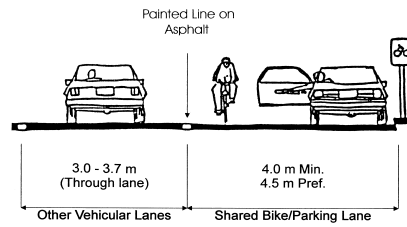
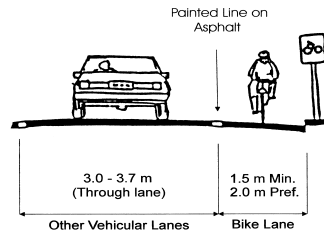


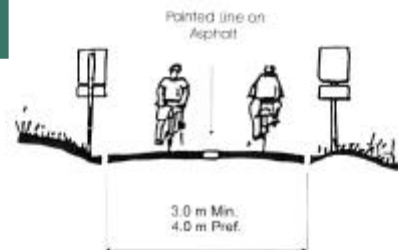
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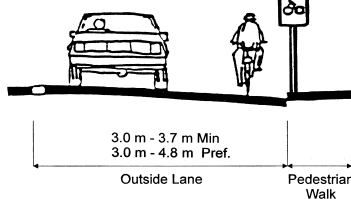
On - Road Cycling/Parking Lane



On - Road Cycling Lane



Off-Road Shared-Use Path



On-Road Shared Use Lane

Final Report

# CITY OF SASKATOON BICYCLE FACILITY NETWORK STUDY

Final Report

**CITY OF SASKATOON  
BICYCLE FACILITY NETWORK STUDY**

April 2003

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## EXECUTIVE SUMMARY

The City of Saskatoon, recognizing the full range of opportunities for bicycle travel on the existing road network, commissioned a study to examine the implementation of a cycling network plan. The *City of Saskatoon Bicycle Facility Network Plan* was developed to provide a detailed perspective on local cycling/transportation issues, to identify network alignments and to facilitate predominantly local utilitarian bicycle trips within the community. Prior to the commencement of the study, City Council identified the three destinations that were necessary to be served by the network, including:

- Downtown Saskatoon
- University of Saskatchewan Campus
- SIAST Kelsey Campus

The intent of the plan is to improve commuting and access opportunities for cyclists, make trip distances shorter and more convenient by bicycle, encourage cycling as a mode of transportation and recognize all potential users, including experienced versus inexperienced and adult versus child.

The process of selecting network alignments was one of opportunity and iterative in nature. Input on proposed alignments for new cycling links were developed through a series of meetings, site visits with City staff, road network data analysis, as well as open house sessions. All roadways in Saskatoon, with the exception of Circle Drive and Idylwyld Freeway, are open to use for cycling and were examined for inclusion in the network plan.

Two public information sessions were held to receive input on the proposed network plan. The objective of the consultation session was to ensure that the public was informed of the proposed network plan alignments and provide an opportunity for residents to communicate their opinions. Response to the proposed network plan revolved more around the timing of implementation and resolving spot operational issues rather than changing the locations of cycling routes. People seemed generally satisfied with the content of the network plan and were typically more interested in having the implementation of cycling facilities occur quickly.

Salient findings of the assessment include:

- the *City of Saskatoon Bicycle Facility Network Plan* consists of approximately 71 kilometres of facilities and all are within the City of Saskatoon corporate limits
- on-road facilities comprise 60.4 kilometres or 85 percent of the total network
- off-road facilities comprise 10.3 kilometres or 15 percent of the total network
- shared-travel facilities comprise 80 percent of the on-road cycling network, while cycling lanes comprise 20 percent
- the cycling network is generally accessible by a trip of one kilometre or less

- the majority of the network is provided on collector and local roadways and the posted speed for the majority of network roadways is 50 km/h
- most roadways defined within the network are sufficient in width. A total of 6 percent of the on-road links are substandard in width and will need to be widened
- all existing off-road pathways within the defined network are deficient in width and would need to be widened to the standard 3.0 m. The only exception is the path along Attridge Drive from Berini Drive to Central Avenue. This link only requires signage

### Network Costing and Staging

The ***total cost of implementing the cycling network is estimated at \$2,321,000 including a 15 percent contingency***. The cost for providing on road facilities is estimated at \$1,722,000 *including 15 percent contingency* or approximately 75 percent of the total network cost. Since the majority of on-road cycling links occur on local and collector roadways where the current road widths allow cyclists and motorists to safely pass parked cars, the major cost of implementing cycling facilities along these routes is mainly signage and, where necessary, line painting. Roadway widening in the network is only necessary for approximately 6 percent of the proposed alignments.

The cost of providing off-road facilities is estimated at \$599,000 *including 15 percent contingency* or approximately 25 percent of the total network cost. This includes costs for widening existing pathways, new path construction and illumination. Special features in the cycling network are estimated at \$30,000 or approximately 1 percent of the network budget.

***A funding commitment of \$200,000 per year will allow the majority of the network to be constructed within 6 years*** (i.e. Stages 1 and 2). Longer-term initiatives are represented in Stage 3 and are intended to build upon this base network over time. Stage 3 is also intended to make use of opportunities that may be presented over time by the public to improve the cycling network. The total network, including Stage 3 facilities, could be constructed within an 11 year time frame.

Note that some of the special network features identified in the network (i.e. Special Features 1, 2, 6 and 7) will require the budgetary commitment to be constructed as part of other capital projects (these special features are currently assumed as part of other budgets and are estimated at an additional \$800,000).

### Conclusion

The *City of Saskatoon Bicycle Facility Network Plan* identifies network alignments and facilitates predominantly local utilitarian bicycle trips within the community. The plan provides realistic goals that can achieve comprehensive network facilities and provides direction to help prepare for network issues. The cycling network plan will serve as a template for City of Saskatoon budget planning process and provides an achievable plan for the staging of cycling network facilities.

## 1.0 INTRODUCTION

Over the past 30 years, there has been an increase in the ownership of bicycles and the use of bicycles for both commuting and recreational purposes. Local, provincial and federal agencies are responding to the increased usage of bicycles by implementing cycling facilities and programs that recognize the differing levels of skills and performance of cyclists, as well as the limitations, vulnerability and safety aspects of cycling. Safe, convenient and adequate cycling facilities are essential for enhancing bicycle travel and, if planned properly, can benefit the overall transportation system.

The City of Saskatoon, in recognizing the full range of opportunities for bicycle travel on the existing road network, commissioned a study in 1999 to examine the implementation of a cycling network plan. The *City of Saskatoon Bicycle Facility Network Plan* was developed to provide a detailed perspective on local cycling/transportation issues, to identify network alignments and to facilitate predominantly local utilitarian bicycle trips within the community. City Council, prior to the commencement of the study, identified the three destinations that were necessary to be served by the network, including:

- Downtown Saskatoon
- University of Saskatchewan Campus
- SIAST Kelsey Campus

### 1.1 Study Issues and Influences

A number of key issues and considerations were focused on during the study to ensure a network that is both practical and achievable. These include:

**Functional design** – Standard facility designs were established by applying current Transportation Association of Canada (TAC) design guidelines to determine roadway surface requirements and identify where deficiencies may exist.

**Examination of network segments** – A field review of facilities was undertaken to establish network opportunities and constraints. Opportunities often exist for connecting into existing infrastructure (e.g. community roadways, pathways through parks) that may better serve as direct links for cyclists, as well as reduce network costs.

**Costing and staging of the network** – Initially, a key set of facilities should be planned to provide the “backbone” of the network. Subsequent stages will augment the existing network and provide additional connections to community facilities (e.g. schools, community centers and local retail).

**Next steps** – This study will affect future initiatives including the production of a cycling map and advertising of network routes to the public. The aim is to provide a product that is cognizant of these goals and will work towards their achievement.

## **2.0 STUDY PROCESS**

The following section identifies the study process used to develop the network plan. The key study goals, study approach and public consultation process are presented.

### **2.1 Study Goals**

The City of Saskatoon currently has over 5.6 kilometres of existing multi-use pathways and 12.6 kilometres of existing on-road cycling facilities. The intent of the *City of Saskatoon Bicycle Facility Network Plan* is to form a cohesive network of both on and off-road cycling alignments that will address the needs of commuter cyclists, as well as address existing barriers to cycling travel.

Specific objectives of the cycling network study include:

- prepare a cycling network plan that addresses the needs of the City of Saskatoon and adheres to the City's bicycle policy
- ensure that cycling routes access downtown Saskatoon, the University of Saskatchewan and SIAST Kelsey Campus
- integrate the proposed network with existing transportation infrastructure to reduce network costs and provide a cohesive network
- employ appropriate facilities corresponding to the roadway traffic volumes, roadway speed and truck presence
- ensure that the network provides logical connections to the recreational and shared-use pathway systems, including the Meewasin Valley Authority trail
- include input from the citizens of Saskatoon on cycling alignments

### **2.2 Study Approach**

The development of the network plan involved four key study activities, including:

#### **1. Inventory and Analysis**

This study activity involved conducting an inventory of existing cycling facilities, both on and off-road, and the collection of data from the City of Saskatoon (e.g. cycling destination map, employment, population information, existing and forecast roadway volumes and relevant reports). Special emphasis was also placed on linking to schools, parks and shopping centers within the network, while providing access to the three major destination centers.



## **2. Cycling Network Planning**

This study activity involved planning the network alignments, conducting field reviews of the current and future alignments and determining the feasibility of the proposed routes. Opportunities and constraints were established during this phase, and the preferred alternatives were selected and refined. Alternatives were selected based on such factors as demand/need, safety, cost, facility requirements in relation to available road width, environmental impacts and network continuity.

## **3. Priority and Implementation Planning**

An implementation plan was developed to identify a methodology for constructing the network. Costs associated with construction and maintenance of the network were also developed during this stage. A staging plan was also developed to coordinate the implementation of network facilities. The staging plan will provide an estimate for short, medium and long-term initiatives to help prepare for capital budget planning.

## **4. Public Consultation**

The public consultation process involved meeting with the public to obtain input and direction on study alternatives, as well as to communicate study findings and conclusions. In addition, a presentation to the Caswell Hill Local Area Planning Committee was made to address specific route options in that area.

### **2.3 Public Consultation**

Two public information sessions were held to receive input on the proposed network plan. The open house sessions were held on September 16<sup>th</sup>, 1999 at different locations to provide better coverage of the City and to reach a varied group of users. The first open house session was held during the afternoon at the University of Saskatchewan. The second open house session was held at the Midtown Plaza in the evening. Residents representing a broad range of cycling interests attended including commuters, recreational users and cycling association members. A total of 21 formal comment sheets were completed.

The consultation sessions allowed the public to be informed of the proposed network plan alignments and provide an opportunity for residents to communicate their opinions. The public was asked to discuss concerns and register their comments about the plan. Comment sheets, sign-in sheets and mapping of the cycling network plan were prepared for the open house sessions. The public was encouraged to indicate their comments directly on the network maps. In addition, pamphlets prepared by the City of Saskatoon Traffic Safety Committee were handed out to provide general rules and safety tips for riding on the roadway.

Response to the proposed network plan was generally favorable. Discussions tended to revolve more around the timing of implementation and resolving spot operational issues rather than changing the locations of cycling routes. People seemed generally satisfied with the content of the network plan and were typically more interested in having the implementation of cycling facilities occur quickly.

The issues identified by cyclists at the open house sessions include:

- potholes create hazardous situations for cyclists and should be filled if they exist on cycling routes
- need to promote bike routes and educate motorists to make them aware of cyclists on the road
- use routes parallel to higher volume, major arterials
- cycling routes should receive priority street sweeping and snow clearance to ensure continuity and cycling in the winter
- downtown core is a problem area – drivers looking for parking spots are not aware of cyclists
- use more off-road paths
- McDonald Bridge is too narrow; stairs at the end make it difficult for cyclists. Boards are also too difficult to maneuver for narrow wheels

A complete summary of comments received at the public open house sessions is provided in Appendix A.

### **3.0 ALIGNMENT SELECTION**

The process of selecting network alignments was one of opportunity and iterative in nature. Input on proposed alignments for new cycling links were developed through a series of meetings, site visits with City staff, road network data analysis, as well as open house sessions.

Examined were potential roadways and connections that would facilitate cycling movement while providing access to the key community facilities identified at the inventory stage. All roadways in Saskatoon are open to use for cycling and were examined for inclusion in the network plan. The only exceptions are Circle Drive and Idylwyld Freeway due to their intended operation, high speeds and conflicts at key intersections.

This process involved a significant review of potential connection options within Saskatoon neighborhoods (e.g. parks, pedestrian easements and bridge connections) that could provide a high level of service to cyclists. In many instances, it was possible to provide connections between areas not available to automobile users. To this end, the intent of the plan was to improve commuting and access opportunities for cyclists, make trip distances shorter and more convenient by bicycle and encourage cycling as a mode of transportation.

The development of an effective cycling network calls for the recognition of all potential users – experienced versus inexperienced and adult versus child. The network should be designed for the safety of the least experienced commuter cyclist, specifically the child who may be accessing a school facility. It should be recognized that the network will attract not only commuters but recreational users, including visitors to Saskatoon cycling on downtown streets for the first time. For these reasons, the network must identify routes that are safe, have been examined for the safety of users and promoted by the City as preferred routes for use.

As this network plan is designed to provide for the commuter cyclist, some user characteristics and desired conditions were identified for this type of use, including:

- commuter cyclists prefer continuous, direct routes and will avoid streets with delays if there is a parallel through-street or a nearby continuous bike path;
- bikeways must be designed with provisions for continuity and logical connections. Although a cycling route may end, there should be an acceptable cycling option that continues. In most cases, the designated alignments end at another proposed City of Saskatoon cycling route, an existing City of Saskatoon pathway, the Meewasin Valley Trail pathway, a residential neighborhood low volume roadway, or one of three primary attractions (i.e. Saskatoon downtown, University of Saskatchewan Campus or SIAST Kelsey Campus); and
- a bikeway along a route that connects areas of interest to cyclists will get maximum usage. The route could include work places, elementary and high schools, shopping districts, community facilities and parks.

For on-street bike routes, the following conditions were considered desirable:

- cyclists prefer streets with low volume traffic and will use them if they are through streets. Cyclists also prefer to drive with traffic operating at a similar speed. They will avoid high-speed, high-volume roadways unless they are wide enough for cycling;
- narrow truck and bus routes are avoided because the greater width of large vehicles causes passing problems and cross drafts from passing vehicles;
- cyclists are generally attracted to routes with smooth surfaces; they will avoid roadways with rough or uneven surfaces, loose gravel or dirt, broken edges or sewers and maintenance covers not flush with the roadway surface; and
- crossing of arterials roadways (i.e. high volumes) at signalized intersections.

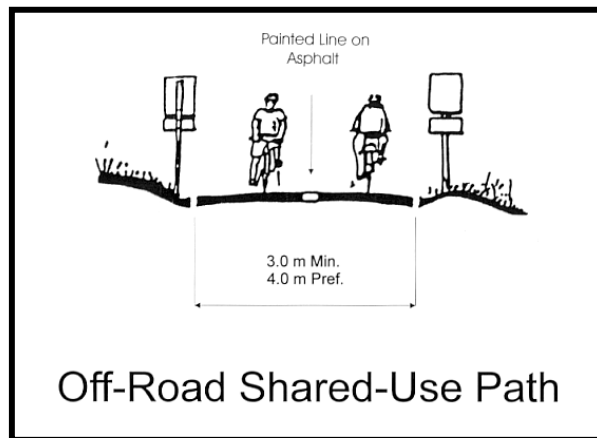
Cycling networks should also be planned to overcome barriers to travel. The *City of Saskatoon Bicycle Facility Network Plan* is unique in that it addresses a broad range of physical barriers encountered by cyclists, including Circle Drive, the South Saskatchewan River and the Canadian Pacific and Canadian National railways in east Saskatoon. Existing tunnel, bridge and bicycle/pedestrian overpass connections, as well as two new railway connections, a future tunnel connection and future interchange location have all been incorporated in the network.

## 4.0 TYPICAL FORMS OF CYCLING FACILITIES

The network plan will include both on-road and off-road cycling facilities. There are various classifications of cycling facilities, as presented in Exhibits 1 through 4, including:

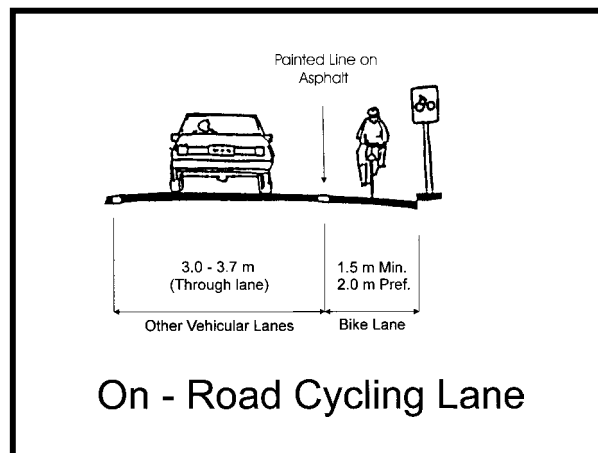
**Pathways:** Off-road facility that is physically separate from roadways, and where all motorized vehicles are excluded. These pathways are often shared with pedestrians and are typically two-way facilities. Bicycle pathways can effectively serve recreational cyclists or provide a more attractive commuting route for commuter cyclists.

**Exhibit 1 Off-Road Shared-Use Pathway**



**Cycling Lane:** On-road facility intended for the exclusive use of bicycles, usually separated from adjacent travel lanes by either a painted line or by some more positive delineators such as bollards or buttons. Bike lanes are usually limited to one-way travel, in the same direction as the adjacent traffic flow. A bike lane can be established by reducing the number and/or widths of motorized vehicular traffic lanes, prohibiting on-street parking or widening the roadway.

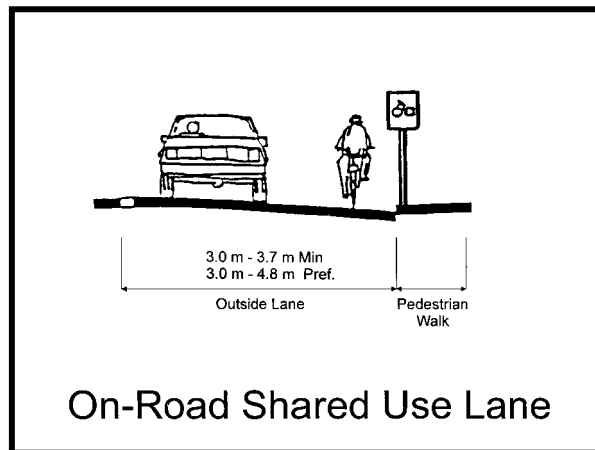
**Exhibit 2 On-Road Cycling Lane**



**Bicycle Route:** On-road facility that is shared by bicycles and motorized vehicles or parked cars. Bike routes assist cyclists in identifying routes that are aesthetically pleasing and are typically found in high bike-demand corridors or on streets with low traffic volumes. Bike routes are generally identified by signage. The signage also alerts drivers to the potential presence of cyclists in the area.

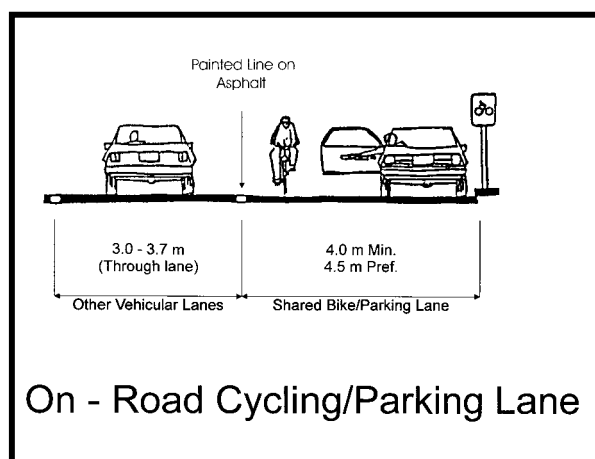
There are two types of facilities designated as bike routes: shared-travel and shared cycling/parking lanes. Shared-travel facilities fully integrate the cyclist with the motorist and are representative of most alignments identified within the network plan.

**Exhibit 3 Shared-Travel Lane**



Shared cycling/parking facilities are provided when provision/retention of parking is extremely important and on-road shared-travel solutions are unfeasible. A line between the bicycle and parking lane is generally painted in this circumstance.

**Exhibit 4 Shared Cycling/Parking Lane**



## 5.0 RECOMMENDED NETWORK PLAN

### 5.1 Overview

The recommended *City of Saskatoon Bicycle Facility Network Plan* is illustrated in Exhibit 5. The network is comprised of a series of on-road and off-road cycling routes. The majority of the network is comprised of on-road facilities located on local streets in residential areas and on collector roadways that have low traffic volumes and operating speeds. Arterial roadways are utilized in the network nearer to major destinations such as downtown and generally employ separate cycling lanes. The majority of off-road pathways in the network are existing facilities.

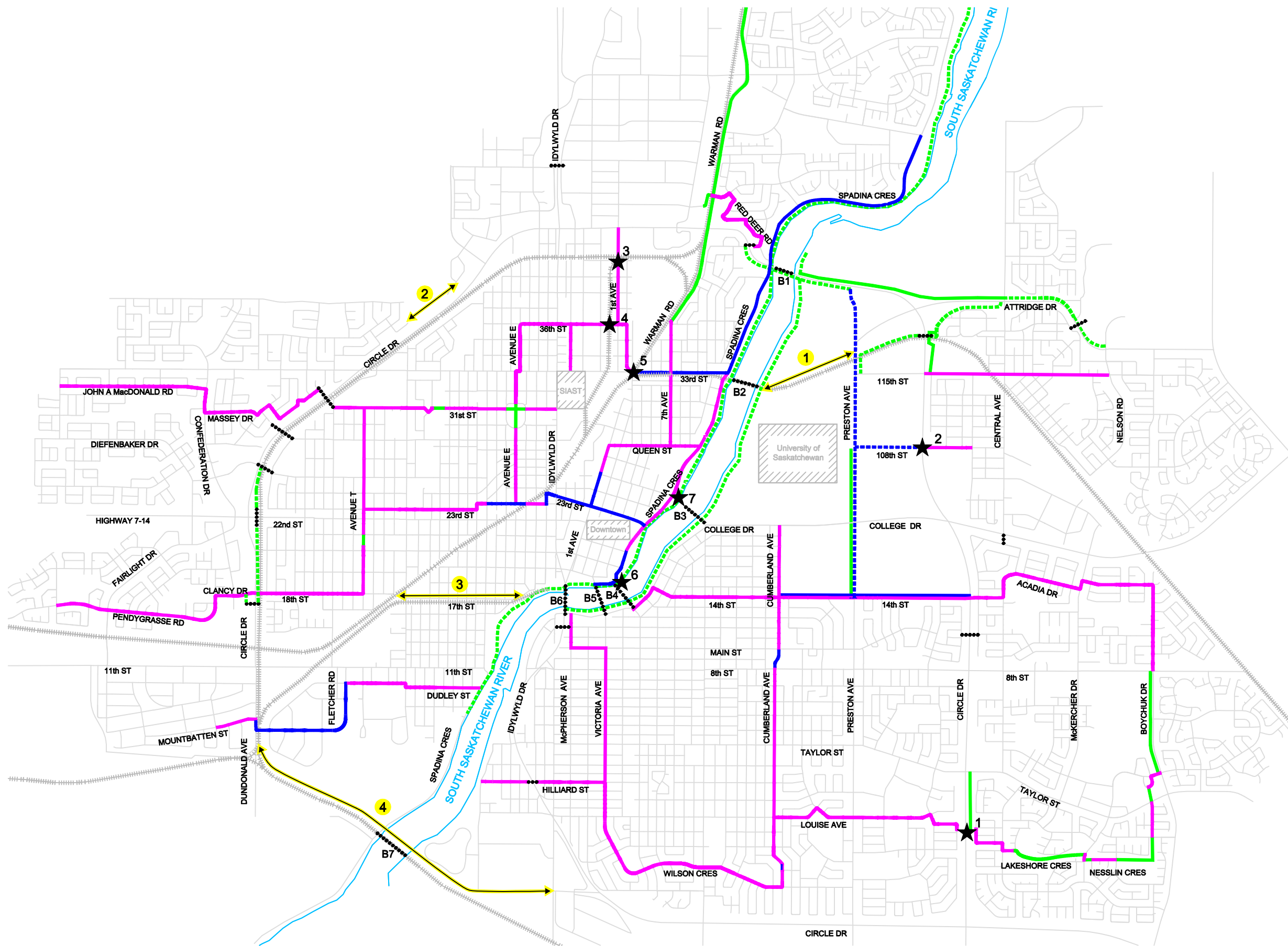
Special features identified on the exhibit are described in Table 1. These features overcome barriers in the network and serve as connecting elements between cycling facilities. Table 2 presents four future network opportunities available to the network.

**Table 1**  
**Special Features**

No	Location	Connecting Feature
1	Circle Dr. and Christopher Rd.	Bicycle/pedestrian overpass
2	Circle Dr. and 108 <sup>th</sup> St. Overpass	Bridge widening to accommodate cycling lanes
3	1 <sup>st</sup> Ave. N. (40 <sup>th</sup> St. E. to 41 <sup>st</sup> St. E.)	Path across railway
4	36 <sup>th</sup> Ave. (1 <sup>st</sup> Ave. to Quebec Ave.)	Path across railway
5	33 <sup>rd</sup> St. (Warman Rd. to Memorial Ave.)	Path across railway
6	Spadina Cr. and Broadway Bridge	Ramp connection to bridge
7	Spadina Bridge (between Queen Street and Mendel Art Gallery)	Widening

**Table 2**  
**Future Network Opportunities**

No	Description
1	CP railway corridor north of the University of Saskatoon
2	Corridor between the Westview Neighbourhood and the Airport/Business Park
3	17 <sup>th</sup> Street West CN railway corridor
4	Future South River Crossing corridor



Notes:

SPECIAL NETWORK FEATURES

- ★1 Bicycle/pedestrian overpass
- ★2 Bridge widening to accommodate cycling lane
- ★3 Construction of path across railway
- ★4 Construction of path across railway
- ★5 Construction of path across railway
- ★6 Ramp connection to bridge
- ★7 Widening to accommodate shared cycling lane

FUTURE NETWORK OPPORTUNITIES

- 1 CP railway corridor north of the University of Saskatchewan
- 2 Corridor between the Westview Neighbourhood and the Airport/Business Park
- 3 17th Street West CN railway corridor
- 4 Future South River Crossing corridor

SASKATOON BRIDGES

- B1 Circle Drive Bridge
- B2 McDonald Bridge
- B3 University Bridge
- B4 Broadway Bridge
- B5 Victoria Bridge
- B6 Idylwyld Bridge
- B7 Grand Trunk Bridge



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LEGEND:

CYCLING FACILITIES

- Shared-Use On-Road Cycling Lane
- Exclusive-use On-Road Cycling Lane
- Shared Off-Road Path

PROPOSED

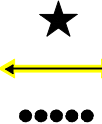
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EXISTING

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OTHER CYCLING NETWORK FACILITIES

- Special Network Features
- Future Opportunities
- Bridge or Tunnel Path Crossing





## 5.2 List of Recommended Alignments

Table 3 provides an assessment of the alignments recommended as cycling routes for the network plan. The following information is presented for each alignment:

- ***description*** of the cycling facility
- ***contribution*** of the alignment to the network
- ***highlights*** of the alignment

Exhibits 6 through 8 illustrate the recommended cycling facility alignments.

<b>Table 3</b> <b>List of Network Alignments</b>	
<b>Alignment 1 –</b>	<b>Lakeridge and Lakeview Areas/ 1400 East Heights/ Arlington Avenue/ Louise Street/ Ruth Street</b>
<i>Description</i>	Combination of shared-travel and existing off-road facilities
<i>Contribution</i>	<p>Provides a key east-west cycling connection through the Lakeridge, Lakeview, Eastview and Nutana neighborhoods</p> <p>Utilizes existing off-road facilities through Crocus Park and Lakeview Park along Boychuk Drive</p> <p>Provides access to numerous community facilities, including Market Mall, St. Bernard Elementary School, Lakeview Elementary School and St. James Elementary School</p>
<i>Highlights</i>	Includes new bicycle/pedestrian connection recommended over Circle Drive from Christopher Road to 1400 East Heights
<b>Alignment 2 –</b>	<b>Cumberland Avenue/ Wilson Crescent/ Victoria Avenue/ Hilliard Street/ McPherson Avenue</b>
<i>Description</i>	Shared-travel facilities
<i>Contribution</i>	<p>Combination of east-west collector routes and Victoria Avenue to provide a major north-south route to access the central business district via the Idylwyld Bridge</p> <p>Provides access to Adelaide Park, Churchill Park, John Lake Park, Buena Vista Park and Thornton Park, as well as various local schools and churches, including Georges Vanier Elementary School, John Lake Elementary School and St. Francis Elementary School</p>
<i>Highlights</i>	Includes existing pedestrian overpass structure on Hilliard Street at Idylwyld Drive

<b>Alignment 3 –</b>	<b>Cumberland Avenue/ 14<sup>th</sup> Street/ Saskatchewan Crescent</b>
<i>Description</i>	Shared-travel and cycling lane facilities
<i>Contribution</i>	Provides access to the University of Saskatchewan via Cumberland Avenue and to the downtown area via 14 <sup>th</sup> Street and the Broadway Bridge
<i>Highlights</i>	Includes widening on Cumberland Avenue between 8 <sup>th</sup> Street and Main Street. Widening will allow cycling lanes to be provided on narrow and curved section of Cumberland Avenue in front of shopping centre
<b>Alignment 4 –</b>	<b>Boychuck Drive/ Acadia Drive/ 14<sup>th</sup> Street</b>
<i>Description</i>	Combination of shared-travel and cycling lane facilities
<i>Contribution</i>	Provides an east-west connection through College, College Park, Greystone, and Grosvenor Park neighborhoods  Facilitates access to St. Augustine and Roland Michener elementary schools and Evan Hardy High School, as well as Sidney Buckwold Park and Dr. Gerhard Herzberg Park
<i>Highlights</i>	Includes a cycling lane on the north side of 14 <sup>th</sup> Street (will require restriction of parking) and incorporates a shared-travel lane on the south side of 14 <sup>th</sup> Street to facilitate access to the University
<b>Alignment 5 –</b>	<b>Preston Avenue/ 108<sup>th</sup> Street West/ 115<sup>th</sup> Street</b>
<i>Description</i>	Combination of shared-travel and existing cycling lane facilities
<i>Contribution</i>	Provides east–west collector routes on 115 <sup>th</sup> Street and 108 <sup>th</sup> Street  Connects to existing facilities along Preston Avenue to facilitate access to the University of Saskatchewan
<i>Highlights</i>	Includes widening of 108 <sup>th</sup> Street Bridge over Circle Drive for cycling lanes
<b>Alignment 6 –</b>	<b>Spadina Crescent/ 23<sup>rd</sup> Street/ 1<sup>st</sup> Avenue/ Queen Street</b>
<i>Description</i>	Combination of shared-travel and cycling lane facilities
<i>Contribution</i>	A primary downtown link that provides access to major shopping and entertainment facilities such as the Midtown Plaza, Centennial Auditorium, the pedestrian mall on 21 <sup>st</sup> Street, as well as employment in the downtown
<i>Highlights</i>	Includes cycling lanes adjacent to metered parking on 1 <sup>st</sup> Avenue between 23 <sup>rd</sup> Street and Queen Street, and on Spadina Crescent between 3 <sup>rd</sup> Avenue and 21 <sup>st</sup> Street. Ramp connection proposed

between Spadina Crescent and the Broadway Bridge (northwest corner).

**Alignment 7 –**

**Spadina Crescent**

*Description*

Combination of shared-travel and cycling lane facilities

*Contribution*

Focal north-south link that provides access to the downtown

*Highlights*

An on-road alternative to the Meewasin Valley Trail for commuters. Cycling lanes are proposed adjacent to the section of Spadina Crescent with parking

**Alignment 8 –**

**Rupert Place/ Red Deer Road/ Columbia Drive/ St. Lawrence Crescent/ Assiniboine Drive/ Warman Off-Road Pathway**

*Description*

Combination of off-road and shared-travel facilities

*Contribution*

Provides a connection to the Spadina Crescent route, Circle Drive and Rupert Place bicycle/pedestrian overpass and Circle Drive Bridge

Provides access to Lawson Heights, Silverwood Heights, River Heights and Richmond Heights neighborhoods, as well as Lawson Heights Mall

*Highlights*

Includes proposed off-road connection across railway to North Industrial area (i.e. west side of Warman Road at Assiniboine Drive). Extends off-road pathway on east side of Warman Road north to Adilman Drive

**Alignment 9 –**

**33<sup>rd</sup> Street/ 7<sup>th</sup> Avenue/ Kelsey- Woodlawn Areas**

*Description*

A series of shared-travel and cycling lane facilities

*Contribution*

Provides 33<sup>rd</sup> Street as a key east-west route for access to SIAST Kelsey Institute Campus

Identifies collector routes (e.g. 1<sup>st</sup> Avenue, 2<sup>nd</sup> Avenue, 36<sup>th</sup> Street, Alberta Avenue and Avenue E N.) for north-south access to the North Industrial Area, SIAST – Kelsey Institute campus, the Armories and the Harry Bailey Aquatic Centre

Provides shared-travel on residential roadways. Many of the roadways in this area (e.g. 1<sup>st</sup> Avenue) are older, narrower (9.0 - 9.5 m) roadways. These roads carry low traffic volumes, have sporadic on-street parking and will provide room for a car and cyclist to safely pass a parked vehicle

*Highlights*

Includes the construction of three new off-road railway crossings (i.e. 36<sup>th</sup> Street, a closed section of 1<sup>st</sup> Avenue between the residential and industrial areas, as well as a pathway connection from the

	Warman Road and 33 <sup>rd</sup> Street intersection to an adjacent frontage road to the northwest of the intersection)
<b>Alignment 10 –</b>	<b>John A. Macdonald Road/ Confederation Drive/ Massey Drive/ Northumberland Avenue/ Morris Drive/ Marlborough Crescent/ 31<sup>st</sup> Street West</b>
<i>Description</i>	Combination of shared-travel and off-road facilities
<i>Contribution</i>	<p>Provides a key east-west route that connects across the west side of Saskatoon</p> <p>Facilitates direct access to the SIAST Kelsey Institute campus and the Harry Bailey Aquatic Centre via a traffic signal on Idylwyld Drive</p> <p>Connects to north-south routes such as Avenue T N. and Avenue E N., which then connects to 23<sup>rd</sup> Street for access to the downtown area</p> <p>Connects to Vincent Massey Elementary School and Confederation Park Elementary School</p>
<i>Highlights</i>	Includes the use of existing off-road facilities in Ashworth Holmes Park and Pierre Radisson Park and the use of an existing bicycle/pedestrian underpass at Circle Drive
<b>Alignment 11 –</b>	<b>McCormack Road/ Pendygrasse Road/ Clancy Drive/ 18<sup>th</sup> Street/ Avenue T/ 23<sup>rd</sup> Street</b>
<i>Description</i>	A key east-west shared-travel route that connects to the downtown routes via 23 <sup>rd</sup> Street
<i>Contribution</i>	<p>Provides access to St. Marguerite Elementary School, St. Mark Elementary School, Fairhaven Elementary School and Pleasant Hill Elementary School, as well as William A. Reid Park, Parkridge Park, Herbert S. Sears Park, Meadowgreen Park, D.L. Hamilton Park and Leif Erickson Park</p> <p>Provides a safe and accessible railway crossing over the CPR tracks at 23<sup>rd</sup> Street</p>
<i>Highlights</i>	<p>Provides upgrades to a gravel section on Avenue T just north of 20<sup>th</sup> Street</p> <p>Includes 23<sup>rd</sup> Street as a combination of shared-travel and cycling lane to increase safe access to downtown</p>

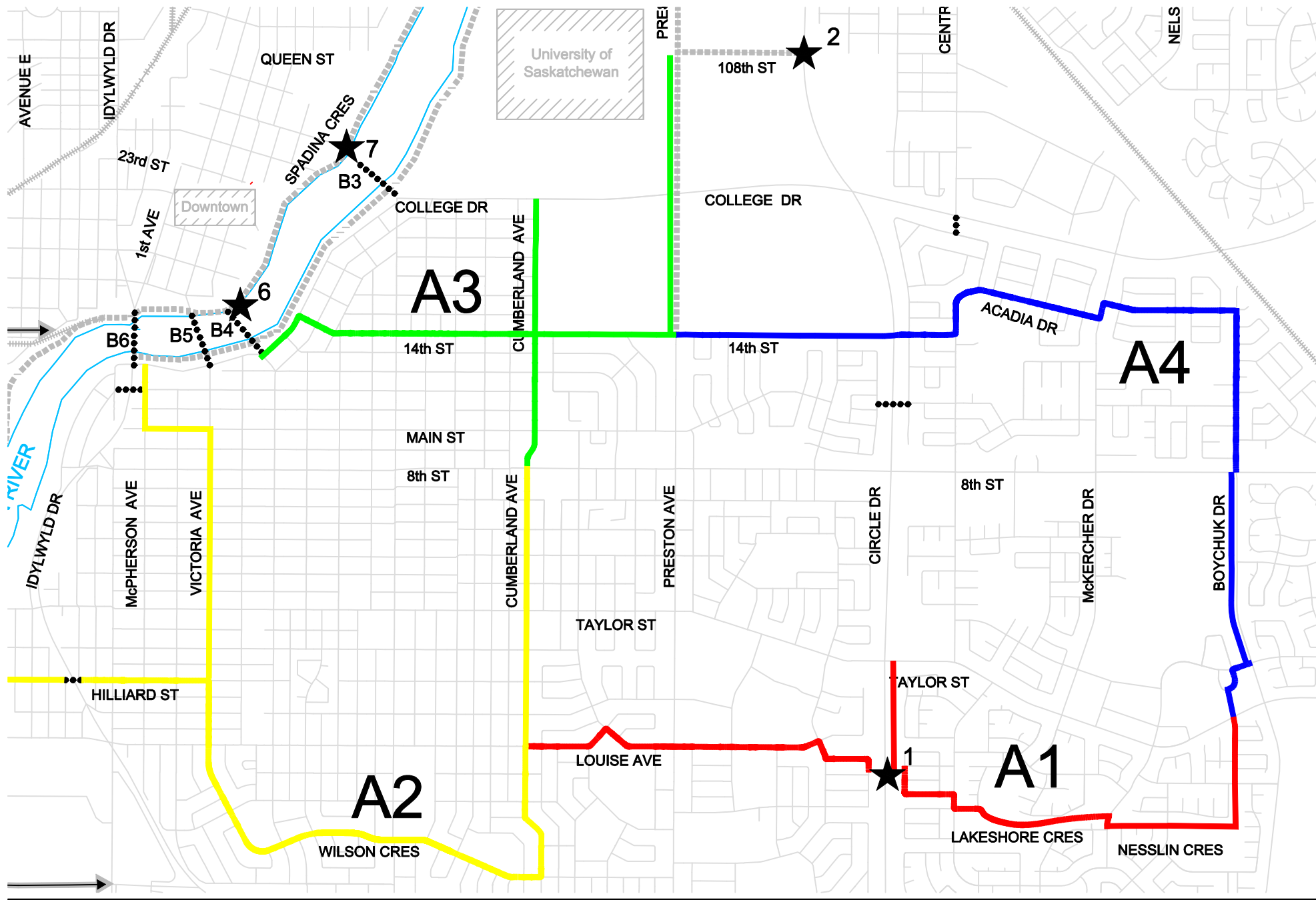
**Alignment 12 – Mountbatten Street/ Dundonald Avenue/ Fletcher Road/ Dudley Street**

<i>Description</i>	Combination of shared-travel and cycling lane facilities
<i>Contribution</i>	<p>An east-west collector route that serves Holiday Park, the Southwest Industrial Park and Montgomery Place</p> <p>Connects to the Meewasin Valley Trail for access to downtown and other cycling routes</p>
<i>Highlights</i>	Includes widening of Dundonald Avenue to accommodate cycling lanes. Requires restriction of on-street parking on Fletcher Road

**Existing Meewasin Trail and Bridge Crossings**

<i>Description</i>	Existing off-road pathways with wide, shared bicycle/pedestrian facilities and 13 existing exclusive pedestrian/bicycle tunnels and bridges. Also includes the bridges over the South Saskatchewan River
<i>Contribution</i>	The Meewasin Valley Authority trail system provides travel paths along the South Saskatchewan River. The 13 grade-separated tunnels and bridges provide a safe crossing path over the major roadways within Saskatoon, including Circle Drive, Idylwyld Freeway, 22 <sup>nd</sup> Street and Attridge Drive. The network also provides connections to various bridges in Saskatoon for travel across the South Saskatchewan River.
<i>Highlights</i>	Includes a new facility being planned by the Meewasin Valley Authority along the north side of Circle Drive connecting from the South Saskatchewan River to an existing pathway along Attridge Drive

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# CITY OF SASKATOON BICYCLE FACILITY NETWORK STUDY

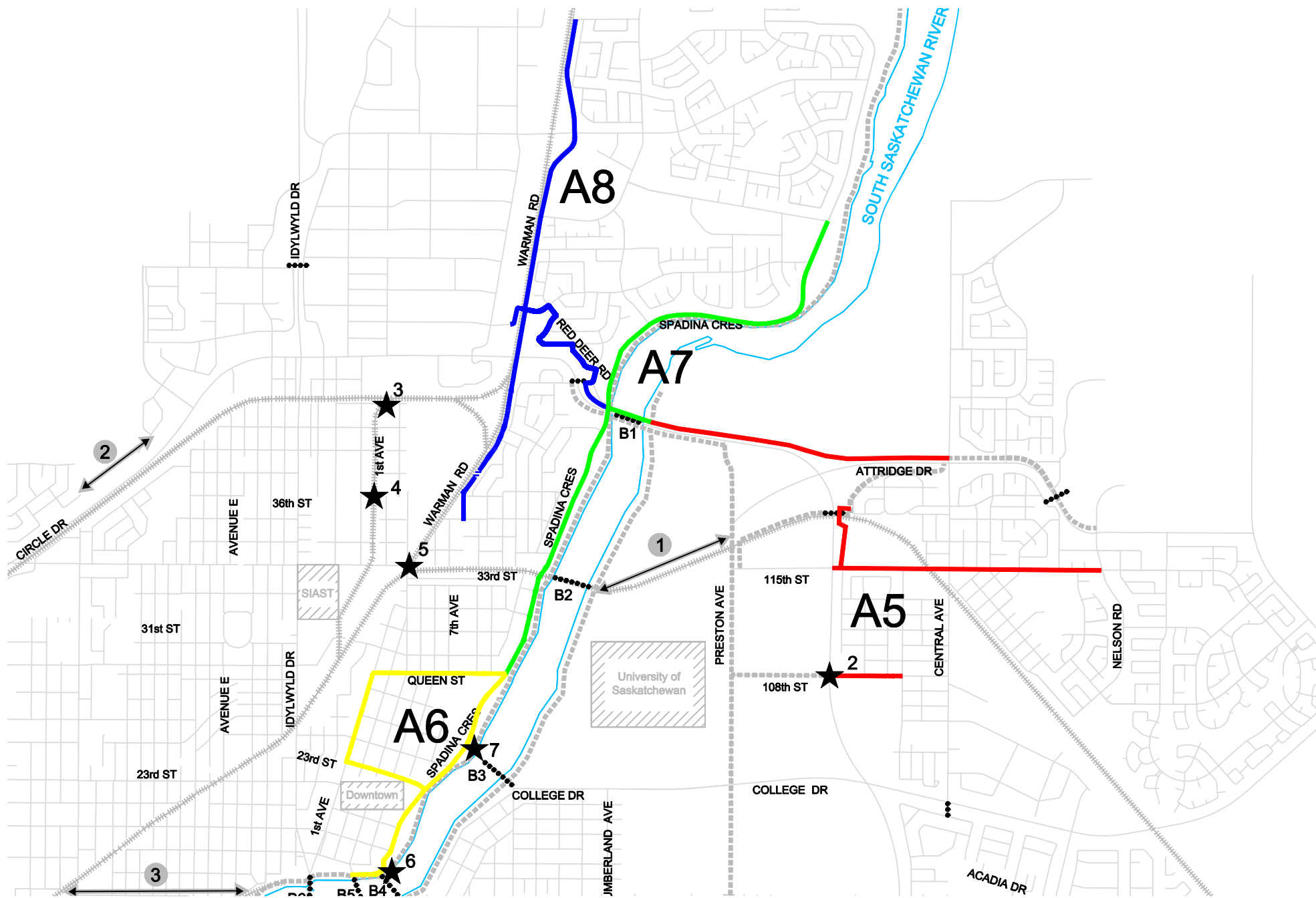
## EXHIBIT 6

Cycling Alignments - SE Saskatoon

Scale: NTS  
Date: April 07, 2003  
Drawn By: TCD  
File: cycling align.dwg

## LEGEND

Existing Facility      .....      Special Network Features      ★  
Future Opportunities      <====>      Bridge or Tunnel Path Crossing      ●●●●●

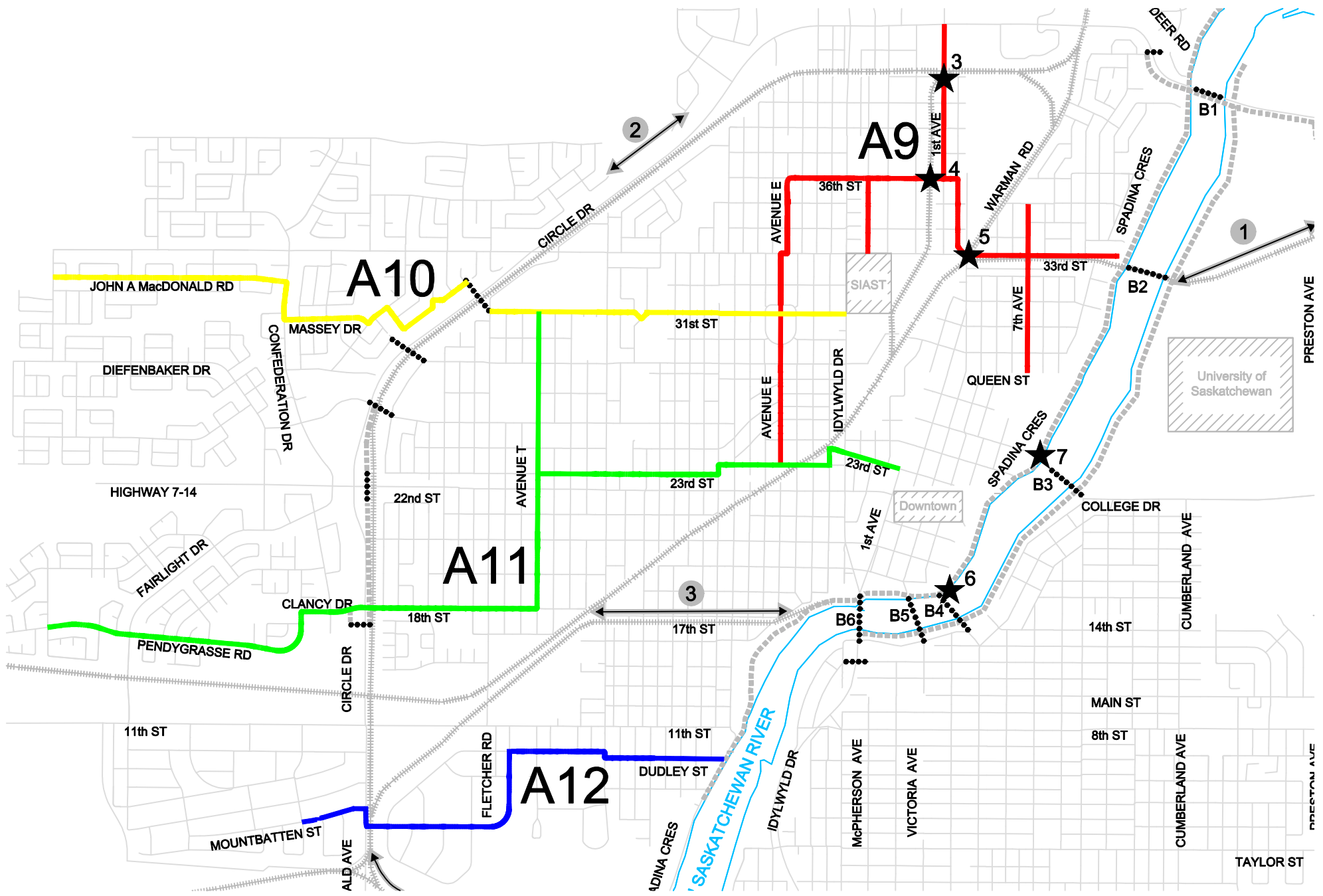


**CITY OF SASKATOON BICYCLE FACILITY  
NETWORK STUDY**  
**EXHIBIT 7**  
**Cycling Alignments - NE Saskatoon**

Scale: NTS  
Date: April 07, 2003  
Drawn By: TCD  
File: cycling align.dwg

**LEGEND**

Existing Facility	-----	Special Network Features	★
Future Opportunities	↔	Bridge or Tunnel Path Crossing	●●●●



# CITY OF SASKATOON BICYCLE FACILITY NETWORK STUDY

## EXHIBIT 8

### Cycling Alignments - West Saskatoon

Scale: NTS  
Date: April 07, 2003  
Drawn By: TCD  
File: cycling align.dwg

## LEGEND

Existing Facility	-----	Special Network Features	★
Future Opportunities	↔	Bridge or Tunnel Path Crossing	●●●●



### 5.3 Facilities Assessment

Cycling alignments were chosen based on engineering judgment and public input. However, guidelines were also used to test the selected on-road alignments, ensuring a sound rationale for the selection of an alignment.

Tables 4 and 5 provide the guidelines recommended by the Transportation Association of Canada (TAC) for cycling facility widths and automobile lane widths. Standard automobile lane widths (std auto lane) are identified, as they are often the minimum requirement for a shared-travel lane.

**Table 4  
Bicycle Facility Width Guidelines**

	<b>AADT / Lane <sup>1</sup></b>	<b>Minimum</b>	<b>Desirable</b>
Bike Path:	Two-way shared with pedestrians	3.0 m	4.0 m
Bike Lane:	<6000	1.5 m	2.0 m
	>6000 or 10% Trucks	2.0 m	2.5 m
Shared-Travel Lane	0 – 1000	std auto lane	std auto lane
	1000 – 2000	std auto lane	4.3 m
	2000 – 4000	std auto lane	4.5 m
	4000 – 6000	std auto lane	4.8 m
	>6000	Route avoided	Route avoided
Shared-Parking Lane	4.0 m (includes 2.4 m required for parked automobile)		

<sup>1</sup>. Average Annual Daily Traffic given in vehicles per day per lane

**Table 5  
Automobile Lane Width Guidelines**

<b>Lane Utilization</b>	<b>Street Type</b>	<b>Standard Width</b>
Through Lane	Major Arterial	3.7 m
	Minor Arterial	3.5 m
	Collector	3.5 m
	Local	3.0 m
Parking Lane	-	2.4 m

These guidelines provide the basis for establishing cycling facility options (i.e. shared lane or separate cycling lane). In some instances, the existing road width exceeded minimum guidelines for the cycling facility. Also in cases, a separate cycling lane was provided where it was deemed that a shared lane (i.e. the minimum requirement) would not provide adequate protection for the cyclist.

With few exceptions, the proposed network complies with the facility width guidelines. Table 6 summarizes the total length of each facility type provided in the *City of Saskatoon Bicycle Facility Network Plan*.

**Table 6**  
**Network Length by Facility Type**

<b>Facility Type</b>	<b>Facility Length</b>
Off-road:	
New pathways	2.5 kms
Existing pathways (with widening)	6.4 kms
Existing pathways (with signage only)	1.4 kms
<i>Subtotal:</i>	<i>10.3 kms</i>
On Road:	
Bike Lane	12.1 kms
Shared-Travel	48.3 kms
<i>Subtotal:</i>	<i>60.4 kms</i>
<b>Total:</b>	<b>70.7 kms</b>

Salient findings of the assessment include:

- the *City of Saskatoon Bicycle Facility Network Plan* consists of approximately 71 kilometres of facilities and all are within city limits
- on-road facilities comprise 60.4 kilometres or 85 percent of the total network and off-road facilities comprise 10.3 kilometres or 15 percent of the total network
- shared-travel facilities comprise 80 percent of the on-road cycling network, while cycling lanes comprise 20 percent
- the cycling network is generally accessible by a trip of one kilometre or less
- the majority of the network is provided on collector and local roadways. Most roadways defined within the network are two lane roadways. A small percentage (6 percent) of the alignments are located on 4-lane roadways
- the posted speed for the majority of network roadways is 50 km/h
- most roadways defined within the network are sufficient in width. A total of 6 percent of the on-road links are substandard in width and will need to be widened to TAC standards
- all existing off-road pathways within the defined network are deficient in width and would need to be widened to the standard 3.0 m. The only exception is the path along Attridge Drive from Berini Drive to Central Avenue. This link only requires signage
- higher truck volumes are primarily found on designated truck routes on City of Saskatoon roadways. Eighteen percent of the network alignments are located on these truck routes. These links were, however, deemed important for network continuity

## 6.0 NETWORK COST

Costing of the network plan was based on standard construction costs per running linear metre or square metre of bicycle facility. The capital expenditure estimates were determined from standard City of Saskatoon unit costs, as defined below for a variety of common applications:

- **Curb removal and replacement** – the removal and replacement of an existing curb was estimated at \$45 per linear metre
- **Asphalt widening** – paving of an existing shoulder was estimated at \$150 per square metre of surface area and to a standard depth
- **Line painting** – the costs for these improvements was estimated at \$2.50 per linear metre
- **Signage** – signage costs were identified at \$0.50 per linear metre
- **Illumination** – cost estimates for providing illumination are identified at approximately \$65 per linear metre based on a spacing of 30 m between pole mounted lamps (\$2000 per unit)
- **Estimate of path improvements** – cost estimates for construction of a new path are identified at \$27.94 per square metre and for widening an existing path at \$18.75 per square metre.

Table 7 provides details on network costs.

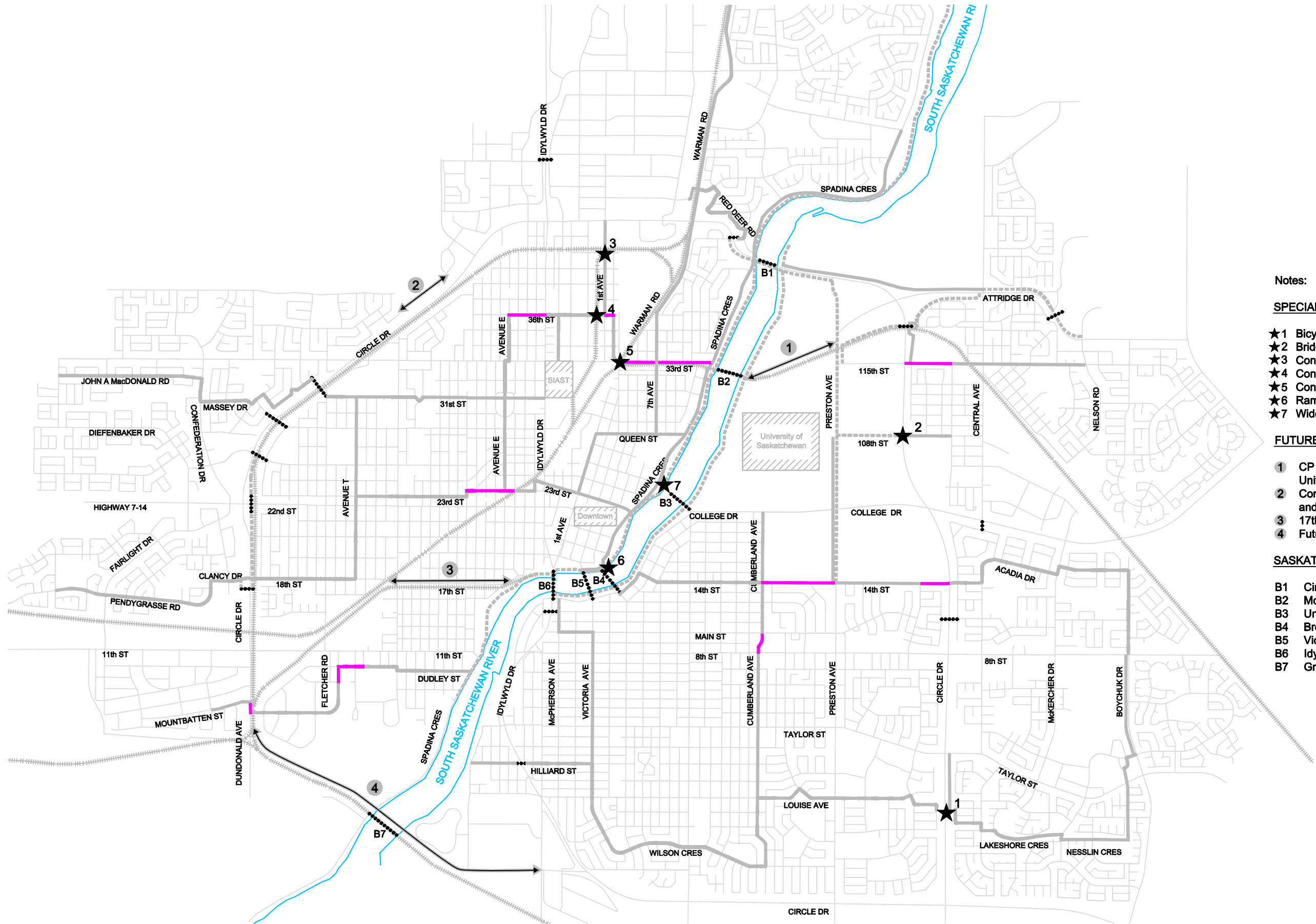
The total cost of implementing the cycling network is estimated at \$2,321,000 including 15 percent engineering and contingency. Since the majority of on-road cycling links occur on local and collector roadways, the current road widths allow cyclists and motorists to safely pass parked cars. The cost of implementing cycling facilities along these routes is mainly signage and, where necessary, line painting.

Roadway widening in the network accounts for approximately 6 percent of the proposed alignments. Those proposed on-road cycling facilities that require the road to be widened are illustrated in Exhibit 9. Roadway widening estimates include curb removal, asphalt widening and reconstruction costs.

Approximately 6.4 kilometres of existing off-road pathways identified in the analysis require upgrading. In these instances, reconstruction costs include widening and resurfacing asphalt pedestrian paths to 3.0 m. Most are currently 1.5 m wide.

**Table 7  
Network Costs**

Facility Type	Expenditure	Cost	
On – Road:	Road Widening	\$1,313,000	
	Painting	\$ 84,000	
	Signage	\$ 69,000	
	Subtotal	\$1,466,000	
Off – Road:	Existing Path Widening	\$ 181,000	
	New Path Construction	\$ 190,000	
	Illumination	\$ 151,000	
	Subtotal	\$ 522,000	
Special Features:	1 <sup>st</sup> Ave. N. Path across railway	\$ 5,000	
	36 <sup>th</sup> Ave. Path across railway	\$ 5,000	
	33 <sup>rd</sup> St. Path across railway	\$ 20,000	
	Subtotal	\$ 30,000	
		Total	\$ 2,018,000
Grand Total : including 15 percent Engineering and Contingency		\$ 2,321,000	



- Notes:
- SPECIAL NETWORK FEATURES**
- ★1 Bicycle/pedestrian overpass
  - ★2 Bridge widening to accommodate cycling lane
  - ★3 Construction of path across railway
  - ★4 Construction of path across railway
  - ★5 Construction of path across railway
  - ★6 Ramp connection to bridge
  - ★7 Widening to accommodate shared cycling lane

- FUTURE NETWORK OPPORTUNITIES**
- ① CP railway corridor north of the University of Saskatoon
  - ② Corridor between the Westview Neighbourhood and the Airport/Business Park
  - ③ 17th Street West CN railway corridor
  - ④ Future South River Crossing corridor

- SASKATOON BRIDGES**
- B1 Circle Drive Bridge
  - B2 McDonald Bridge
  - B3 University Bridge
  - B4 Broadway Bridge
  - B5 Victoria Bridge
  - B6 Idylwyld Bridge
  - B7 Grand Trunk Bridge



Scale: NTS  
Date: April 1, 2003  
Drawn By: TCD  
File: cycling.dwg

- LEGEND:**
- Proposed Facility - Road Widening Required (pink line)
  - Proposed Facility - Road Widening Not Required (grey line)
  - Existing Facility (on and off-road) (dotted line)

- Special Network Features**
- Future Opportunities (double-headed arrow)
  - Bridge or Tunnel Path Crossing (dotted line with star)

## 7.0 IMPLEMENTATION

The implementation plan is intended to outline the order in which links are to be constructed, provide continuity from one link to the next during construction and place context on funding requirements. The network implementation is identified in three stages, including:

- Stage 1* - first priority links forming the backbone of the network and allowing for continuous travel across the city on east-west and north-south facilities. Main routes connecting to key destinations in the city
- Stage 2* - links providing additional east-west and north-south connections into residential neighborhoods
- Stage 3* - links serving to complete the network. Includes some of the higher-cost special features required for completion

Recommended staging of alignments is illustrated on Exhibit 10. Network costs by stage (including contingency) are identified in Table 8.

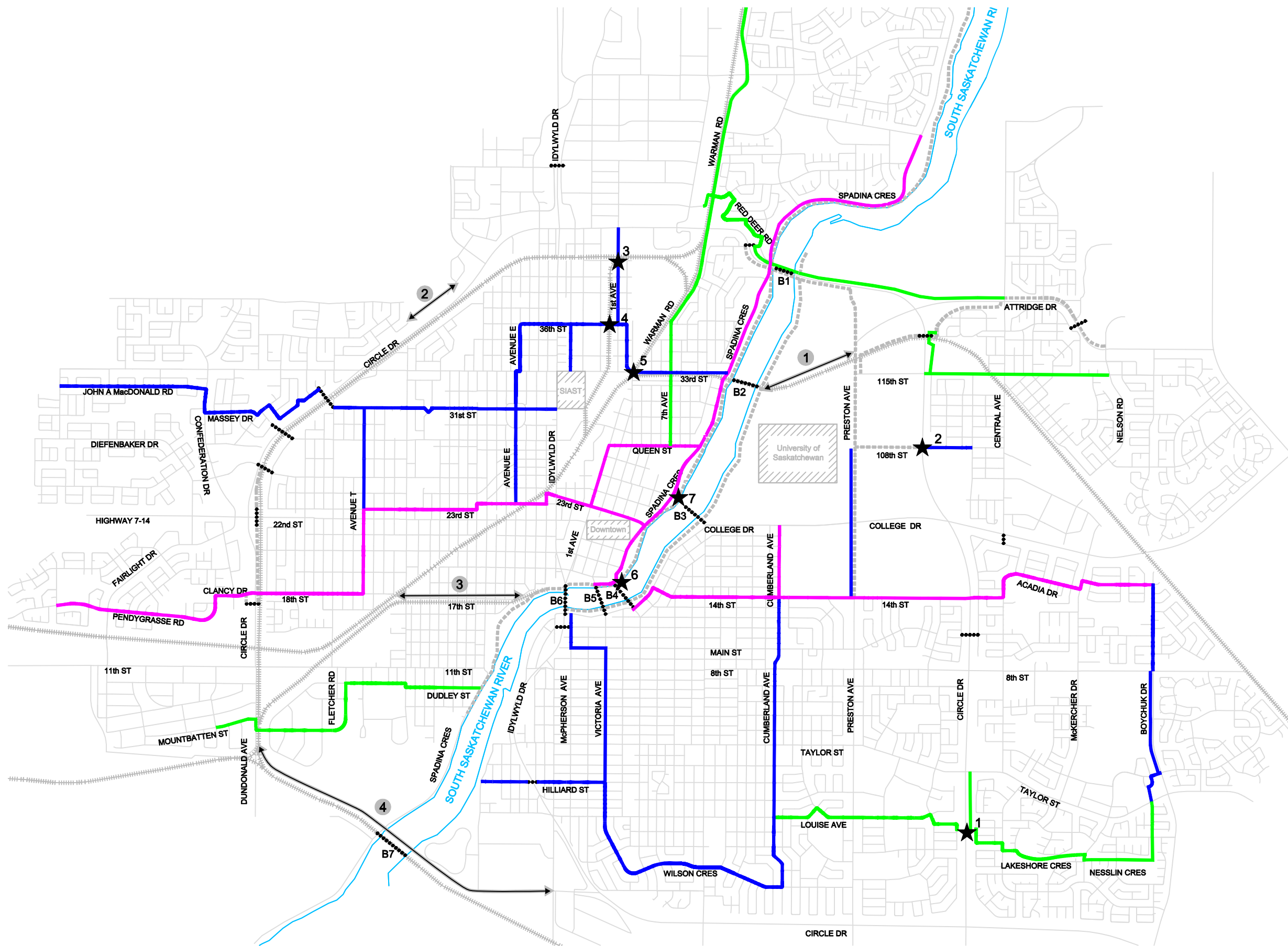
**Table 8**  
**Network Cost by Implementation Stage**

Stage	Cost
Stage 1	\$ 540,000
Stage 2	\$ 581,000
Stage 3	\$1,200,000
<b>Total</b>	<b>\$2,321,000</b>

The total cost of the network is approximately \$2.3 million. ***A funding commitment of \$200,000 per year will allow the majority of the network to be constructed within 6 years*** (i.e. Stages 1 and 2). Longer-term initiatives are represented in Stage 3 and are intended to build upon this base network over time. Construction in Stage 3 is subject in part to the timing of other capital projects that include special features identified in the cycling network. Stage 3 is also intended to make use of opportunities that may be presented over time by the public to improve the cycling network. The total network, including Stage 3 facilities, could be constructed within an 11 year time frame.

Note that some of the special network features identified in Table 1 (i.e. Special Features 1, 2, 6 and 7) will require the budgetary commitment to be constructed as part of other capital projects. These special features are currently assumed as part of other budgets and are estimated at an additional \$800,000. The detailed costing of these features can be referenced in Appendix B.





Notes:

SPECIAL NETWORK FEATURES

- ★1 Bicycle/pedestrian overpass
- ★2 Bridge widening to accommodate cycling lane
- ★3 Construction of path across railway
- ★4 Construction of path across railway
- ★5 Construction of path across railway
- ★6 Ramp connection to bridge
- ★7 Widening to accommodate shared cycling lane

FUTURE NETWORK OPPORTUNITIES

- ① CP railway corridor north of the University of Saskatoon
- ② Corridor between the Westview Neighbourhood and the Airport/Business Park
- ③ 17th Street West CN railway corridor
- ④ Future South River Crossing corridor

SASKATOON BRIDGES

- B1 Circle Drive Bridge
- B2 McDonald Bridge
- B3 University Bridge
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- B7 Grand Trunk Bridge



Scale: NTS  
Date: April 1, 2003  
Drawn By: TCD  
File: cycling.dwg

LEGEND:

- Stage 1
- Stage 2
- Stage 3

- Existing Facility (on and off-road)
- Future Opportunities

- Special Network Features
- Bridge or Tunnel Path Crossing

It is recognized that additional neighborhood requests for cycling facilities will occur once the overall plan starts to be implemented. Generally, the facilities identified in the network should be constructed first. However, all requests should be given consideration in the context of the overall network and achieving the goals of the network.

Table 9 provides a summary of the length of facilities to be constructed by implementation stage. The number of kilometres of network anticipated at each stage (i.e. Stages 1, 2 and 3) are similar at an average of 22 kilometres per stage.

**Table 9**  
**Network Length by Facility Type and Stage**

Facility Type	Stage 1	Stage 2	Stage 3	Total
Bicycle Lane	8.8 km	1.3 km	2.0 km	12.1 km
Shared-travel	17.0 km	21.7 km	9.6 km	48.3 km
Bicycle Path	0.1 km	1.2 km	9.0 km	10.3 km
<b>Total</b>	<b>25.9 km</b>	<b>24.2 km</b>	<b>20.6 km</b>	<b>70.7 km</b>

Table 10 provides a summary of the cost per each alignment for both on road and pathway costs. The costs per alignment range from \$9,000 for Alignment 2 to \$556,000 for Alignment 12.

**Table 10**  
**Network Cost by Alignment and Improvement Type**

Alignment	Length (km)	On-Road Widening	Painting / Signage *	Off-Road Pathway Costs **	Total ***
A1	5.9	\$ -	\$ 6,000	\$ 63,000	\$ 69,000
A2	8.5	\$ -	\$ 9,000	-	\$ 9,000
A3	4.6	\$ 207,000	\$ 6,000	-	\$ 213,000
A4	6.4	\$ 32,000	\$ 9,000	\$ 46,000	\$ 87,000
A5	5.0	\$ 11,000	\$ 5,000	\$ 46,000	\$ 62,000
A6	4.5	\$ -	\$ 21,000	-	\$ 21,000
A7	4.8	\$ -	\$ 31,000	-	\$ 31,000
A8	5.5	\$ -	\$ 5,000	\$ 351,000	\$ 356,000
A9	7.5	\$ 283,000	\$ 16,000	\$ 5,000	\$ 304,000
A10	6.1	\$ -	\$ 6,000	\$ 9,000	\$ 15,000
A11	8.0	\$ 275,000	\$ 18,000	\$ 2,000	\$ 295,000
A12	3.9	\$ 535,000	\$ 21,000	-	\$ 556,000
<b>Total</b>	<b>70.7</b>	<b>\$ 1,343,000</b>	<b>\$ 153,000</b>	<b>\$ 522,000</b>	<b>\$ 2,018,000</b>

\* includes signage costs for pathway-facilities

\*\* includes path widening, new path construction and lighting costs

\*\*\* does not include contingency and engineering fees



## **8.0 CONCLUSION**

The *City of Saskatoon Bicycle Facility Network Plan* provides a detailed perspective on local cycling/transportation issues, identifies network alignments and facilitates commuter bicycle trips within the community. The design of the network also recognizes all potential users – experienced versus inexperienced and adult versus child. As such, the network is designed for the safety of the least experienced commuter cyclist, specifically the child who may be accessing a school facility.

It should be recognized that the network will attract not only commuters but recreational users, including visitors to Saskatoon cycling on downtown streets for the first time. For these reasons, the network routes identified are safe and should be promoted by the City as preferred routes for use.

Finally, the cycling network plan provides a well-documented starting point for reviewing and updating the network plan in the future.

The plan provides realistic goals for the development of a comprehensive cycling network and provides direction to help resolve network issues. The cycling network plan will also serve as a template for the City of Saskatoon budget planning process and provides an achievable plan for the staging of cycling network facilities.

**APPENDIX A**  
**SUMMARY OF PUBLIC OPEN HOUSE COMMENTS**

## **Saskatoon Bicycle Facility Network Study**

### **Public Open Houses:**

**University of Saskatchewan - 10:00 am to 2:00 pm**

**Midtown Plaza – 5:30 pm to 8:30 pm**

**September 16, 1999**

- Potholes create hazardous situations for cyclists and should be filled if they exist on cycling routes
- Need to connect shopping centers at 8<sup>th</sup> St and Circle Drive with the rest of the cycling routes
- Railroad bridge is too narrow and stairs at the end make it difficult for cyclists. Boards are also too difficult to maneuver for narrow wheels
- Need to promote bike routes and educate motorists to make them aware of cyclists on the road; stricter enforcement of cyclist safety by police
- Use routes parallel to major arterials
- Cycling routes should receive priority snow clearance to ensure continuity and cycling in the winter
- Cycling routes should receive priority street sweeping
- Consider paving routes and paths with smoother types of pavement - easier for rollerblades
- Better pedestrian crossings at Brunskill
- Need for a north/south bike route on Munroe Ave. or McKinnon Ave.
- Downtown core is a problem area – drivers not aware of cyclists when looking for parking spots
- Need for a route on Cumberland Ave. from 14<sup>th</sup> St. to College Dr.
- Area north of Circle Dr. and west of Central Ave. should be preserved as a natural, undisturbed area for recreation, i.e. hiking, biking, birding, historical/geographic interpretation
- Should be designated shoulder sections for cycling on major roads like Warman Rd. or 51<sup>st</sup> St.
- Use more off-road routes
- Need for a paved path on the north side of 14<sup>th</sup> St. E. between the 14<sup>th</sup> St overpass and Cumberland Avenue

**APPENDIX B**

**COST ESTIMATES FOR SPECIAL FEATURES**

No	Location	Connecting Feature	Cost Estimate
1	Circle Dr. and Christopher Rd.	Bicycle/pedestrian overpass	\$ 250,000
2	Circle Dr. and 108 <sup>th</sup> St. Overpass	Bridge widening to accommodate cycling lanes	\$ 300,000
6	Spadina Cr. and Broadway Bridge	Ramp connection to bridge	\$ 200,000
7	Spadina Bridge (between Queen Street and Mendel Art Gallery)	Widening	\$ 50,000
<b>Total:</b>			<b>\$ 800,000</b>