DRAFT Bicycle & Pedestrian Memo

Date:	Friday, April 09, 2021
Project:	Watertown MTP
To:	Study Advisory Team
From:	HDR
Subject:	Bicycle & Pedestrian Component of MTP

Introduction

This memo provides a set of recommendations to improve walking and bicycling conditions in the City of Watertown, South Dakota. Recommendations were developed based upon public input, the Existing Conditions Memo developed earlier in the Master Transportation Plan process, and the 2012 Watertown Trail Master Plan. Recommendations for bicycle and pedestrian improvements were grouped into the following categories:

- Key Pedestrian Intersections and Crossings
- Key Mid-Block Crossings
- Off-Street Trails
- On-Street Bicycle Facilities
- Sidewalk Network Gaps

The following national state-of-the-practice guidance documents were used to inform recommendations:

- FHWA Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations
- City of Boulder Pedestrian Crossing Treatment Installation Guidelines
- FHWA Manual on Uniform Traffic Control Devices (MUTCD)
- NACTO Designing for All Ages and Abilities

The City of Boulder Pedestrian Crossing Treatment Installation Guidelines were used in conjunction with national best-practices. These guidelines are regarded as high-quality policy standards across the region and include some more detailed information about pedestrian crossings than the FHWA guide provides.

Recommendations for bicycle and pedestrian improvements are provided in the following sections. In summary, the recommendations include:

- **50** street intersection improvements
- **3** key mid-block crossing improvements
- **60** trail crossing enhancements
- **32 miles** of new trails

- **13 miles** of new on-street bicycle facilities
- **140 miles** of new sidewalks

Table 1 shows the breakdown estimated cost of each improvement type. Costs for key crossings, sidewalks, trails, and bicycle facilities. were calculated using high-level planning cost estimates that include contingencies. Actual project costs may be different from these preliminary estimates.

Table 1: Total Estimate Cost of Recommended Bicycle and Pedestrian Improvements

Quantities	
DESCRIPTION	**COST**
Intersections and Key Crossings Along Sidewalk Feeder Network Total	$610,000
Key Mid-block Crossings	$250,000
Install Tier 1 Sidewalks Total*	$9,780,000
New Trails Total	$17,260,000
Trail Crossings Total	$1,220,000
On-Street Bicycle Facilities Total	$2,270,000
PROJECT TOTAL	**$31,390,000**

***Tier I sidewalks only encompass a portion of missing sidewalks which are the highest priority to construct. More information is available in the Sidewalk Network Gaps section.**

Multiple funding opportunities are available to the City of Watertown to implement these bicycle and pedestrian improvements. The South Dakota DOT provides funding for alternatives modes of transportation under the federal Transportation Alternatives (TA) program. Eligible projects include pedestrian and bicycle facilities, recreation trails, and safe routes to school projects, with projects ranging from $50,000-$400,000 and include a minimum local match of 18.05%.[1]

Key Pedestrian Intersections and Crossings

The City of Watertown Master Trails Plan (2012) defined a “Sidewalk Feeder Linkage” system that allows for connections to trails and bicycle facilities throughout the City of Watertown. This network includes 3rd Avenue Northwest/Northeast, Kemp Avenue, 4th Avenue South, Broadway, 19th Street East, and 11th Street East. This feeder network was analyzed for pedestrian connectivity, gaps in sidewalks, ADA accessibility, and potential safety improvements. Identified locations for crossing improvements included key intersections of the sidewalk feeder system, areas near schools, parks, and the Uptown Commercial District. These 50 locations were identified as priority crossing locations. Additionally, recommended city-wide policies to upgrade all pedestrian crossings should include continental crosswalks, four-way stops near schools, parks, and other public amenities, detectable warning surfaces (truncated domes) at all crossings, and traffic signals with pedestrian count-down timers where applicable. It is recommended to conduct multiway stop sign engineering studies at all proposed multiway stop locations to determine if pedestrian and vehicle volumes support installation of multiway stops or if adding pedestrian warning signs would be more appropriate to facilitate pedestrian

[1] https://dot.sd.gov/programs-services/programs/transportation-alternatives#listItemLink_1419

crossings. City-wide policies and spot location improvements were determined using the FHWA Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations and City of Boulder Pedestrian Crossing Treatment Installation Guidelines. In addition to these sidewalk and intersection improvements, these key routes should be considered for the installation of pedestrian-scale lighting where nighttime lighting is currently lacking. **Figure 1** and **Figure 2** show example improvements.

Figure 1: Continental Crosswalks with ADA Accessible Curb Cuts and Detectible Warning Surfaces[2]

Figure 2: Pedestrian Countdown Signal[3]

Figure 3 shows the existing feeder linkage system and proposed locations for crossing improvements. **Table 2** describes in detail the existing condition and proposed improvements at each location; a more detailed table can be found in the **Appendix**. **Table 3** details the estimated cost information for all proposed crossing locations.

Beyond the Sidewalk Feeder Linkage Network, a more detailed corridor-wide pedestrian study of US-212 is also recommended to identify opportunities for safety improvements including sidewalk infill and pedestrian crossings.

[2] https://www.transitchicago.com/assets/1/6/ASAP_Presentation_for_MPAC_-_051017.pdf
[3] spokesman.com

Figure 3: "Sidewalk Feeder Linkage" System and Proposed Crossing Improvement Locations

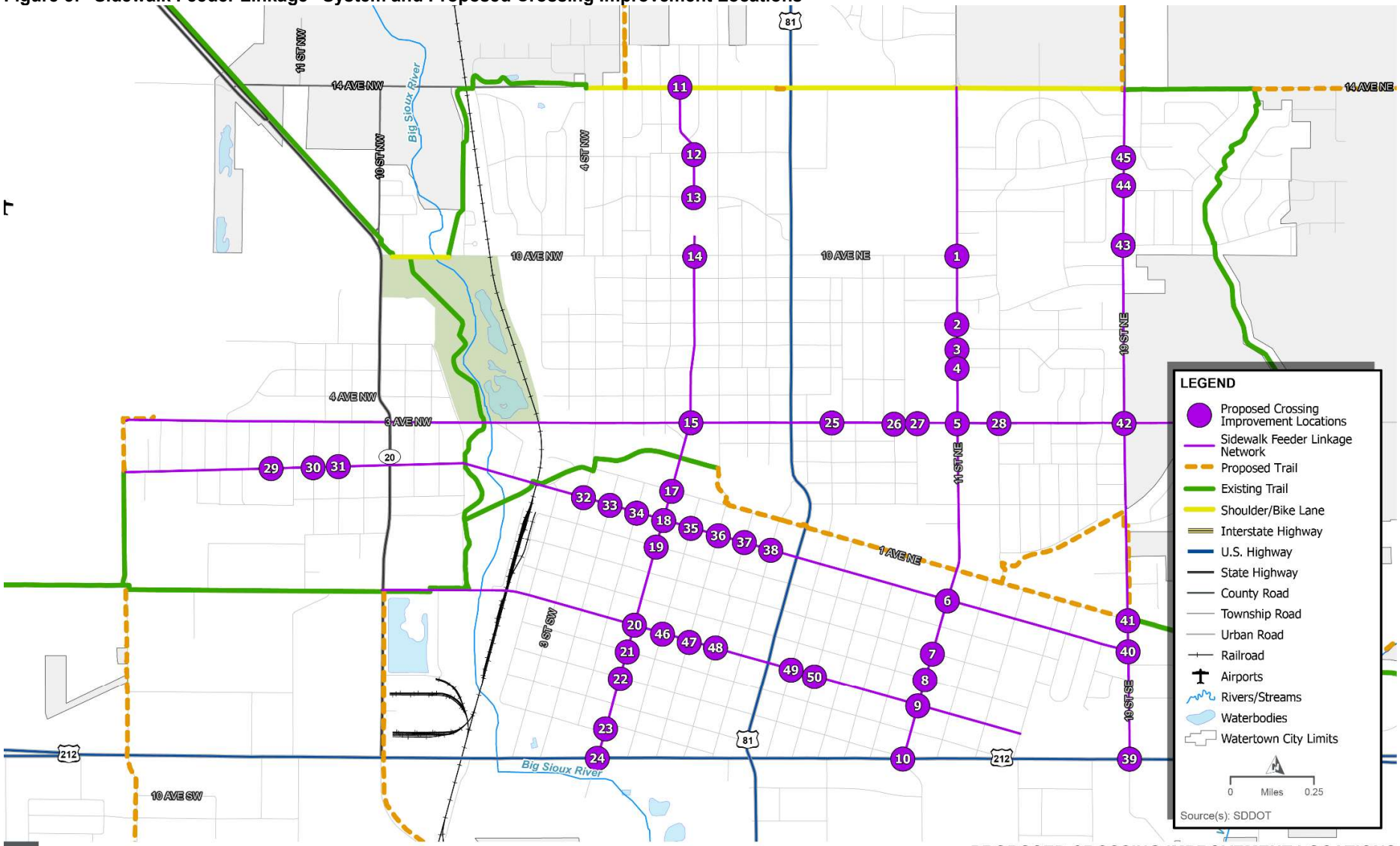


Table 2: Proposed Crossing Improvements

ID	Location	Proposed Improvements
1	11th St NE & 10th Ave NE	Continental Crosswalks
2	11th St NE & 7th Ave NE	Conduct multiway stop sign engineering study; continental crosswalks
3	11th St NE & 6th Ave NE	Conduct multiway stop sign engineering study; square up intersection; continental crosswalks; continue crosswalks through parking lot
4	11th St NE & 5th Ave NE	Conduct multiway stop sign engineering study; continental crosswalks
5	11th St NE & 3rd Ave NE	Upgrade signal to have pedestrian count-down; make ADA accessible on west side
6	11th St NE & E Kemp Ave	Conduct multiway stop sign engineering study; continental crosswalks; make ADA accessible, infill sidewalk gaps
7	11st St NE & 2nd Ave SE	Conduct multiway stop sign engineering study; continental crosswalks; make ADA accessible, infill sidewalk gaps
8	11st St NE & 3rd Ave SE	Conduct multiway stop sign engineering study; continental crosswalks; make ADA accessible, infill sidewalk gaps
9	11st St NE & 4th Ave SE	Conduct multiway stop sign engineering study; continental crosswalks; make ADA accessible, infill sidewalk gaps
10	11st St NE & US-212	Upgrade signal to have pedestrian count-down; make ADA accessible; infill sidewalk gaps
11	N Broadway & 14th Ave NW	Continental Crosswalks; make south side ADA Accessible, infill sidewalk gaps
12	N Broadway & 12th Ave NE	Conduct multiway stop sign engineering study; continental crosswalks; infill sidewalk gaps
13	N Broadway & N Highland Blvd	Conduct multiway stop sign engineering study; continental crosswalks; infill sidewalk gaps
14	N Broadway & 10th Ave NW	Conduct multiway stop sign engineering study; make north side ADA Accessible; continental crosswalks; infill sidewalk gaps
15	N Broadway & 3rd Ave NW	Conduct multiway stop sign engineering study; continental crosswalks
16	N Broadway & Carpenter Pl	Conduct multiway stop sign engineering study; continental crosswalks; add Detectable Warning Surface on east sidewalks
17	N Broadway & 1st Ave NW	Upgrade to all overhead traffic signals; Upgrade signal to have pedestrian count-down; continental crosswalks; Add Detectable Warning Surface on all curb cuts
18	N Broadway & E Kemp Ave	Upgrade to all overhead traffic signals; Upgrade signal to have pedestrian count-down; continental crosswalks; Add Detectable Warning Surface on all curb cuts
19	N Broadway & 1st Ave SW	Continental crosswalks; Add Detectable Warning Surface on all curb cuts
20	N Broadway & 4th Ave SW	Conduct multiway stop sign engineering study; continental crosswalks; add Detectable Warning Surface on all curb cuts
21	N Broadway & 5th Ave SW	Conduct multiway stop sign engineering study; continental crosswalks; add Detectable Warning Surface on SW curb cuts
22	N Broadway & 6th Ave SW	Conduct multiway stop sign engineering study; continental crosswalks; add Detectable Warning Surface on NW curb cuts
23	N Broadway & 8th Ave SW	Conduct multiway stop sign engineering study; continental crosswalks; infill sidewalk gaps, add curb cuts
24	N Broadway & US-212	Upgrade signal to have pedestrian count-down; make ADA accessible; infill sidewalk gaps
25	3rd Ave NE & 6th St NE	Conduct multiway stop sign engineering study; continental crosswalks; infill sidewalk gaps, add curb cuts
26	3rd Ave NE & 8th St NE	Conduct multiway stop sign engineering study; continental crosswalks
27	3rd Ave NE & 9th St NE	Conduct multiway stop sign engineering study; continental crosswalks; Detectable Warning Surface; infill sidewalk gaps
28	3rd Ave NE & 13th St NE	Conduct multiway stop sign engineering study; continental crosswalks; Detectable Warning Surface; infill sidewalk gaps
29	W Kemp Ave & 15th St NW	Conduct multiway stop sign engineering study; continental crosswalks
30	W Kemp Ave & 13th St NW	Conduct multiway stop sign engineering study; continental crosswalks
31	W Kemp Ave & 12th St NW	Conduct multiway stop sign engineering study; continental crosswalks
32	W Kemp Ave & 3rd St SW	Continental Crosswalks; Detectable Warning Surface

33	W Kemp Ave & 2nd St SW	Conduct multiway stop sign engineering study; Continental Crosswalks; Detectable Warning Surface
34	W Kemp Ave & 1st St SW	Conduct multiway stop sign engineering study; Continental Crosswalks; Detectable Warning Surface
35	E Kemp Ave & N Maple	Upgrade signal to have pedestrian count-down; Continental Crosswalks; Detectable Warning Surface
36	E Kemp Ave & 2nd St SE	Upgrade signal to have pedestrian count-down; Continental Crosswalks
37	E Kemp Ave & 3rd St SE	Conduct multiway stop sign engineering study; Continental Crosswalks; Detectable Warning Surface
38	E Kemp Ave & 4th St SE	Conduct multiway stop sign engineering study; Continental Crosswalks; Detectable Warning Surface
39	19th St SE & US-212	Upgrade signal to have pedestrian count-down; make ADA accessible; infill sidewalk gaps
40	19th St SE & E Kemp Ave	Conduct multiway stop sign engineering study; Continental Crosswalks; Detectable Warning Surface on west side
41	19th St SE & 1st Ave NE/ Willow Creek Dr	Continental Crosswalks
42	19th St SE & 3rd Ave NE	Conduct multiway stop sign engineering study; Continental Crosswalks; Detectable Warning Surface on NW
43	19th St SE & 10th Ave NE	Conduct multiway stop sign engineering study; Continental Crosswalks
44	19th St SE & 12th Ave NE	Conduct multiway stop sign engineering study
45	19th St SE & 13th Ave NE	Conduct multiway stop sign engineering study; Continental Crosswalks
46	4th Ave SE & S Maple	Conduct multiway stop sign engineering study; Continental Crosswalks; Detectable Warning Surface
47	4th Ave SE & 2nd St SE	Conduct multiway stop sign engineering study; Continental Crosswalks
48	4th Ave SE & 3rd St SE	Conduct multiway stop sign engineering study; Continental Crosswalks
49	4th Ave SE & 6th St SE	Conduct multiway stop sign engineering study; Continental Crosswalks; Detectable Warning Surface
50	4th Ave SE & 7th St SE	Conduct multiway stop sign engineering study; Continental Crosswalks; Detectable Warning Surface

Table 3: Proposed Crossing Improvement Estimated Costs

Quantities				
DESCRIPTION	**UNIT**	**QUANTITY**	**UNIT PRICE**	**COST**
Construct ADA Ramp at all four corners	EACH	12	$40,000	$480,000
Add Detectable Warning Surface (Truncated Domes) at all four corners	EACH	20	$2,000	$40,000
Continental Crosswalks (Assume 4 Legs)	EACH	45	$2,000	$90,000
PROJECT TOTAL				**$610,000**

Key Mid-Block Crossings

In addition to identifying key pedestrian crossings at intersections along the “Sidewalk Feeder Linkage” network, mid-block crossings were also identified to provide greater access to schools in Watertown. These mid-block crossings would include continental crosswalks, curb extensions (paint and post), yield to pedestrians and bikes signs (MUTCD signs W11-15 and W11-15P), and in-street pedestrian crossing signs (MUTCD signs R1-6). City-wide policy for all mid-block crossings should follow these recommendations, with prioritization of mid-block crossings along the “Sidewalk Feeder Linkage” routes. City-wide policies and spot location improvements were determined using the FHWA Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations, the City of Boulder Pedestrian Crossing Treatment Installation Guidelines, and

NACTO Midblock Crossing guidelines. **Figure 4**, **Figure 5**, and **Figure 6** show example of a mid-block crossing with continental crosswalks, curb extensions and signage.

Figure 4: Mid-Block Crossing

[4]

Figure 5: Yield to Pedestrians and Bikes Sign (MUTCD W11-15)

[5]

Figure 6: In-street Pedestrian Crossing Sign (MUTCD R1-6)

[6]

Figure 7 and **Table 4** show the locations and proposed improvements. The **Appendix** has more detail for each proposed crossing location. **Table 5** details the estimated cost information for all proposed mid-block crossing locations.

[4] https://louisville.edu/sustainability/images/IMG_0674.JPG/image_view_fullscreen
[5] https://mutcd.fhwa.dot.gov/htm/2009/part2/fig2c_10_longdesc.htm
[6] https://mutcd.fhwa.dot.gov/htm/2009/part2/fig2b_02_longdesc.htm

Figure 7: "Sidewalk Feeder Linkage" System and Proposed Mid-block Crossing Improvement Locations.

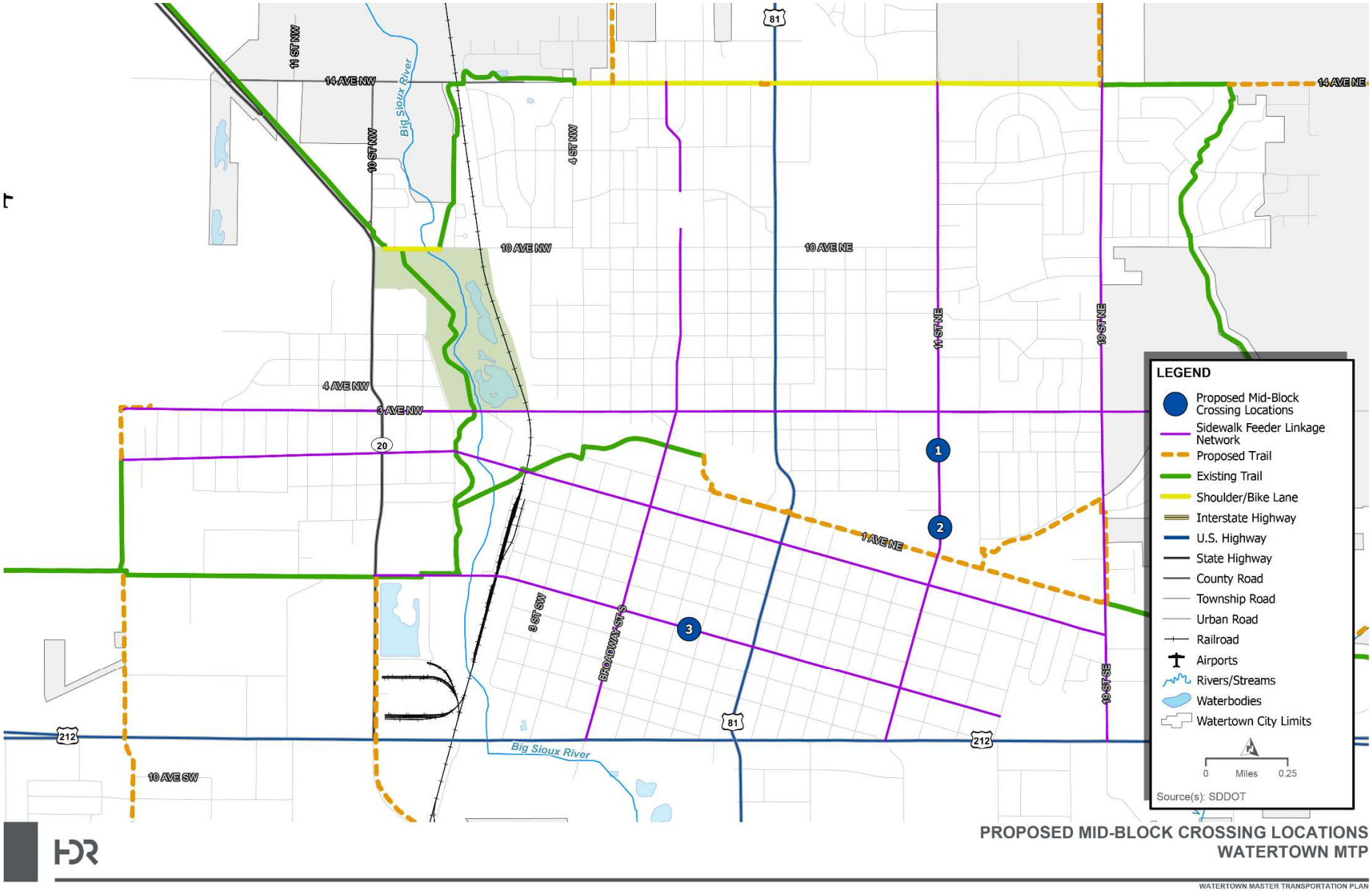


Table 4: Proposed Mid-Block Crossing Improvements

ID	Location	Proposed Improvements
1	11th St NE between 3rd Ave NE & Arrow Ave NE	Mid-block crossing connecting Watertown Sr High School and Lake Area Technical College - need further study to determine exact location Continental Crosswalk & curb extension (paint and post), upgrade sign to yield to pedestrian and bikes (W11-15 with W11-15P), in-street pedestrian crossing signs (R1-6)
2	11th St NE between Arrow Ave NE & 1st Ave NE	Mid-block crossing connecting overflow parking and Lake Area Technical College Continental Crosswalk & curb extension (paint and post), upgrade sign to yield to pedestrian and bikes (W11-15 with W11-15P), in-street pedestrian crossing signs (R1-6)
3	4th Ave SE between 2nd St SE & 3rd St SE	Mid-block crossing connecting parking lot and Roosevelt Elementary School Continental Crosswalk & curb extension (paint and post), upgrade sign to yield to pedestrian and bikes (W11-15 with W11-15P), in-street pedestrian crossing signs (R1-6)

Table 5: Proposed Mid-Block Crossing Improvement Estimated Costs

Quantities				
DESCRIPTION	**UNIT**	**QUANTITY**	**UNIT PRICE**	**COST**
Crosswalks, Pavement Markings and Warning Signs (Typical)	EACH	3	$3,000	$9,000
Construct ADA Ramp	EACH	6	$10,000	$60,000
Concrete Curb Extension (Typical)	EACH	3	$60,000	$180,000
PROJECT TOTAL				**$249,000**

Off-Street Trails

There is currently a strong network of existing off-street trails in the City of Watertown. The City currently includes the following trails:

- Highway 20 Trail
- North Lake Kampeska Trail
- South Lake Kampeska Trail
- Golf Course Trail
- 4th Avenue Trail
- Big Sioux River Trail
- Uptown Trail
- Willow Creek Trail
- 14th Avenue Trail
- 1st Avenue Trail

The project team reviewed the 2012 Watertown Trails Master Plan and provided additional detail and cost estimates to build out the recommended improvements included in that plan. Where new trails were recommended, a 10’ wide concrete off-street trail was assumed as the typical design. Recommended improvements include upgrading crosswalks and warning signs, High-Intensity Activated Crosswalks, (HAWK), Rectangular Rapid Flashing Beacons (RRFB), and concrete median islands with refuge. There is one example of a HAWK in Watertown, located on US-81 between 12th Avenue NE and 11th Avenue NE. **Figure 8**, **Figure 9**, **Figure 10**, and **Figure 11** show examples of these improvements.

Figure 8: Uncontrolled Crossing with Crosswalks, Pavement Markings and Warning Signs[7]

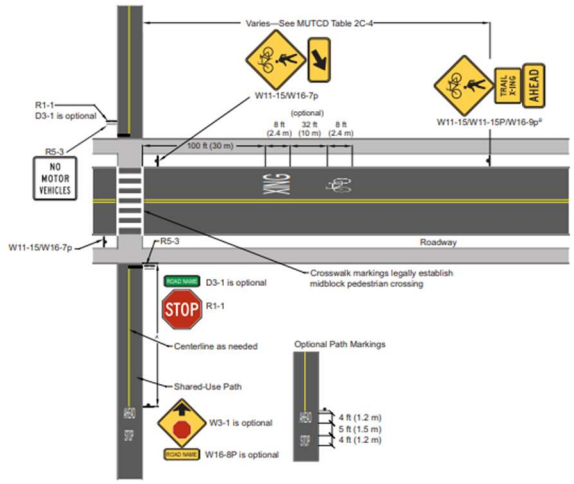


Figure 9: High-Intensity Activated Crosswalk Beacon (HAWK)[8]

Figure 10: 8' x 20' Concrete Median Island with Refuge[9]

Figure 11: Rectangular Rapid-Flashing Beacon (RRFB)[10]

Figure 12 and **Table 6** show the locations of proposed improvements. The **Appendix** has more detail for each proposed crossing location. **Table 7** and **Table 8** detail the estimated cost information for all proposed new trails and trail crossing improvement locations.

[7] https://njdotlocalaidrc.com/perch/resources/aashto-gbf-4-2012-bicycle.pdf
[8] http://loudoun.granicus.com/MetaViewer.php?view_id=69&clip_id=4991&meta_id=123851
[9] https://nacto.org/publication/urban-street-design-guide/intersection-design-elements/crosswalks-and-crossings/midblock-crosswalks/
[10] https://redwoodcounty-mn.us/departments/highway-department/attachment/rapid-flashing-beacon/

Figure 12: Proposed New Trail and Trail Crossing Improvement Locations

Table 6: Proposed Trail Crossing Improvements

ID	Name	Location	Crosswalks, Pavement Markings and Warning Signs (Typical)	HAWK Signal	RRFB	Construct ADA Ramp	Add Detectable Warning Surface (Truncated Domes)	8' x 20' Concrete Median Island With Refuge (Typical)	Other Proposed Improvement
1	Uncontrolled Crossing	N Broadway & S Kempeska Blvd					2		
2	Uncontrolled Crossing	3rd Ave NW near 1st Ave NW						1	
3	Uncontrolled Crossing	3rd Ave NE near 22nd St E	1				2		
4	Uncontrolled Crossing	33rd St SE near US-212							
5	Controlled Crossing	14th Ave & 22nd St E	1			2			
6	Controlled Crossing	14th Ave NE & 20th St NE	1			2			
7	Controlled Crossing	14th Ave NE & 19th St E	1						
8	Uncontrolled Crossing	14th Ave NW & 4th St NW	1			2			Change to All-way Stop
9	Uncontrolled Crossing	14th Ave NW & 6th St	1				1		
10	Uncontrolled Crossing	7th St NW south of 14th Ave NW							
11	Uncontrolled Crossing	10th Ave NW near 7th St NW						1	
12	Uncontrolled Crossing	10th Ave NW east of 9th St NW						1	Move crossing to the east to cross where trail meets the road coming from the south
13	Uncontrolled Crossing	SD-20 Slip Ramp south of 10th St NW	1				1		Close slip ramp
14	Uncontrolled Crossing	10th St NW & SD-20	1						
15	Controlled Crossing	14th Ave NW & SD-20	1						
16	Controlled Crossing	26th Ave NW & SD-20	1						
17	Controlled Crossing	Sioux Conifer Rd & SD-20	1						
18	Controlled Crossing	Airport Dr & SD-20	1				2		
19	Uncontrolled Crossing	SD-20 & S Lake Dr		1		2			
20	Controlled Crossing	Forsberg Park & SD-20	1				2		
21	Uncontrolled Crossing	SD-20 & N Lake Dr/451st Ave		1			2		
22	Controlled Crossing	SD-139 east of SD-20 connection	1				2		
23	Uncontrolled Crossing	SD-139 & N Lake Dr	1				1		

ID	Name	Location	Crosswalks, Pavement Markings and Warning Signs (Typical)	HAWK Signal	RRFB	Construct ADA Ramp	Add Detectable Warning Surface (Truncated Domes)	8' x 20' Concrete Median Island With Refuge (Typical)	Other Proposed Improvement
24	Controlled Crossing	SD-139 & 458th Ave	1						
25	Controlled Crossing	SD-139 & County Rd 8 2/10	1						
26	Controlled Crossing	SD-139 & 449th Ave	1						
27	Controlled Crossing	SD-139 & 169th Ave	1						
28	Uncontrolled Crossing	SD-139 east of Sunset Dr	1						
29	Uncontrolled Crossing	Codington Memorial Park & Campground	1						
30	Uncontrolled Crossing	Pompeska Dr & S Lake Dr	1						
31	Uncontrolled Crossing	S Lake Dr & Prairie Hills Dr	1						
32	Uncontrolled Crossing	S Lake Dr north of Prairie Hills Dr			2				Drop speed limit to 35MPH
33	Controlled Crossing	Co Rd 17 5/10 & 54th St W	1						
34	Controlled Crossing	Co Rd 17 5/10 & Prairie Winds Golf Club	1				2		
35	Controlled Crossing	CO Rd 12 3/10 & 43rd St NW							
36	Uncontrolled Crossing	CO Rd 12 3/10 west of 43rd St NW	1						
37	Controlled Crossing	42nd St NW & County Rd 12 3/10	1						
38	Uncontrolled Crossing	42nd St NW Slip Ramp	1						
39	Uncontrolled Crossing	S Lake Dr & Jackson Park (south entrance)	1						
40	Uncontrolled Crossing	Jackson Park (south)	1				2		
41	Uncontrolled Crossing	S Lake Dr & Jackson Park (north entrance)	1				2		
42	Controlled Crossing	Jackson Park (north)	1				2		
43	Uncontrolled Crossing	S Lake Drive west of Casino Speedway	1				2		
44	Uncontrolled Crossing	Stokes-Thomas Lake City Park & S Lake Dr					2		
45	Uncontrolled Crossing	Co Rd 12 3/10 & 33rd St NW	1				2		

ID	Name	Location	Crosswalks, Pavement Markings and Warning Signs (Typical)	HAWK Signal	RRFB	Construct ADA Ramp	Add Detectable Warning Surface (Truncated Domes)	8' x 20' Concrete Median Island With Refuge (Typical)	Other Proposed Improvement
46	Uncontrolled Crossing	5th Ave NW & Co Rd 12 3/10	1				2		
47	Controlled Crossing	3rd Ave NW & Co Rd 12 3/10	1				2		
48	Controlled Crossing	Co Rd 12 3/10 & 4th Ave SW	1				2		Change to All-way Stop
49	Controlled Crossing	4th Ave SW & Co Rd 14A	1				4		
50	Uncontrolled Crossing	21st St NW & W Kemp Ave	1				2		
51	Controlled Crossing	4th Ave SW & 19th St SW	1				2		
52	Controlled Crossing	4th Ave SW & 14th Ave SW	1				2		
53	Uncontrolled Crossing	4th Ave SW west of S Kampeska Blvd	1				2		
54	Controlled Crossing	4th Ave SW & S Kampeska Blvd	1				1		
55	Uncontrolled Crossing	W Kemp Ave & Kampeska Blvd	1						
56	Uncontrolled Crossing	Kampeska Blvd north of W Kemp Ave	1						
57	Uncontrolled Crossing	W Kemp Ave east of 6th St NW	1				2		
58	Uncontrolled Crossing	1st Ave NW & 3rd St NW	1				4		
59	Controlled Crossing	Codington County Hwy Shop & SD-20	1				2		
60	Controlled Crossing	Fireside Camper & SD-20	1				2		

Table 7: Proposed New Trail Estimated Costs

Quantities				
DESCRIPTION	**UNIT**	**QUANTITY**	**UNIT PRICE**	**COST**
Install 10' concrete trail	LF	172,510	$100	$17,251,007
PROJECT TOTAL				**$17,251,007**

Table 8: Proposed Trail Crossing Improvement Estimated Costs

Quantities				
DESCRIPTION	**UNIT**	**QUANTITY**	**UNIT PRICE**	**COST**
Crosswalks, Pavement Markings and Warning Signs (Typical)	EACH	49	$3,000	$147,000
RRFB	EACH	2	$30,000	$60,000
HAWK	EACH	2	$300,000	$600,000
Construct ADA Ramp	EACH	8	$10,000	$80,000
Add Detectable Warning Surface (Truncated Domes)	EACH	58	$500	$29,000
8' x 20' Concrete Median Island with Refuge (Typical)	EACH	3	$100,000	$300,000
PROJECT TOTAL				**$1,216,000**

On-Street Bicycle Facilities

There are currently existing shoulder bicycle routes on the following street segments:

- 14th Ave NE (1.5 mi shoulder bikeway/bike lane)
- 10th Ave NW – trail connection (0.1 mi shoulder bikeway/bike lane)
- North Lake Kampeska Trail (1.4 mi shoulder bikeway/bike lane)
- South Lake Kampeska Trail (0.6 mi shoulder bikeway/bike lane)

On-street bicycle facilities have been proposed in addition to these existing shoulder bicycle routes and the trail network improvements discussed above. On-street bicycle facilities were proposed for all routes identified as “Sidewalk Feeder Linkage” routes in the 2012 City of Watertown Master Trail Plan. Proposed facilities were determined using the NACTO Contextual Guidance for Selecting All Ages & Abilities Bikeways document. Recommended facilities were tailored to the Watertown street network evaluating existing street and right-of-way width, traffic speeds and volumes and land use context. **Figure 13**, **Figure 14**, and **Figure 15** show example recommended bicycle facilities.

Figure 13: Bicycle Boulevard[11]

Figure 14: Conventional Bike Lane[12]

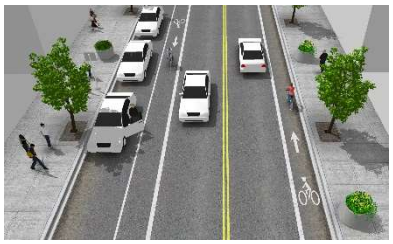
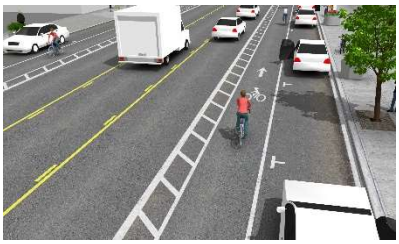


Figure 15: Buffered Bike Lane[13]



[11] https://twitter.com/NYCMayor/status/1355207355739365388/photo/1
[12] https://nacto.org/publication/urban-bikeway-design-guide/bike-lanes/conventional-bike-lanes/
[13] https://nacto.org/publication/urban-bikeway-design-guide/bike-lanes/buffered-bike-lanes/

Broadway

- ADT:
  - 2,080 north of 3rd Ave NE
  - 3,070 south of 3rd Ave NE
- Recommendations:
  - Bicycle Boulevard from 10th Ave NE to 3rd Ave NE (0.5 miles)
  - Sharrows from 3rd Ave NE to 3rd Ave SE (0.55 miles)
  - Buffered Bike Lane from 3rd Ave SE to 9th Ave SE/US-212 (0.5 miles)

11th Street East

- ADT:
  - 1,810 between 14th Ave NE and 7th Ave NE
  - 2,500 between 7th Ave NE and 3rd Ave NE
  - 2,800 south of 3rd Ave NE
- Recommendation:
  - Conventional Bike Lane from 14th Ave NE to 9th Ave SE/US-212 (2 miles)

19th Street Southeast

- ADT:
  - 3,760 between 14th Ave NE and 10th Ave NE
  - 7,280 between 10th Ave NE and 3rd Ave NE
  - 6,460 between 3rd Ave NE and Arrow Ave NE
  - 9,540 between Arrow Ave NE and 1st Ave NE
  - 6,470 between 1st Ave NE and 9th Ave SE/US-212
- Recommendations:
  - Remove two-way left turn lane (TWLTL) and add buffered bike lanes between 14th St NE and 9th Ave SE/US-212 (2 Miles)

East Kemp Avenue

- ADT:
  - 1,490 between 3rd St NW and 5th St NE/US-81
- Recommendation
  - Bike Boulevard between 21st St NW and 19th St SE (3 Miles)

4th Avenue Southeast/Southwest

- ADT:
  - 5,900 between 21st St NW and 10th St NW/SD-20
  - 4,930 between 10th St NW/SD-20 and 3rd St SW
  - 3,190 between 3rd St SW and Broadway
  - 2,510 between Broadway and 5th St NE/US-81
  - 1,590 between 5th St NE/US-81 and 14th St SE
- Recommendations:
  - Conventional Bike Lanes between 4th St SW and 14th St SE (1.5 Miles)

3rd Avenue Northwest/Northeast

- ADT:
  - 1,860 between 21st St NW and 17th St NW
  - 2,830 between 17th St NW and 10th St NW/SD-20
  - 5,700 between 10th St NW/SD-20 and Broadway
  - 4,350 between Broadway and 4th St NE/US-81
  - 3,580 between 4th St NE/US-81 and 7th St NE
  - 3,670 between 7th St NE and 11th St NE
  - 2,200 between 11th St NE and 19th St NE
  - 660 between 19th St NE and 31st St NE (dirt road in this segment)
- Recommendations:
  - Conventional or Buffered Bike Lanes (depending on pavement width) from 21st St NW and to 19th St NE

Figure 16 shows the locations of proposed improvements and **Table 9** detail the estimated cost information.

Figure 16: Proposed On-Street Bike Facility Locations

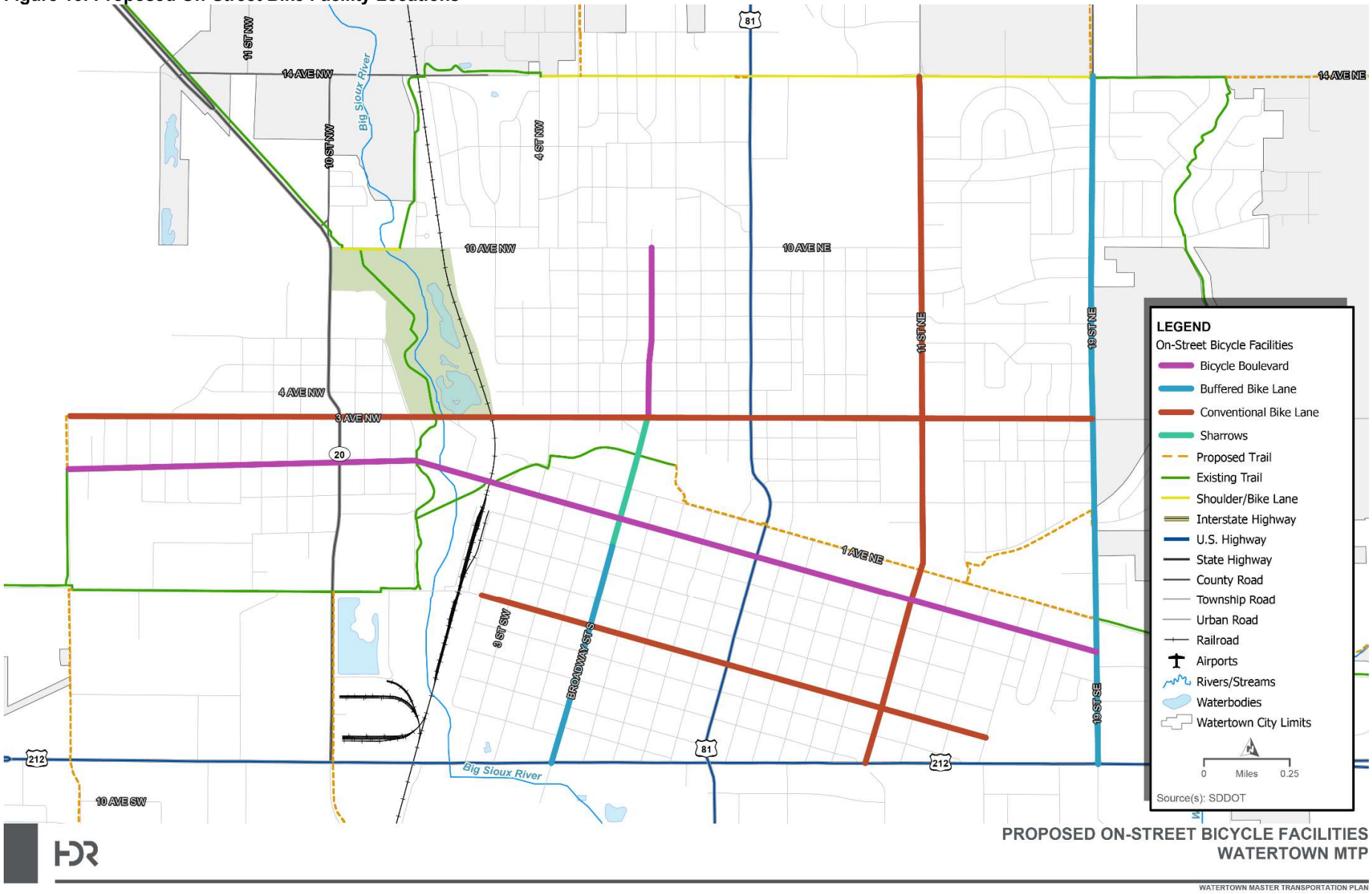


Table 9: Proposed On-Street Bike Facility Estimated Costs

Quantities				
DESCRIPTION	**UNIT**	**QUANTITY**	**UNIT PRICE**	**COST**
Bike Lanes	MILES	4.55	$135,000	$1,019,250
Buffered Bike Lanes	MILES	2.00	$185,000	$370,000
Bicycle Boulevard (Includes Traffic Calming, Signing and Striping	MILES	3.50	$250,000	$875,000
PROJECT TOTAL				**$2,264,250**

Sidewalk Network Gaps

Existing and missing sidewalk data were collected in a previous City of Watertown project. Building off this data, the project team developed a two-tier priority system for building the remaining missing sidewalks in the city. The first tier includes sidewalks along the Sidewalk Feeder Linkage routes identified in the 2012 Watertown Trails Master Plan and any sidewalks within the surrounding blocks of public schools in the City of Watertown. The second tier includes all other missing sidewalks in the City of Watertown.

Figure 17 on the following page shows the locations of existing sidewalks, Tier 1 missing sidewalks, Tier 2 missing sidewalks, and the existing and proposed trail network for reference. **Table 10** on the subsequent page shows the estimated cost to install sidewalks in these locations.

Figure 17: Missing Sidewalk Infill Locations and Tiers

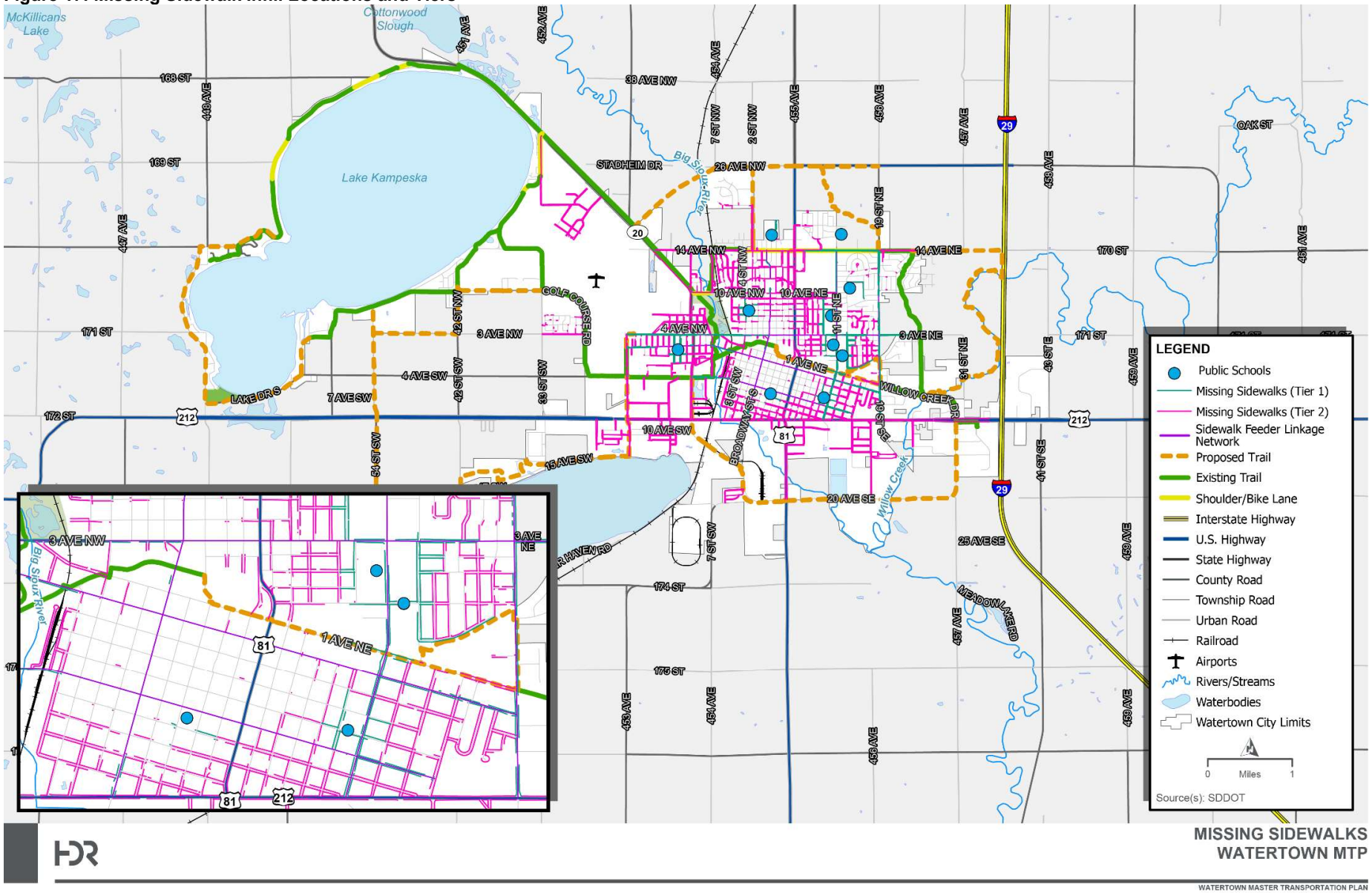


Table 10: Tier 1 Missing Sidewalk Infill Estimated Costs

Quantities				
DESCRIPTION	**UNIT**	**QUANTITY**	**UNIT PRICE**	**COST**
(TIER 1) Install 5' concrete sidewalk and curb and gutter	LF	114,958	$85	$9,771,390
PROJECT TOTAL				**$9,771,390**

One strategy to address sidewalk gaps for the City of Watertown is to incorporate sidewalk improvements into other neighborhood improvement and road resurfacing projects. Additionally, looking at sidewalk infill on a case by case basis as other projects come up may be more manageable than looking at the City as a whole. Other cities have allocated annual budget dollars to a sidewalk fund so that they can continually infill sidewalks each year.

Advisory sidewalks or pedestrian lanes within the existing ROW are another interim solution to sidewalk infill. Pedestrian lanes may include signing, striping, and/or bollards. More information can be found on FHWA Small Town and Rural Design Guide. As seen in **Figure 18** and **Figure 19** below, these types of facilities include striping or otherwise separating a portion of the existing roadway for pedestrians rather than building new concrete sidewalk above the curb.

Figure 18: Pedestrian Lane with Bollards[14]

Figure 19: Pedestrian Lane with Signing and Striping[15]

[14] https://www.cbc.ca/news/canada/calgary/adaptive-sidewalks-calgary-1.5125310
[15] https://ruraldesignguide.com/visually-separated/pedestrian-lane

Appendix

Appendix A: Table of Proposed Pedestrian Crossing Improvements

Appendix B: Table of Proposed Mid-Block Crossings

Appendix C: Table of Proposed Trail Crossing Improvements

Appendix A: Table of Proposed Pedestrian Crossing Improvements

Table 11: Proposed Crossing Improvements

ID	Location	Existing Condition	Speed (mph)	Daily Traffic Volume	Proposed Improvements	Notes
1	11th St NE & 10th Ave NE	4-way stop; 2 lane no centerline; transverse Line Crosswalk	25	2,500	Continental Crosswalks	Near school
2	11th St NE & 7th Ave NE	2-way stop; 2 lane no centerline; Transverse Line Crosswalk	15	2,500	Conduct multiway stop sign engineering study; continental crosswalks	Near school
3	11th St NE & 6th Ave NE	2-way stop; 2 lane no centerline; Transverse Line Crosswalk	15	2,500	3-way stop; square up intersection; continental crosswalks; continue crosswalks through parking lot	Near school
4	11th St NE & 5th Ave NE	2-way stop; 2 lane no centerline; Transverse Line Crosswalk	15	2,500	Conduct multiway stop sign engineering study; continental crosswalks	Near school
5	11th St NE & 3rd Ave NE	Traffic signal; 2 lanes with centerline; turn lanes each direction; transverse line crosswalk	25	3,670	Upgrade signal to have pedestrian count-down; make ADA accessible on west side	Near school
6	11th St NE & E Kemp Ave	2-way stop; 2 lane no centerline; no crosswalks; existing sidewalk on west side	25	2,820	Conduct multiway stop sign engineering study; continental crosswalks; make ADA accessible, infill sidewalk gaps	Key sidewalk network crossing
7	11st St NE & 2nd Ave SE	2-way stop; 2 lane no centerline; Transverse Line Crosswalk	15	2,820	Conduct multiway stop sign engineering study; continental crosswalks; make ADA accessible, infill sidewalk gaps	Near school
8	11st St NE & 3rd Ave SE	2-way stop; 2 lane no centerline; Transverse Line Crosswalk	35	2,820	Conduct multiway stop sign engineering study; continental crosswalks; make ADA accessible, infill sidewalk gaps	Near school
9	11st St NE & 4th Ave SE	2-way stop; 2 lane no centerline; Transverse Line Crosswalk	25	2,790	Conduct multiway stop sign engineering study; continental crosswalks; make ADA accessible, infill sidewalk gaps	Key sidewalk network crossing
10	11st St NE & US-212	Traffic signal; 3-way intersection: 11st St NE - 2 lanes no centerline, US-212 - 4 lanes with turn lanes; continental crosswalk	35	2,500 - 8,000 - 11th St; 18,570 - US-212	Upgrade signal to have pedestrian count-down; make ADA accessible; infill sidewalk gaps	
11	N Broadway & 14th Ave NW	4-way stop; 2 lane no centerline (N Broadway); 2 lanes with centerline (14th Ave NW); transverse line crosswalk	35	6,220	Continental Crosswalks; make south side ADA Accessible, infill sidewalk gaps	
12	N Broadway & 12th Ave NE	No stop signs; 2 lane no centerline; no crosswalks	25	-	Conduct multiway stop sign engineering study; continental crosswalks; infill sidewalk gaps	Near school
13	N Broadway & N Highland Blvd	2-way stop; 2 lane no centerline; no crosswalks	15	-	Conduct multiway stop sign engineering study; continental crosswalks; infill sidewalk gaps	Near park

ID	Location	Existing Condition	Speed (mph)	Daily Traffic Volume	Proposed Improvements	Notes
14	N Broadway & 10th Ave NW	2-way stop; 2 lane no centerline; no crosswalks	25	4,780	Conduct multiway stop sign engineering study; make north side ADA Accessible; continental crosswalks; infill sidewalk gaps	Near park & daycare
15	N Broadway & 3rd Ave NW	4-way stop; 2 lane no centerline; no crosswalks	25	4,350	Conduct multiway stop sign engineering study; continental crosswalks	
16	N Broadway & Carpenter Pl	2-way stop (1-way?); 2 lane no centerline; no crosswalks	25	3,070	Conduct multiway stop sign engineering study; continental crosswalks; add Detectable Warning Surface on east sidewalks	
17	N Broadway & 1st Ave NW	Traffic signal; 4-way intersection; 1st Ave has centerline and turn lanes; Broadway 2 lane no centerline; transverse line crosswalk	25	3,070	Upgrade to all overhead traffic signals; Upgrade signal to have pedestrian count-down; continental crosswalks; Add Detectable Warning Surface on all curb cuts	Downtown
18	N Broadway & E Kemp Ave	Traffic signal; 4-way intersection; 2 lane no centerline; transverse line crosswalk	25	3,070	Upgrade to all overhead traffic signals; Upgrade signal to have pedestrian count-down; continental crosswalks; Add Detectable Warning Surface on all curb cuts	Downtown; near daycare; Key sidewalk network crossing
19	N Broadway & 1st Ave SW	Traffic Signal; 1st Ave SW 2 lane with centerline; Broadway 2 lane no centerline; transverse Line Crosswalk	25	3,070	Continental crosswalks; Add Detectable Warning Surface on all curb cuts	Downtown; near daycare
20	N Broadway & 4th Ave SW	2-way stop; 2 lane no centerline; 1 ladder crosswalk	25	3,070	Conduct multiway stop sign engineering study; continental crosswalks; add Detectable Warning Surface on all curb cuts	Key sidewalk network crossing
21	N Broadway & 5th Ave SW	2-way stop; 2 lane no centerline; no crosswalks	25	3,070	Conduct multiway stop sign engineering study; continental crosswalks; add Detectable Warning Surface on SW curb cuts	Near park
22	N Broadway & 6th Ave SW	2-way stop; 2 lane no centerline; no crosswalks	25	3,070	Conduct multiway stop sign engineering study; continental crosswalks; add Detectable Warning Surface on NW curb cuts	Near park
23	N Broadway & 8th Ave SW	2-way stop; 2 lane no centerline; no crosswalks	25	3,070	Conduct multiway stop sign engineering study; continental crosswalks; infill sidewalk gaps, add curb cuts	Near daycare; disjointed intersection
24	N Broadway & US-212	Traffic signal; 4-way intersection: N Broadway - 2 lanes no centerline, US-212 - 4 lanes with turn lanes; continental crosswalk	35	2,500 - 8,000 - N Broadway; 18,410 - US-212	Upgrade signal to have pedestrian count-down; make ADA accessible; infill sidewalk gaps	
25	3rd Ave NE & 6th St NE	2-way stop; 2 lane no centerline; no crosswalks or curb cuts	25	3,670	Conduct multiway stop sign engineering study; continental crosswalks; infill sidewalk gaps, add curb cuts	Near preschool

ID	Location	Existing Condition	Speed (mph)	Daily Traffic Volume	Proposed Improvements	Notes
26	3rd Ave NE & 8th St NE	2-way stop; 2 lane no centerline; no crosswalks	25	3,670	Conduct multiway stop sign engineering study; continental crosswalks	Near park & school; too close to 27?
27	3rd Ave NE & 9th St NE	2-way stop; 2 lane no centerline; one transverse line crosswalk	25	3,670	Conduct multiway stop sign engineering study; continental crosswalks; Detectable Warning Surface; infill sidewalk gaps	Near park & school
28	3rd Ave NE & 13th St NE	2-way stop; 2 lane no centerline; no crosswalks	25	3,670	Conduct multiway stop sign engineering study; continental crosswalks; Detectable Warning Surface; infill sidewalk gaps	Near school
29	W Kemp Ave & 15th St NW	2-way stop; 2 lane no centerline; no crosswalks; curb cuts with ADA tactile warnings	25	-	Conduct multiway stop sign engineering study; continental crosswalks	Near stadium
30	W Kemp Ave & 13th St NW	2-way stop; 2 lane no centerline; Transverse Line Crosswalk	25	-	Conduct multiway stop sign engineering study; continental crosswalks	Near school
31	W Kemp Ave & 12th St NW	2-way stop; 2 lane no centerline; Transverse Line Crosswalk	25	-	Conduct multiway stop sign engineering study; continental crosswalks	Near school
32	W Kemp Ave & 3rd St SW	4-way stop; 2 lane no centerline; transverse Line Crosswalk	25	1,490	Continental Crosswalks; Detectable Warning Surface	Downtown
33	W Kemp Ave & 2nd St SW	2-way stop; 2 lane no centerline; transverse Line Crosswalk	25	1,490	Conduct multiway stop sign engineering study; Continental Crosswalks; Detectable Warning Surface	Downtown
34	W Kemp Ave & 1st St SW	2-way stop; 2 lane no centerline; transverse Line Crosswalk	25	1,490	Conduct multiway stop sign engineering study; Continental Crosswalks; Detectable Warning Surface	Downtown
35	E Kemp Ave & N Maple	Traffic signal; 2 lane no centerline; transverse line crosswalk	25	1,490	Upgrade signal to have pedestrian count-down; Continental Crosswalks; Detectable Warning Surface	Downtown
36	E Kemp Ave & 2nd St SE	Traffic signal; 2 lane no centerline; transverse line crosswalk	25	1,490	Upgrade signal to have pedestrian count-down; Continental Crosswalks	Downtown
37	E Kemp Ave & 3rd St SE	2-way stop; 2 lane no centerline; transverse Line Crosswalk	25	1,490	Conduct multiway stop sign engineering study; Continental Crosswalks; Detectable Warning Surface	Downtown
38	E Kemp Ave & 4th St SE	2-way stop; 2 lane no centerline; transverse Line Crosswalk	25	1,490	Conduct multiway stop sign engineering study; Continental Crosswalks; Detectable Warning Surface	Downtown
39	19th St SE & US-212	Traffic signal: 19th St SE - 2 lanes with center turn lane, US-212 - 4 lanes with turn lanes; continental crosswalk	35	2,500 - 8,000 - 19th St; 18,410 - US-212	Upgrade signal to have pedestrian count-down; make ADA accessible; infill sidewalk gaps	

ID	Location	Existing Condition	Speed (mph)	Daily Traffic Volume	Proposed Improvements	Notes
40	19th St SE & E Kemp Ave	2-way stop; 2 lanes with center turn lane; no crosswalks	35	6,470	Conduct multiway stop sign engineering study; Continental Crosswalks; Detectable Warning Surface on west side	Key sidewalk network crossing
41	19th St SE & 1st Ave NE/Willow Creek Dr	Traffic signal: 2 lanes with centerline and turn lanes; transverse line crosswalk	45	6,470	Continental Crosswalks	
42	19th St SE & 3rd Ave NE	2-way stop; 2 lanes with center turn lane; no crosswalks	35	6,460	Conduct multiway stop sign engineering study; Continental Crosswalks; Detectable Warning Surface on NW	Key sidewalk network crossing
43	19th St SE & 10th Ave NE	2-way stop; 2 lanes with center turn lane; no crosswalks	35	7,280	Conduct multiway stop sign engineering study; Continental Crosswalks	
44	19th St SE & 12th Ave NE	2-way stop; 2 lanes with center turn lane; Continental Crosswalks	35	7,280	Conduct multiway stop sign engineering study	
45	19th St SE & 13th Ave NE	2-way stop; 2 lanes with center turn lane; no crosswalks	35	7,280	Conduct multiway stop sign engineering study; Continental Crosswalks	
46	4th Ave SE & S Maple	2-way stop; 2 lane no centerline; two transverse line crosswalk	25	2,510	Conduct multiway stop sign engineering study; Continental Crosswalks; Detectable Warning Surface	
47	4th Ave SE & 2nd St SE	2-way stop; 2 lane no centerline; transverse line crosswalks	25	2,510	Conduct multiway stop sign engineering study; Continental Crosswalks	Near school
48	4th Ave SE & 3rd St SE	2-way stop; 2 lane no centerline; transverse line crosswalks	25	2,510	Conduct multiway stop sign engineering study; Continental Crosswalks	Near school
49	4th Ave SE & 6th St SE	2-way stop; 2 lane no centerline; no crosswalks	25	1,590	Conduct multiway stop sign engineering study; Continental Crosswalks; Detectable Warning Surface	Near park
50	4th Ave SE & 7th St SE	2-way stop; 2 lane no centerline; no crosswalks	25	1,590	Conduct multiway stop sign engineering study; Continental Crosswalks; Detectable Warning Surface	Near park

Appendix B: Table of Proposed Mid-Block Crossings

Table 12. Proposed Mid-Block Crossing Improvements

ID	Location	Existing Condition	Speed	Daily Traffic Volumes	Proposed Improvements	Notes
1	11th St NE between 3rd Ave NE & Arrow Ave NE	2 lanes without centerline; on-street parking; existing stairs from street to school parking lot	15	2,820	Mid-block crossing connecting Watertown Sr High School and Lake Area Technical College - need further study to determine exact location Continental Crosswalk & curb extension (paint and post), upgrade sign to yield to pedestrian and bikes (W11-15 with W11-15P), in-street pedestrian crossing signs (R1-6)	Near school
2	11th St NE between Arrow Ave NE & 1st Ave NE	2 lanes without centerline	25	2,820	Mid-block crossing connecting overflow parking and Lake Area Technical College Continental Crosswalk & curb extension (paint and post), upgrade sign to yield to pedestrian and bikes (W11-15 with W11-15P), in-street pedestrian crossing signs (R1-6)	Near school
3	4th Ave SE between 2nd St SE & 3rd St SE	2 lanes without centerline; on-street parking; existing curb ramp and transverse line crosswalk from parking lot to school	25	2,510	Mid-block crossing connecting parking lot and Roosevelt Elementary School Continental Crosswalk & curb extension (paint and post), upgrade sign to yield to pedestrian and bikes (W11-15 with W11-15P), in-street pedestrian crossing signs (R1-6)	Near school

Appendix C: Table of Proposed Trail Crossing Improvements

Table 13. Proposed Trail Crossing Improvements

ID	Name	Location	Existing Condition	Speed Limit (mph)	Daily Traffic Volumes	Crosswalks, Pavement Markings and Warning Signs (Typical)	HAWK Signal	RRFB	Construct ADA Ramp	Add Detectable Warning Surface (Truncated Domes)	8' x 20' Concrete Median Island With Refuge (Typical)	Other Proposed Improvement
1	Uncontrolled Crossing	N Broadway & S Kempeska Blvd	Warning signs and transverse lines crosswalk	25	3,070					2		
2	Uncontrolled Crossing	3rd Ave NW near 1st Ave NW	Warning signs and continental crosswalk	25	5,700						1	
3	Uncontrolled Crossing	3rd Ave NE near 22nd St E	Uncontrolled crossing	25	600	1				2		
4	Uncontrolled Crossing	33rd St SE near US-212		25								
5	Controlled Crossing	14th Ave & 22nd St E	Stop sign controlled T-intersection	25	960	1			2			
6	Controlled Crossing	14th Ave NE & 20th St NE	Stop sign controlled T-intersection	25	960	1			2			
7	Controlled Crossing	14th Ave NE & 19th St E	All-way stop with new curb ramps	35	7,280	1						
8	Uncontrolled Crossing	14th Ave NW & 4th St NW	Two-Way Stop	30	4,970	1			2			Change to All-way Stop
9	Uncontrolled Crossing	14th Ave NW & 6th St	Warning signs and continental crosswalk	30	4,970	1				1		
10	Uncontrolled Crossing	7th St NW south of 14th Ave NW	Warning signs and continental crosswalk									
11	Uncontrolled Crossing	10th Ave NW near 7th St NW	Warning signs and continental crosswalk	25	4,180						1	
12	Uncontrolled Crossing	10th Ave NW east of 9th St NW	Warning signs and continental crosswalk	25	4,180						1	Move crossing to the east to cross where trail meets the road coming from the south

ID	Name	Location	Existing Condition	Speed Limit (mph)	Daily Traffic Volumes	Crosswalks, Pavement Markings and Warning Signs (Typical)	HAWK Signal	RRFB	Construct ADA Ramp	Add Detectable Warning Surface (Truncated Domes)	8' x 20' Concrete Median Island With Refuge (Typical)	Other Proposed Improvement
13	Uncontrolled Crossing	SD-20 Slip Ramp south of 10th St NW	Continental crosswalk	35	7,910	1				1		Close slip ramp
14	Uncontrolled Crossing	10th St NW & SD-20	Warning signs and continental crosswalk	25		1						
15	Controlled Crossing	14th Ave NW & SD-20	Warning signs and continental crosswalk			1						
16	Controlled Crossing	26th Ave NW & SD-20	Detectable warning surfaces			1						
17	Controlled Crossing	Sioux Conifer Rd & SD-20	Warning signs and continental crosswalk			1						
18	Controlled Crossing	Airport Dr & SD-20				1				2		
19	Uncontrolled Crossing	SD-20 & S Lake Dr	Warning signs and continental crosswalk	45	4,180		1		2			
20	Controlled Crossing	Forsberg Park & SD-20		45	4,180	1				2		
21	Uncontrolled Crossing	SD-20 & N Lake Dr/451st Ave	Warning signs and continental crosswalk	45	3,570		1			2		
22	Controlled Crossing	SD-139 east of SD-20 connection	Warning signs and continental crosswalk	40		1				2		
23	Uncontrolled Crossing	SD-139 & N Lake Dr	Warning signs and continental crosswalk	40		1				1		
24	Controlled Crossing	SD-139 & 458th Ave	Continental crosswalk	40	70	1						
25	Controlled Crossing	SD-139 & County Rd 8 2/10	Continental crosswalk	40	70	1						
26	Controlled Crossing	SD-139 & 449th Ave	Detectable warning surfaces	40		1						
27	Controlled Crossing	SD-139 & 169th Ave	Detectable warning surfaces	40		1						
28	Uncontrolled Crossing	SD-139 east of Sunset Dr	Detectable warning surfaces	40		1						

ID	Name	Location	Existing Condition	Speed Limit (mph)	Daily Traffic Volumes	Crosswalks, Pavement Markings and Warning Signs (Typical)	HAWK Signal	RRFB	Construct ADA Ramp	Add Detectable Warning Surface (Truncated Domes)	8' x 20' Concrete Median Island With Refuge (Typical)	Other Proposed Improvement
29	Uncontrolled Crossing	Codington Memorial Park & Campground	Detectable warning surfaces	40		1						
30	Uncontrolled Crossing	Pompeska Dr & S Lake Dr	Warning signs and detectable warning surfaces			1						
31	Uncontrolled Crossing	S Lake Dr & Prairie Hills Dr	Detectable warning surfaces	45		1						
32	Uncontrolled Crossing	S Lake Dr north of Prairie Hills Dr	Warning signs and continental crosswalk	45				2				Drop speed limit to 35MPH
33	Controlled Crossing	Co Rd 17 5/10 & 54th St W	Detectable warning surfaces	25		1						
34	Controlled Crossing	Co Rd 17 5/10 & Prairie Winds Golf Club		25		1				2		
35	Controlled Crossing	CO Rd 12 3/10 & 43rd St NW	Two-Way Stop	30								
36	Uncontrolled Crossing	CO Rd 12 3/10 west of 43rd St NW	Continental crosswalk	30		1						
37	Controlled Crossing	42nd St NW & County Rd 12 3/10	Two-Way Stop	25		1						
38	Uncontrolled Crossing	42nd St NW Slip Ramp	Continental crosswalk	25		1						
39	Uncontrolled Crossing	S Lake Dr & Jackson Park (south entrance)	Warning signs and continental crosswalk	25		1						
40	Uncontrolled Crossing	Jackson Park (south)	Continental crosswalk	15		1				2		
41	Uncontrolled Crossing	S Lake Dr & Jackson Park (north entrance)	Warning signs and continental crosswalk	25		1				2		
42	Controlled Crossing	Jackson Park (north)	Transverse line crosswalk	15		1				2		

ID	Name	Location	Existing Condition	Speed Limit (mph)	Daily Traffic Volumes	Crosswalks, Pavement Markings and Warning Signs (Typical)	HAWK Signal	RRFB	Construct ADA Ramp	Add Detectable Warning Surface (Truncated Domes)	8' x 20' Concrete Median Island With Refuge (Typical)	Other Proposed Improvement
43	Uncontrolled Crossing	S Lake Drive west of Casino Speedway	Warning signs and continental crosswalk	25		1				2		
44	Uncontrolled Crossing	Stokes-Thomas Lake City Park & S Lake Dr	Warning signs and continental crosswalk	25						2		
45	Uncontrolled Crossing	Co Rd 12 3/10 & 33rd St NW	Warning signs and continental crosswalk	45		1				2		
46	Uncontrolled Crossing	5th Ave NW & Co Rd 12 3/10	Warning signs and continental crosswalk	45		1				2		
47	Controlled Crossing	3rd Ave NW & Co Rd 12 3/10	Warning signs and continental crosswalk	45		1				2		
48	Controlled Crossing	Co Rd 12 3/10 & 4th Ave SW	Two-Way Stop	45	4,060	1				2		Change to All-way Stop
49	Controlled Crossing	4th Ave SW & Co Rd 14A	All-Way Stop with transverse line crosswalks	45	5,900	1				4		
50	Uncontrolled Crossing	21st St NW & W Kemp Ave	Warning signs and transverse lines crosswalk	35	2,930	1				2		
51	Controlled Crossing	4th Ave SW & 19th St SW	Two-Way Stop	35	5,900	1				2		
52	Controlled Crossing	4th Ave SW & 14th Ave SW	Two-Way Stop	35	5,900	1				2		
53	Uncontrolled Crossing	4th Ave SW west of S Kampeska Blvd	Warning signs and continental crosswalk	25	4,930	1				2		
54	Controlled Crossing	4th Ave SW & S Kampeska Blvd	Two-Way Stop	25	4,930	1				1		
55	Uncontrolled Crossing	W Kemp Ave & Kampeska Blvd	Warning signs and transverse lines crosswalk	25	5,700	1						
56	Uncontrolled Crossing	Kampeska Blvd north of W Kemp Ave	Curb cut with detectable warning surfaces	25	5,700	1						

ID	Name	Location	Existing Condition	Speed Limit (mph)	Daily Traffic Volumes	Crosswalks, Pavement Markings and Warning Signs (Typical)	HAWK Signal	RRFB	Construct ADA Ramp	Add Detectable Warning Surface (Truncated Domes)	8' x 20' Concrete Median Island With Refuge (Typical)	Other Proposed Improvement
57	Uncontrolled Crossing	W Kemp Ave east of 6th St NW	Warning signs and continental crosswalk	25	5,700	1				2		
58	Uncontrolled Crossing	1st Ave NW & 3rd St NW	Two-Way Stop	25	5,700	1				4		
59	Controlled Crossing	Codington County Hwy Shop & SD-20		50	7,768	1				2		
60	Controlled Crossing	Fireside Camper & SD-20		55	7,768	1				2		