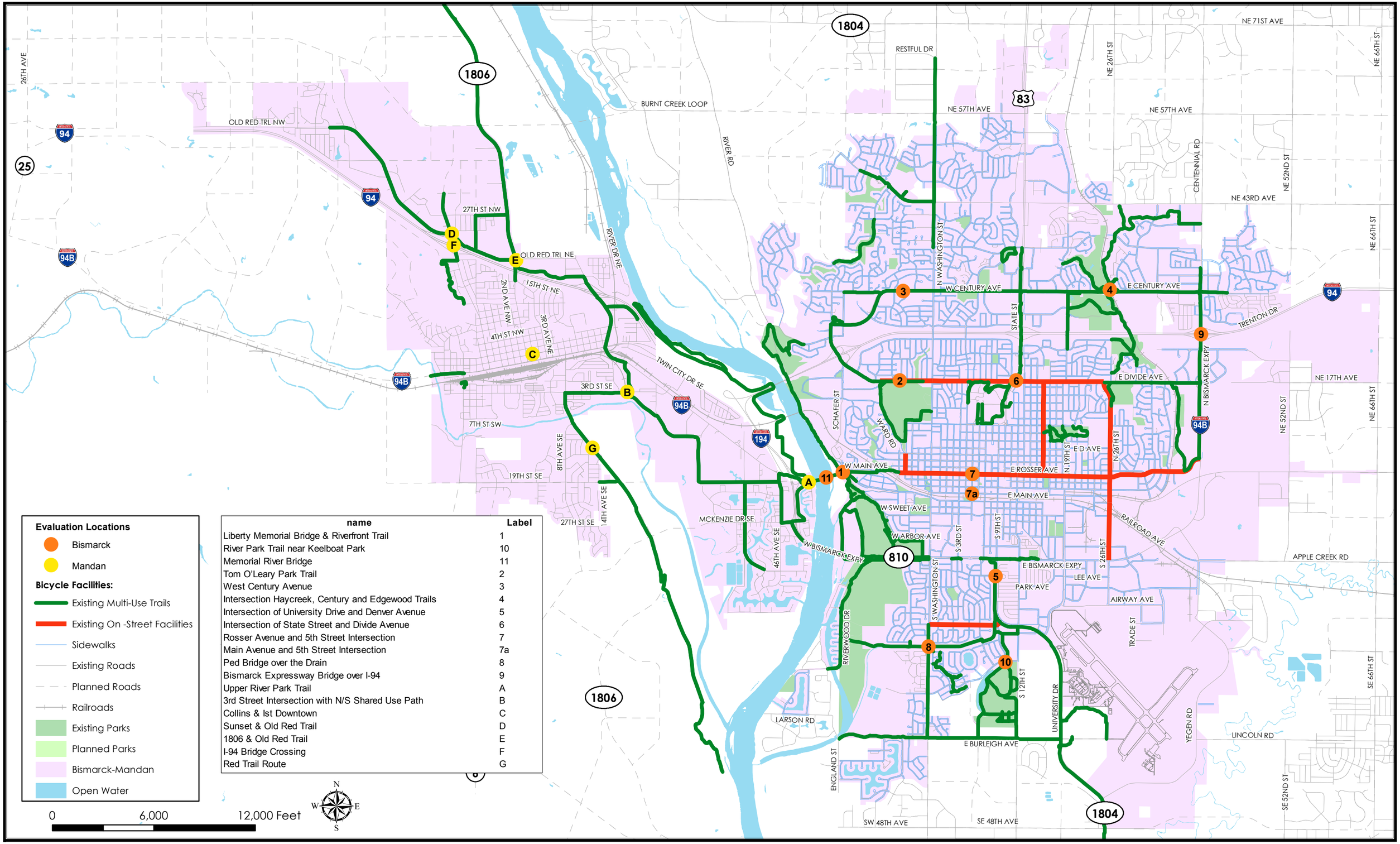
Attachment: Meeting sign in sheet



Evaluation Locations

- Bismarck
- Mandan

Bicycle Facilities:

- Existing Multi-Use Trails
- Existing On -Street Facilities
- Sidewalks
- Existing Roads
- Planned Roads
- Railroads
- Existing Parks
- Planned Parks
- Bismarck-Mandan
- Open Water

name	Label
Liberty Memorial Bridge & Riverfront Trail	1
River Park Trail near Keelboat Park	10
Memorial River Bridge	11
Tom O'Leary Park Trail	2
West Century Avenue	3
Intersection Haycreek, Century and Edgewood Trails	4
Intersection of University Drive and Denver Avenue	5
Intersection of State Street and Divide Avenue	6
Rosser Avenue and 5th Street Intersection	7
Main Avenue and 5th Street Intersection	7a
Ped Bridge over the Drain	8
Bismarck Expressway Bridge over I-94	9
Upper River Park Trail	A
3rd Street Intersection with N/S Shared Use Path	B
Collins & Ist Downtown	C
Sunset & Old Red Trail	D
1806 & Old Red Trail	E
I-94 Bridge Crossing	F
Red Trail Route	G

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N W E S

Bicycle/Pedestrian Existing Network and Evaluation Locations

Bismarck-Mandan Bicycle and Pedestrian Plan

September 25, 2017

Stantec

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MEETING SIGN-IN SHEET

Bismarck-Mandan Metropolitan Planning Organization

Stantec

Project Name: Bismarck- Mandan Bicycle and Pedestrian Plan		
Client Name: Bismarck-Mandan MPO		
Stantec Project No. 193803697	Date of Meeting: September 12, 2017	Time of Meeting: 1:00 PM
Project Manager: Peggy Harter		

Name	Representing	Phone
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Will Hutchings	Comm. Development	Phone: Cell: Email: wthutchings@bismarcknd.gov

MEETING SIGN-IN SHEET

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Bismarck Mandan Bicycle and Pedestrian Plan

Steering Committee Meeting #6

Draft Plan Review

Date/Time: October 10, 2017 / 2:00 PM
Place: Mandan Parks and Recreation Office
2600 46th Avenue SE, Mandan, ND

Next Meeting: Public Open House #2 – November 2, 2017 – Mandan City Hall at 5:30 pm

Attendees: Rachel Drewlow – Bismarck-Mandan MPO
Steve Saunders – Bismarck-Mandan MPO
Jeff Solemsaas – Bismarck Police Department
Craig Scnaaf – Central Dakota Cyclists
Al Thompson – League of American Bicyclists
Natalie Pierce – Morton County
Mark Berg – City of Bismarck Engineering
Justin Froseth – City of Mandan Planning & Engineering
Gabe Schell - City of Bismarck Engineering
Bennett Kubischta - NDDOT retired
Keith Johnson – Custer Health
Wendy Van Duyne – Bartlett & West
Kate Herzog – Downtowners
Peggy Harter – Stantec Consulting Services, Inc.

Distribution: Steering Committee Members

ACTION ITEMS

- Update Draft Report based on all Steering Committee Members comments. **Stantec**
- Send comments on the draft report to Stantec. **Will Hutchings**
- City of Mandan send updated text regarding comments on ordinances on pages 40 and 41 in the Draft Plan. **Justin Froseth**
- Page 47 – Century Code Section that mandates that the City can put in sidewalk if deemed it is unsafe for the parcel to not have sidewalk. We will add this in to either page 40 or 41 to note that the state provides the authority to do this when needed. Justin will also identify whether Mandan developed criteria for using this. **Justin Froseth**
- Identify text on Evaluation within Chapters 8 and 9 to leave in the full body of the report and put the remaining information within a full technical memorandum within the appendix. Send highlighted text to leave in Chapters 8 and 9 to Steve Saunders for review and approval. **Stantec**
- Page 65 – Bismarck Priority Route #2 – Gabe will check on the curb to curb widths to verify. **Gabe Schell**
- Page 67 & 68 – Justin will take a detailed look at Mandan's top 2 priority routes to identify additional opportunities/constraints. **Justin Froseth**
- Review top three intersections in Bismarck identifying opportunities and issues based on the audit and provide feedback for changes to the graphics or text. **Gabe Schell and Mark Berg**
- Review top two intersections in Mandan identifying opportunities and issues based on the audit and provide feedback for changes to the graphics or text. **Justin Froseth**

Welcome and Introductions

Peggy Harter opened the meeting and thanked Cole Higlin with the Mandan Park District and Randy Bina with the Bismarck Park District for accommodating all the project Steering Committee meetings. She also thanked the Steering Committee members for their continued participation in the project. Each member present at the meeting then introduced themselves and the organization in which they represent.

Draft Plan Review

Peggy Harter walked the steering committee members through each of the chapters of the Draft Bicycle and Pedestrian Plan. Ms. Harter noted that prior to the meeting she had already received comments from Steve Saunders and Wendy Berg and that Will Hutchings was still planning to send his comments. The following comments and changes were discussed:

- Chapter 1: Introduction – Page 4 – Lead with the second paragraph – switch the first and second paragraph around.
- Page 4: Reference the League of American Bicyclists Graphic for the Building Blocks of a Bike Friendly Community which is available on line and discusses all 5 of the E's. Could remove one of the existing graphics on page 4 with this graphic. Graphic provided by Al Thompson.
- Page 8: SC Meeting #3 – add date of the meeting.
- Page 13: Engineering – Add a date to the table for mileage of facility types based on the date of the data.
- Figure 4-1 Page 14 – not every undeveloped lot has a sidewalk in Bismarck. Within the GIS sidewalk file there is an attribute that identifies whether it is existing or not. Double check the sidewalk file to be sure that the non-existent sidewalks aren't showing up on this figure. Gabe Schell can resend this file if needed.
- Page 17 – Table on the right includes Jamestown: Why did the LRSP include both Mandan and Jamestown? Justin noted that the safety study lumped Mandan and Jamestown. Add a footnote to explain why this table says Mandan and Jamestown.
- Page 17 – Table 4-3: Add clarification that all Total Severe Crashes include motorized and non-motorized vehicles (all crashes) in parenthesis. Also, should the 2231 be a percentage?? Go back and check the LRSP to ensure the table is showing correctly and to better explain the data within it. Comparing it back to the Bismarck/Burleigh table, it looks like there is a mistake on Table 4-3. Review and correct from LRSP.
- Page 18 – Right Column – Pedestrian Underpass heading second paragraph moves into a new subject. We need to identify a new heading for the second paragraph or revise the "pedestrian underpass" heading to include Rails to Trails as well.
- Update page 18 per Will's comments on the Downtown Subarea Plan once they are received.
- Page 18 – Last paragraph – ensure the 543 miles of existing sidewalk in Bismarck is correct as we check the GIS files for sidewalk non-existent.

- Page 19 – Right column – 9th line down – designed to be 10-feet wide with three feet of separation from the road… We would rather have this be variable on the boulevard width dependent on what is available. Change the three feet to variable boulevard width.
- When developing the future bicycle and pedestrian network – we don't really hit what we are doing for pedestrian under the "developing the future bike and pedestrian network." On page 20 hit on the recommendations from encouragement for furthering improvements to our sidewalk and pedestrian network as well.
- Figure 4-6: A bit confusing but decided that this figure should be left in because it tells an important part of the story.
- Page 28: Under the footnote for protected bike lanes – remove the word "residential"
- Add the walk audit sheets and summary to the plan appendices.
- Ben K comment – Education – 1938 Highway department safety program conducted an educational program throughout the entire state of ND and showed a series of safety videos put on by motor and insurance companies. They also had safety pamphlets funded by similar companies. They went out to the schools and public and came back and reported that they showed all this information to multiple students and adults. Ben wondered if private funding for education still exists today.
- The message to include what to include to the residents should include "Why are cyclists riding on the sidewalk" and "Why are cyclists riding on the road." Folks also feel it is too dangerous to ride your bikes on the road.
- Page 36 – add to the bullet list the left turn incidents in addition to the right hook and define both further within the bullet.
- Page 37 – "yard signage in the neighborhood" should be changed to "Improved Signage for Cyclists and Pedestrians. Change this throughout the document from "Yard signage in the Neighborhood" since the focus of this changed significantly at the SC meeting.
- Page 40 – City of Mandan ordinance – Last paragraph – the ordinance waiver statement is not entirely correct. Justin Froseth will send updated text for the last paragraph on page 40.
- Page 42 – Table from the survey results lists out the full phrases for everything that was voted on. The 3rd from the top is cut off and should be corrected to show the full item from the survey monkey.
- Page 41 – Winter maintenance for Mandan – Left Column – 2nd paragraph. Justin Froseth will send a recommendation to clarify that the only time they address snow on the sidewalk is when they receive a complaint is not the case. He will send updated text.
- Page 43 – regarding the development community not wanting to put the sidewalk in up front, there is concern for their investment being ruined during construction. So, the reason the sidewalks aren't put in before the homes is typically because of the risk of damaging the infrastructure when constructing the home. Gabe felt this description should be added to the left column on page 43.
- Mid-range neighborhoods – adding in on-road bicycle facilities seems to be a gentrification issue for the public feedback received. This could be a focus item as part of the education campaign listed back on page 35.

- Page 47 – Century Code Section that mandates that the City can put in sidewalk if deemed it is unsafe for the parcel to not have sidewalk. Justin Froseth will send this reference to the Century code. We will add this in to either page 40 or 41 to note that the state provides the authority to do this when needed. Justin will also identify whether Mandan developed criteria for using this.
- Page 51 on the strategies – bullet number 3 – change from "Getting all officers bicycle certified" to Increase the number of officers that are bicycle certified." This should also be carried through to the implementation chapter.
- Within the implementation chapter – there is discussion of a "LAB certification program" but this isn't for officers. So that reference should be deleted as the LAB certifies but not for patrol officers.
- Chapter 8 – Very difficult to read – not reader friendly. Let's pull Greg's full report back into one full technical memorandum and pull forward within the body of the report the development of the baseline evaluation program. Peggy will take a first shot and keep all the bolded headings and have Steve Saunders review. Beginning and/or end of chapter should reference the full tech memo within the appendices.
- Add in a different photo for a "lower cost" version of the infrared counter.
- For the Top 5 Route graphics in the implementation chapter – add north arrows. Re-do graphics and associate comments with the number and remove comments from the aerial. Make graphics like the intersection graphics. Make sure that north is facing up on all the graphics when they are redone.
- Page 64 – Bismarck Route Priority #1 – second to bottom comment on graphic should be cleaned up so it doesn't appear that we are making an unsafe intersection by making the route connection.
- Page 65 – again due to the frequency of access – we should probably pull the protected bike lane off the table and show the recommended facility as a buffered bike lane. Updated text.
- Page 65 – Bismarck Priority Route #2 – Gabe will check on the curb to curb widths to verify.
- Page 67 & 68 – Justin will take a detailed look at Mandan's top 2 priority routes to identify additional opportunities/constraints.
- Page 70: Funding Sources – Federal Aid Urban Roads Program – Gabe noted that they can be applied for through this program in addition to a roadway project or as stand-alone project. This is feasible but hasn't been done in the past. The Urban Roads Program should be added to the implementation chapter.
- Page 70: funding Sources – Main Street Governor's Initiative had specific funding sources for Main Street improvements. We can look at this to see if additional sources show up on there.
- Add language to note that Cities, Parks, School Districts, etc. can develop a capital improvement plan to set aside and program yearly funds to put toward bicycle and pedestrian improvements.
- Page 70: Funder for HSIP should be NDDOT and not USDOT. Then the official approvers would be the Cities.

- Add discussion regarding private partnership specific to the non-engineering improvements – specifically education.
- Add a table for the non-engineering implementation items for funding sources.
- Include AARP as a funding source as it was used for the "pop-up" project in Bismarck.
- Table 9-1 ND Parks and Rec funds would likely go to the Park Districts and not the Cities for the Applicable Agency.
- League of American Bicyclists supplies funds for Advocacy Events if this can be included within the report.

Engineering – Review of Opportunities & Constraints at the Top 5 Intersections

Ms. Harter referred the committee members to the five-page handout of the top 5 intersections in Bismarck and Mandan that had previously been prioritized at the Engineering Steering Committee Meeting. Ms. Harter noted that Wendy Van Duyne completed an audit at each of the top 5 intersections from the perspective of both a pedestrian and a bicyclist utilizing the "Walk Audit" sheets developed for this project. Will Hutchings accompanied Wendy when conducting the audit for the Top 3 intersections in Bismarck. Natalie Pierce accompanied Wendy when conducting the audit for the Top 2 intersections in Mandan. Ms. Harter explained that engineering solutions are not to be provided as part of this plan, but opportunities and issues identified for each of the intersections will help the jurisdictions develop solutions to improve the intersections for pedestrians and bicyclists. Ms. Harter reviewed one intersection and asked that the Cities of Bismarck and Mandan further review the data for the five intersections and send comments to Stantec to appropriately update the report. The group discussed one intersection to include the following updates:

<u>South Washington Street & Bismarck Expressway – Bismarck Priority Intersection #1</u>

- Vehicle Speed – 2nd Bullet – The signal timing is set for pedestrians to only cross one direction of travel to the median. Therefore the signal timing is too short to cross the entire street through one pedestrian timing cycle.
- Vehicle Speed – 3rd Bullet – should say that the medians "feel" too narrow, instead of "are" too narrow.
- Vehicle Speed – 5th Bullet – add "in the southwest quadrant" to the end of the statement
- Vehicle Speed – 6th Bullet – update to say "Neighboring residents were observed crossing further east of south of the intersection as opposed to at the intersection."
- ADA Ramps – 1st Bullet – update to say "Ramps are not directions and are missing truncated domes at two of the intersection quadrants."

Next Steps

- Incorporate SC Comments into the Draft Plan by 10/17/2017 and place the updated Draft Plan on the project website.
- Publish the Open House #2 ad on 10/18/2017 (MPO)
- Prepare for and hold Open House #2 on 11/02/2017 at Mandan City Hall beginning at 5:30 pm. Comments will be received until 11/15/2017. Send email calendar invite out to all Steering Committee members (Harter)
- Begin NDDOT and FHWA review on 11/04/2017.
- City, Parks, & MPO reviews and approvals will occur in November & December 2017.

The meeting adjourned at approximately 5:00 PM.

The foregoing is considered to be a true and accurate record of all items discussed. If any discrepancies or inconsistencies are noted, please contact the writer immediately.

Stantec Consulting Services Inc.

Peggy Harter, PE
Project Manager
Phone: (701) 566-6020
Peggy.Harter@stantec.com

Attachment: Meeting sign in sheet

MEETING SIGN-IN SHEET

Project Name: Bismarck- Mandan Bicycle and Pedestrian Plan		
Client Name: Bismarck-Mandan MPO		
Stantec Project No. 193803697	Date of Meeting: October 10, 2017	Time of Meeting: 2:00 PM
Project Manager: Peggy Harter		

Name	Representing	Phone
Peggy Harter	Stantec	Phone: (701) 566-2020 Cell: (701) 371-4167 Email: peggy.harter@stantec.com
Rachel Drewlow	Bis-Man MPO	Phone: 701-355-1852 Cell: Email: rdrewlow@bismarcknd.gov
Jeff Solemsaas	Bismarck PW	Phone: 701-355-1914 Cell: Email: jsolemsaas@bismarcknd.gov
Gabe Schell	Bismarck Engineering	Phone: 701 355 1505 Cell: Fax: Email: gschell@bismarcknd.gov
Steve Saunders	Bis-Man MPO	Phone: 355-1845 Cell: Email: ssaunders@bismarcknd.gov
CRAIG SENAFF	CENTRAL DAKOTA CYCLISTS	Phone: Cell: 426-6783 Email: craigsenaff@middlebrookhic.com
Al Thompson	LAB NDAT A	Phone: Cell: 701-471-4207 Email: athorp@bis.midco.net
Natalie Pierce	Morton County	Phone: 701-667-3361 Cell: Email: natalie.pierce@mortonnd.org

MEETING SIGN-IN SHEET

Mark A. Berg	City of Bismarck Engr'ing Dept	Phone: 355/505 Cell: Email: mberg@bismarcknd.gov
Bennett Kubischta	Public (NDDOT Retired)	Phone: Cell: Email: KubischtaeBis.Midco.Net
Keith Johnson	Custer Health	Phone: 667 3370 Cell: 870 1455 Email: KJohnson@custerhealth.com
JUSTIN FROSETH	CITY OF MANDAN PLANNING & ENGINEERING	Phone: 667-3227 Cell: Email: jfroseth@cityofmandan.com
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Kate Herzog	Downtowners (Bismarck)	Phone: Cell: Email: Kate@downtownbismarck.com
		Phone: Cell: Email:
		Phone: Cell: Email:
		Phone: Cell: Email:
		Phone: Cell: Email:

APPENDIX C:
Bismarck-Mandan Walk Audit Memorandum

Bartlett & West

MEMORANDUM

Date: June 30, 2017

To: Steve Saunders, Bismarck-Mandan MPO; Peggy Harter, Stantec

From: Wendy Van Duyne, Bartlett & West

Re: **Recap of walk audit demonstrations for the Bismarck Mandan Bicycle and Pedestrian Master Plan**

On Tuesday June 27, 2017, Bartlett & West conducted two demonstration walk audits for the City of Bismarck and the City of Mandan. Led by Wendy Van Duyne, these activities were held in support of the Bis-Man Bicycle and Pedestrian Master Plan and were intended to serve as a "train the trainer" activity, wherein those in attendance could easily replicate the exercise with other stakeholders throughout the community, on a case-by-case basis, as various project needs arise.

The walk audit process:

Walk audits serve an important role in evaluating current pedestrian infrastructure order to raise awareness, identify gaps and evaluate potential project opportunities for municipalities and neighborhood groups. Many times, this activity serves as a measurable exercise to complete at the onset of a project, in response to public concerns, or in conjunction with other planning studies. The process of a walk audit can be led by city engineering or planning staff and includes the following:

- Gather with invited stakeholders (recommended size of 3 to 12 participants) to review the walking corridor and survey questions (presentation materials included as Attachment A)
    - Review intersection evaluation criteria in response to these items:
        - Vehicle Speeds
        - Curb Returns/Corner Treatments
        - Visibility & Lighting
        - ADA Ramps
        - Crossing Controls
        - Traffic Signals
    - Review Mid-Block evaluation criteria to assess the following:
        - Sidewalk Presence
        - Sidewalk Width
        - Driveway Slopes & Design
        - Sidewalk Condition
        - Vehicle Speed
        - Street Tress & Vegetation
        - Place
        - Lighting
        - Median
        - Accessibility
        - Transit

- Complete the pre-determined walking route to review each intersection configuration and mid-block condition in accordance with the walk audit criteria. It is recommended that the group complete one set of evaluation questions for each intersection and mid-block area that is encountered along the route. Walk audit routes are recommended to be contiguous, but do not necessarily need to follow a direct linear path-- is expected that the evaluation corridors can turn and take detours as necessary.

- Once the group has completed the walking route, it is important to reconvene to review the existing conditions as observed during the exercise. This recap discussion provides an important opportunity to identify areas of most concern, record general observations, and facilitate group discussion of how potential improvements could be addressed. Some questions which should be included within this reflection time are:

    - What did you see?
    - As a person walking, did you feel like you were of importance to other road users?
    - What other feelings did you have while performing the audit?
    - What needs to change? (in the short, medium, long-term timeframe)
    - How did the roadway and intersection segments rank?

Walk audit evaluation criteria:

The primary value of a walk audit rests on the evaluation criteria. As part of this exercise an extensive list of questions has been developed to evaluate the pedestrian needs of a walking corridor for both roadway intersections as well as mid-block environments. Each of these criteria are to be scored on the following scale:

- Good (+3 points)
- Fair (+1 point)
- N/A (0 points)
- Poor/Gap in pedestrian infrastructure (-3 points)

It should be noted that the cumulative score of a walk audit is important, but not the ultimate indicator for how a corridor should be evaluated. In many instances, the scoring system provides an opportunity to specifically measure the efficacy of each element, rather than the overall performance of the walking route itself. At present time, there are no known industry scoring standards which have been developed to assess pedestrian elements. The scoring aspect of the walk audit process has been provided to help stakeholders prioritize areas of improvement along corridors where numerous challenges may exist.

The following list of walk-audit questions have been assembled and included within the scoring sheets (included in attachment B). During the walk-audit exercise, each of these questions are evaluated on an individual basis (per the scale provided above) in order to set priorities and establish goals for improvement. The questions are divided into two categories: Intersections and Mid-Block, and are provided as follows:

Intersections

- Vehicle Speed
    - What is the operating speed of the roadway adjacent to the sidewalk?
    - What is the posted speed of the two intersecting roadways?

- Curb Returns/Corner Treatments
    - What are the corner treatments? (tight, large, channelized right turn, ‘smart’ right turn, curb extension)

- Visibility & Lighting
    - Are people walking visible to the people driving through the intersection?
    - Is lighting provided that illuminates the roadway when people are walking across the street?
    - Is lighting if illuminates the people waiting to cross the street on the sidewalk?

- ADA Ramps
    - Are ADA ramps existing at all corners of the intersections that have sidewalk connections?
    - Are the ramps shared at the corner or is there one ramp per direction?

- Crossing Controls
    - What pedestrian crossing controls are present?
    - Does the control type convey the importance of a crossing location?

- Traffic Signals
    - Is the signal designed to minimize the delay to people waiting to cross the intersection?
    - Is there adequate time for people of all ages and abilities to cross the street?
    - Is there information provided to indicate the amount of time remaining in crossing the street?
    - Are accessible signals provided?
    - Are tactile walking surface indicators used to navigate the intersections?

Mid-Block

- Sidewalk Presence
    - Are sidewalks existing on both sides of the street?

- Sidewalk Width
    - How wide is the sidewalk?
    - Is it conducive for two people in wheelchairs to wheel side-by-side while passing another person (8.5' clearance)?
    - Can two wheelchair users pass each other on the sidewalk without issue (6' clearance)?
    - Is the sidewalk clear of obstructions?

- Driveway slopes & Design
    - Describe the driveway treatments (if present)
    - Comment on the degree of side slope that exists for the driveway portion if walking or wheeling is expected to occur across it.

- Sidewalk Condition
    - What is the condition of the sidewalk?
    - Is it conducive to reliable wheelchair travel?

- Vehicle Speed
    - What is the operating speed of the roadway adjacent to the sidewalk?
    - What is the posted speed of the roadway adjacent to the sidewalk?
    - What is the distance from the edge of the sidewalk to the nearest travel lane?

- Street Trees & Vegetation
    - Is there a boulevard present?
    - Are trees or vegetation able to be viable and thrive in the boulevard?

- Place
    - Are there programming and design components that enhance the experience in the area?

- Lighting
    - Is lighting provided that illuminates the walkways in addition to the roadway?
    - Is lighting provided in a manner that does not create darker areas that feel less comfortable and secure?

- Median
    - Is there a median in the street? If yes, what is the width and what is it made of?

- Accessibility
    - Are tactile walking surface indicators used to navigate the street?
    - Is the street clear of obstacles that would be a barrier to access?

- Transit Access
    - Are transit stops easy to access and accessible for all users?
    - Are transit stops located outside of the clear walkway width, not impeding travel along the sidewalk?

Summary of walk audit for the City of Bismarck:

The City of Bismarck walk audit was held from 9:30am-12:00pm on June 27, 2017. The audit group met at the offices of Stantec (600 South 2nd Street, Suite 150) and the route consisted of the following corridor:

- Start at intersection of E. Indiana Avenue and cross east on S. 3rd Street

- Walk south on 4 blocks of S. 3rd Street (east side)
    - Evaluate mid-block crossing to Ramkota (unsignalized)

- Cross E. Bismarck Expressway to evaluate intersection
    - Cross south
    - Cross west
    - Cross north

- Walk north on 1 block of S. 3rd Street (west side)

- Walk 1 block west on E. Arbor Avenue

- End walk audit at intersection of E. Arbor and S. 2nd Street

The above route was selected due to the socio-economic context of the study area. It has been noted that this corridor receives regular pedestrian traffic from residents of the multi-family housing units to the west and south of the route—who often utilize this path to access shopping and other commercial areas nearby.

Bismarck Walk Audit Route

North

The walk audit for the City of Bismarck was attended by a dozen individuals representing the Bicycle-Pedestrian Plan Steering Committee, The City of Bismarck Engineering and Planning Departments, Bismarck Police Department as well as one member of the Bismarck City Commission. Those in attendance for the walk audit are as follows:

- Steve Saunders, Bismarck-Mandan MPO
- Jeff Solemsass, Bismarck Police Department
- Gabe Schell, City of Bismarck Engineering
- Mark Berg, City of Bismarck Engineering
- Linda Smestad, City of Bismarck Engineering
- Steve Schumaker, City of Bismarck Engineering
- Chris Delupo, City of Bismarck Engineering
- Will Hutchings, City of Bismarck Planning
- Andrew Stromme, City of Bismarck Planning
- Bennett Kubischta, retired NDDOT
- Shawn Oban, Bismarck City Commissioner
- Wendy Van Duyne, Bartlett & West

The group consisted of a good cross section of individuals—some of whom were very familiar with the design elements being evaluated and others who were very familiar with pedestrian/vehicle conflicts that had occurred within the audit corridor. This group also benefited from the participation of a Bismarck City Commissioner who, while not necessarily familiar with the technical aspects of pedestrian infrastructure, is actively engaged with learning more about how this infrastructure can benefit the community.

Boulevard spaces and additional vegetation were recognized as a beneficial improvement to the S. 3rd. Street portion of the Bismarck walk audit.

Overall, the S. 3rd Street corridor was a good area to audit. There were several examples of intersections where appropriate signals were in place, but were missing appropriate tactile surface indicators. While S. 3rd Street is a very active roadway with 35 mph speed limits, the group noted that many of the adjacent commercial establishments had completed recent improvements to help improve the ‘sense of place’ for the area including:

- Adding outdoor seating areas at coffee shops adjacent to sidewalks
- Including a landscape buffer between parking areas and pedestrian sidewalks
- Providing trees within boulevard spaces

There were numerous driveway entrances that also provided an opportunity to evaluate existing conditions and assess cross-slope considerations for pedestrians who may be in wheelchairs. The group was equipped with a laser level and measuring wheel to clearly evaluate whether these intersections would benefit from improvement.

The alignment of this walk audit also included an opportunity to cross E. Bismarck Expressway, which is recognized as one of the busiest intersections within the City. The group collectively utilized each pedestrian signal in-place at the intersection and made special note as to the efficacy of the signals in facilitating a safe crossing.

The final block of E. Arbor Avenue was also a good field example to include in the audit alignment as there presently is not a sidewalk located along this portion of the walk audit corridor. This was a good example of a pedestrian infrastructure gap in an area where many residents walk between the multi-family complexes and commercial amenities nearby.

E. Arbor Avenue was lacking in sidewalks, which the group recognized was a notable pedestrian infrastructure gap that could be addressed.

After the walk audit exercise, the group shared the following closing thoughts and observations:

- Context is very important. Some of the questions may ask to compare existing conditions to an ideal scenario. Some existing conditions, while not ideal, may still represent a good example of pedestrian infrastructure within the local context of the City of Bismarck. Before a walk audit is completed, it would be a good idea for the group to establish a baseline understanding of what constitutes an ideal pedestrian environment to better assess the existing conditions of the walk audit route.

- Seasons are also very important. Perhaps repeat walk audits could be completed, of the same route, at various times of the year—to evaluate the efficacy of snow removal in the winter and stormwater drainage in the spring.

Summary of walk audit for the City of Mandan:

The City of Mandan walk audit was held from 2:30pm-5:00 pm on June 27, 2017. The audit group met at the Veteran's Conference Room in Mandan City Hall (205 2nd Ave. NW) and the route consisted of the following alignment:

- Start at intersection of 1st St. NW and 3rd Ave. NW
  - Cross west at intersection to evaluate intersection of 3rd Ave. and 1st St.
- Walk north on 3rd Ave. NW (3 blocks) to assess the west side of 3rd Ave. NW
  - Evaluate two vehicular intersections along this route
- Walk west at 4th St. NW (1 block) to the east side of 4th Ave. NW
- Walk south on 4th Ave. NW (4 blocks) to the intersection of E. Main St. and 4th Ave. NW
- Cross E. Main Street to evaluate pedestrian crossings
  - Cross South
  - Cross East
  - Cross North
- Walk east on E. Main Street (1 block)
  - Cross 3rd Ave NW to east sidewalk
- Walk north on 3rd Ave NW (1 block) to 1st St. NW
- End walk audit at intersection of 1st St. NW and 3rd Ave. NW

The above route was selected due to the context of the surrounding residential neighborhood and the relative proximity to the downtown business and commercial district. Additionally, the previous Mandan Junior High building (located at 4th St. NW and 3rd Ave. NW) is planned to be redeveloped into low-income housing and it is expected that this corridor will be a frequently travelled route for residents who may live in this building.

The walk audit for the City of Mandan was attended by ten individuals representing the Bicycle-Pedestrian Plan Steering Committee, The City of Mandan Engineering and Planning Departments and the Federal Highway Department. Those in attendance for the walk audit are as follows:

- Steve Saunders, Bismarck-Mandan MPO
- Joey Roberston-Kitsman, Bismarck-Mandan MPO
- Al Thompson, ND Active Transportation Alliance
- Bob Decker, City of Mandan Planning
- Justin Froseth, City of Mandan Engineering
- Bennett Kubischta, Retired NDDOT
- Natalie Pierce, Morton County Planning
- Richard Ducan, FHWA
- Sandy Kramer, FHWA
- Wendy Van Duyne, Bartlett & West

The group that participated in the City of Mandan walk-audit represented City, County and Federal departments as well as those who are actively engaged in community organization to support active transportation.

Mandan Walk Audit Route

206

North

Overall, the 3rd Ave. NW corridor was a good area to audit. Intersection concerns were a common theme along the audit alignment and were determined to be problematic within the business district located along 1st Street NW. Due to the wide width of these roadways, and the setback distances of sidewalks from the street (adjacent to angled parking) it is difficult to allow for proper pedestrian visibility within these areas. It appears that the pavement colorations indicate that a traffic bump-out was planned in these areas, but was never constructed. This could be an appropriate solution to help address pedestrian visibility issues and was a good example for the group to discuss.

Similarly, while the residential neighborhoods benefit from very wide boulevard areas (in excess of 20 feet) it was determined by the group that these boulevards prove problematic at traffic intersections where the visibility of pedestrians by motorists is limited and the pedestrian crossing is not ideally located.

There were numerous driveway entrances that also provided an opportunity to evaluate existing conditions and assess cross-slope considerations for pedestrians who may be in wheelchairs. Overall, the walk audit route was relatively flat, which posed very few problematic examples. Perhaps the greatest issue that the group observed was the condition of the sidewalks (numerous cracks and heaves) as well as overgrown vegetation, of adjacent residences, that crowds the sidewalk area.

Overgrown vegetation, uneven sidewalks, and wide boulevard widths were the most prevalent observations during the Mandan walk audit.

To better understand the transition between residential neighborhoods and the downtown business and commercial areas, the group collectively decided to walk one block further south in order to assess the pedestrian crossing signals across E. Main Street. Overall, it was determined that these signals are effective and offer adequate time for pedestrian crossings. It was also noted, by Justin Froseth, that all pedestrian crossings on E. Main Street are scheduled to be improved over the next several months.

After the walk audit exercise, the group shared the following closing thoughts and observations:

- Not all audit questions appeared to be applicable to the neighborhood context of the route being evaluated. Perhaps it might be beneficial to develop a specific list for different neighborhood contexts (ex. commercial, residential, business, industrial), or identify to which types of areas each question may pertain.

Final observations of the walk audit demonstration:

Overall, both walk audit groups indicated that the exercise was valuable and could be utilized as an effective tool to help convey the importance of pedestrian infrastructure. The tools are easily utilized and administered to the group and participants indicated they felt comfortable replicating this with other community constituent groups, and elected officials, in the future.

Participants in both groups conveyed the importance of site context and how it impacts the audit process. There are some questions that more aptly pertain to busier streets and high density areas, while other questions are better suited to smaller scale contexts such as residential neighborhoods and calmer streets. It was indicated that the process could benefit from having a specifically-tailored list for various corridor applications, or from an indication of what types of study contexts could be addressed by each question.

Due to the wide-ranging seasonal considerations experienced in North Dakota, it was also suggested that this exercise would provide value if completed at various times of the year to evaluate pedestrian access, snow removal and accommodation of stormwater runoff.

Presentation materials and walk audit questions will be provided within the final report for the Bismarck-Mandan Bicycle-Pedestrian Master Plan. These tools may be utilized by representatives of local organizations and municipalities to replicate this exercise with other community groups and elected officials as needs arise. All who participated indicated that this could be a valuable exercise to help raise awareness and emphasize the importance of pedestrian infrastructure.

Attachment A
Presentation/Orientation Materials for Walk Audit

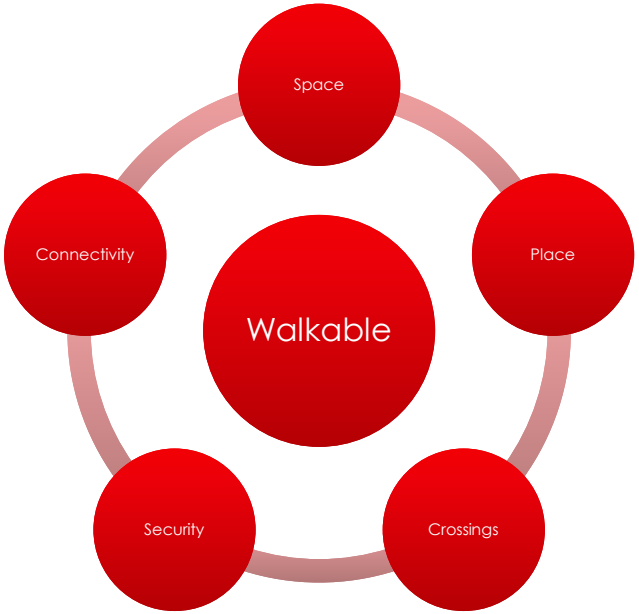
Walking Audits

Bismarck-Mandan MPO
Bismarck-Mandan Bicycle and Pedestrian Plan

June 27, 2017

Stantec

Elements that make a good walking environment



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Purpose

- Repeatable Train the Trainer
- Measurable
- Target & Prioritize

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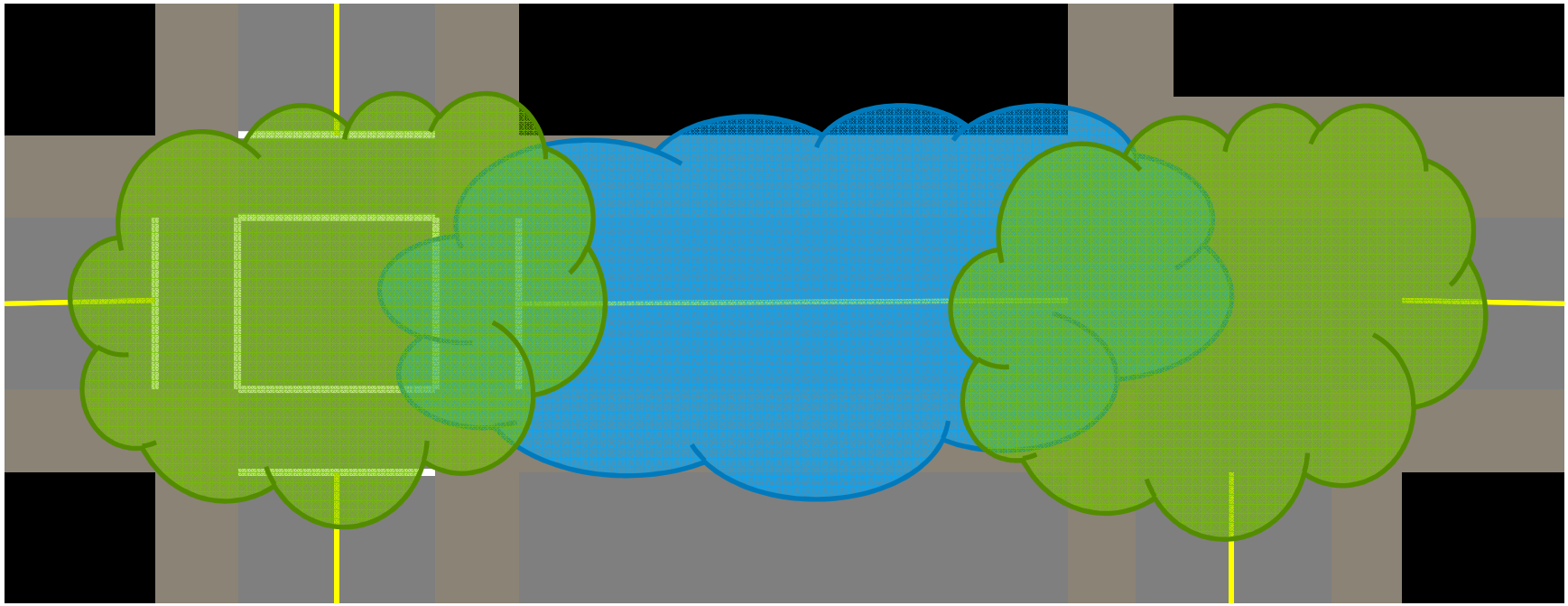
When is this used?

- Project Start-Up
- Responding to public concerns
- Responding to incidents
- Other planning studies – Master Plans, Corridor Studies, Identifying Walking Routes
- Gain support for needed improvements
- Does not replace an ADA assessment

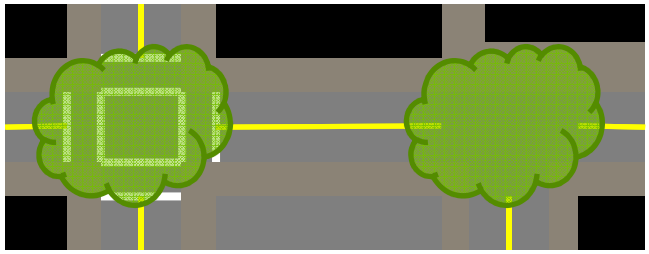
Stantec

Survey Sections



Stantec

Intersections



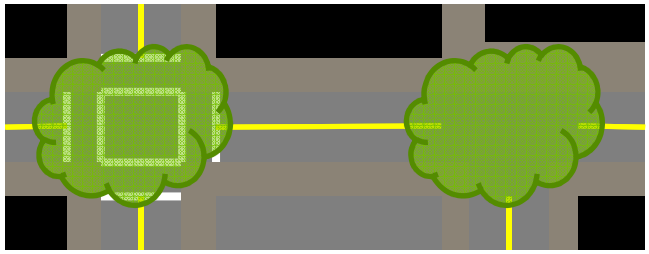
Design Principles to reinforce:

- Minimize conflict between modes
- Accommodate all modes with appropriate levels of service based on context
- Avoid elimination of any travel modes due to intersection design
- Provide good visibility to all modes
- Minimize pedestrian exposure to moving traffic
- Design for slow speeds and critical pedestrian-vehicle conflict points
- Avoid extreme intersection angles make pedestrian crossings staged in large intersections
- Ensure intersections are fully accessible

Source: ITE – Walkable Urban Thoroughfares

Stantec

Intersections



Principles of good intersection design for pedestrians:

- **Clarity** – making it clear to drivers that pedestrians use the intersections and indicating to pedestrians where the best place is to cross
- **Predictability** – drivers know where to expect pedestrians
- **Visibility** – good signt distance and lighting so that pedestrians can clearly view oncoming traffic and be seen by approaching motorists
- **Short Wait** – providing reasonable wait times to cross the street at both unsignalized (via gaps created in traffic or two-stage crossings) and signalized intersections (via signal cycle length)
- **Adequate crossing time at signalized intersections** – the appropriate signal timing for all types of users to cross the street
- **Limited exposure** – reducing conflict points where possible, reducing crossing distance and providing refuge islands when necessary
- **Usable crossing** – eliminating barriers and ensuring accessibility for all users

Source: AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities

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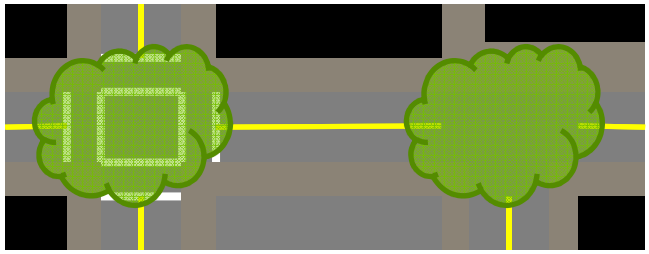
Intersections



- Vehicle Speeds
- Curb Returns / Corner Treatments
- Visibility & Lighting
- ADA Ramps
- Crossing Controls
- Traffic Signals

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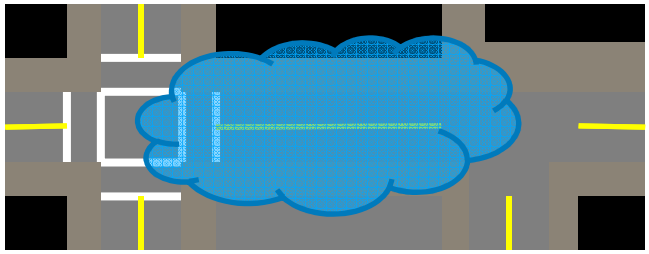
Mid-Block



- Sidewalk Presence
- Sidewalk Width
- Driveway Slopes & Design
- Sidewalk Condition
- Vehicle Speed
- Street Trees & Vegetation
- Place
- Lighting
- Median
- Accessibility
- Transit

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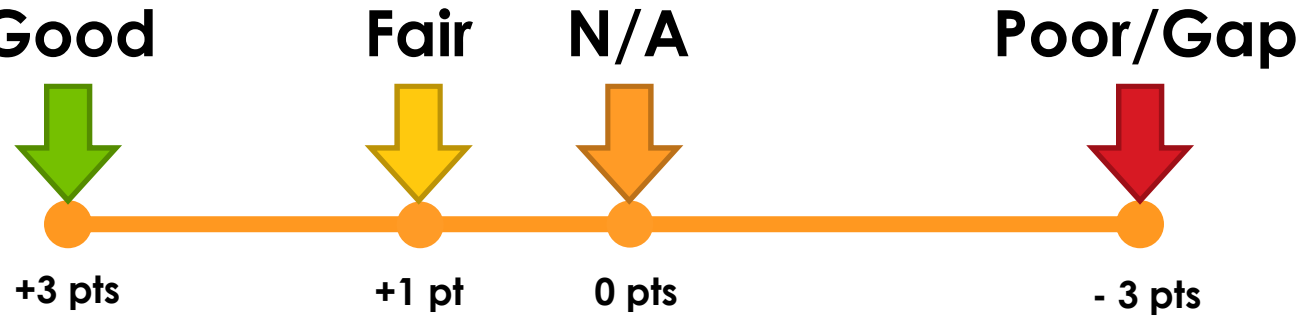
Scoring and Ranking

- Scoring of each element is based on the Good (3 points), Fair (1 point), Poor (-3 points) levels described in the audit sheet



- Add scores within intersection and mid-block categories for each area along the study area
- Rank scores to assist in prioritization of future investment

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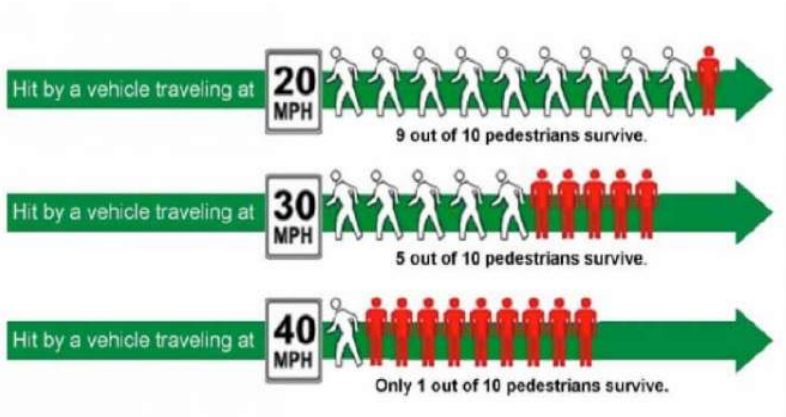
Intersections

Vehicle Speed



The speed of vehicles is related to the safety and comfort of people walking in the area.

Key Questions:

- What is the operating speed of the roadway adjacent to the sidewalk?
- What is the posted speed of the two intersecting roadways?

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Intersections

Curb Returns / Corner Treatments

Curb returns are the curved connections of curbs in the corner of an intersection of two streets that guides the vehicle in turning corners and separate vehicular traffic from pedestrian areas.

Key Questions:

- What are the corner treatments?

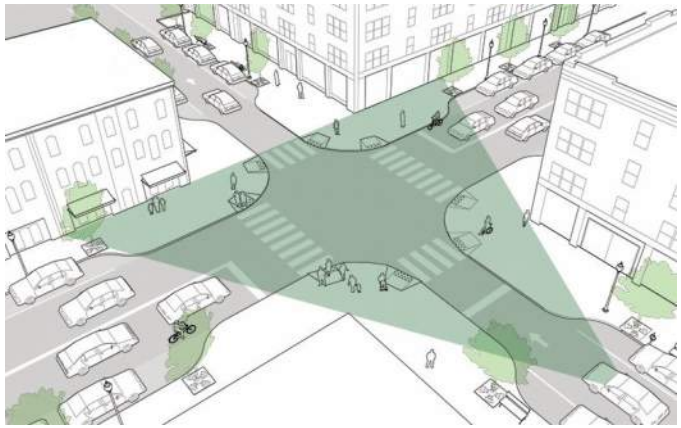
Intersections

Visibility & Lighting

To effectively indicate to motorists that they are in, or approaching, a pedestrian area and that they should expect to encounter pedestrians crossing the street, the design of the crossings must be easily understood, clearly visible, and incorporate realistic crossing opportunities for pedestrians.

Key Questions:

- Are people walking visible to the people driving through the intersection?
- Is lighting provided that illuminates the roadway when people are walking across the street?
- Is lighting provided that illuminates the people waiting to cross the street on the sidewalk?



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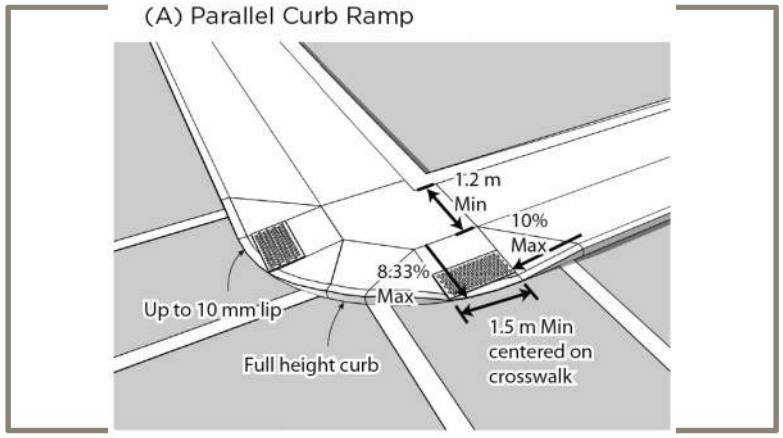
Intersections

ADA Ramps

Curb ramps are present and are designed to be in line with the intended direction of travel across an intersection rather than directing travel into the center of the intersection.

Key Questions:

- Are ADA ramps existing at all corners of the intersection that have sidewalk connections?
- Are the ramps shared at the corner or is there one ramp per direction?



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Intersections

Crossing Controls

In walkable areas, the intent is to create an environment in which pedestrians are expected and to support this expectation with consistent and uniform application of signing, markings, and other visual cues for motorists and pedestrians.

Key Questions:

- What pedestrian crossing controls are present?
- Does the control type convey the importance of a crossing location?

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Intersections

Traffic Signals

Pedestrian signals and pedestrian countdown heads are present and/or crossing times and shorter cycle lengths are considerate of the needs of people walking to ensure compliance and safety.

Key Questions:

- Is the signal designed to minimize the delay to people waiting to cross the intersection?
- Is there adequate time for people of all ages and abilities to cross the street?
- Is there information provided to indicate the amount of time remaining in crossing the street?
- Are accessible signals provided?
- Are tactile walking surface indicators used to navigate the intersections?

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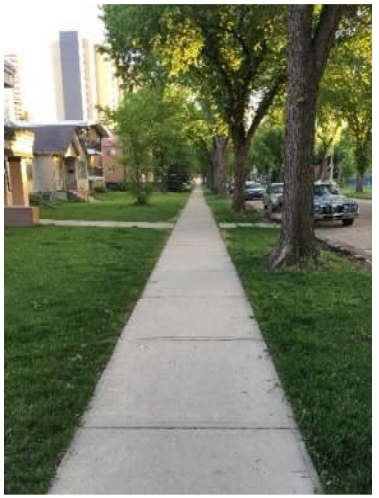
Mid-Block

Sidewalk Presence



The presence of sidewalks or lack of sidewalks greatly affects the accessibility of the street to people of all mobility types and the comfort of people walking in the area.

Key Questions:

- Are sidewalks existing on both sides of the street?

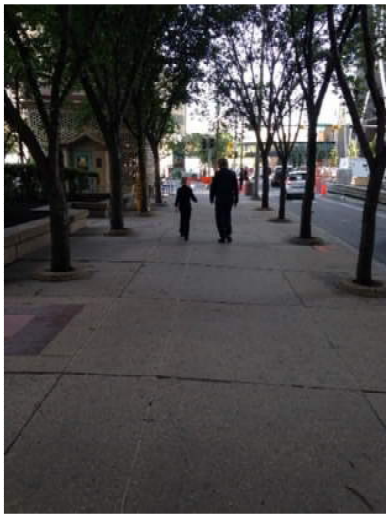
Mid-Block

Sidewalk Width

Providing comfortable sidewalk widths for people to have conversations and pass other groups of people allows the sidewalk area to function as a good public space for convening and sharing ideas. Accessibility is also affected when narrow sidewalks are only provided.

Key Questions:

- How wide is the sidewalk?
- Is it conducive for two people in wheelchairs to wheel side-by-side while passing another person (8.5 clearance)?
- Can two wheelchair users pass each other on the sidewalk without issue (6 feet clearance)?
- Is the sidewalk clear of obstructions?



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Mid-Block

Driveway slopes & Design

If driveway access is provided across a sidewalk, the design of the interaction and slope affects the comfort, accessibility, and safety of people walking.

Key Questions:

- Describe the driveway treatments (if present)
- Comment on the degree of side slope that exists for the driveway portion if walking or wheeling is expected to occur along it

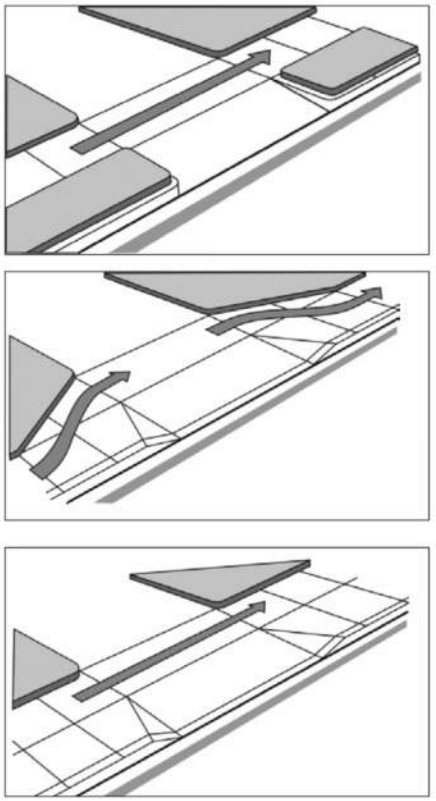

Figure 8.6 Preferred accessible designs for driveway and alley crossings. Source: based on *Designing Sidewalks and Trails for Access*. Illustration by Digital Media Productions.

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Mid-Block

Sidewalk Condition

The condition of the sidewalk along the side of a street influences its likelihood to contribute to slips, trips, and falls which is important to consider with aging populations and accessibility needs.

Key Questions:

- What is the condition of the sidewalk?
- Is it conducive to reliable wheelchair travel?

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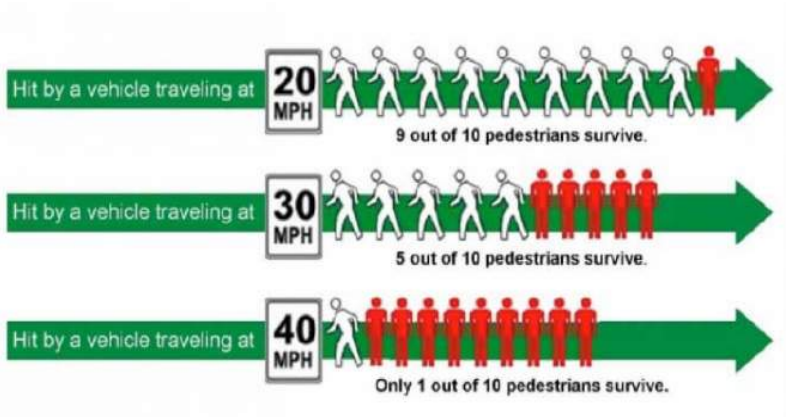
Mid-Block

Vehicle Speed



The speed of vehicles is related to the safety, especially when involved in collisions, and comfort of people walking in the area.

Key Questions:

- What is the operating speed of the roadway adjacent to the sidewalk?
- What is the posted speed of the roadway adjacent to the sidewalk?
- What is the distance from the edge of the sidewalk to the nearest travel lane?

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Mid-Block

Street Trees & Vegetation

Street trees and vegetation along a street can contribute to the comfort and enjoyment of a space for all users. Ensuring adequate space is provided for the vegetation to survive and thrive is needed so maintenance and operation costs are kept low.

Key Questions:

- Is there a boulevard present?
- Are trees or vegetation able to be viable and thrive in the boulevard?

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Mid-Block

Place

The quality of a street or place to draw people in and have them spend time in the area is often neglected in typical street design considerations. These elements contribute to a more comfortable and welcoming area and increases community involvement and pride.

Key Questions:

- Are there programming and design components that enhance the experience in the area?

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Mid-Block

Lighting

For safety and visibility reasons it is important that lighting is provided to illuminate the people crossing the street as well as the people walking along the street segment. Lighting levels also contribute to feelings of security and comfort in an area.

Key Questions:

- Is lighting provided that illuminates the walkways in addition to the roadway?
- Is lighting provided in a manner that does not create darker areas that feel less comfortable and secure?

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Mid-Block

Median

Medians provide additional space for trees or vegetation to be planted, increasing the aesthetic quality of the street section. Medians can also be used as refuges when staged crossings are required.

Key Questions:

- Is there a median in the street?
  - If 'yes' what is the width and what is it made of?

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Mid-Block

Accessibility

Providing equitable access to our public space and infrastructure is important for a civil society. Barrier-free design is one way to improve the accessibility of a street section or public space.

Key Questions:

- Are tactile walking surface indicators used to navigate the street?
- Is the street clear of obstacles that would be a barrier to access?

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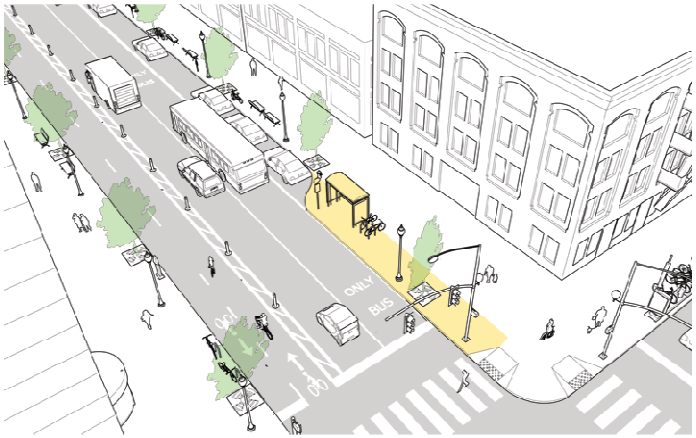
Mid-Block

Transit Access



Pedestrian access to transit is critical to the success of transit in an area. All transit stops should be connected to the sidewalk network and be accessible for people with varying mobility capabilities.

Key Questions:

- Are transit stops easy to access and accessible for all users?
- Are transit stops located outside of the clear walkway width, not impeding travel along the sidewalk?

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Reflection

- What did you see?
- As a person walking, did you feel like you were of importance to other road users?
- What other feelings did you have while performing the audit?
- What needs to change? (Short, Medium, Long term)
- How did the roadway and intersection segments rank?

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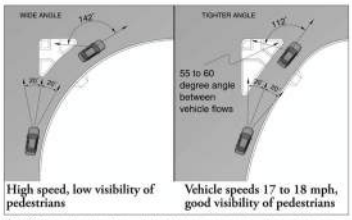
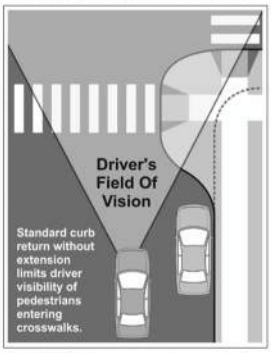
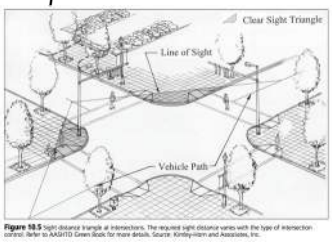
Attachment B
Walk Audit Field Questions and Forms

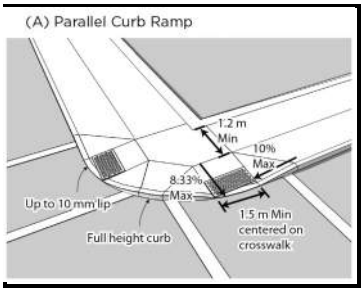
Audit questions

Intersections

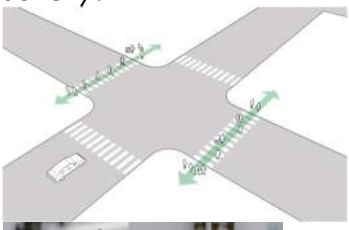
Intersection Element	Prompting Questions	Rating
Vehicle speed *The speed of vehicles is related to the safety and comfort of people walking in the area.* 	What is the operating speed of the roadway adjacent to the sidewalk? _____ mph What is the posted speed of the two intersecting roadways? _____ mph on _____ _____ mph on _____	**Good** Operating speeds of vehicles are < 30mph or sufficient distance between pedestrians and vehicles **Fair** Operating speeds of vehicles are between 30-40 mph with sufficient distance between pedestrians and vehicles **Poor** Operating speeds of vehicles >40 mph with sufficient distance between pedestrians and vehicles

Intersection Element	Prompting Questions	Rating
Curb Returns / Corner Treatments *Curb returns are the curved connections of curbs in the corner of an intersection of two streets that guides the vehicle in turning corners and separate vehicular traffic from pedestrian areas*  **Figure 10.11** The preferred design of a channelized right-turn lane uses an approach angle that results in a lower speed and improved visibility. Source: Kimley-Horn and Associates, Inc., adapted from an illustration by Dan Burden.  **Figure 10.16** Curb extensions can improve pedestrian visibility and reduce crossing distance. Source: Digital Media Productions.	What are the corner treatments? • 'Tight' Curb Radii • 'Large' Curb Radii • Channelized Right Turn (yield or free) • 'Smart' Right Turn (Not Yield or Free Right) • Curb Extension  *Example of a 'large' curb radii converted to a 'tight' curb radii (Source: NACTO)*	**Good** Tight curb radii, smart right, or curb extension **Fair** Channelized right (yield) **Poor** Channelized right (free) Large curb radii

Intersection Element	Prompting Questions	Rating
Visibility & Lighting *To effectively indicate to motorists that they are in, or approaching, a pedestrian area and that they should expect to encounter pedestrians crossing the street, the design of the crossings must be easily understood, clearly visible, and incorporate realistic crossing opportunities for pedestrians.*  	Are people walking visible to the people driving through the intersection? Yes No Is lighting provided that illuminates the roadway when people are walking across the street? Yes No Is lighting provided that illuminates the people waiting to cross the street on the sidewalk? Yes No *Note: This portion of the audit may be more appropriate to complete at dusk or night.*	**Good** Is lighting provided on the street and on the sidewalk with sight lines clear for motorists to view pedestrians **Fair** Is lighting provided on the street and are sight lines clear for motorists to view pedestrians **Poor** No lighting provided at the intersection and/or sight lines are not clear for motorists to view pedestrians

Intersection Element	Prompting Questions	Rating
ADA Ramps *Curb ramps are present and are designed to be in line with the intended direction of travel across an intersection rather than directing travel into the center of the intersection.*  	Are ADA ramps existing at all corners of the intersection that have sidewalk connections? Yes No Are the ramps shared at the corner or is there one ramp per direction? Shared One per direction	**Good** There is one ADA ramp per direction on all corners of the intersection **Fair** There is one ADA ramp per direction on some corners of the intersection **Poor** There are shared ADA ramps on all corners of the intersection **Gap** ADA ramps are missing on all or some of the corners of the intersection

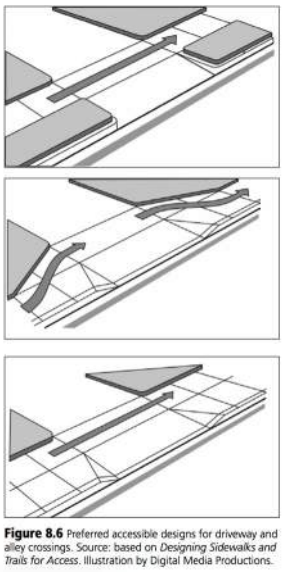
Intersection Element	Prompting Questions	Rating
Crossing Controls *In walkable areas, the intent is to create an environment in which pedestrians are expected and to support this expectation with consistent and uniform application of signing, markings, and other visual cues for motorists and pedestrians.* 	What pedestrian crossing controls are present? _____ _____ Does the control type convey the importance of a crossing location? Yes Somewhat No Comments: _____	**Good** Crossing controls, when present, are highly visible and meet expectations of both drivers and pedestrians in the area
		Fair Crossing controls, when present, meet expectations of both drivers and pedestrians in the area, but may be difficult to see
		Poor Crossing controls, when present, are difficult to see and do not meet expectations of both drivers and pedestrians in the area

Intersection Element	Prompting Questions	Rating
Traffic Signals *Pedestrian signals and pedestrian countdown heads are present and/or crossing times and shorter cycle lengths are considerate of the needs of people walking to ensure compliance and safety.*  	Is the signal designed to minimize the delay to people waiting to cross the intersection? Yes Somewhat No Is there adequate time for people of all ages and abilities to cross the street? Yes Somewhat No Is there information provided to indicate the amount of time remaining in crossing the street? Yes No Are accessible signals provided? Yes Somewhat No Comments: _____ Are tactile walking surface indicators (e.g. truncated domes) used to navigate intersections? Yes Somewhat No Comments: _____	**Good** Signal design minimizes delay to people crossing the intersection, the crossing time provided is adequate for people of all ages and abilities to cross (with information provided), has accessible push buttons, **and** tactile walking surface indicators are provided. **Fair** Signal design minimizes delay to people crossing the intersection, the crossing time provided is adequate for people of all ages and abilities to cross (with information provided), has accessible push buttons, **and/or** tactile walking surface indicators are provided. **Poor** Signal design does not minimizes delay to people crossing the intersection or the crossing time provided is not adequate for people of all ages and abilities to cross (with information provided), **or** accessible push buttons are not present and tactile walking surface indicators are missing.

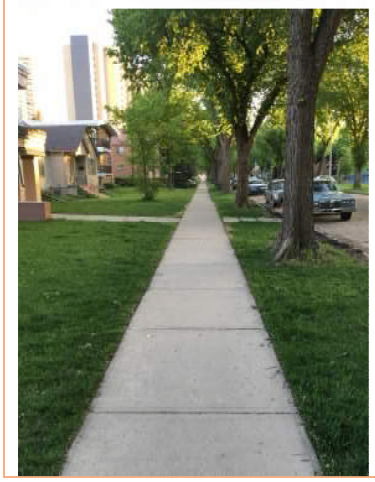
Mid-Block

Mid-Block Element	Prompting Questions	Rating
Sidewalk Presence *The presence of sidewalks or lack of sidewalks greatly affect the accessibility of the street to people of all mobility types and the comfort of people walking in the area.*  	Are sidewalks existing on both sides of the street? Yes No	**Good** Sidewalks are provided on both sides of the street
		Fair Sidewalks are provided on one side of the street
		Poor Sidewalks are missing for portions of the street segment
		Gap Sidewalks are not provided along the street

Mid-Block Element	Prompting Questions	Rating
Sidewalk Width *Providing comfortable sidewalk widths for people to have conversations and pass other groups of people allows the sidewalk area to function as a good public space for convening and sharing ideas. Accessibility is also affected when narrow sidewalks are only provided.*  	How wide is the sidewalk? _____ feet Is it conducive for two people in wheelchairs to wheel side-by-side while passing another person (8.5 feet clearance)? Yes Somewhat No Comments: _____ Can two wheelchair users pass each other (6 feet clearance) on the sidewalk without issue? Yes Somewhat No Comments: _____ Is the sidewalk clear of obstructions? Yes Somewhat No Comments: _____	**Good** Two people in wheelchairs can wheel side-by-side while passing another person (8.5 feet clearance) **and** the sidewalk clear of obstructions **Fair** Two wheelchair users can pass each other on the sidewalk without issue (6 feet clearance) **and** the sidewalk clear of obstructions **Poor** Only one wheelchair user can travel on the sidewalk without issue **and** the sidewalk has obstructions **Gap** The sidewalk is not clear of obstructions

Mid-Block Element	Prompting Questions	Rating
Driveway Slopes & Design *If driveway access is provided across a sidewalk, the design of the interaction and slope affects the comfort, accessibility, and safety of people walking.*  **Figure 8.6** Preferred accessible designs for driveway and alley crossings. Source: based on *Designing Sidewalks and Trails for Access*. Illustration by Digital Media Productions. *Images depict a Good (Image 1 and 3) and Fair (Image 2) with respect to the alignment and side slop conditions shown in the rating system*	Describe the driveway treatments (if present): _____ ___ Comment on the degree of side slope that exists for the driveway portion if walking or wheeling is expected to occur along it: _____ ___	**Good** Driveways do not change the alignment and side slope of the sidewalk **Fair** Driveways do not change the side slope of the sidewalk, but alignment is shifted **Poor** Driveways change the side slope and alignment of the sidewalks

Mid-Block Element	Prompting Questions	Rating
Sidewalk Condition *The condition of the sidewalk along the side of a street influences its likelihood to contribute to slips, trips, and falls which is important to consider with aging populations and accessibility needs.* 	What is the condition of the sidewalk? • Good – no cracks, bumps, uneven areas, missing sections • Fair – some cracks, bumps, uneven areas, missing sections • Poor - cracks, bumps, uneven areas, missing sections Is it conducive to reliable wheelchair travel? Yes Somewhat No Comments: _____	**Good** No cracks, bumps, uneven areas, or missing sections are present on the sidewalk **Fair** Some cracks, bumps, uneven areas, missing sections are present on the sidewalk **Poor** Cracks, bumps, uneven areas, missing sections are present on the sidewalk

Mid-Block Element	Prompting Questions	Rating
Vehicle Speed *The speed of vehicles, is related to the safety, especially when involved in collisions, and comfort of people walking in the area.*  	What is the operating speed of the roadway adjacent to the sidewalk? _____ mph What is the posted speed of the roadway adjacent to the sidewalk? _____ mph What is the distance from the edge of the sidewalk to the nearest travel lane? _____ feet	**Good** Operating speeds of vehicles are 10-30mph or sufficient distance between pedestrians and vehicles **Fair** Operating speeds of vehicles are between 30-40 mph with sufficient distance between pedestrians and vehicles **Poor** Operating speeds of vehicles >40 mph with sufficient distance between pedestrians and vehicles

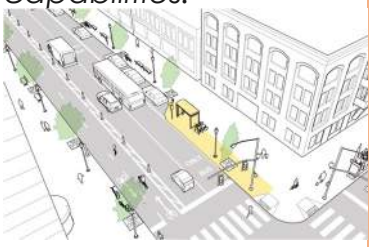
Mid-Block Element	Prompting Questions	Rating
Street Trees & Vegetation *Street trees and vegetation along a street can contribute to the comfort and enjoyment of a space for all users. Ensuring adequate space is provided for the vegetation to survive and thrive is needed so maintenance and operation costs are kept low.* 	Is there a boulevard present? Yes Somewhat No Comments: _____ Are trees or vegetation able to be viable and thrive in the boulevard? Yes Somewhat No Comments: _____	**Good** A boulevard is present and is wide enough for trees or vegetation to be viable and thrive **Fair** A boulevard is present, but is not wide enough for trees or vegetation to be viable and thrive **Poor** No boulevard is present

Mid-Block Element	Prompting Questions	Rating
Place *The quality of a street or place to draw people in and have them spend time in the area is often neglected in typical street design considerations. These elements contribute to a more comfortable and welcoming area and increases community involvement and pride.* 	Are there programming and design components that enhance the experience in the area? Yes Somewhat No Comments: _____	**Good** Programming and design components enhance the experience in the area
		Fair Programming or design components enhance the experience in the area
		Poor No programming or design components are present to enhance the experience in the area

Mid-Block Element	Prompting Questions	Rating
Lighting *For safety and visibility reasons it is important that lighting is provided to illuminate the people crossing the street as well as the people walking along the street segment. Lighting levels also contribute to feelings of security and comfort in an area.* 	Is lighting provided that illuminates the walkways in addition to the roadways? Yes Somewhat No Comments: _____ Is lighting provided in a manner that does not create darker areas that feel less comfortable and secure? Yes Somewhat No Comments: _____	**Good** Lighting is provided that illuminates the walkways in addition to the roadways **and** does not create dark areas that feel less comfortable and secure
		Fair Lighting is provided that illuminates the walkways in addition to the roadways **but** does create dark areas that feel less comfortable and secure
		Poor Lighting is provided that illuminates the roadways only
		Gap Lighting is not provided that illuminates the walkways in addition to the roadways

Mid-Block Element	Prompting Questions	Rating
Median *Medians provide additional space for trees or vegetation to be planted, increasing the aesthetic quality of the street section. Medians can also be used as refuges when staged crossings are required.* 	Is there a median in the street? Yes No If 'yes', what is the width and what is it made of? _____ feet Material description: _____	**Good** Physical median in the street with refuge areas for pedestrians and trees, vegetation, or pageantry adding to the streetscape
		Fair Physical median in the street with refuge areas for pedestrians
		Poor Painted median only
		Gap No median provided

Mid-Block Element	Prompting Questions	Rating
Accessibility *Providing equitable access to our public space and infrastructure is important for a civil society. Barrier-free design is one way to improve the accessibility of a street section or public space.* 	Are tactile walking surface indicators (e.g. truncated domes) used to navigate the street? Yes Somewhat No Comments: _____ Is the sidewalk clear of obstacles that would be a barrier to access? Yes Somewhat No Comments: _____	**Good** Tactile walking surface indicators are used to navigate the street and the street is clear of obstacles that would be a barrier to access **Fair** The sidewalk is clear of obstacles that would be a barrier to access **Poor** The sidewalk is not clear of obstacles that would be a barrier to access

Mid-Block Element	Prompting Questions	Rating
Transit *Pedestrian access to transit is critical to the success of transit in an area. All transit stops should be connected to the sidewalk network and be accessible for people with varying mobility capabilities.* 	Are transit stops easy to access and accessible for all users? Yes Somewhat No Comments: _____ Are transit stops located outside of the clear walkway width, not impeding travel along the sidewalk? Yes Somewhat No Comments: _____	**Good** Transit stops are easy to access and accessible for all users while being located outside of the clear walkway width, not impeding travel along the sidewalk **Fair** Transit stops are easy to access and accessible for all users **Poor** Transit stops are not easy to access and are not accessible for all users

APPENDIX D:
Evaluation and Monitoring Technical Memorandum

Date: 25 August 2017

To: Katrina Nygaard, Peggy Harter, Stantec

From: Dr. Greg Lindsey, University of Minnesota

Re: Bicycle and Pedestrian Monitoring Options for Bismarck-Mandan Metropolitan Planning Organization

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This memorandum outlines options for monitoring bicycle and pedestrian traffic to be considered by the Bismarck-Mandan Metropolitan Planning Organization (MPO). The purpose of monitoring is to inform transportation planning and engineering initiatives undertaken by the MPO, including development of evaluation strategies to be included in the Bismarck-Mandan Bicycle and Pedestrian Plan (Plan). This memo uses a framework for nonmotorized traffic monitoring established by the Federal Highway Administration (FHWA) in its *Traffic Monitoring Guide* (TMG; FHWA 2013) to present these options. The reason for using the FHWA framework is to ensure that future bicycle and pedestrian monitoring is consistent with engineering principles used in motorized traffic monitoring and will produce valid and reliable estimates of bicycle and pedestrian traffic that can be used in routine planning and engineering applications. This memorandum also draws on other recent federal and state technical reports and research publications that evaluate technologies used in monitoring and assess strategies, procedures, and protocols for design of monitoring networks and analysis, management, and reporting of data.

Chapter 4 Traffic Monitoring for Nonmotorized Traffic in the *TMG* reviews key elements of any bicycle and pedestrian monitoring program (FHWA 2013). The primary purposes of monitoring programs envisioned in the *TMG* are to characterize traffic flows on networks and produce estimates of annual average daily bicyclists (AADB) and pedestrians (AADP) that are analogous to estimates of annual average daily traffic (AADT) produced from motorized traffic monitoring programs. In comprehensive monitoring initiatives, these measures of AADB and AADP potentially could be used to estimate measures of distances traveled on networks such as bicycle miles traveled (BMT) that are analogous to vehicle miles traveled (VMT), a performance indicator used by federal, state, and regional planning agencies for many different purposes. Key elements of the *TMG* monitoring framework include (FHWA 2013)

1. Establish monitoring objectives,
2. Determine modes of traffic to be monitored,
3. Select monitoring sites, including permanent and short-duration stations,
4. Determine the type(s) of devices to be deployed,
5. Implement monitoring following recommended guidelines,
6. Follow recommended analytic procedures to ensure validity of data, and
7. Use factors derived from permanent monitoring stations to extrapolate short duration counts and estimate annual average daily bicyclists (AADB), pedestrians (AADP) or mixed-mode, undifferentiated nonmotorized traffic.

In addition to these technical issues, the MPO must consider a number of institutional, administrative, and financial issues if it chooses to initiate a monitoring program. This memo also addresses some of these issues. Following review of general considerations in bicycle and pedestrian traffic monitoring, this memo presents a set of options for the MPO.

1. Establish monitoring objectives

Common objectives for monitoring bicycle and pedestrian traffic include:

- Gain a general understanding of traffic volumes at particular locations,
- Characterize traffic flows on particular elements of a transportation network,
- Inform site-specific planning or engineering analyses such as installation of traffic controls,
- Evaluate impacts of changes or improvements in bicycle and pedestrian infrastructure, and
- Provide data for funding requests for infrastructure projects.

These objectives often are complimentary, but they are distinct, and they imply different types of monitoring initiatives. For example, if the objective is to characterize traffic flows on a network, then one set of criteria for site selection may be established. If, however, the objective is to assess whether new infrastructure affects the volume or safety of bicycle traffic, a pre-post design may be required, and a different set of criteria for site selection may be necessary. The first step in establishing a monitoring program, therefore, is to establish monitoring objectives.

In many, if not most communities, these objectives evolve over time. Agencies may move from ad hoc monitoring to understand approximate bicycle or pedestrian volumes at particular locations to assessing the effects of new infrastructure to more comprehensive monitoring of entire networks with the goals of, for example, estimating AADB for segments within the network. The objectives typically are constrained by several factors, including the technical capacity of agencies and the availability of financial resources.

2. Determine modes of traffic to be monitored

Options for modes of traffic to be monitored include bicycles, pedestrians, and mixed-mode traffic. Mixed-mode traffic refers to undifferentiated bicycle and pedestrian traffic and often is measured on multiuse trails or shared use paths that serve both bicyclists and pedestrians but not motorized traffic. The modes of traffic to be monitored generally are determined jointly with decisions about monitoring objectives. For example, agencies commonly choose to monitor bicyclists on street networks, pedestrians on sidewalks, and, depending on objectives and if sufficient resources are available, bicyclists and pedestrians separately on trails. However, if only a general understanding of the magnitude of trail traffic is needed, and resources are limited, agencies may monitor only mixed-mode traffic on trails. Although sensors used to monitor mixed-mode traffic are less expensive than monitors used to count bicyclists and pedestrians separately, a decision to monitor only mixed-mode traffic carries with it a loss of information, because bicyclists and pedestrians travel for different purposes at different times of day for different distances. Tradeoffs exist in all aspects of monitoring programs.

Other factors relevant to decisions about modes of traffic to monitor may be programmatic or political. For example, in many, if not most communities, pedestrian mode share is higher than bicycle mode share. Hence, from the perspective of managing infrastructure or implementation of a Complete Streets program, there may be a utilitarian rationale for focusing on pedestrian monitoring. However, bicycle advocates typically are more organized and engaged in transportation planning processes, and bicycle infrastructure on streets may be more visible than pedestrian infrastructure, so there may be political reasons for focusing on bicycle traffic. The prioritization of modes to monitor is closely linked to the objectives of monitoring.

3. Select monitoring sites, including permanent and short-duration stations

The choice of sites to monitor follows from the monitoring objective. For example, if the objective is to assess changes in bicycle volumes or interactions with vehicles following installation of a bicycle facility, then the general location is given and the principal decision is to determine the exact location on the general site for installation of equipment. Assuming the objective is to characterize traffic volumes on networks with the long term objective of producing performance indicators such as AADB and BMT, the *TMG* notes the need to determine locations for both permanent and short duration monitoring stations. Permanent monitoring stations are those where automated continuous counters record bicycle or pedestrian volumes, continually, 24 hours per day, 365 days per year. Data from permanent stations are used to estimate AADB or AADP at the site. They also are used identify traffic patterns and compute adjustment factors or ratios that then are used to estimate AADB or AADP from short-duration counts that are taken for periods from one or two days to as long as a month or more. For example, if an MPO installed a permanent monitor on one segment of a trail, and then used portable monitors to count for seven days on another trail segment, adjustment factors developed from weekly and monthly patterns from the permanent site could be used to estimate AAAB or AADP for the location of short duration sample. This process is directly analogous to the processes used by all state Departments of Transportation to estimate AADT for state and county highways.

The *TMG* recommends against selecting sites with the heaviest volumes when choosing representative permanent locations but does not specify how to determine which locations are representative, and agencies initiating monitoring programs have approached this challenge differently. Many programs have evolved by augmenting locations initially selected for site-specific purposes. In general, because of resource limitations, agencies have not randomized selection of permanent monitoring sites to ensure that results can be generalized to entire network within some known confidence interval. Instead, most agencies seem to be developing approaches that involve purposeful section of sites within some stratification process related to infrastructure type and land use or geographic context. For example, the Institute for Transportation Research and Education (ITRE) at North Carolina State University, in collaboration with the North Carolina DOT, is establishing permanent monitoring stations in urban, rural, and near-university areas for locations believed to have commuting, recreation, and mixed traffic patterns, with the long-term goal of having multiple monitoring locations in each region of the state (Jackson et al. 2015). ITRE protocols for permanent site selection call for site visits and test-monitoring prior to installation to type of traffic patterns. The Minnesota Department of Transportation (MnDOT) has followed a different approach, incorporating existing counters, and establishing at least one bicycle monitor on streets and one mixed-mode monitor on trails in each administrative region (Lindsey et al. 2016). MnDOT does not share the goal of establishing multiple counters for each traffic pattern type in each region, partly because of the high cost associated with a comprehensive program. Instead, these MnDOT monitoring sites are serving as index sites to illustrate trends and ways that counts can inform planning and engineering.

The selection of locations for short duration monitoring depends on the type of infrastructure being monitored and how specific monitoring sites are representative of a network. For example, the Minneapolis Park and Recreation Board and the Mid-Ohio Regional Plan Commission (MORPC) followed similar procedures in selection of short-duration monitoring sites to characterize regional trail traffic (Wang et al. 2016). Each had several permanent monitoring stations in place. Each then divided the entire trail network (80 miles in Minneapolis; 110 miles in Columbus and Franklin and Delaware Counties) into segments roughly one-mile long. Short-duration samples then were taken for a minimum of seven days along each segment using portable infrared sensors that produced mixed-mode trail counts. Results were used to estimate annual average daily traffic on each segment and miles traveled annual on each network. The specific location for monitoring on each segment was determined in the field based on trail geometry, adjacent land use, accessibility, and vendor specifications for installation.

In other contexts where the goal is more general and monitoring is being initiated in a more exploratory way, other factors might be considered, but, as noted, the *TMG* cautions against focusing on locations believed to have the highest volumes. Professional judgment plays a large role in the design and implementation of all monitoring programs.

An objective common to virtually all initiatives is to illustrate the range of traffic volumes and patterns that may occur within an area. The trail studies in Minneapolis and by MORPC, for example, both showed that trail traffic volumes through their respective networks varied by three orders of magnitude across networks and that this variation was associated with adjacent land use and access (Wang et al. 2017). Care must be taken when initiating monitoring to select a range of sites in a range of locations to maximize the likelihood that sites with different volumes and patterns are monitored. The North Carolina protocol that requires short-duration monitoring before installation of permanent stations helps to ensure that the information obtained from each monitoring location add to understanding of variation in bicycle and pedestrian traffic volumes (Jackson et al. 2015).

4. Determine the type(s) of devices to be deployed

The choice of monitoring devices or sensors to be deployed depends on the monitoring objectives and site specific conditions that affect deployment of particular technologies. As noted above, some technologies provide mode-specific counts, while others provide mixed-mode, undifferentiated counts. If specific information about individual bicyclists or pedestrians such as gender or use of helmets is needed, then video recording with manual observation (or manual observation by itself) may be the most effective strategy. In some contexts, automated sensors cannot be deployed easily, and video recording or manual observation is required. For example, in contexts where pedestrians are walking on road shoulders because of the lack of sidewalks, infrared sensors used to count pedestrians on sidewalks typically cannot be deployed and other more labor-intensive approaches may be required.

The *TMG* describes the advantages and disadvantages of different types of sensors for monitoring nonmotorized traffic (FHWA 2013). Since then, a National Cooperative Highway Research Program (NCHRP) report, "Methods and Technologies for Pedestrian and Bicycle Volume Data Collection", has been published and now is recognized as the authoritative guide to validity and reliability of monitoring technologies (Ryus et al. 2014a, Ryus et al. 2014b). Among other findings, the NCHRP study found that inductive loops provide accurate counts of cyclists with less than 1% deviation from true volumes, while passive infrared sensors are accurate, on average, within 10% (Ryus et al., 2014a, Ryus et al. 2014b). In addition, because of the growing demand for bicycle and pedestrian volume data, new technologies are becoming available, the number of vendors for similar technologies is growing, and new validation studies are being published. Many different types of sensors now come with remote reporting capabilities and integrated software that greatly facilities analysis and reporting of data.

While new sensors are being developed, trends in deployment of specific technologies are emerging, and tradeoffs among them are generally understood. These tradeoffs have to do with the need for mode-specific information, relative accuracy, costs, labor for data collection, capacity for remote reporting, and vendor support. Inductive loops, which are variations of the technology used to activate traffic signals or count cars on freeways, now can differentiate between bicycles and cars and are being used to count bicycles at permanent, in-road installations. For short-duration bicycle counts pneumatic tubes can be deployed in roadways for periods of one to two weeks or on trails, though deployment on trails may present challenges for some skaters and roller-bladers. These tubes can count both vehicles and cyclists or only cyclists, but bicycle-specific counters seem to produce more accurate results. Both active and passive infrared monitors can be used to count pedestrians on sidewalks or both pedestrians and bicyclists on trails. Active infrared sensors involve installation of a transmitter and a receiver on opposite sides of a

sidewalk and register each time a pedestrian walks between them, breaking an infrared beam. Passive infrared devices work by sensing temperature differentials with ambient temperature. They register each time a pedestrian passes by sensing the temperature differential. Automated video processing remains the Holy Grail of monitoring, and some vendors offer this approach, but it has not been implemented widely.

The costs of individual sensors vary along with their capabilities and while costs for individual units are modest, the costs of enough counters for implementing a comprehensive monitoring program can be substantial. For example, passive infrared counters for monitoring traffic on sidewalks or trails can range from as little as $500-600 to more than $2,500 per unit, with additional costs for equipment such as cables or tables needed to download and analyze data or annual costs of $400-$500 per year for remote reporting capabilities. Similarly, the costs of pneumatic tubes can range from a few hundred dollars to between $2,000 and $3,000 depending on capabilities and the vendor. Inductive loops are more expensive and are most expensive to install because they involve saw-cutting in roads to install loops. Their costs may be $5,000 or more for the counter, plus an equal amount or more for installation, plus design and permitting costs, if required, bringing the total costs of installation of a single counter to $10,000 - $15,000. Multiple vendors exist for nearly every technology.

5. Implement monitoring following recommended guidelines

Implementation follows specification of monitoring objectives, selection of modes to be monitored, selection of monitoring sites, and choice of monitoring equipment. Implementation presents both technical and administrative challenges. Some monitoring devices (e.g., passive infrared monitors) can be deployed by non-technical personnel using simple tools (e.g., drills, screwdrivers, and wrenches) while others (e.g., inductive loops) require engineering oversight for design, permitting, and installation and may include contracting with construction firms with specialized equipment (e.g., saws for cutting pavement). Vendors typically will provide advice concerning installation and assist with troubleshooting, and for additional fees, some will assist with or oversee installation.

In many places, agencies interested in data collaborate in installation. For example, in North Carolina, ITRE and NDOT install counters in collaboration with local jurisdictions that, after a period of time, assume responsibility for maintenance (Jackson et al. 2015). In the MnDOT case, the monitoring initiative was led by bicycle and pedestrian planners in the Transit office, but the division responsible for all motorized traffic monitoring in Minnesota assumed responsibility for installation of all inductive loops (Lindsey et al. 2017). In mid-Ohio, MORPC coordinated efforts by the City of Columbus and various park districts and suburban municipalities in implementation of the trail monitoring program (Lindsey et al. 2015a, Lindsey et al. 2015b). MORPC acquired infrared monitors, coordinated deployment, and determined protocols and procedures for data collection, management, and analysis. While collaborative approaches in creation of monitoring networks is common, a single agency typically assumes responsibility for managing, analyzing, and archiving data.

6. Follow protocols and analytic procedures to ensure validity of data

The inductive loops, infrared sensors, and pneumatic tubes available on the market for use in counting bicycle and pedestrian traffic have been tested by manufacturers and in many cases have been subjected to third party validation. The NCHRP guidebook, for example, involved extensive, in-field testing of different devices and report relative accuracy (Ryus et al. 2014a, Ryus et al. 2014b). The accuracy varies by technology, but, as noted, error rates range from one to two percent to as high as fifteen percent. These magnitudes of error generally are consistent with magnitudes associated with automated devices used to count motorized traffic, though rates for some infrared counters are higher, mainly due to undercounts associated with occlusion. Occlusion is the technical word used to refer to the problem that occurs when bicyclists or pedestrian pass sensors simultaneously, the sensors cannot distinguish them, and only one

count is recorded. Occlusion, which is a problem for infrared, pneumatic, and other types of counters, is common on sidewalks and trails, for example, where pedestrians often walk side-by-side. As with sensors used to monitor motorized traffic, no sensor is 100% accurate, but the sensors do produce counts considered valid estimates of traffic volumes.

Recurring issues in data quality management include validation of counters following installation, whether to correct for systematic error associated with sensors such as occlusion, how to implement quality assurance / quality control (QAQC) procedures, and whether to impute missing counts for days when counts are missing. The *TMG* notes the problem of data quality management but does not recommend specific procedures, and different agencies are developing protocols consistent with their needs for data quality.

In-field validation of equipment following installation is recommended by all vendors, but the duration of validation and periods for re-validation vary. For example, people deploying sensors at permanent stations may observe traffic for one to two hours following installation, while personnel deploying portable equipment may validate less than an hour. Although some researchers have adjusted all hourly counts to correct for occlusion, this does not appear to be a common practice in public agencies.

With respect to quality assurance and quality control (QAQC) for all counts, Turner and Lasley (2013) recommend, at minimum:

- Visual inspection of data;
- Use of pre-specified criteria to identify potential outliers;
- Assessment of zero counts; and
- Use of professional judgment to censor counts believed to be invalid.

Based on experience in North Carolina, ITRE recommends weekly visual inspections to ensure prompt identification of problems, development of hourly data checks, interquartile checks to identify outliers, and automated procedures for flagging suspect data (Jackson et al. 2017). As part of its efforts to develop QAQC procedures, MnDOT systematically analyzed potential outliers and concluded that many apparent outliers may be valid counts associated with events (Minge et al. 2017). A particularly difficult problem is to differentiate valid and invalid hourly zero counts, particularly in winter when conditions are unfavorable for walking and cycling. For low volume sites (e.g., average daily traffic volumes less than 100), the cost of implementing checks must be weighed against the practical significance of changes in estimates of traffic volumes that might result from application of checks.

Another decision involves how to manage missing observations or whether impute values for hours or days that have been censored using QAQC checks. Agencies have dealt with this problem by in different ways, including by ignoring them and using available data, by imputing values using averages from comparable time periods, or by more sophisticated statistical procedures. Overall, an important consideration in launching a nonmotorized traffic monitoring program is a plan for data quality management to address the problems that inevitably will emerge.

7. Use factors to estimate AADB and AADP

A primary purpose of the monitoring principles outlined in the *TMG* is to develop performance indicators such as AADB and BMT that can be used track changes in bicycling. The *TMG* illustrates how procedures used in motorized traffic monitoring can be adapted to estimate bicycle and pedestrian performance measures from short-duration counts. Since publication of Chapter 4 in the *TMG*, researchers have developed new procedures that better account for variation in nonmotorized traffic associated with weather and produces better estimates of AADB and AADP. From a practical perspective, these researchers have shown that accuracy of estimates is maximized when short-duration samples are taken for a seven days or longer during months when volumes are highest (e.g., May-September in temperate climatic regions).

Many agencies now are reporting estimates for AADB and AADP but fewer have attempted to estimate miles traveled on networks. For example, state (e.g., North Carolina, Colorado, Minnesota), regional (e.g., Delaware Valley Regional Planning Commission (DVRPC), MORPC), and local (e.g., Vancouver, BC; Hennepin County, MN) agencies now are routinely reporting AADB and AADP for permanent monitoring locations (DVRPC 2017), and, as noted previously, miles traveled on urban trail networks or trails in Minneapolis, MN, Columbus, OH, and Chicago, IL (Wang et al. 2016; Gobster et al. 2017).

Institutional, Administrative, and Financial Considerations in Nonmotorized Traffic Monitoring

From an institutional perspective, a major challenge in implementing a nonmotorized traffic monitoring program involves matching or aligning monitoring objectives with administrative and financial capacity. Most agencies that have initiated nonmotorized traffic monitoring programs do not appear to have received major infusions of new funds; instead, they seem to have revised institutional priorities, re-allocated staff time, and cobbled together funding opportunistically to achieve incremental growth. It appears champions within agencies have led these types of efforts, demonstrating the value of counts with ad hoc efforts that have led to broader institutional initiatives. The value of monitoring sometimes has been demonstrated with use of portable, automated counters to conduct short-duration counts at a few locations and followed with installation of permanent sensors. In other places, a few permanent counters have been installed followed by a larger commitment to more systematic deployment of portable monitors. In addition to information about traffic volumes at specific locations, these efforts have documented differences in hourly and day-of-week traffic patterns, and, with modest financial outlays, have enabled agency staff to gain experience in monitoring and build partnerships with other agencies interested in the data. As with motorized traffic monitoring, state, regional, and local agencies are collaborating in these initiatives, sharing data that can inform their own programs.

Administrative issues to address as part of efforts to implement monitoring programs include designation of offices or staff responsible for building partnerships, establishing monitoring objectives, choosing monitoring locations, selection of monitoring locations, acquisition and deployment of equipment, and coordination of data collection, management of data quality, data analysis, and reporting and distribution of results. There is no single "right" way to organize these administrative responsibilities, and agencies have managed them in different ways. For example, MORPC, the metropolitan planning agency that organized efforts to conduct trail monitoring in central Ohio, had different priorities and structured efforts differently than the DVRPC in Pennsylvania that makes available estimates for AADB and AADP produced by partners in the region. Similarly, the Arrowhead Regional Planning Commission, the MPO for the Duluth-Superior region, began differently, partnering with a local public health agency to initiate monitoring on a regional trail (ARDC 2015). The costs of staff and financial resources for these initiatives are not easily calculated nor compared because so much of the initiatives have been done as "add-ons" or new activities without additional personnel or budgets. Because of financial constraints, these types of limited, opportunistic initiatives are likely to continue.

A Practical Approach to Bicycle and Pedestrian Monitoring for the Bismarck-Mandan MPO

The Bismarck-Mandan MPO has identified the need for bicycle and pedestrian traffic data to inform metropolitan planning initiatives and to greatly aid efforts to evaluate programs and infrastructure improvements designed to foster bicycling and walking. The MPO also has noted, however, that resources are not available to initiate a metropolitan-wide monitoring program and that the MPO has not made policy decisions about the scope of monitoring it will support, including whether it will serve as the repository of bicycle and pedestrian traffic data collected in the region. The approach to development of a bicycle and pedestrian monitoring initiative outlined here therefore is incremental, builds on the current bicycle and pedestrian planning process, and is designed to provide experience that will inform future decisions by the MPO and about monitoring.

The approach involves:

- A recommendation in the Bicycle and Pedestrian Plan to establish a task force to develop a long-term monitoring strategy for the region,
- Investment and deployment of a few portable counters so the MPO and partners can gain experience with equipment and analysis of data,
- Evaluation of monitoring results, and
- Development of the long-term strategy.

The latter three steps could be guided by the Task Force.

Establish a Bicycle and Pedestrian Monitoring Task Force. An initial step towards development of a monitoring program could be a recommendation to create a Bicycle and Pedestrian Monitoring Task Force to spearhead efforts to explore monitoring. The Task Force could include staff of the MPO, public works, transportation, or parks and trails staff from Bismarck, Mandan, and other nearby communities, county traffic engineers, the North Dakota Department of Transportation traffic, public health organizations, and bicycle, walking or trail advocates. The purpose of the Task Force would be to engage partners who care about and have a stake in evidence-based transportation system management.

The responsibilities of the Task Force would be to develop a long-term monitoring strategy for the metropolitan region, set short-term objectives relative to monitoring, identify partnerships to implement monitoring, seek sources of funding and oversee acquisition of monitors, track implementation, review results, assess initial monitoring efforts, and refine long-term strategies.

Invest in and Deploy Portable Counters. A second step in development of a monitoring initiative would be to invest in a few portable monitors to gain experience in working with equipment and to generate information about traffic patterns. For example, with three or four or four infrared monitors and two sets of pneumatic tubes, the Task Force could deploy one monitor on a trail for a period of at least one year, one monitor on a sidewalk for at least one year, and have two monitors to deploy on trails or sidewalks at other locations for periods of a minimum of seven days. The pneumatic tubes could be deployed for one to two weeks on roads (e.g., bike lanes, streets targeted for bike lanes in the future). This type of activity would produce useful information about magnitude of bicycle, pedestrian, and mixed-mode trail traffic in various locations and build local capacity and expertise.

The costs for this type of exploratory initiative would be modest. For example, depending on the vendor, costs could be between $7,500 and $20,000. In collaboration with local agencies, MPO staff could deploy the two quasi-permanent monitors following acquisition, and a summer intern could be recruited to work with municipal and count staff to deploy pneumatic tubes and other infrared monitors and to

analyze results. Assuming 10 days for each short-duration deployment, and deployment during 13 weeks in a summer, each portable monitor could provide data for nine locations in a summer. With two infrared monitors and two sets of pneumatic tubes, as many as 36 locations could be monitored in one summer, although some locations may require deployment of multiple counters due to their configuration, reducing the total number of sites that could be studies. This level of monitoring would provide useful insights into variation in traffic volumes across locations.

There are currently 70 miles of multiuse trails in Bismarck (52 miles) and Mandan (18 miles), 4 miles of bicycle lanes in Bismarck, 5 miles of shared lanes in Bismarck, and 543 miles of sidewalks in Bismarck. Task Force members could review this report and related data from other jurisdictions to identify locations to experiment with monitoring. Because the deployment of monitors would be aimed at generating information for locations of special interest and for purposes of gaining experience, the data would not be representative of traffic on these trail, street, or sidewalk networks. However, data would help build knowledge useful to the MPO and its partners as they develop a long-term, more comprehensive strategy.

Evaluate Monitoring Results. The third step would be to evaluate monitoring results and report implications for long-term monitoring. The evaluation would commence after at least one year of data had been collected at the quasi-permanent sites so that insights into seasonal variation in traffic can be obtained. The evaluation would include a summary of equipment deployed and the traffic volumes at each location where monitors were deployed. The evaluation also would document problems in data collection, analysis, and management. The report could and recommendations for acquisition of additional equipment, if deemed warranted.

Develop a Long-Term Monitoring Strategy. The fourth step would be to develop a long-term monitoring strategy that builds on these initial efforts. The long term strategy could be organized using the framework for nonmotorized traffic monitoring outlined in the FHWA's *Traffic Monitoring Guide.* With the experience gained in the initial effort, the MPO and its partners would be in better position to establish long-term objectives (e.g., to characterize bicycle traffic flows on all arterials and collectors and multiuse trails); determine modes of traffic and locations to monitor; invest in more expensive permanent equipment such as inductive loops and additional portable monitors; conduct monitoring; and establish protocols for data quality management and analysis.

Timing of Implementation. This approach to initiating a bicycle and pedestrian monitoring program could be implemented over a two-year period. For example, if a Task Force was appointed in the fall of 2017 and began work in January of 2018, equipment could be acquired in the late winter of 2018. Two quasi-permanent counters could be installed in April or May of 2018, and an intern could collect data using other portable counters during the summer of 2018. MPO staff and other partners could analyze data from summertime, short-duration counts in the fall of 2018. By the end of May 2019, one year of data will be available from the quasi-permanent counters, and staff could analyze annual volumes and seasonal trends. The portable equipment then could be used again in the summer of 2019, data could be analyzed, and a report completed by December 2019. This report would provide a foundation for development of the longer term strategy.

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