



# COMPLETE STREETS DESIGN AND POLICY GUIDE





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# Table of Contents

PART 1: INTRODUCTION .....	1
1.1 How will the Guide be Used?.....	4
1.2 How Will Complete Street Treatments be Implemented?.....	4
PART 2: VISION FOR A COMPLETE STREET .....	5
2.1 What a Complete Street Is.....	6
2.2 What a Complete Street Is Not .....	7
2.3 What Can Be Achieved?.....	9
PART 3: CONTEXT .....	11
3.1 What Exists Today .....	13
3.2 Future Street Context.....	15
3.3 Putting It All Together .....	19
PART 4: COMPLETE STREET TYPOLOGIES.....	21

PART 5: TOOLKIT FOR COMPLETE STREET DESIGN .....	37
5.1 Sidewalks .....	39
5.1.1 Sidewalk Areas .....	39
5.1.2 Other Sidewalk Treatments .....	44
5.2 Streets.....	51
5.2.1 Bicycle Facilities .....	52
5.2.2 Transit .....	58
5.2.3 Alternative Curbside Treatments .....	62
5.2.4 Calming Treatments for Urban Streets.....	65
5.3 Intersections.....	69
5.3.1 Pedestrian Treatments for Urban Street Intersections.....	69
5.3.2 Bicycle Facilities at Intersections.....	75
5.3.3 Transit Accommodation at Intersections .....	79
PART 6: OPPORTUNITIES FOR IMPLEMENTATION .....	85

# Table of Figures

Figure 1 - 'Incomplete' Street Example (22nd Street) .....	2
Figure 2 - Policy and Design Guide Outline .....	3
Figure 3 - Complete Streets Process Diagram .....	12
Figure 4 - Typical Local Area Plan .....	13
Figure 5 - Existing Street Classifications .....	13
Figure 6 - Pick Up and Delivery Vehicle Routes .....	14
Figure 7 - Future Growth Areas .....	15
Figure 8 - Corridor Growth Priorities .....	16
Figure 9 - Transit Plan .....	16
Figure 10 - All Ages and Abilities Bicycle Network .....	17
Figure 11 - Sidewalk Gaps on Major Roadways .....	18
Figure 12 - Street Context Inputs .....	19
Figure 13 - Recommended Complete Street Typologies .....	22
Figure 14 - Principle Features for Each Street Typology .....	23
Figure 15 - Freeway & Expressway Typology Example .....	24
Figure 16 - Limited Access Arterial Example .....	25
Figure 17 - City Arterial Example .....	26
Figure 18 - Community Arterial Example .....	27
Figure 19 - Suburban Arterial Example .....	28
Figure 20 - Urban Main Street Example .....	29
Figure 21 - Downtown Commercial Street Example .....	30
Figure 22 - Parkways Example .....	31
Figure 23 - Neighbourhood Connector Example .....	32
Figure 24 - Local Street Example .....	33
Figure 25 - Industrial Street Example .....	34
Figure 26 - Shared Street Example .....	35
Figure 27 - Potential Street Typologies .....	36
Figure 28 - Essential Complete Street Treatments .....	38
Figure 29 - Sidewalk Areas .....	39
Figure 30 - Limited Access Arterial Streets .....	40
Figure 31 - City & Suburban Centre Arterial Streets .....	41
Figure 32 - Community Arterial Streets .....	41
Figure 33 - Downtown Commercial/Urban Main Streets .....	42
Figure 34 - Neighbourhood Connectors & Local Streets .....	42

Figure 35 - Industrial Streets .....	43
Figure 36 - Seating .....	45
Figure 37 - Bicycle Parking .....	46
Figure 38 - Continuous, Level Sidewalks Across Driveways .....	47
Figure 39 - Bus Stop/Shelter .....	48
Figure 40 - Sidewalk Cafes .....	49
Figure 41 - Plazas .....	50
Figure 42 - Multi-Use Pathways .....	53
Figure 43 - Protected Bicycle Lanes .....	54
Figure 44 - Bicycle Lanes (Optional Buffer) .....	55
Figure 45 - Bicycle Boulevards .....	56
Figure 46 - Shared Use Lanes .....	57
Figure 47 - Curb Bus Lanes .....	59
Figure 48 - Side Bus Lanes .....	60
Figure 49 - Centre Bus Lane .....	61
Figure 50 - Accessible On-Street Parking .....	63
Figure 51 - On-Street Bicycle Parking .....	64
Figure 52 - Desired Lane Width .....	66
Figure 53 - Mid-Block Narrowing .....	67
Figure 54 - Mid-Block Centre Median Islands .....	68
Figure 55 - Curb Radii (Detail) .....	70
Figure 56 - Curb Radii .....	70
Figure 57 - Centre Median Crossing Islands .....	71
Figure 58 - Curb Extension & Ramps .....	72
Figure 59 - Standard & Enhanced Crosswalks .....	73
Figure 60 - Bicycle Lanes at Intersections .....	76
Figure 61 - Bike Boxes .....	77
Figure 62 - Protected Bicycle Lanes at Intersections .....	78
Figure 63 - Bus Stop Locations .....	80
Figure 64 - Transit Priority at Intersections .....	81
Figure 65 - Bus Bulbs .....	82
Figure 66 - Fare Paid Zones .....	83



# PART 1: Introduction



For several decades, street corridors in many cities have been designed, managed and maintained in an increasingly auto-centric way. Some major roadways can have six or more wide travel lanes. Intersections are typically wider than travel lanes, with turn lanes and signal timing plans designed to minimize delays to vehicles. Public expectations have evolved to assume that roadways be designed and managed to limit congestion for vehicles. In other words, society has come to expect that city streets will be designed, operated and maintained in a way that supports safe and efficient movement of vehicles as their primary function.

Inadvertently, urban streets in many communities have now become barriers to healthy and balanced urban places, as illustrated in **Figure 1** below. Wide streets designed for vehicles often lack safe, comfortable walking and bicycling experiences, as travel speeds tend to increase on wider streets, with limited space

and priority given to people of varying levels of mobility and confidence. These barriers also extend to transit; as driving is made more convenient, transit ridership is reduced, and increased levels of service less justifiable. On congested roadways, transit is often stuck in the same ‘bottlenecks’ as those driving personal vehicles, ultimately discouraging sustainable modes and encouraging driving.

**Figure 1** shows a functioning street for its intended user, the motorist. This method of design will not be sustainable moving forward as the diversity of road users increases on streets. The challenge will be making the transition of cities from an auto-oriented street design to a complete street model that incorporates all the design factors that influence a street corridor.



Figure 1 - ‘Incomplete’ Street Example (22nd Street)



The challenges of traditional urban roadway design also affect the land uses that surround them. With auto-oriented development patterns, urban streets are less likely to be places where people will want to live, work or play. Major streets are often unaccommodating and become barriers to residential land uses. Retail and office developments are typically set back from the street, separated from the adjacent street by large parking areas. In turn, uses permitted in these areas tend to be lower density, with high parking requirements and design standards that ultimately promote driving.

A “Complete Streets” model is one of many strategies changing how cities are being planned and designed. In existing urban areas, guidelines for complete streets can help to encourage and support infill and densification on major roads, and balance accommodation for all modes of travel within the public right-of-way. For newer growth areas, the guidelines can be used to shape the City’s street design standards, which may incorporate many of the principles and tools in the **Complete Street Design and Policy Guide (the Guide)**.

With this in mind, complete streets imply more than just physical changes to a community’s streets. The implementation of a complete streets model must extend across planning, design, maintenance and funding for land use and transportation projects. A guide for complete streets can be achieved through clear policies and guidelines that influence land use and transportation plans, as well as include street design standards that will influence new and retrofit projects.

**The Guide** will direct planners and engineers to work collaboratively with the community and developers to consistently design the public right-of-way and ensure land uses are integrated, contributing to a people-oriented street environment that works for everyone.

**The Guide** is divided into six parts as follows:

Part 1	Introduction
Part 2	Vision for a Complete Street
Part 3	Context
Part 4	Complete Street Typologies
Part 5	Toolkit for Complete Street Design
Part 6	Opportunities for Implementation

Figure 2 - Policy and Design Guide Outline





## 1.1 How will the Guide be Used?

**The Guide** provides an updated way of looking at street design in Saskatoon, considering aspirations for both land uses and roadway planning, and intentionally connecting them through the selection of appropriate street treatments.

Planners and designers can apply necessary treatments to address street functions rather than simply service traffic patterns and needs. Moving away from standard templates, **the Guide** provides a customizable design tool for achieving the many goals of an individual street section.

The most impactful application for **the Guide** is on the existing street system. Individual treatments that are critical to creating a complete street can be implemented in Saskatoon over time as opportunities arise through redevelopment projects.

The current standard for street design in new neighbourhoods needs to be revised. **The Guide** will provide the justification, means, and information needed to effect change on the City's expanding street network.

**The Guide** is also meant to be an accessible resource for City staff, City Council and the residents of Saskatoon. **The Guide** will be a source of consistent information, using a common language that may be used by planners, designers and citizens to work collaboratively on design options for neighbourhoods and major streets throughout the City.

Complete street treatments may be developed through public engagement sessions to highlight what's possible and discuss treatments options and outcomes with the community. Designers can then use these discussions to create drawing standards for each treatment style to ensure safety and reliability of City Streets.

## 1.2 How Will Complete Street Treatments be Implemented?

The City's **Design and Development Standards Manual (the Manual)** provides the process and design information for streets and other utilities required for new subdivision development, as well as infill areas. **The Guide** can be used to update **the Manual** with design treatments that may be used in new areas of the City.

However, a more immediate need of **the Guide** is to retrofit existing streets. This need stems from the **Growth Plan to Half a Million (Growth Plan)**, in which many of Saskatoon's streets and land uses are being transformed to support sustainable growth patterns and to reshape how people move around the community.

The complete street treatments contained in **the Guide** will be most effective for transforming the established areas of the City through ongoing initiatives such as:

- Existing road improvements to entire sections or localized changes to intersections;
- Road and sidewalk rehabilitation projects, providing opportunities to reallocate street space;
- Street operations and maintenance programs to better support specific travel modes, as well as mobility needs for all ages and abilities throughout the year and across the network; and;
- Infill or redevelopment projects in neighbourhoods and along major streets incorporated through to the roadway.

The City can use **the Guide** to work with residents on these and other initiatives to achieve a complete streets model in the most critical areas as identified in the **Growth Plan**.

## PART 2: Vision for a Complete Street





Bicycle lanes, walkability, vulnerable user safety, and traffic volumes are all topics that are being discussed increasingly by the public, politicians and municipal staff in Saskatoon. These topics all make up components of a connected city and when consideration is given to each of them, the result is a complete street.

**Complete streets provide safe connections for users of all ages, abilities, and modes of travel where design is centered on the context of the street corridor.**

This section of **the Guide** outlines what a complete street ‘is’ and ‘is not’ as well as what success would look like in Saskatoon.

## 2.1 What a Complete Street Is

Complete Streets are streets designed to address the context of the street while providing safe access for all intended users. Pedestrians, bicyclists, motorists and transit riders of all ages and abilities must be able to safely move along and across a complete street. In support of the land uses they serve, complete streets help build strong, livable and vibrant communities.

Complete streets are unique, and so are the guides for each community. For Saskatoon, complete streets are designed to:

- ✓ **Enhance safety for all modes.** Appropriate facilities designed as separated or shared spaces enhance safety and comfort for everyone. For vulnerable users such as pedestrians and bicyclists, addressing perceived and real safety concerns will serve to not only reduce serious collisions, but will ultimately increase usage of these sustainable modes.



- ✓ **Expand transportation choice.** Visibility of attractive and comfortable pedestrian, bicycling and transit facilities will serve to create greater awareness of the transportation options available in Saskatoon. In turn, increased use of these facilities will motivate people to consider opportunities that can contribute toward personal and community goals.
- ✓ **Support universal accessibility.** At any point of a journey, everyone is a pedestrian. As such, the design of sidewalks, crossings and connections with private properties can create barriers for people with physical and/or cognitive disabilities. Universal accessibility is essential not only to support individuals with mobility challenges, but also to make public spaces comfortable for everyone.



- ✓ **Enhance connection to community.** Complete streets are complementary to the surrounding land uses. They provide space for people to move around, within, and between communities, as well as places for people to live, work, shop and play. They can also support the development and creation of a vibrant public realm, extending businesses into the street space with patios, parklets or simply with better access.
- ✓ **Develop a sense of place.** Ultimately, most community streets should be comfortable and desirable places for people. Rather than simply transport people, complete streets should be designed as comfortable and desirable public places for community to gather.

## 2.2 What a Complete Street Is Not

In addition to knowing what a complete street is, it is equally important to acknowledge what a complete street is not. This will ultimately assist in shaping **the Guide** and support discussions with the public, City Council and staff. For Saskatoon, complete streets are:

- ✗ **Not focused solely on the automobile.** While there remains the need for some streets to serve the primary function of moving large volumes of traffic – such as on-ramps to highways – there are often other functions of a street that must be considered in the design and configuration of the network. Where vulnerable users, such as pedestrians and bicyclists are present, the street design should provide safe and comfortable facilities to enhance safety for all road users.



- ✘ **Not a 'one-size-fits-all' solution.** In every community, the public right-of-way for streets is often limited and even constrained. In other words, it is unlikely that the needs of all modes can be accommodated on one street. Although streets can be designed to share space in many instances, a network of varying streets types is often required to comfortably accommodate the individual needs of each mode. A grid system promotes a network approach where some streets may serve cars, transit and pedestrians effectively while parallel streets may prioritize pedestrians and bicyclists and serve lower volumes of traffic.



- ✘ **Not necessarily a prescriptive design.** In most built areas of Saskatoon, the available space and uses for the existing street network are already established. Rather than look for an off-the-shelf solution or design standard, complete streets are typically created by understanding the constraints and opportunities to yield unique solutions suited to context and based on guidelines or a toolkit of best practices.
- ✘ **Not an 'all or nothing' proposition.** Building new streets and retrofitting existing ones can be expensive. Beyond the obvious surface works, underground and above-ground utilities and property can dramatically increase the cost for even the smallest road projects. Rather than commit to the full implementation of retrofit projects, a phased approach toward implementing a complete street will enable the more critical matters to be dealt with in the short-term and other features to be added over time as resources become available. In this regard, complete streets may be achieved in stages, particularly when managing funding to transform existing roadways. It is important that the community understand that a phased implementation is possible or likely depending on the individual project. Phasing a project can also help create early community support, allowing users to experience the change as a low-cost trial before making a full investment in the ultimate solution.

## 2.3 What Can Be Achieved?

Saskatoon's **Growth Plan** requires more choices for getting around the community, sustainable land uses, as well as creating livable and vibrant communities. The City seeks to enact policies and objectives for building and retrofitting safe, economically productive, cost-effective, and active street space. A flexible **Guide** will provide a blueprint for designing, building (retrofitting), operating, and maintaining complete streets. This approach also creates longevity, adaptability, and allows for effective implementation in order to achieve the vision for complete streets.

### The Vision

“Saskatoon will plan, design, operate and maintain existing and new streets to effectively support movement of people of all ages and levels of mobility by: providing appropriate facilities that support pedestrians, bicyclists, transit vehicles as well as motor vehicles; and integrating the street environment with existing and future land uses.”

In support of the vision, a complete streets approach for Saskatoon seeks to develop a transportation network that will better serve and support sustainable growth through all seasons.

### Principle 1: Serve and support existing and planned land use and built form context.

Streets in Saskatoon will be designed to create active environments that support surrounding land use patterns and accommodate the built form of the sites. Additionally, land use patterns along many corridors will be better integrated with the street system supporting an active pedestrian environment and providing attractive connections with other modes.

### Principle 2: Encourage people to travel by walking, bicycling and transit.

Even where automobiles and heavy vehicles are significant, steps will be taken to ensure that accessible and attractive pedestrian, bicycle and transit facilities and treatments are provided along key corridors.

### Principle 3: Provide transportation options for people of all ages and abilities through universal design.

The transportation system will be designed to support the needs of all segments of the population including children, youth, seniors, and those with mobility challenges.

### Principle 4: Enhance the safety and security of urban streets.

The safety and security of all street users, especially the most vulnerable people (children, the elderly, and those with mobility challenges) and modes (pedestrians and bicyclists), will be integral to the design of every street.



**Principle 5: Create a network of streets that offers mobility options for all users.**

A dense network of local, collector and arterial streets will provide attractive facilities that support walking, bicycling, transit, vehicles and goods movement. In urban areas of the City, a grid system of streets will provide options to prioritize and allocate shared or dedicated space for each user group throughout the network as opposed to all on one street.

**Principle 6: Provide opportunities for improved health and recreation to people in the community.**

Complete streets not only contribute to the quality of life within a community, they are necessary to improve personal health. From sidewalks and bicycle lanes to accessible bus shelters, complete streets can improve pedestrian safety while reducing congestion and emissions. Complete streets encourage people to walk and bike for short trips, and support social interactions within the street that will strengthen the sense of community. By improving travel safety, complete streets have a positive effect on the health of both the community and the people living in it. Increased walking and bicycling lowers the risk of obesity and the host of health problems that come with it.

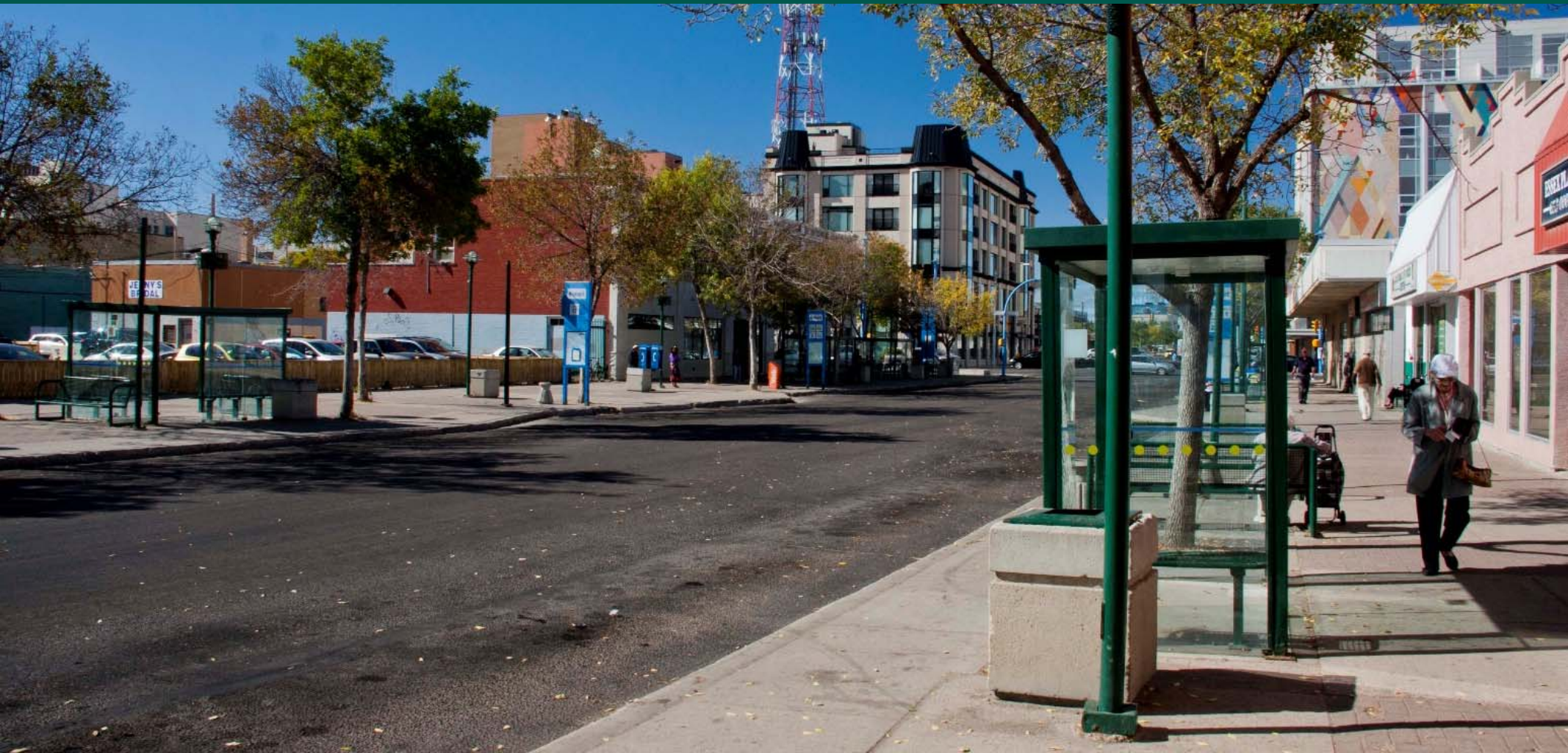
**Principle 7: Promote the economic well-being of both businesses and residents.**

Complete streets will be designed to encourage street activity by creating a place for people to socialize, deepening a sense of community. An urban street redevelopment project is a proven method for revitalizing an area and attracting new development. In turn, complete streets can boost the economic value for businesses and can increase property values for both business owners and residents, who are generally willing to pay more to live in walkable communities.

**Principle 8: Create public space within the street corridor.**

Complete streets can provide a space where people feel comfortable to congregate and, in some cases, form an extension of other public-oriented spaces.

## PART 3: Context



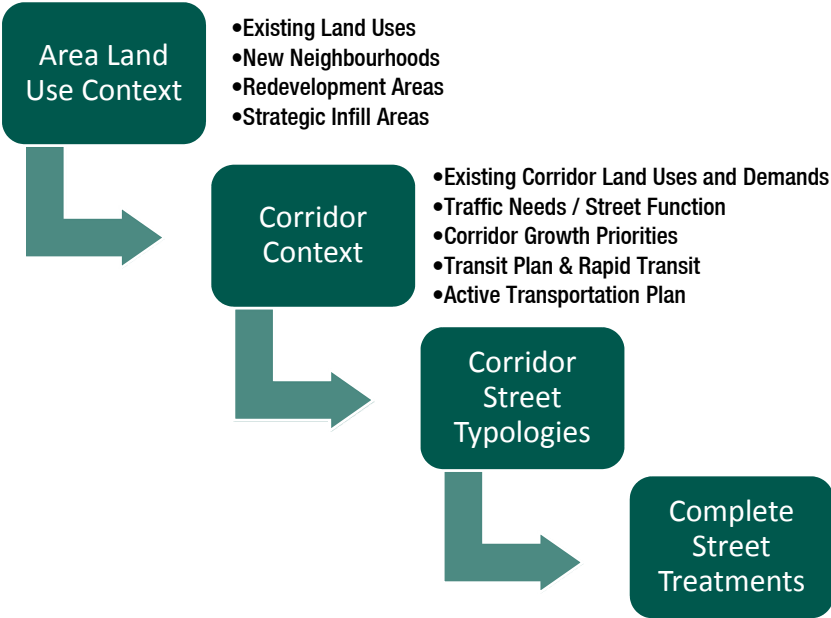
Community context is one of the most central, yet frequently overlooked, parameters in designing streets. Through implementation of **the Guide**, the City aims to ensure that the context of adjacent communities and future land uses are first understood, and then incorporated in the street design process, impacting the desired character of the public realm.

The context for complete streets in the long-term begins with what currently exists combined with the City’s current plans for communities that may include new suburban neighbourhoods, redevelopment areas and neighbourhood infill. The context also includes consideration of both area and corridor specific development plans that will shape aspirations for specific streets. Both area and corridor specific context may be used to define the functions that streets should serve and support – or typologies. The street typologies in turn provide guidance on priorities for each travel mode and subsequently shape the selection of complete street treatments.

Today, Saskatoon’s streets have been designed to support the growing needs for automobiles and heavy vehicles, particularly on major roadways. This approach has in turn affected how new and existing roadways are being designed, operated and maintained.

As a basis to consider streets differently, the City must not only incorporate complete street treatments, but also change how streets are planned and designed based on their ‘context’. A more holistic approach will shift the current emphasis away from traditional thinking of streets as a ‘utility’ within the community, aiming to advance priorities for transit, pedestrian and bicycle facilities. This is essential to advance aspirations for sustainable growth and mobility as presented in the **Growth Plan**.

This section of **the Guide** is intended to position ‘context’ as the foundational element of the City’s street design process moving forward.



**Figure 3 - Complete Streets Process Diagram**



### 3.1 What Exists Today

The City of Saskatoon is committed to realizing an increasingly sustainable community, with an enhanced quality of life consistent with the vision and core strategies of the City's Strategic Plan. Over time, the built form of the community has been shaped by a variety of sector plans, neighbourhood concept plans and local areas plans (**Figure 4**). In determining the context for complete streets, there is much that can be derived from the land uses, built form and transportation networks that exist today.

#### NUTANA LOCAL AREA PLAN

##### BROADWAY AREA MIXED USE



Figure 4 - Typical Local Area Plan

Consistent with many communities across North America, Saskatoon uses a conventional hierarchy of roadway classifications to design and operate streets. Freeways and expressways are designed to carry significant amounts of passenger cars and trucks across the City at higher speeds and do not generally support walking, bicycling or transit. Major and minor arterials accommodate large volumes of traffic between neighbourhoods with remaining space allocated to accommodate walking and bicycling. Collectors and local streets facilitate all modes of travel to, from and within neighbourhoods. **Figure 5** illustrates the existing roadway classification system in Saskatoon.

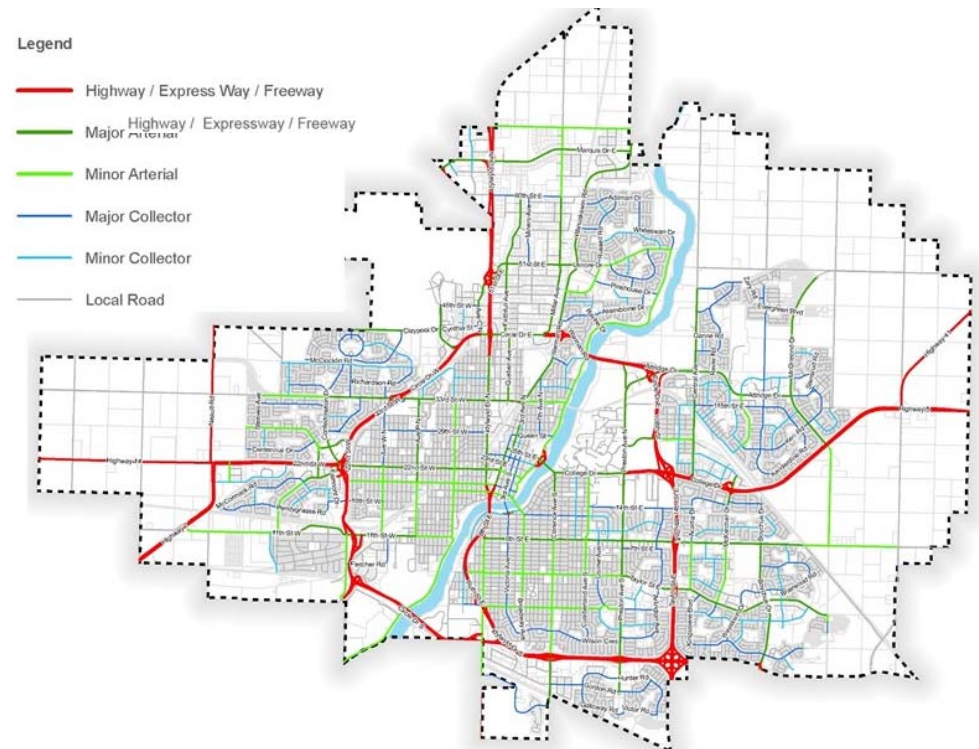
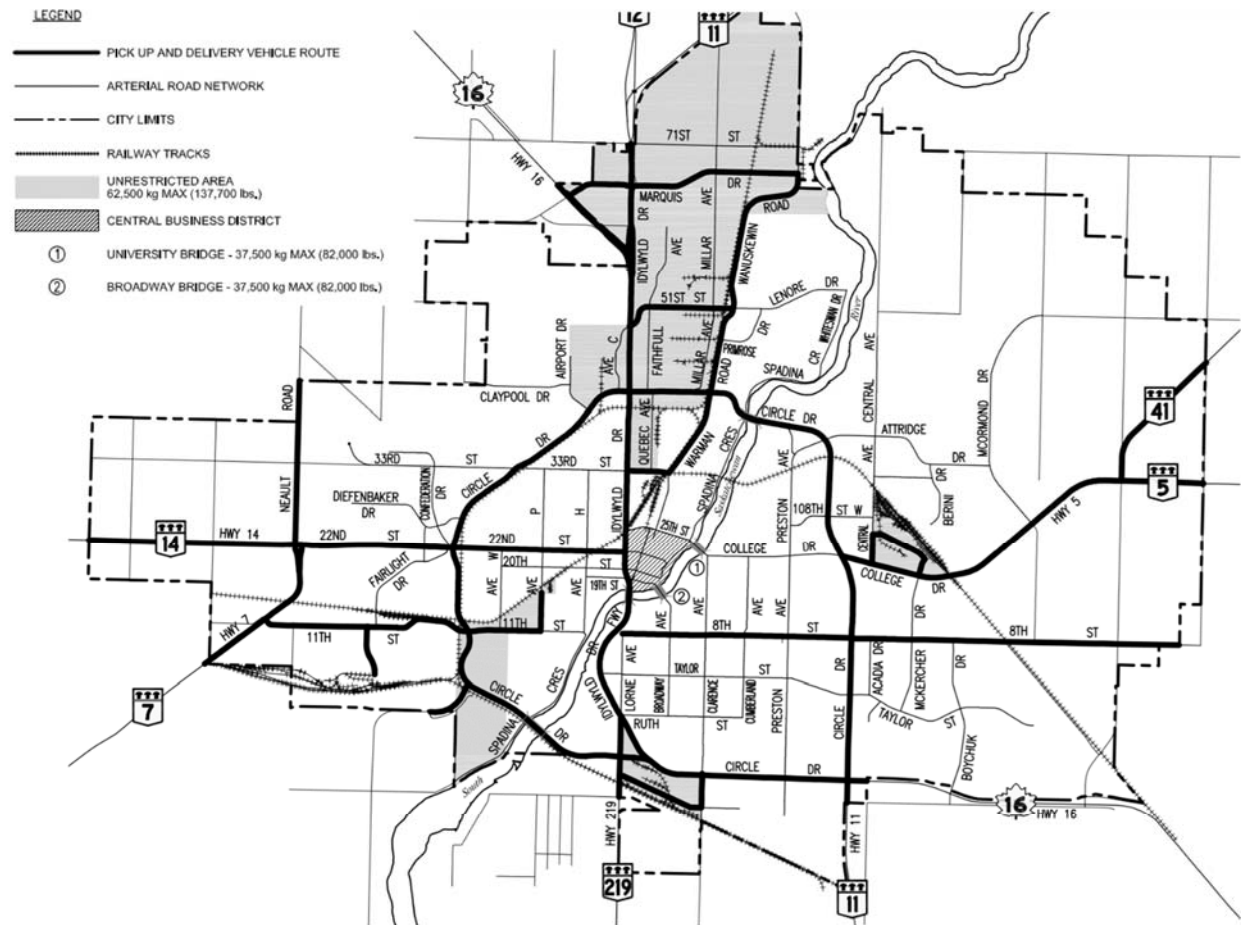


Figure 5 - Existing Street Classifications

Since most streets in Saskatoon have been classified based on their vehicle serving functions – such as daily traffic volumes and patterns – design decisions are meant to accommodate the largest vehicles and highest traffic volumes. For example, the expressways and major arterials in Saskatoon typically carry four to six lanes of traffic at higher speeds with wide travel lanes. Parking is restricted in favour of long-term mobility and safety for traffic. Provisions for walking, bicycling and transit have traditionally not been integral to the design and are at best given secondary consideration in capital projects for new and existing roadways. However, the City’s existing pedestrian, bicycling and transit facilities can inform the context of specific streets. The land uses that surround the corridor are considered as impacts on the roadway network rather than integral to the street design and treatments.

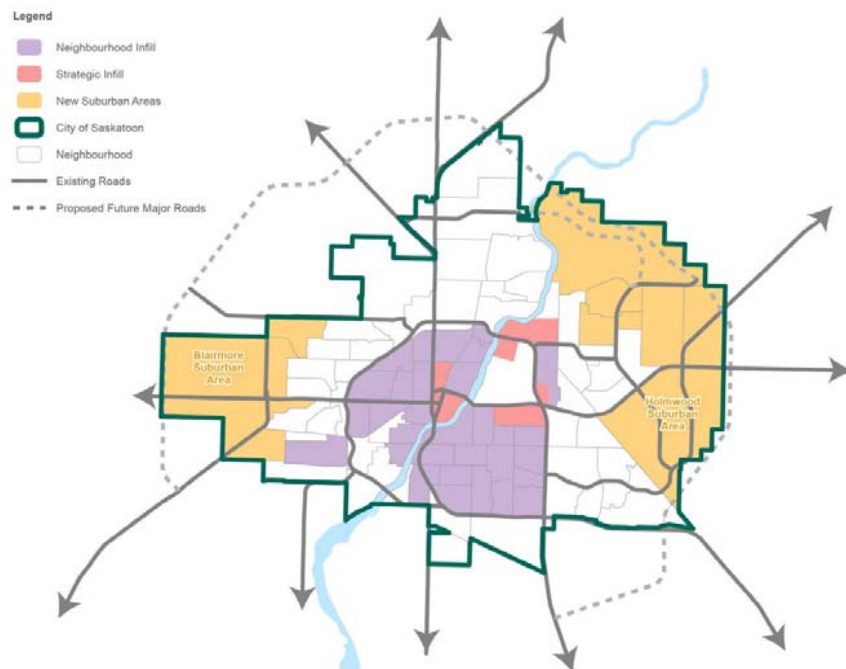
The safe and efficient movement of goods within and through the City is essential to economic development and the competitiveness of businesses within Saskatoon and the Region. The City’s major goods movements routes (**Figure 6**) are another key parameter to be considered in shaping needs considerations within the broader aspirations and context for major roads.



**Figure 6 - Pick Up and Delivery Vehicle Routes**

## 3.2 Future Street Context

The City has several clear and robust plans that will serve to shape area growth toward a population of half a million people within the existing municipal boundaries. In addition to the plans for new neighbourhoods in Blairmore, University Heights and Holmwood, the City has identified strategic infill areas for downtown, north downtown and the University of Saskatchewan where more compact, mixed-use growth is planned. The City has also developed an infill strategy to accommodate growth within established residential neighbourhoods where a higher mixture of uses is envisioned, and where major streets transition from barriers to becoming an integral part of the surrounding areas as shown in **Figure 7**.



**Figure 7 - Future Growth Areas**

The context for complete streets is to be drawn out of these plans. In many areas, major roadways are preserved to support mobility for vehicle travel with enhanced accommodations for walking and bicycling. In the urban centres of neighbourhoods and strategic growth areas, major roadways are an integral part of the planned community and must be designed to enable movement to thriving neighbourhoods. Increasingly, major roadways through these areas must support broader mobility needs that prioritize pedestrians, bicyclists and transit.

The more immediate contexts when considering complete street treatments are aspirations for corridor land uses and mobility. The **Growth Plan** provides further direction for more sustainable growth adjacent to major corridors across the City, as well as aspirations for walking, bicycling and transit mobility. The **Growth Plan** identifies aspirations for mobility along several corridors across the City in terms of accommodating transit, walking and bicycle facilities. To determine the context of the street in the design process, the following key features of the **Growth Plan** need to be considered:



**a. Corridor Growth:** This must be designed to advance the City's commitment toward sustainable growth and provide more vibrant places that bring communities together (**Figure 8**). The high and moderate priority growth corridors rely on streets that support a vibrant and integrated environment with land uses that provide for users of all modes. If street design does not respond to the context, many of these major corridors will remain auto-centric and unwelcoming to sustainable forms of redevelopment and travel.

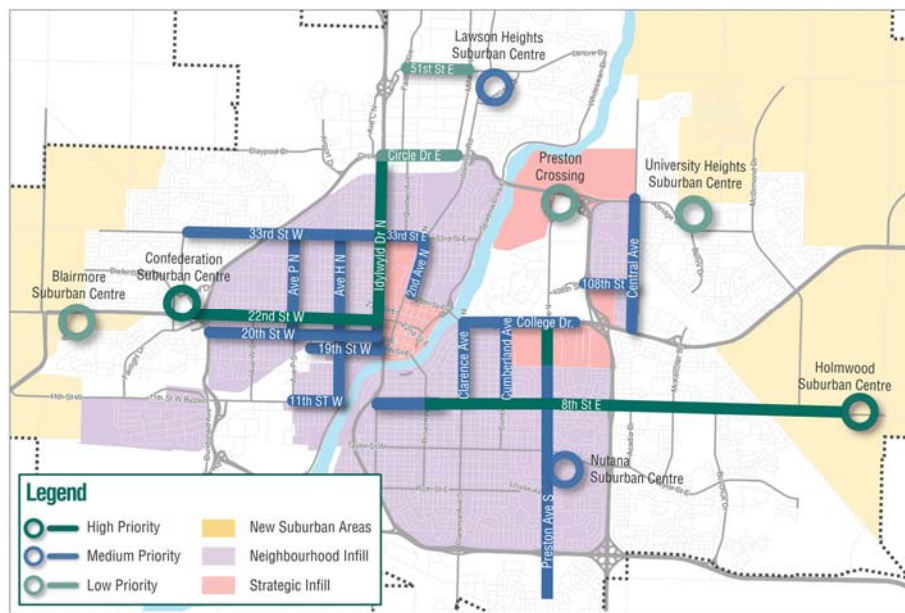


Figure 8 - Corridor Growth Priorities

**b. Bus Rapid Transit (BRT) and Frequent Transit Corridors:** Defined within the Transit Plan (**Figure 9**), they form the spine of the transit system and provide transportation choices for people travelling across the City. For the BRT plan to be successful, these corridors must be surrounded by transit-oriented land uses as envisioned in the **Growth Plan**. The corridors themselves must be comfortable and accessible for transit passengers as well as pedestrians, with attractive connections to the bicycle network.

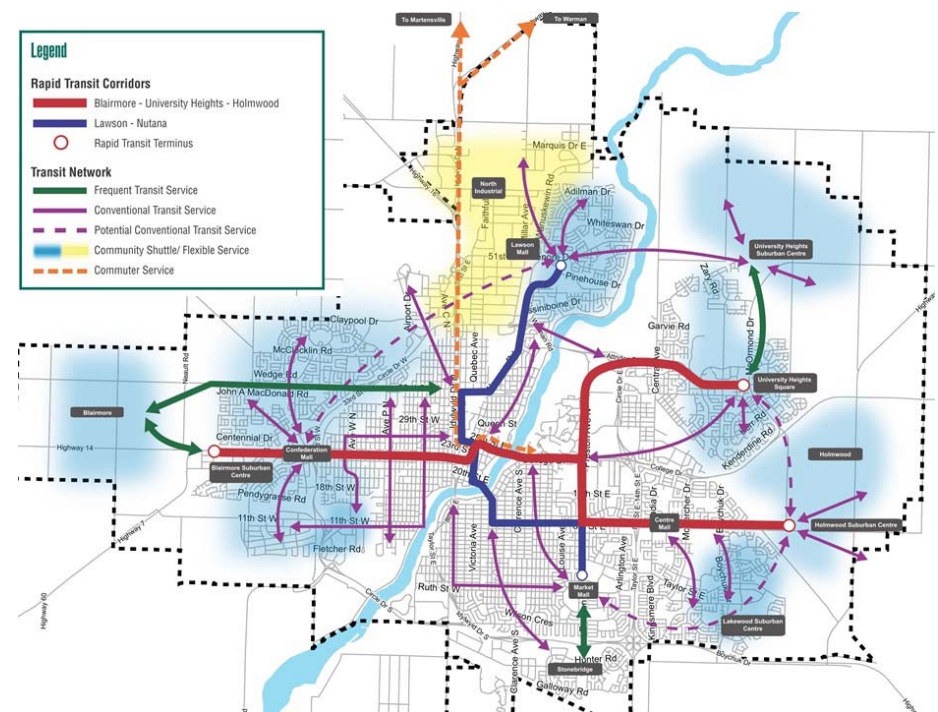
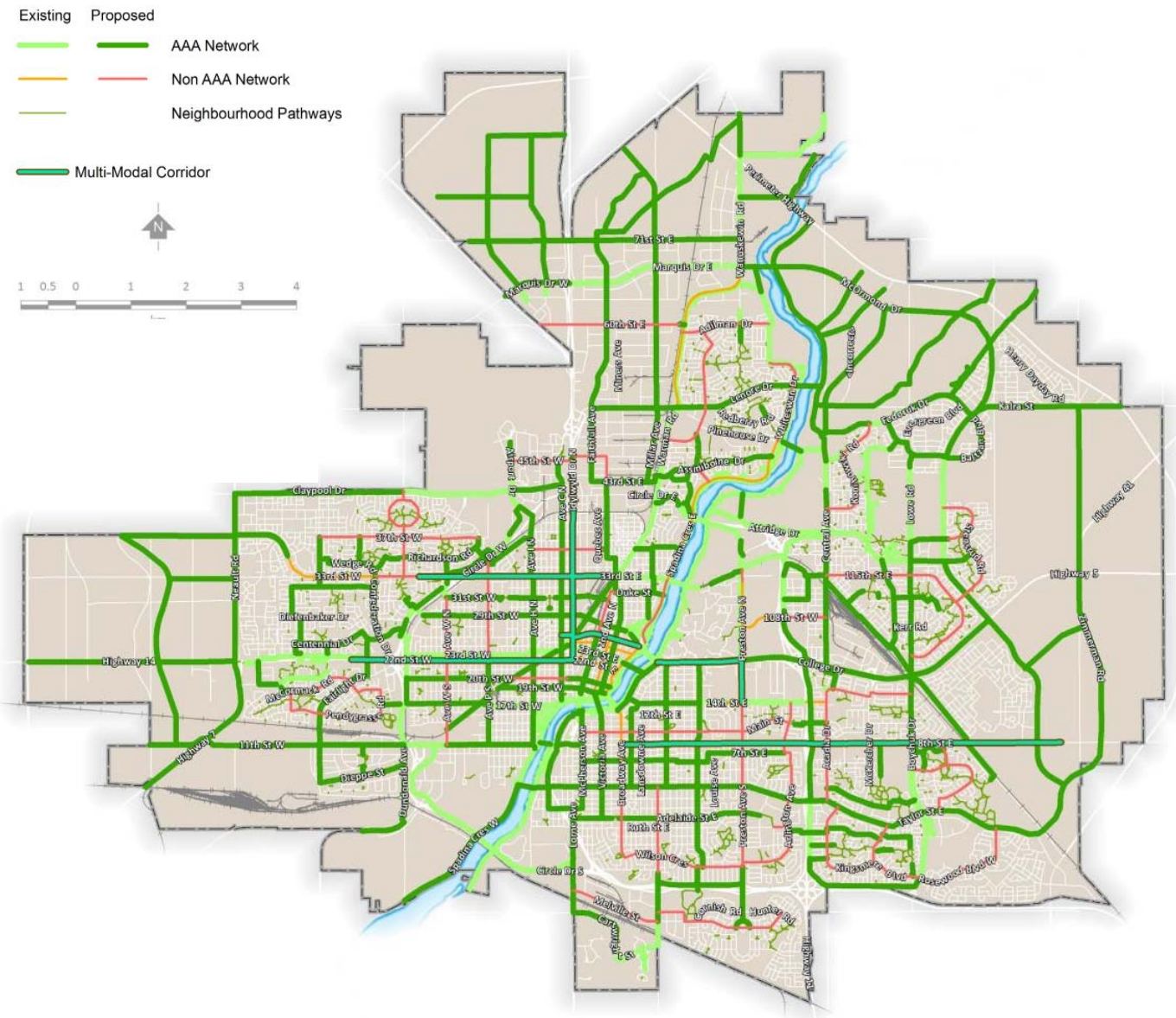


Figure 9 - Transit Plan

**c. Active Transportation Corridors:** To achieve many aspects of the **Growth Plan**, active transportation corridors are integral to success. The **Active Transportation Plan (AT Plan)** promotes walking and bicycling with a comprehensive plan of bicycle and pedestrian facilities across the City. An “All Ages and Abilities” (AAA) bicycle network supports bicycle facilities that are comfortable and attractive for all users and is identified in **(Figure 10)**.

Recognizing that everyone is a pedestrian for all or part of each trip they take (regardless of mode), the **AT Plan** also identifies sidewalk gaps on major roadways across the City as they exist today **(Figure 11)**. Higher vehicle volumes combined with speeds along these roadways – many of which include transit – create barriers to walking, particularly for more vulnerable persons like children, youth, seniors and people with physical and cognitive disabilities. More detailed maps can be found in the **AT Plan**.



**Figure 10 - All Ages and Abilities Bicycle Network**



- Recommended Sidewalks - Major Roads
- 2 Sidewalks Recommended
  - 1 Sidewalk Recommended
- Proposed Multi-Use Pathway Network
- Multi-Use Pathway
  - Proposed Multi-Use Pathway
- Hospitals
  - Library
  - Campground
  - Community Recreation
  - Park
  - School Sites
  - Commercial Districts
  - Institutional Districts



Figure 11 - Sidewalk Gaps on Major Roadways



### 3.3 Putting It All Together

As noted above, setting the context for a specific street or corridor is a process that starts with understanding the existing land uses and street classifications as well as the existing road, transit, bicycle and pedestrian networks – this is where the City is at today. Similarly, the process must also incorporate the City's plans to accommodate future growth and to evolve the transit, bicycle and pedestrian networks – this is where the City is going.

Putting it all together, the process of setting the context of the street involves the consideration of many different plans and technical inputs (**Figure 12**). In this way, the context of the street inherently places priority on the various land uses that are being served by the street as well as the travel modes that are required to make the street successful. The various combinations of land use and travel mode priority for the City's streets are defined through a suite of street typologies and are described further in **Section 4**.

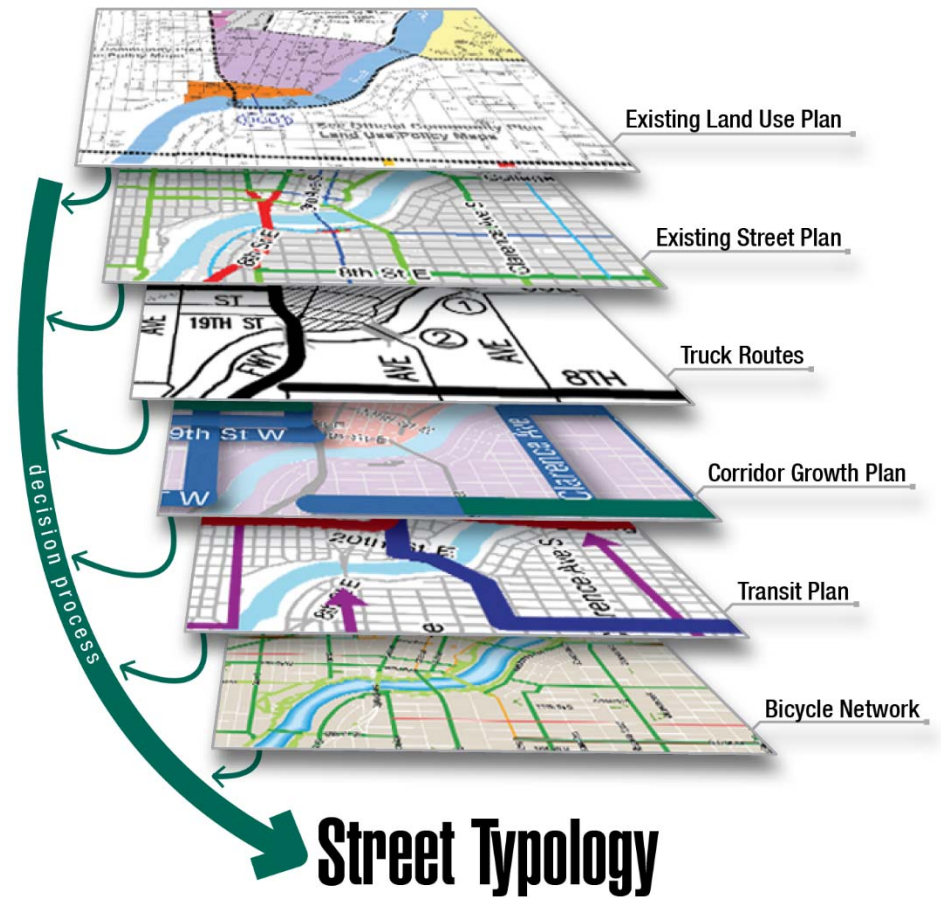


Figure 12 - Street Context Inputs

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## PART 4: Complete Street Typologies





Strengthening the connection between street designs, land use character, and their multi-modal functions is important to the success of this complete streets initiative. To bolster this, the City may consider a new typology of streets that goes beyond the traditional street classifications. Unlike the existing street classification system, these street typologies capture the differing land uses and multi-modal conditions and expectations that exist along many major corridors.

As land use character and transportation functions of most major corridors vary from one end to the other, so too should the design and operation of the street. Much like an urban main street, sections of 22<sup>nd</sup> Street inside Circle Drive are expected to support a greater scale, density and mixture of land uses along with BRT and a much-improved pedestrian environment. West of Circle Drive, however, 22<sup>nd</sup> Street will continue to be surrounded by lower density suburban land use patterns and accommodate higher volumes of traffic. All elements of the street and land uses that surround them should be designed and operated accordingly.

Rather than alter the existing street classification system, this section of **the Guide** outlines a set of street typologies that may be used to reimagine and rebalance priorities on all new and existing urban roadways in Saskatoon. The street typologies refine and add definition to the generalized existing functional classification system.

The governing features of the complete street typologies being considered for Saskatoon are briefly described in **Figure 13**.

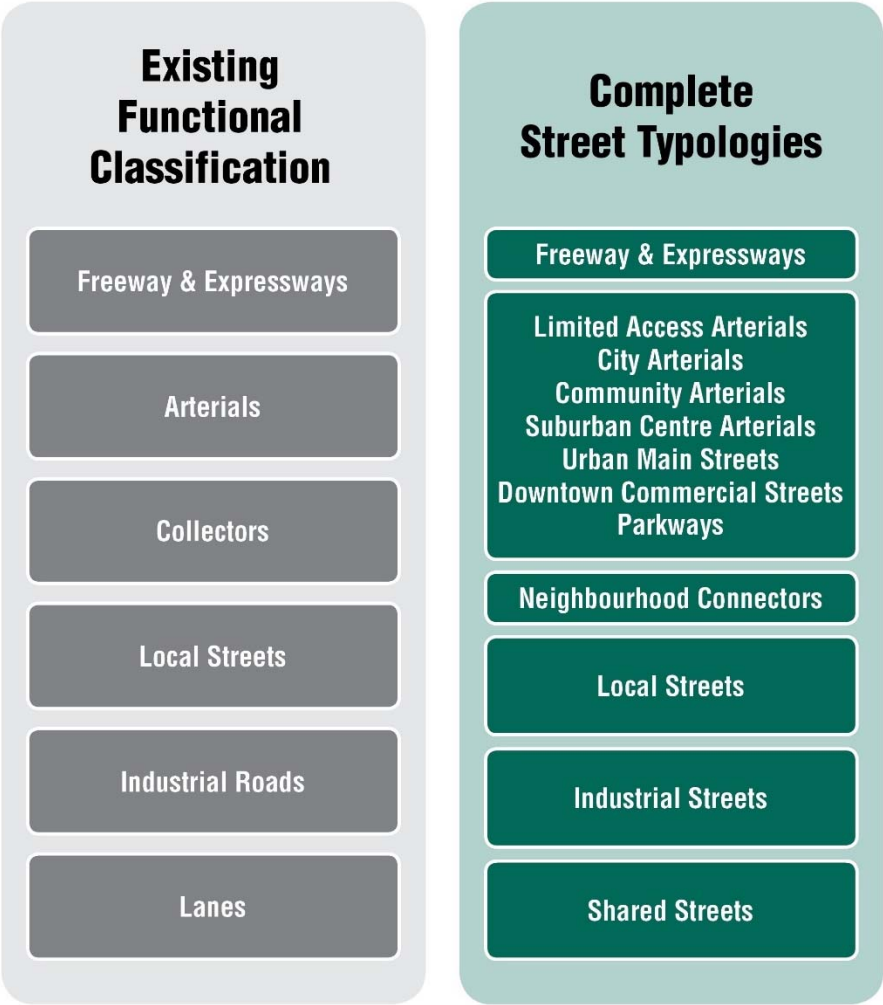


Figure 13 - Recommended Complete Street Typologies

When design is centred around the context of the surrounding area, it is important to identify the land uses that are being served and the modal priority that is required for the specific street. In this way, the role or purpose of the street is represented through the typology and the inherent prioritization of travel modes.

Figure 14 highlights the transportation modes and land uses that each street typology prioritizes.

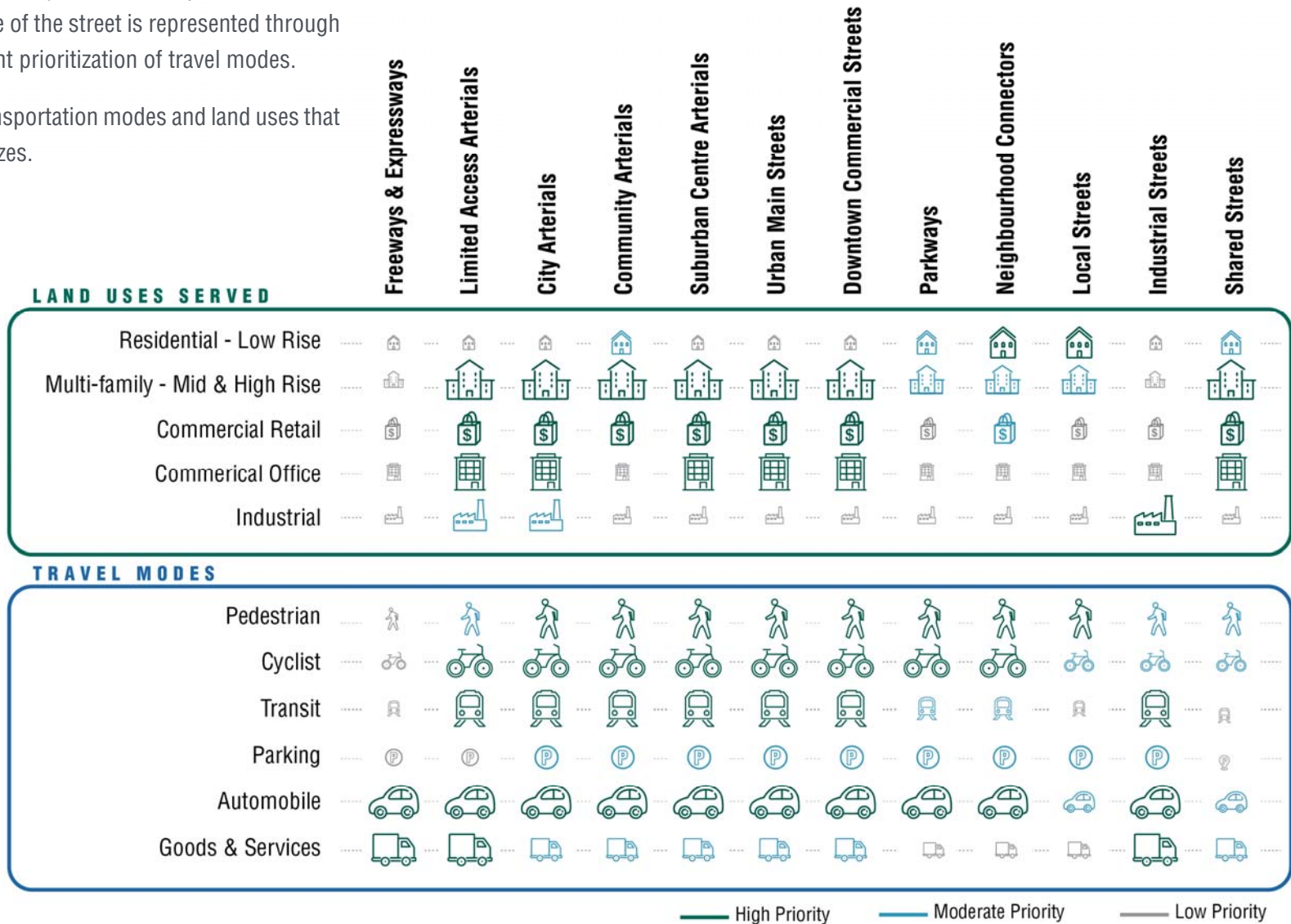


Figure 14 - Principle Features for Each Street Typology


## FREEWAYS AND EXPRESSWAYS

Designed to support large volumes of traffic, freeways and expressways move vehicles to, from and through the city, rather than supporting or integrating with the localized land use patterns that surround them. This is generally achieved with several travel lanes and grade-separated interchanges providing connections to other freeways and expressways, city arterials, and limited access arterials.

They function as a primary route for passenger cars and heavy vehicles, and are essential for the reliable and safe movement of people, goods and services that support the economy of Saskatoon and the surrounding area. These roadways are largely located outside the established urban areas of the city and have large buffers or right-of-ways that separate them from surrounding land uses. As development increases around these areas, the main function of this typology should always be vehicle movement.

### LAND USES SERVED

Residential - Low Rise ... 

Multi-family - Mid & High Rise ... 

Commercial Retail ... 

Commercial Office ... 

Industrial ... 

### TRAVEL MODES

Pedestrian ... 

Cyclist ... 

Transit ... 

Parking ... 

Automobile ... 

Goods & Services ... 

### Land Uses

Separated with large buffer areas

### Modes of Travel

Passenger cars and heavy vehicles

Limited or no access for pedestrians and bicyclists

Multi-use pathways for pedestrians and bicyclists

### Access

Freeways, Expressways, and City Arterials

No access to minor roads or individual properties

### Built Form

Developments front away from right-of-way or are set back significantly

Sound barriers should be considered adjacent to residential land use

### Examples

Idylwyld Freeway south of 19th Street

Circle Drive east of the river

College Drive east of Preston Avenue



Figure 15 - Freeway & Expressway Typology Example



## LIMITED ACCESS ARTERIALS

Limited access arterials are intended to connect the communities of Saskatoon, serving travel across the city, and providing connections to and from freeways and expressways and other major roadways. They serve large volumes of passenger cars and trucks throughout the day. In most cases, these corridors will support rapid transit services and facilities – such as bus only lanes – carrying passengers across the city. Attractive and accessible connections will be required to planned park-and-ride lots and rapid transit stations nearby limited access arterials.

Most limited access arterials will remain separated from the land uses that surround them with buffered areas in the form of greenspace in some suburban and urban areas of the city.

<b>Land Uses</b>	Retail, office, and residential
<b>Modes of Travel</b>	Passenger cars, heavy vehicles, and buses Multi-use pathways or sidewalks and protected bicycle lanes for pedestrians and bicyclists
<b>Access</b>	Community and Suburban Centre Arterials Limited access to individual properties
<b>Built Form</b>	Buffer provided between street and development Building orientation does not prioritize the street
<b>Examples</b>	Preston Avenue north of College Drive 22 <sup>nd</sup> Street west of Circle Drive Attridge Drive

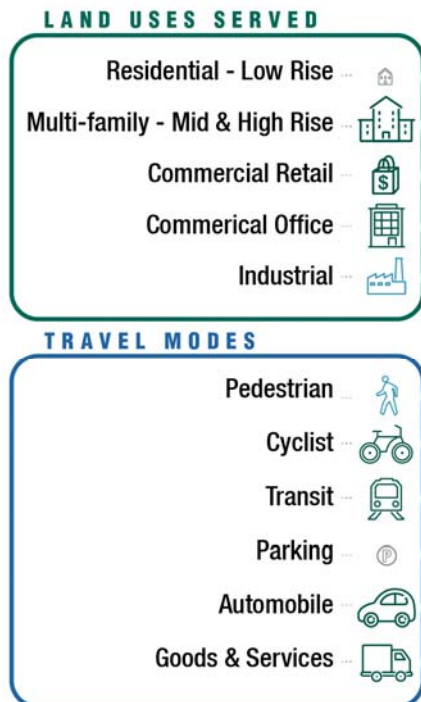
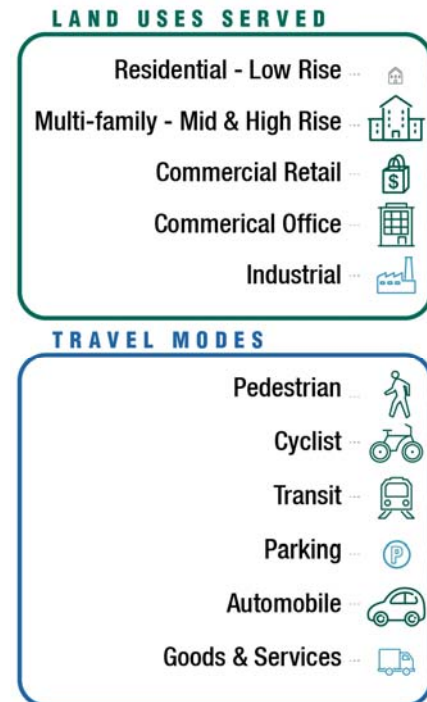


Figure 16 - Limited Access Arterial Example

## CITY ARTERIALS

Intended to connect communities of Saskatoon, city arterials serve travel between the neighbourhoods and provide connections to and from freeways and expressways, serving large volumes of passenger cars and trucks. In many cases, they will include frequent transit services to local area land uses and travel across the city. In these cases, transit facilities should be accessible and attractive for people of all ages and abilities throughout the year.

Unlike limited access arterials, city arterials will maintain connections to surrounding land uses.



### Land Uses

### Modes of Travel

### Access

### Built Form

### Examples

Integrated with mixture of retail, office, and residential

Passenger cars and heavy vehicles

If transit is present, priority treatments required for stations and stops

Multi-use pathways or sidewalks and protected bicycle lanes for pedestrians and bicyclists

Community and Suburban Centre Arterials

Access to individual properties to be managed

Buildings should be street-oriented

Building orientation could back the street but pedestrian linkages would be present

Idylwyld Drive between 20<sup>th</sup> and 38<sup>th</sup> Street

25<sup>th</sup> Street east of Idylwyld Drive

Central Avenue south of Attridge Drive



Figure 17 - City Arterial Example



# COMMUNITY ARTERIALS

Community arterials serve travel needs between neighbourhoods in Saskatoon, rather than intra-city travel patterns. This street type is largely surrounded by and supports residential land uses, with small commercial nodes that are designed to serve local community needs.

Community arterials are designed to serve moderate volumes of traffic and support frequent, conventional and neighbourhood transit services. In many cases, these streets also form the spine of the active transportation system in Saskatoon with attractive and accessible pedestrian and bicycle facilities.

Land Uses	Medium to low density residential with commercial nodes
Modes of Travel	Passenger cars and transit Dedicated space for pedestrians and bicyclists Bicycle lanes and wide sidewalks Secondary route for delivery vehicles
Access	Other Arterials, Neighbourhood Connectors and Local Streets Direct access to adjacent land uses
Built Form	Residential buildings fronting the street Commercial nodes typically set back from the street with parking in front
Examples	Broadway Avenue south of 8 <sup>th</sup> Street Taylor Street Avenues H, P, and W

LAND USES SERVED

- Residential - Low Rise
- Multi-family - Mid & High Rise
- Commercial Retail
- Commerical Office
- Industrial

TRAVEL MODES

- Pedestrian
- Cyclist
- Transit
- Parking
- Automobile
- Goods & Services



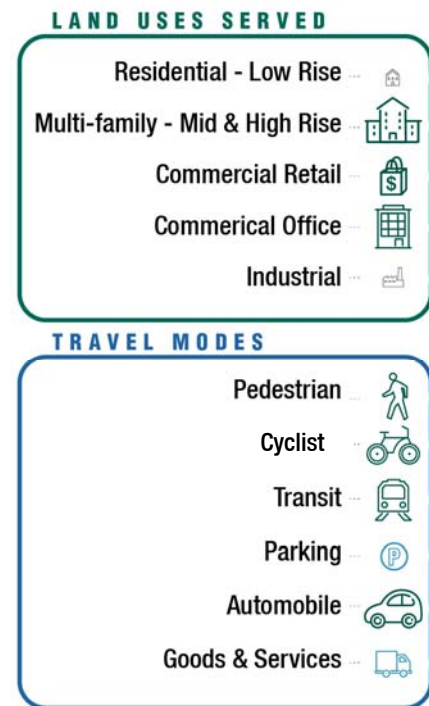
Figure 18 - Community Arterial Example



## SUBURBAN CENTRE ARTERIALS

These are intended to support access to, from and within designated suburban centres from all areas of the city. Although most of these streets are generally auto-centric today, they need to provide multi-modal connections within suburban centres for large numbers of people walking, bicycling, driving and using transit. These street types will support frequent, and in some cases rapid, transit services planned for the city where dedicated lanes and unique stations may be integral to the corridor design.

Over time, land uses along suburban centre arterials may be closer to the street, but likely remain buffered by greenspace, sidewalks as well as multi-use pathways.



<b>Land Uses</b>	Surrounded by commercial, retail, and office with medium density residential
<b>Modes of Travel</b>	Passenger cars, frequent or rapid transit with transit priority treatments Dedicated pedestrian and bicycling facilities required
<b>Access</b>	Other Arterials, Neighbourhood Connectors and Local Streets Some access to larger parcels, other access through side streets
<b>Built Form</b>	Buildings located close to street, buffered by and integrated with greenspace and sidewalks
<b>Examples</b>	Primrose Drive Confederation Drive south of Milton Street McEown Avenue



Figure 19 - Suburban Arterial Example

## URBAN MAIN STREETS

Urban main streets will serve as the nucleus of local neighbourhoods and economies, providing residents with daily essentials that include businesses and services of all varieties. These streets are required to bring communities together, rather than function as barriers within them, therefore they need to support a vibrant public realm with street facing land uses.

Urban main streets may be of varying length and designed to prioritize walking, bicycling, transit, and in some cases, will accommodate short-term parking and loading for local shops and restaurants. In many areas, they will support the frequent and rapid transit services planned for Saskatoon. It is therefore essential that the street be accommodating to transit-oriented land use designs, with dense, mixed-uses surrounding the corridor and ground floor commercial retail uses.

### LAND USES SERVED

- Residential - Low Rise ... 
- Multi-family - Mid & High Rise ... 
- Commercial Retail ... 
- Commercial Office ... 
- Industrial ... 

### TRAVEL MODES

- Pedestrian ... 
- Cyclist ... 
- Transit ... 
- Parking ... 
- Automobile ... 
- Goods & Services ... 



Figure 20 - Urban Main Street Example

### Land Uses

Medium-density commercial, retail, office, and residential

### Modes of Travel

Passenger cars and heavy vehicles permitted

Priority treatments for pedestrians and bicyclists

Along BRT corridors, dedicated bus lanes are essential with transit stations

### Access

Other Arterials, Neighbourhood Connectors and Local Streets

No direct vehicle access to land uses

### Built Form

Buildings located close to and fronting street,

### Examples

Broadway Avenue north of 8<sup>th</sup> Street

20<sup>th</sup> Street between Avenue E and Idylwyld Drive



# DOWNTOWN COMMERCIAL STREETS

In Saskatoon, downtown commercial streets are concentrated in the City Centre and North Downtown areas and serve one of Saskatoon’s primary employment areas, with a growing mixture of residential, retail and office land uses.

Although these streets can serve regional travel and their designs should support large volumes of traffic as well as frequent and rapid transit services, the streets themselves must be comfortable and accessible for people throughout the day and night. These downtown areas and streets are comprised of short blocks with crossings at intersections and mid-blocks as required.

The street design should reflect the character of the land uses and building architecture that surrounds downtown commercial streets.

Land Uses	Medium to high density mixed-use commercial, retail, office, and high density residential
Modes of Travel	Passenger cars and rapid transit with stations and priority treatments
Access	Priority treatments for pedestrians and bicyclists Closely spaced cross-streets and laneways or shared streets
Built Form Examples	No direct vehicle access to land uses Buildings located close to and fronting street Downtown Avenues including 1 <sup>st</sup> , 2 <sup>nd</sup> , 3 <sup>rd</sup> , and 4 <sup>th</sup> Downtown Streets 21 <sup>st</sup> , 22 <sup>nd</sup> , 23 <sup>rd</sup> , and 25 <sup>th</sup>

LAND USES SERVED

- Residential - Low Rise
- Multi-family - Mid & High Rise
- Commercial Retail
- Commercial Office
- Industrial

TRAVEL MODES

- Pedestrian
- Cyclist
- Transit
- Parking
- Automobile
- Goods & Services



Figure 21 - Downtown Commercial Street Example



## PARKWAYS

Generally characterized by long, uninterrupted stretches of roadway running alongside Saskatoon's open space corridors such as the South Saskatchewan River, parkways provide space for and support an extensive greenway system with trees that line much of the corridor.

With longer stretches of uninterrupted flow for traffic, it is essential to provide safe and accessible crossing locations for pedestrians and bicyclists. With limited land uses that directly surround parkways, transit is not typically provided along these corridors.

### Land Uses

### Modes of Travel

### Access

### Built Form

### Examples

Park space and greenway

Passenger cars

Multi-use pathways along corridor or sidewalks and bike lanes for pedestrians and bicyclists


Limited or no access to adjoining land uses

Few buildings with many trees

Spadina Crescent


Saskatchewan Crescent

#### LAND USES SERVED

Residential - Low Rise ... 

Multi-family - Mid & High Rise ... 

Commercial Retail ... 

Commercial Office ... 

Industrial ... 

#### TRAVEL MODES

Pedestrian ... 

Cyclist ... 

Transit ... 

Parking ... 

Automobile ... 

Goods & Services ... 



Figure 22 - Parkway Example

# NEIGHBOURHOOD CONNECTORS






Neighbourhood connectors are through streets that traverse several neighbourhoods, carrying traffic within and between communities, and forming the spine of the walking and bicycling facilities connecting residential areas.

Neighbourhood connectors must balance the flow of people between neighbourhoods, and their street characteristics may be different across the City. They should generally be two lane roadways with comfortable and accessible pedestrian facilities as well as dedicated or shared space for bicyclists. Intersections should be designed for the comfort and safety of pedestrians and bicyclists.

Neighbourhood connectors will serve both conventional and community bus services connecting users to frequent and rapid transit corridors.

Land Uses	Low density residential with some connection to commercial activity
Modes of Travel	All modes with priority for pedestrians and bicyclists
Access	Local streets, arterials Driveway access
Built Form	Residential setbacks apply
Examples	29 <sup>th</sup> Street West Stensrud Road Wilson Crescent

**LAND USES SERVED**

- Residential - Low Rise ... 
- Multi-family - Mid & High Rise ... 
- Commercial Retail ... 
- Commerical Office ... 
- Industrial ... 

**TRAVEL MODES**







- Pedestrian ... 
- Cyclist ... 
- Transit ... 
- Parking ... 
- Automobile ... 
- Goods & Services ... 



Figure 23 - Neighbourhood Connector Example



# LOCAL STREETS

Typically surrounded by and providing access to residential land uses, local streets are perhaps the most abundant street type in the city, serving local trips, and characterized by having lower volumes of traffic traveling at slower speeds. These street types contribute toward the quality of life for area residents and are designed to maintain slow speeds as the streets are places to walk, bike and even play. Local streets provide connections to nearby parks and other community services as well as transit stops on the connector and arterial roadway system.

Local streets are generally narrow and do not serve through traffic. They are no more than two travel lanes with parking on one or two sides, depending on the road width.

Land Uses	Single and low density multi-family residential
Modes of Travel	Passenger cars with priority for pedestrians and bicyclists
Access	Neighbourhood Connectors, Arterials, Urban Main Streets
	Full driveway access
Built Form	Residential setbacks apply

LAND USES SERVED

- Residential - Low Rise
- Multi-family - Mid & High Rise
- Commercial Retail
- Commerical Office
- Industrial

TRAVEL MODES

- Pedestrian
- Cyclist
- Transit
- Parking
- Automobile
- Goods & Services



Figure 24 - Local Street Example



## INDUSTRIAL STREETS

Providing access to and from the City's industrial areas, industrial streets are essential to support movement of goods and access for people working in these areas. These streets are essential for the City's economy both in established urban areas and the expanding North Industrial Area. They also need to provide transportation choices for area employees. Industrial zoning permits commercial and other land uses intended to support area businesses and industrial uses.

Industrial streets must generally support larger vehicles influencing the road width and turning radius at intersections. Additionally, these areas must be supported with attractive transit service and bicycling facilities, in addition to supporting comfortable and accessible pedestrian facilities.

When designing industrial streets, careful attention should be given to discourage and minimize cut-through traffic on nearby residential streets.

### Land Uses

### Modes of Travel

### Access

### Built Form

### Examples

Light and heavy industrial

Heavy vehicle access is critical

Buffered pedestrian and bicycle facilities

Transit and sidewalk on both sides of street

Full access to abutting properties

Buildings set back from the street


Cynthia Street

Faithfull Avenue

Millar Avenue

#### LAND USES SERVED

Residential - Low Rise ... 

Multi-family - Mid & High Rise ... 

Commercial Retail ... 

Commercial Office ... 

Industrial ... 

#### TRAVEL MODES

Pedestrian ... 

Cyclist ... 

Transit ... 

Parking ... 

Automobile ... 

Goods & Services ... 



Figure 25 - Industrial Street Example

# SHARED STREETS

Shared streets are provided in both residential as well as the downtown areas of Saskatoon. Within the downtown area, they provide access for service delivery vehicles, and support increasing numbers of walking and bicycling trips. Shared streets are used to access commercial buildings, office buildings, high rise residences, entertainment venues, and restaurants.

With their narrow width and limited delineation, shared streets are designed for slower speeds where all modes can safely intermingle. In the established downtown areas, street furnishings may be used to create attractive people places and increase street activity. In some cases, access to shared streets may be discouraged by passenger cars, with exceptions for taxis and other commercial vehicles. In residential areas, they provide access to rear yards and allow for service vehicles. They have not been designed for all users, but function as such.

<b>Land Uses</b>	High density commercial retail, office, and residential
<b>Modes of Travel</b>	Passenger cars, heavy vehicles, pedestrians, and bicyclists
<b>Access</b>	Full access to abutting properties
<b>Built Form</b>	Buildings located on or very close to property line

**LAND USES SERVED**

- Residential - Low Rise ...
- Multi-family - Mid & High Rise ...
- Commercial Retail ...
- Commercal Office ...
- Industrial ...

**TRAVEL MODES**

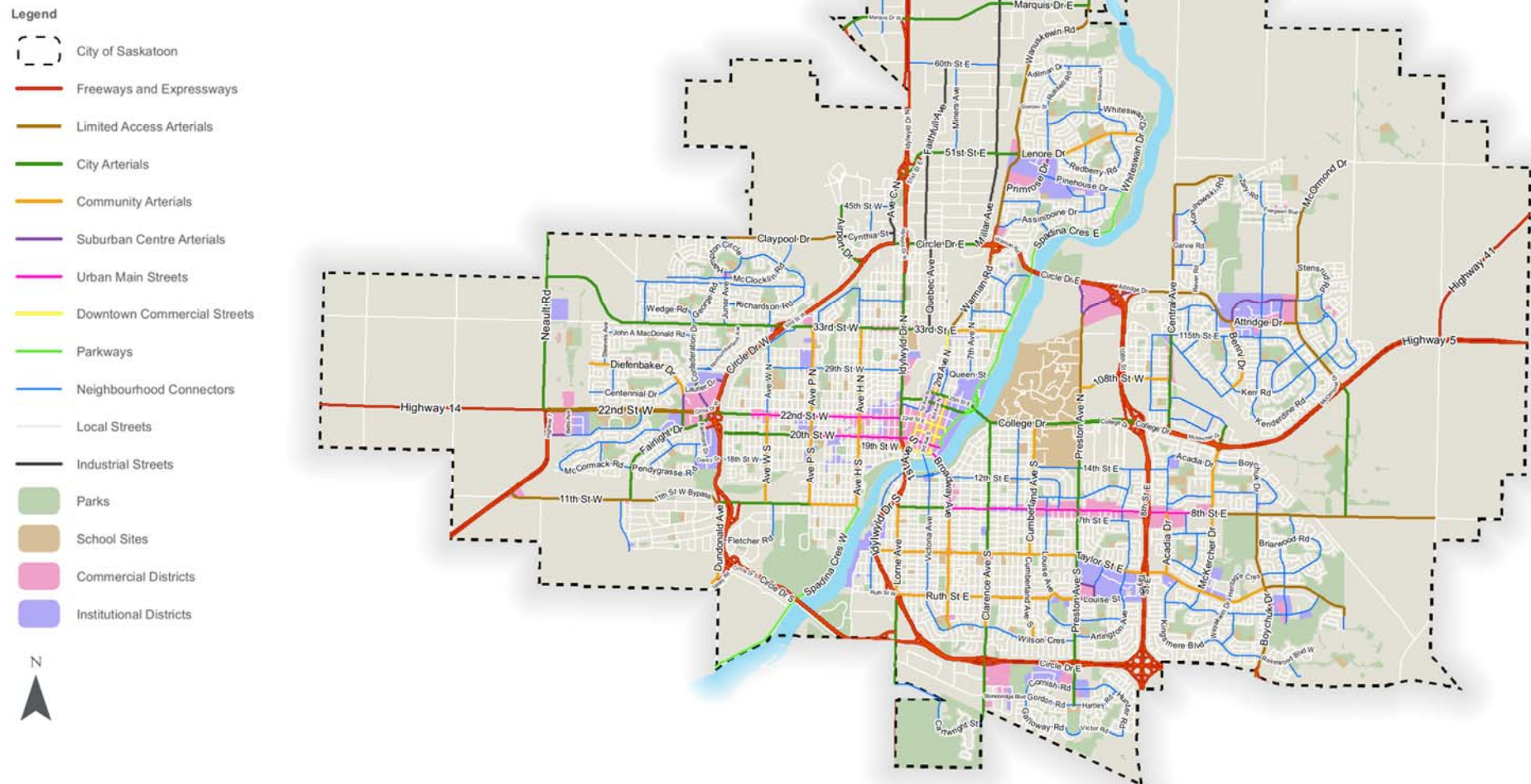
- Pedestrian ...
- Cyclist ...
- Transit ...
- Parking ...
- Automobile ...
- Goods & Services ...



Figure 26 - Shared Street Example



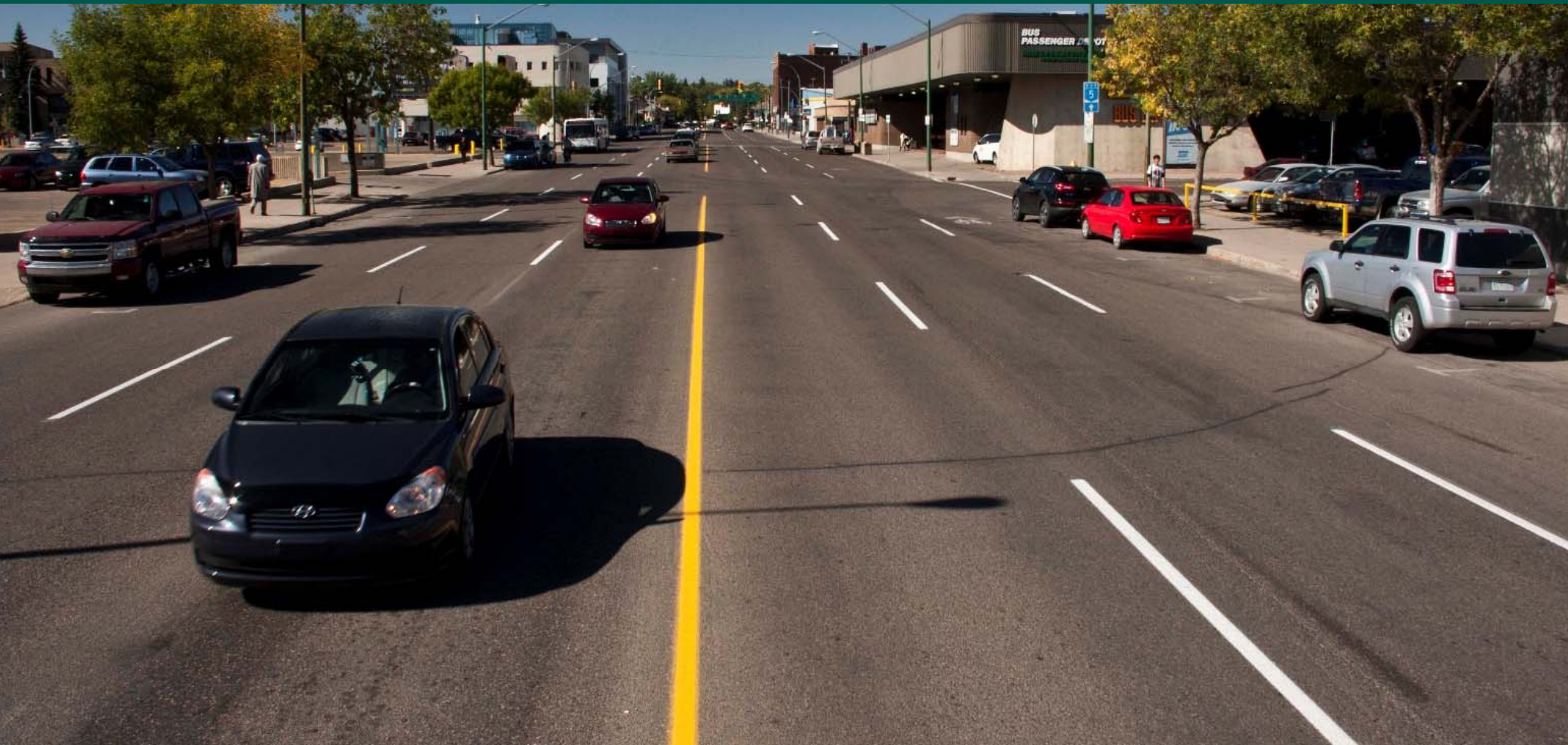
For context purposes only, the street typologies that reflect specific functions for corridors as outlined in the **Growth Plan** have been broadly assigned to the City's existing roadway network and illustrated in **Figure 27**. In this regard, the street treatments described in **the Guide** may be applied to these street typologies when making capital investments or roadway rehabilitation as well as through redevelopment. The City should reference these street typologies when considering reclassification of the existing and new neighbourhood street systems.



**Figure 27 - Potential Street Typologies**



# PART 5: Toolkit for Complete Street Design



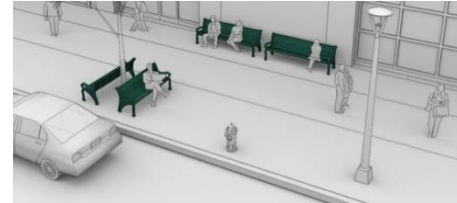
The design of streets in Saskatoon has evolved over the last 100 or so years. At one time, streets were designed for people to get around by streetcar, walking and bicycling. Street fronts and the uses that surrounded them were very much integrated with each other. As the City has grown, more and more people are driving and with vehicles increasing in size – particularly light and heavy trucks – street designs have become less friendly to people walking, bicycling and using transit. Additionally, land uses that surround these auto-centric corridors have turned away from the streets that serve them. With these land use patterns and street designs, fewer people are present on many of the major streets of Saskatoon.

Achieving the City's aspirations for sustainable growth, vibrant streets and a multi-modal transportation system requires a shift in how new streets are being built and changing the design of existing streets in Saskatoon. Within established areas of the City, roadways need to be redesigned over time through capital improvements focused on implementation of treatments for alternative modes. Completely rebuilding streets in Saskatoon to achieve a shift in modes is neither realistic nor practical. However, a 'toolkit' of complete street treatments may be used as a guide to achieve certain outcomes with certain street typologies.

This section of **the Guide** highlights some of the most important complete street treatments that will be critical to Saskatoon's success. The discussion of individual treatments is organized into three parts, including sidewalks (between the edge of curb and building or right-of-way), streets (between the street curbs) and intersections as summarized in **Figure 28**. For each treatment, conceptual illustrations are provided along with a description of the treatment and any specific design guidance and considerations for application in Saskatoon.

### I. Sidewalks

- ✓ Sidewalk Areas
- ✓ Other Sidewalk Treatments



### II. Streets

- ✓ Minimum Desired Lane Widths
- ✓ Transit Lanes
- ✓ Bicycle Facilities
- ✓ Neighbourhood Street Treatments
- ✓ Alternative Curbside Treatments



### III. Intersections

- ✓ Intersection Geometry
- ✓ Pedestrian Facilities
- ✓ Bicycle Facilities
- ✓ Transit Priority



**Figure 28 - Essential Complete Street Treatments**

## 5.1 Sidewalks

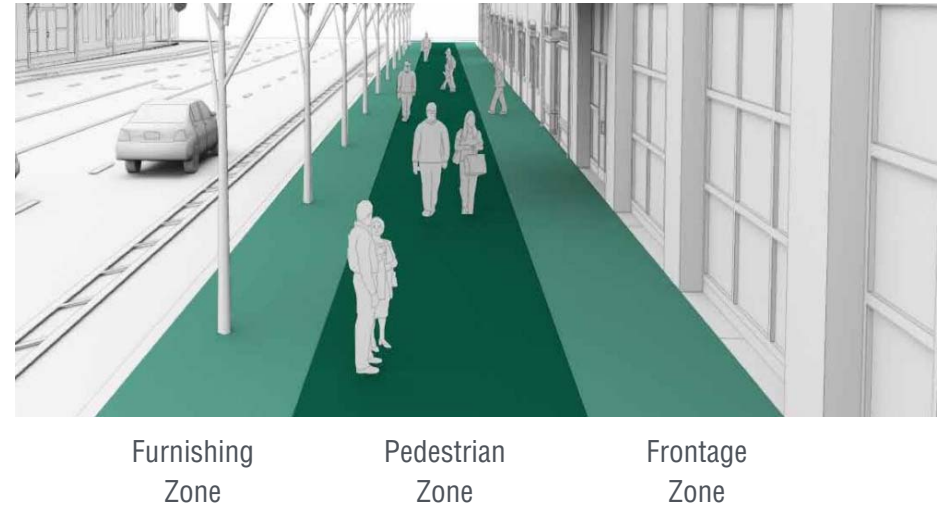
Every trip begins and ends with or is entirely made by walking. In their most basic form, sidewalks play a vital role in encouraging and facilitating people of all ages and abilities to get around the City. They can support a vibrant public realm and create a sense of place for people to interact, as well as connecting people on the street with adjacent land uses and enable us to use other modes such as bikes and cars as well as transit. Transit relies on an accessible and attractive sidewalk system to get passengers safely to and from their bus.

As part of the public realm, sidewalks will contribute to the vibrancy of urban areas in the City. They must be safe, comfortable and attractive to encourage people to linger and participate in face-to-face activities that in turn can support the businesses and community as a whole. Using the principles below, **the Guide** sets a high standard for accessibility, safety, comfort, aesthetics and environmental protection.

- ✓ **Accessible to All.** Regardless of age or physical ability, sidewalk areas and crossings must be supportive of people walking, using mobility aids, and/or pushing strollers. They must have continuous, unobstructed pathways for everyone to move.
- ✓ **All Weather Access.** Sidewalks should be capable of providing areas of shade during warmer months of the year and have neighbouring space for snow storage during winter periods.
- ✓ **Public Realm Opportunities.** Sidewalk areas can provide space beyond the walking realm for everything from benches and cafes to trees and awnings for sun protection.

### 5.1.1 Sidewalk Areas

Sidewalk area design must consider three sidewalk zones in terms of both size and allocation of space. Consistent with the street typologies, these choices must be influenced by the desired land use and transportation outcomes. **Figure 29** illustrates the three sidewalk zones that are briefly described below: Frontage Zone, Pedestrian Zone and Furnishing Zone.



**Figure 29 - Sidewalk Areas**

- The **Frontage Zone** is the interface between buildings and the walking area on the sidewalk. On some street types, these zones can provide space for cafes, plazas and greenspace in front of buildings. This added space to the sidewalk area can be used to enhance activity and vibrancy of urban streets in the downtown area and urban centres across the City. On many streets, the frontage zone may include room for the installation of, and access to, the curb stop and other utilities.



- The **Pedestrian Zone** is identified by the sidewalk area, providing accessible, unobstructed space for people to move along the street. The sidewalk areas are typically made of concrete and the width should vary depending on the anticipated pedestrian activity. For accessibility, the minimum width of the pedestrian zone should not be less than **1.8m**.
- The **Furnishing Zone** provides buffer area between the Pedestrian Zone and street to increase the comfort and safety of pedestrians. This zone can also be used to support landscaping, snow storage, amenities and other active street furnishings such as seating, lighting, bike parking, etc. In the absence of a frontage zone this zone may be required to include utility access.

Although the allocation of sidewalk space must be considerate and supportive of accommodating desired modes of travel, the design must also be complementary to the land use character that immediately surrounds the corridor and desired public realm along the street. The following descriptions highlight the desirable allocation of sidewalk areas in general terms for each street typology. These guidelines can be used to refresh design standards for new and existing streets in Saskatoon. It should be noted that sidewalk areas are not provided on freeways and expressways or shared streets typologies, and thus not described in **the Guide**.

## LIMITED ACCESS ARTERIALS

City arterial streets (limited access) in Saskatoon support large volumes of higher speed traffic across the City. Land uses surrounding the corridor are often set back from these major streets and pedestrian access is generally along side streets. Sidewalks today are typically limited to one side only with the expectation of installation on both sides as future redevelopment occurs or as part of local area changes. In support of transit services, sidewalks are recommended on both sides of limited access arterial streets. The pedestrian zones on these streets should be a minimum of **2.5m** wide, with a **1.5m** wide furnishing zone and a minimum **1.2m** frontage zone.



**Figure 30 – Limited Access Arterial Streets**

## CITY & SUBURBAN CENTRE ARTERIAL STREETS

City arterials and suburban centre arterial street types are typically two lane or four lane roadways supporting moderate traffic volumes and serving access to nearby properties. Sidewalks are desirable on both sides of the street as many will be surrounding active land uses and served by transit. The pedestrian zones should be a minimum of **2.5m** wide, with a minimum **1.75m** wide furnishing zone consisting of grass and utilities to buffer pedestrians from the adjacent street. The frontage zone should depend on building setbacks and landscaping requirements.



Figure 31 - City & Suburban Centre Arterial Streets

## COMMUNITY ARTERIAL STREETS

Community arterial streets serve travel needs between neighbourhoods in Saskatoon. This street type is largely surrounded by and supports residential land uses with small commercial nodes. Sidewalks are desirable on both sides where moderate levels of traffic, transit service, bicycling, and walking is supported as well as on-street parking. The pedestrian zone on this street type should be a minimum of **1.8m** wide, with a **1.35m** furnishing zone for utilities and separation from adjacent street traffic on streets without on-street parking. On streets with on-street parking, where no furnishing zone is provided, the frontage zone may be a minimum of **1.55m**.



Figure 32 - Community Arterial Streets

## DOWNTOWN COMMERCIAL/URBAN MAIN STREETS

Many downtown streets in Saskatoon already support vibrant street fronts with space for walking, leisure activity and other street functions. As the **Growth Plan** is realized, urban main streets will extend across the City along high priority growth and rapid transit corridors. As the most vibrant and walkable areas of the City, wide pedestrian zones of unobstructed area are essential for accommodating high volumes of pedestrians.

The furnishing zones should be wide enough to support street functions such as parking meters, street furniture and bike parking in addition to trees and landscaping. The frontage zone should be supportive of, and provide access and visibility to the land uses that line the downtown commercial and urban main streets. The minimum widths for the pedestrian zone, furnishing zone, and frontage zones should be **2.5m**, **1.75m**, and **1.0m** respectively.



Figure 33 - Downtown Commercial/Urban Main Streets

## NEIGHBOURHOOD CONNECTORS & LOCAL STREETS

Neighbourhood connectors and local streets support local walking to adjacent properties as well as passing through the community. Today, most of these street types have sidewalks on both sides with low and medium density residential uses surrounding them. With on-street parking permitted on one or both sides, the sidewalk width should be a minimum of **1.8m**, with a minimum **0.5m** furnishing zone to provide separation from the street.



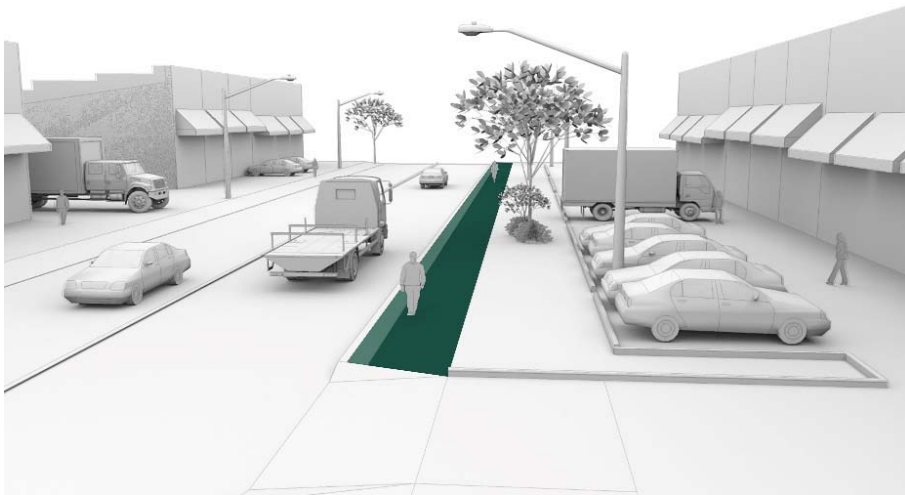
Figure 34 - Neighbourhood Connectors & Local Streets



## INDUSTRIAL STREETS

Sidewalk coverage in industrial areas of the City today is limited. Many of these areas are served by transit, and have commercial and institutional land uses that generate walking trips. A lack of sidewalks presents barriers to walking and accessing transit, but also increases safety exposure for pedestrians and limits accessibility.

The pedestrian zone on this street type should be a minimum **1.8m** wide, with a minimum **0.5m** furnishing zone. Bollards may be used to protect pedestrians where turning vehicles can present safety issues at driveways to adjacent properties. Loading docks and driveways that cross sidewalks should be clearly delineated and accessible for pedestrians.



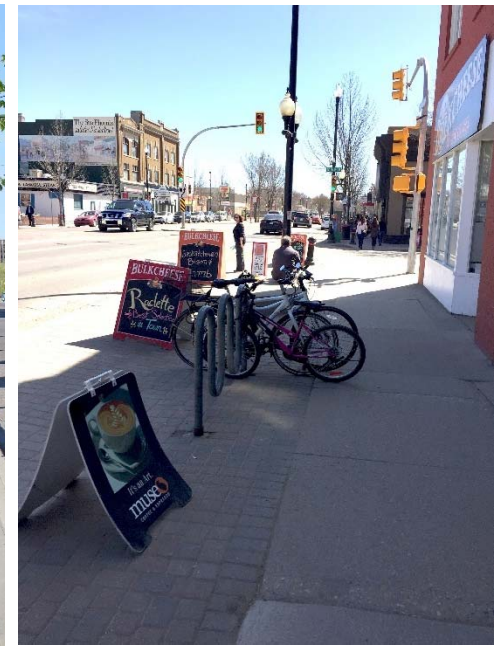
**Figure 35 - Industrial Streets**

## 5.1.2 Other Sidewalk Treatments

Sidewalk area designs must go beyond providing the basic treatments. Pedestrians and businesses thrive where larger sidewalk areas are provided with amenities such as landscaped buffers from the street, lighting, seating, and shade. Conversely, sidewalk areas that are cluttered with too many facilities and poorly designed treatments can impact accessibility and mobility for everyone. In turn, this can have a negative impact on the surrounding land uses that may be less accessible and inviting to visitors.

The sidewalk area also serves other essential functions to accommodate facilities for other modes of travel. Functional treatments in the furnishing zones for seating, bus stops, and shelters as well as bicycle parking can make the urban areas of Saskatoon more accessible and attractive for other modes.

This section of **the Guide** identifies a selection of design treatments for the frontage and furnishing zones that are critical to the success of most urban main street, suburban centre arterial, and downtown commercial street typologies.



## SEATING

Comfortable places to sit in urban areas are essential. It gives people an opportunity to rest, wait for others and/or socialize. Well-designed areas with seating can serve as a gathering place for people and a vital part of the public realm for active streets.

### Key Design Considerations:

- Seating can be provided in a variety of forms including chairs, benches, planters, and steps
- Public seating can be located either in the furnishing zone of the street and/or the frontage zone adjacent to building areas
- Seating must be located in protected areas away from the typical flow of pedestrians
- The location of seating must not affect mobility and accessibility of the pedestrian zone
- Benches should ideally be separated from the adjacent parking and travel lanes ❶ and placed at the pedestrian zone edge
- Where possible, physical barriers and/or landscaping should be part of the separation between the street and seating areas
- Benches should also be separated from other street furniture such as lighting, trees, and hydrants
- Some benches should be provided with armrests for those requiring stability while seating and rising, and some without to assist those in wheelchairs
- Seating should be separated from the pedestrian zone, away from building entrances, and not connected to adjacent buildings. ❷

Street Typology	Primary Application
Freeways & Expressways	
Limited Access Arterials	
City Arterials	
Community Arterials	
Suburban Centre Arterials	
<b>Urban Main Streets</b>	✓
<b>Downtown Commercial Streets</b>	✓
Parkways	
Neighbourhood Connectors	
Local Streets	
Industrial Streets	
Shared Streets	

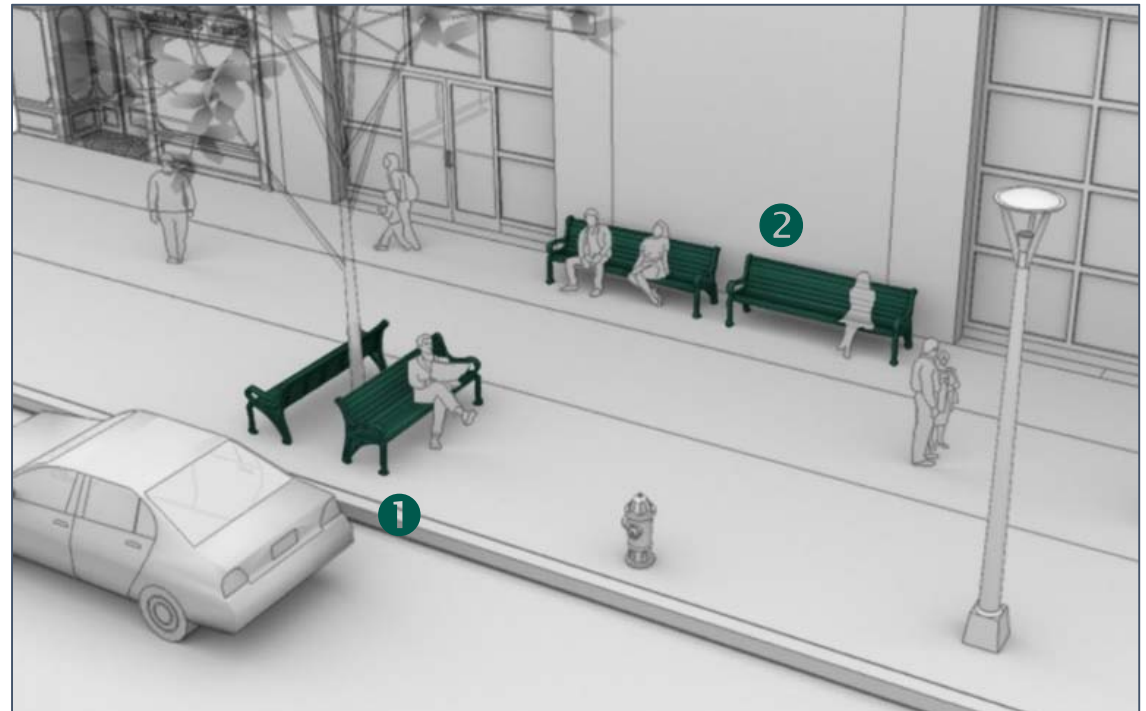


Figure 36 - Seating



## BICYCLE PARKING

Visible on-street bicycle parking is essential for urban areas of Saskatoon to increase the bicycling mode share. Whether for short visits to shops, to pick something up, or longer-term stays, on-street bike parking should be designed to provide a safe, visible place to store bikes.

### Key Design Considerations:

- Bicycle parking is ideally suited to non-residential streets of the City where bicycling demand is highest
- Bicycle racks in sidewalk areas should only be considered where there are no space constraints that may impact accessibility of the pedestrian zone
- Bicycle rack designs should support the frame of the bike at two points, provide access for different bike sizes/designs, allow locking at two locations, and be easily accessible
- No matter the size or number of bicycle stalls provided, bicycle racks must be installed so that parked bicycles do not block either the pedestrian zone or safe access to the adjacent curb
- Bicycle racks should be set back slightly from the adjacent curb of the street ❶
- Racks should be installed to park bicycles at a 45-degree angle or more from the curb within the furnishing zone
- When provided individually, multiple bicycle parking racks should be sufficiently separated to permit access from both sides and separated from adjacent street furniture ❷ and hydrants ❸

Street Typology	Primary Application
Freeways & Expressways	
Limited Access Arterials	
City Arterials	
Community Arterials	
<b>Suburban Centre Arterials</b>	✓
<b>Urban Main Streets</b>	✓
<b>Downtown Commercial Streets</b>	✓
Parkways	
Neighbourhood Connectors	
Local Streets	
Industrial Streets	
Shared Streets	

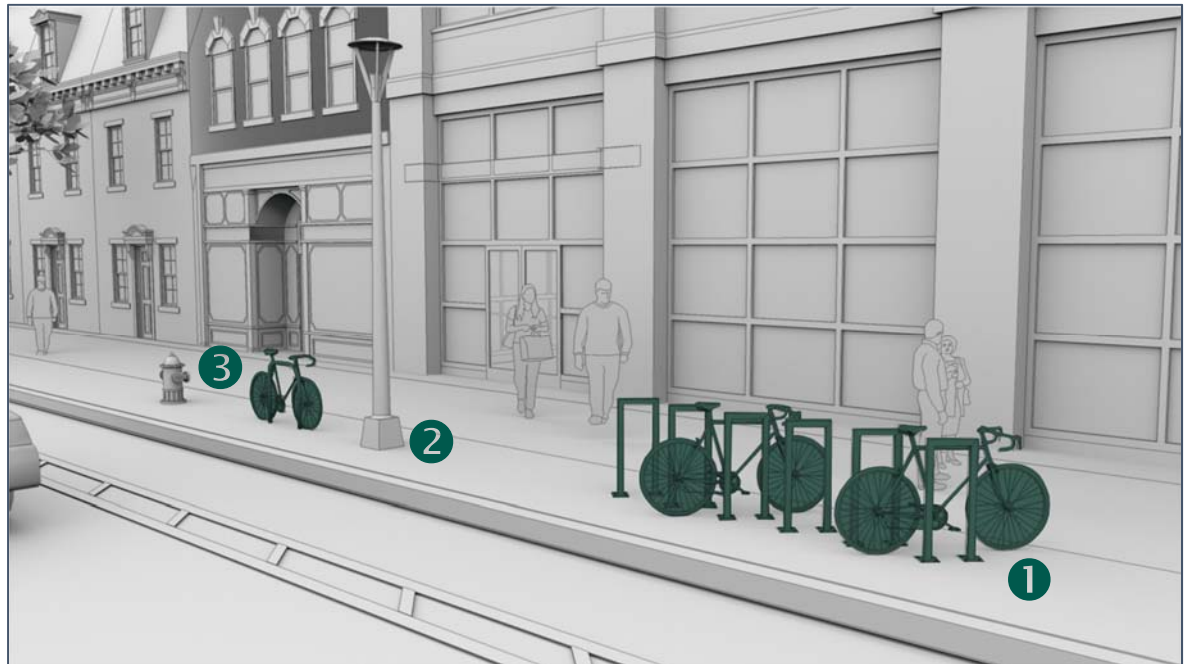


Figure 37 - Bicycle Parking

## CONTINUOUS, LEVEL SIDEWALKS ACROSS DRIVEWAYS

Regardless of the design, pedestrians on sidewalks have priority over vehicles entering and exiting driveways. Driveways can either cross the sidewalk area or create a break in the sidewalk to support vehicle access entering and exiting adjacent properties. By design, this treatment can unintentionally give vehicles the priority over pedestrians crossing their path and increase exposure for those walking. Furthermore, changing sidewalk grades across driveways can make it difficult for people using mobility aids.

### Key Design Considerations:

- In high pedestrian areas of the City, pedestrian zones of the sidewalk area should be designed with a continuous grade across driveways and laneways
- If the sidewalk is concrete, the surface treatment should not depress to better accommodate vehicles travelling across the path of pedestrians
- The design of driveways in these areas should encourage drivers to always look for, and expect to yield to, pedestrians
- The pedestrian zone should be of continuous width across the driveway for a consistent pedestrian experience
- The furnishing zone between the pedestrian zone and street should form the apron area for vehicles to cross the sidewalk
- In constrained areas where the furnishing zone is not sufficient width, a curb extension may be considered where on-street parking is present

Street Typology	Primary Application
Freeways & Expressways	
Limited Access Arterials	
City Arterials	
Community Arterials	
<b>Suburban Centre Arterials</b>	✓
<b>Urban Main Streets</b>	✓
<b>Downtown Commercial Streets</b>	✓
Parkways	
Neighbourhood Connectors	
Local Streets	
Industrial Streets	
Shared Streets	

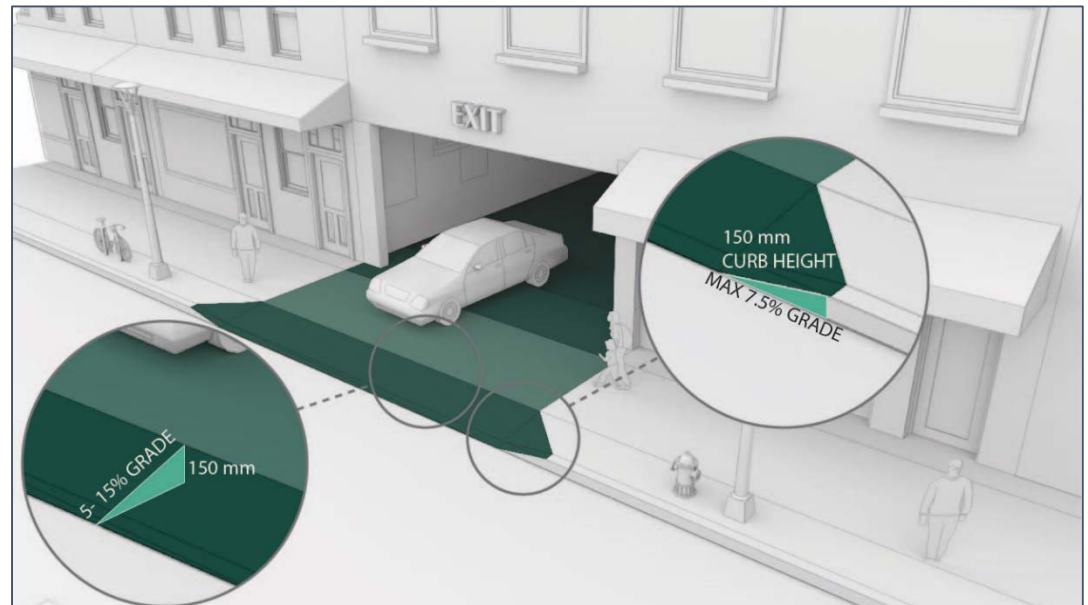


Figure 38 - Continuous, Level Sidewalks Across Driveways

## BUS STOP / SHELTERS

Sidewalk areas provide space for transit passengers to wait for buses at stops and support other transit amenities such as passenger information, lighting, seating, trash receptacles, and shelters.

### Key Design Considerations:

- Ideally, bus stops and shelter areas are located within the furnishing zones, clear of the pedestrian zone
- They should be designed to be safe, convenient, and accessible for passengers of all mobility levels
- For most of the City, the length of transit stops should be designed to support access for conventional, and articulated buses on major roadways such as city arterials, suburban centre arterials, urban main streets and downtown commercial streets
- Near-side intersection and far-side intersection stops require sufficient space between the corner and the nearest parking stall
- For express bus services and stops on major roadways, far-side bus stops are preferred unless constrained by space and/or to support near-side transfers to cross-street routes
- Conventional stops should be set back from intersections and equipped with landing zone for passengers to enter and exit the bus ①
- Landing zones should be provided for all doors, clear of obstruction and allow for sufficient space between the edge of curb and the pedestrian zone
- Bus shelters are typically considered where passenger activity is highest. The designs are determined on a site-by-site basis
- Shelters at most bus stops in Saskatoon are varied, but typically enclosed on three sides with access from the sidewalk and protection from the adjacent street
- When behind the sidewalk, shelters should be off-set slightly from the property line, and separated from any building structure
- For nearside stops, shelters should be separated from nearby cross-walks so as not to impact driver sight lines.

Street Typology	Primary Application
Freeways & Expressways	
<b>Limited Access Arterials</b>	✓
<b>City Arterials</b>	✓
<b>Community Arterials</b>	✓
<b>Suburban Centre Arterials</b>	✓
<b>Urban Main Streets</b>	✓
<b>Downtown Commercial Streets</b>	✓
Parkways	
<b>Neighbourhood Connectors</b>	✓
Local Streets	
<b>Industrial Streets</b>	✓
Shared Streets	



**Figure 39 - Bus Stop/Shelter**



## SIDEWALK CAFES

Sidewalk cafes can be encouraged where commercial activity is highest on main street and downtown commercial street types. The extension of restaurants into the public way brings activity to the street and forms an important part of the public street realm.

### Key Design Considerations:

- Sidewalk Cafes are regulated by the **City of Saskatoon Zoning Bylaw No. 8770**, by the **Use of Sidewalk, Boulevards and Parking Stalls – Vending Policy No. C09-013**, and by the **Sidewalk Café and Parking Patio Guidelines**
- Licenses for sidewalk cafes are issued through the City of Saskatoon Business License Program. The review and approval process involves input from other internal and external departments including the Health Region, Police, Fire, Transportation, Planning and Development, and the local Business Improvement District. As relevant Saskatchewan Liquor and Gaming Authority is also consulted
- Sidewalk cafes must be designed clear of the pedestrian zone to ensure adequate movement and accessibility for all mobility levels
- The width of a sidewalk café should be of consistent width, extending along the full frontage of the restaurant ❶
- The entrance through to the front door should remain clear of furniture ❷
- If alcohol is served at the sidewalk café business, barriers must be provided and attached to the ground
- Awnings, umbrellas and/or heat is desirable for weather protection and to increase functionality
- Landscaping of a temporary nature, and high-quality street furniture to increase functionality and visual aesthetics is encouraged, and must be removed at the end of season

Street Typology	Primary Application
Freeways & Expressways	
Limited Access Arterials	
City Arterials	
Community Arterials	
Suburban Centre Arterials	
<b>Urban Main Streets</b>	✓
<b>Downtown Commercial Streets</b>	✓
Parkways	
Neighbourhood Connectors	
Local Streets	
Industrial Streets	
Shared Streets	

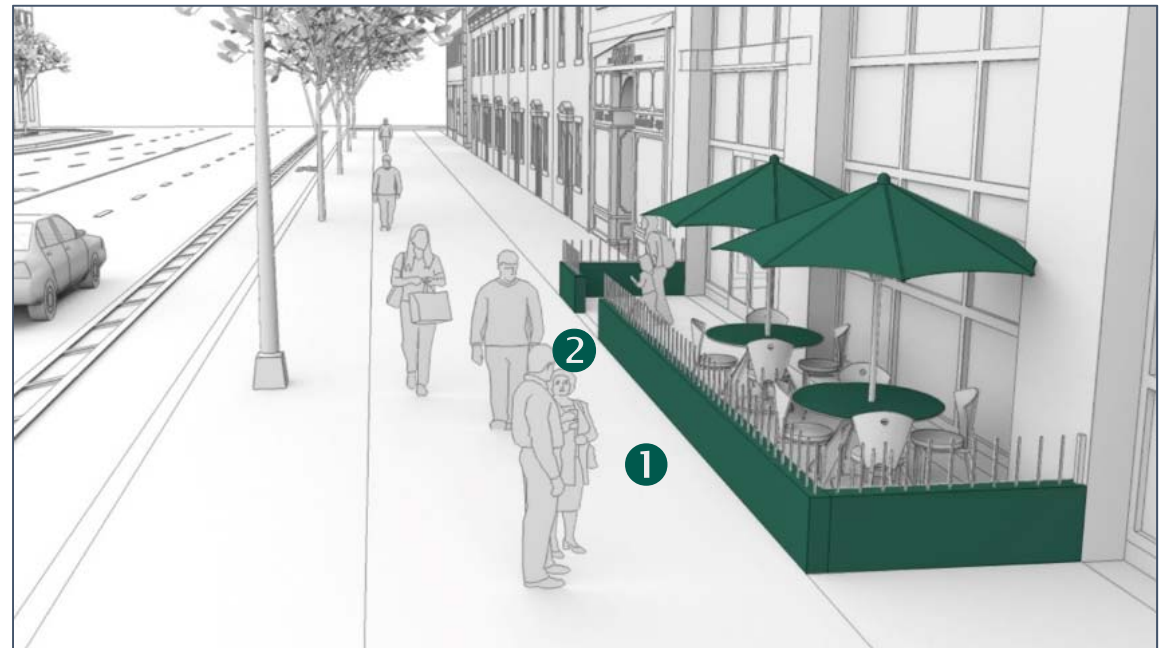


Figure 40 - Sidewalk Cafes

## PLAZAS

Plazas can provide additional walking space for pedestrians, and add vibrancy to the public realm on many urban streets in downtown Saskatoon. Plazas can either be created as part of the public right-of-way or connected with private development. Ideally, they should be located adjacent to transit hubs or other pedestrian generators, and should be easy to access from all sides. Larger plazas – such as in front of City Hall – can and should host activities such as markets, art displays, culture performances, and other community events.

### Key Design Considerations:

- The plaza design should be an extension of the sidewalk area adjacent to, and part of the pedestrian zone. By extension, plazas can also encourage walking trips both destined to the adjacent site and as a short-cut
- Design considerations should include, but not be limited to wayfinding signage, permeable surface materials/landscaping, bicycle parking, seating, gathering areas, and space for events and/or food services
- Permanent displays of public art or cultural amenities within the Plaza should be encouraged to create an identity for the area while encouraging displays of local talent.
- Plazas should provide a variety of seating choices such as benches, low walls, stairs, and landscaping containers
- Bicycle parking racks may be encouraged in and around plazas if they are visible and do not restrict accessibility

Street Typology	Primary Application
Freeways & Expressways	
Limited Access Arterials	
City Arterials	
Community Arterials	
Suburban Centre Arterials	
<b>Urban Main Streets</b>	✓
<b>Downtown Commercial Streets</b>	✓
Parkways	
Neighbourhood Connectors	
Local Streets	
Industrial Streets	
Shared Streets	

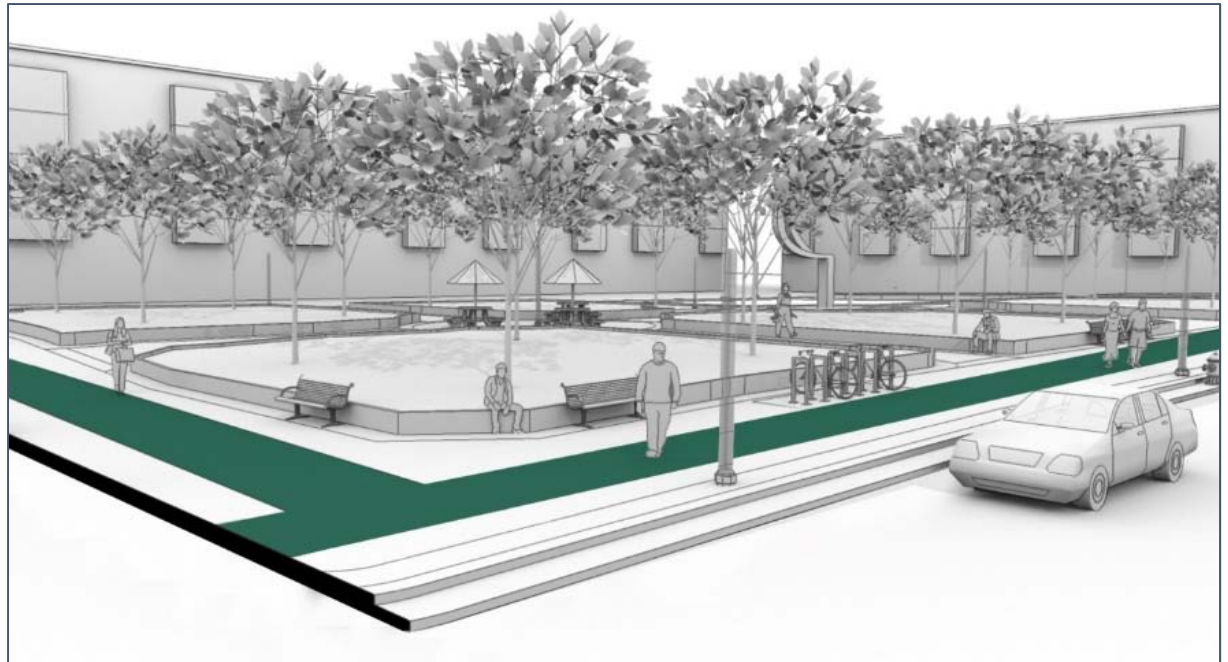


Figure 41 - Plazas



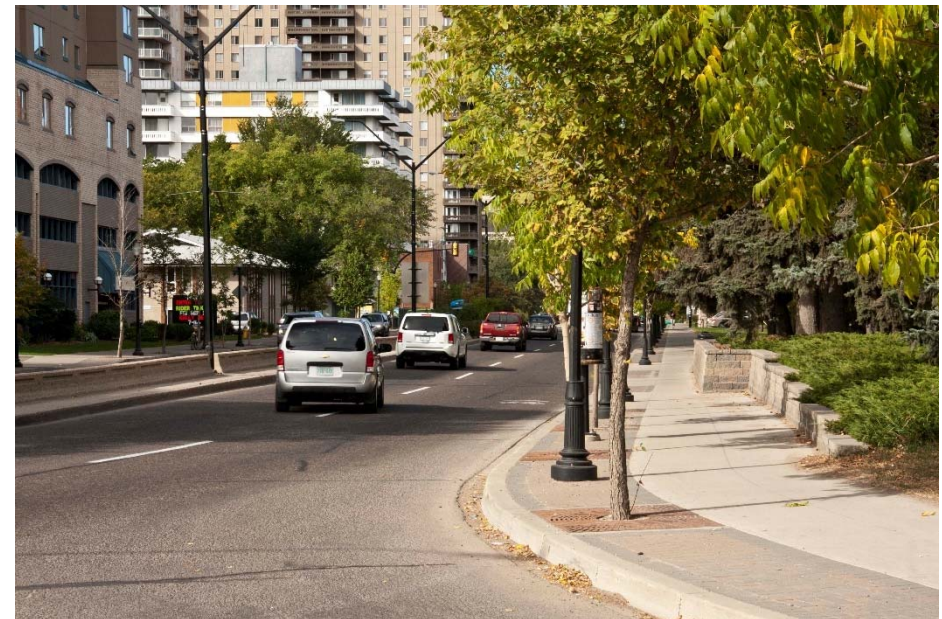
## 5.2 Streets

Streets make up a significant portion of all public space in most cities. They are the lifeblood of communities, supporting economic and social interactions. Streets support mobility for people, be it by car, transit, biking or walking. They support access to goods and services within and beyond Saskatoon, and economic interactions for many businesses. Increasingly, streets are serving the needs of different travel modes and for varied purposes.

In the established and growing areas of the City, street designs have increasingly favoured larger vehicles. This has created barriers for other modes. Wide streets that prioritize large vehicles create comfort and safety issues for the most vulnerable people on our streets, bicyclists and pedestrians. If goals for increased walking, bicycling, and transit are to be realized, the allocation and design of street space must change.

This section of **the Guide** provides a ‘toolkit’ of treatments for accommodating bicycles, transit, and vehicles within the street environment. **The Guide** also considers other uses of the street to support vibrancy and an active street environment. Recognizing that space is limited in much of the established street system, trade-offs must be considered for different modes and needs to support adjacent land uses. No single template or cross-section will work effectively in all situations.

The design of streets in Saskatoon must not only consider today’s needs, but aspirations for the future. Fortunately, these changes may not need to happen all at once. Space can be incrementally altered in phases to achieve the ultimate configuration or long-term goals.





## 5.2.1 Bicycle Facilities

With Saskatoon's population expected to double to half a million people, change in the City is inevitable. The City's **AT Plan** provides transportation options designed to improve accessibility, comfort, and safety of walking, bicycling, and other forms of active transportation in Saskatoon.

Providing a complete and interconnected network of bicycle facilities throughout Saskatoon is critical to supporting and encouraging more people choosing to cycle. Expanding and enhancing Saskatoon's bicycle network includes upgrading existing facilities, ensuring that new neighbourhoods have adequate places for bicycling, and addressing gaps in the existing network. The **AT Plan** supports the principles of creating a quality bicycle network for All Ages and Abilities (AAA) with facility types that will increase comfort for more people in the community.

**This Guide** provides design and application guidance on two basic forms of bicycling facilities: exclusive facilities where roadway space is designated for bicyclists; and shared facilities where roadway space is integrated. The selection and design of different bicycling facilities must recognize that bicyclists are vulnerable road users that can be seriously injured in even minor collisions.



## MULTI-USE PATHWAYS

The City's natural beauty and abundance of multi-use pathways encourage residents to bicycle as a form of commuting, exercise and leisure. Much of the existing network in Saskatoon is made up of paved multi-use pathways located along the Meewasin River Valley and along street right-of-ways.

Multi-use pathways are an integral part of the City's planned AAA bicycling network intended to encourage a broad cross-section of people to bicycle. A system of multi-use pathways has been identified as part of the AAA network along corridors where sufficient right-of-ways are available, parallel to major arterials with limited driveway access. Planned multi-use pathways that have been identified in the Meewasin Trail Study have also been recognized in the **AT Plan**.

### Key Design Considerations:

- Used where there is sufficient space in the public right-of-way as well as a limited number of intersections, alleyways, and driveways
- Must accommodate and manage conflicts between all permitted users such as bicyclists, pedestrians, and skateboarders
- Standard markings and signage are required along the pathways to identify safety hazards, remind users to keep right except to pass, yield to people walking, and yield at intersections
- Consider design treatments that ensure proper sight-lines to reduce potential for collisions on multi-use pathways and at intersections
- Provide lighting to improve visibility and safety
- The width of a multi-use pathway depends on the volume of bicyclists and pedestrians
- Monitor usage through provision of automated counters along pathways
- Multi-use pathways should be cleared of snow in the winter
- Centrelines should be considered once the number and mix of users requires it

Street Typology	Primary Application
<b>Freeways &amp; Expressways</b>	✓
<b>Limited Access Arterials</b>	✓
<b>City Arterials</b>	✓
Community Arterials	
Suburban Centre Arterials	
Urban Main Streets	
Downtown Commercial Streets	
<b>Parkways</b>	✓
Neighbourhood Connectors	
Local Streets	
Industrial Streets	
Shared Streets	



**Figure 42 - Multi-Use Pathways**

## PROTECTED BICYCLE LANES

Protected bicycle lanes are designed to physically separate people bicycling from motor vehicles. There are several design options for this type of infrastructure including installing them at the same grade of the adjacent sidewalk but separate from pedestrian areas, or at street level and separated from vehicles by a barrier. A dense network of protected bicycle lanes has been recommended within the downtown core as this will accommodate the high demand for and potential growth of bicycling within the area. Protected bicycle lanes are part of the AAA bicycling network providing direct access to downtown Saskatoon and other commercial centres throughout the City.

### Key Design Considerations:

- Protected lanes are recommended on streets with larger blocks and limited residential and commercial driveways
- Suggested on corridors with high bicycling potential
- Protected bicycle lanes are typically used on multi-lane streets with higher traffic volumes
- Bicycle lane symbol should be used to define dedicated space for bicyclists
- Barriers used to separate bicyclists can include features such as bollards, curbs, or planters and should be marked by two solid white lines with diagonal hatching ❶
- The width of a one-way protected bicycle lane should be sufficiently wide to support higher speeds and avoid catch basins along the curb ❷
- All-year maintenance, including snow clearance of protected bike lanes on busy routes, should be a priority and considered during design

Street Typology	Primary Application
Freeways & Expressways	
<b>Limited Access Arterials</b>	✓
<b>City Arterials</b>	✓
Community Arterials	
<b>Suburban Centre Arterials</b>	✓
<b>Urban Main Streets</b>	✓
<b>Downtown Commercial Streets</b>	✓
Parkways	
Neighbourhood Connectors	
Local Streets	
Industrial Streets	
Shared Streets	

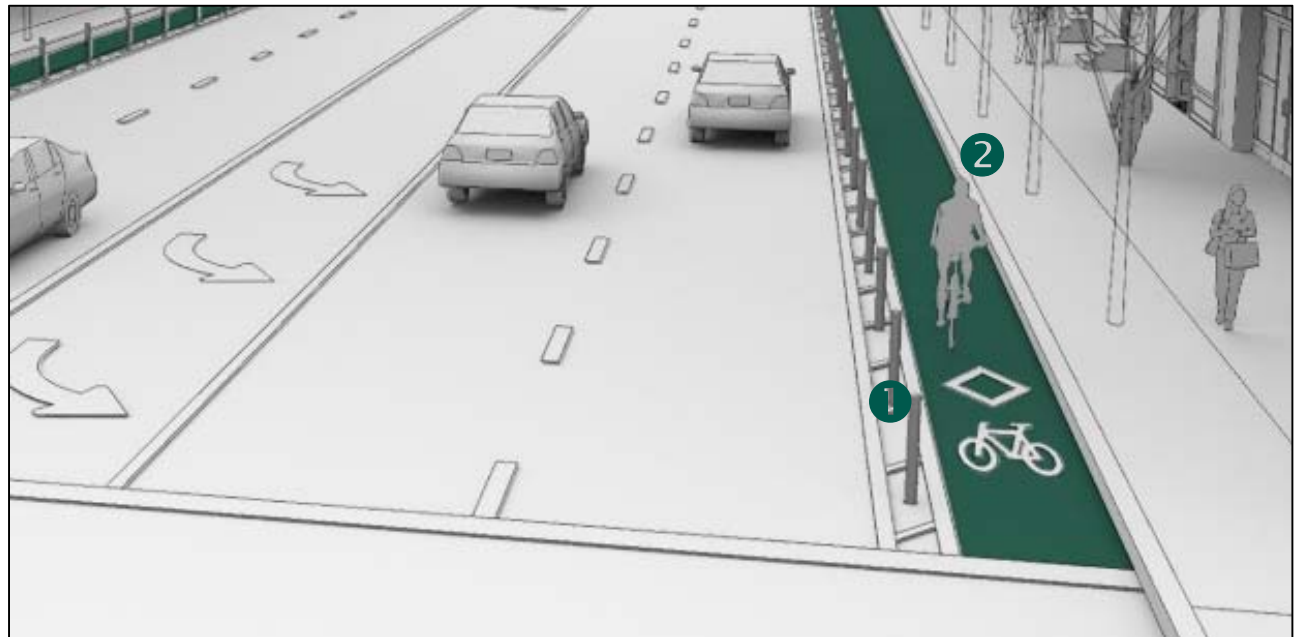


Figure 43 - Protected Bicycle Lanes



## BICYCLE LANES (OPTIONAL BUFFER)

Conventional or buffered bicycle lanes are similar to protected lanes in that they are separated from the adjacent travel lane. Unlike protected bike lanes, buffered bicycle lanes do not provide physical barriers such as bollards, curbs or planters, and are generally considered more comfortable than conventional painted bicycle lanes due to the spatial separation between bicyclists and adjacent traffic lanes. Conventional and buffered bicycle lanes are not considered AAA bicycling facilities.

### Key Design Considerations:

- May be used anywhere a AAA facility is determined as not necessary or there is limited space
- Suggested on corridors where vehicle speeds and volumes are high and there is on-street parking
- May be used on streets with two or more lanes
- Bicycle lane symbol should be used to define dedicated space for bicyclists
- Buffers may be placed either between the bicycle lane and the motor vehicle lane or between the bicycle lane and parked vehicles, or both
- Buffer area should be marked by two solid white lines with diagonal hatching ❶
- The width of a one-way conventional or buffered bicycle lane should be consistent across the City ❷
- Limited use on roadways with several driveways to adjacent properties
- Coloured asphalt or paint may be used to highlight prominence of bike lanes at intersections and conflict zones including laneways and driveways
- All-year maintenance, including snow clearance of bike lanes on busy routes, should be a priority and considered during design
- Buffered bicycle lanes are preferred on 4 or more lane roadways, and lanes without a buffer can be used on 2/3 lane roadways

Street Typology	Primary Application
Freeways & Expressways	
Limited Access Arterials	
<b>City Arterials</b>	✓
<b>Community Arterials</b>	✓
<b>Suburban Centre Arterials</b>	✓
Urban Main Streets	
Downtown Commercial Streets	
<b>Parkways</b>	✓
Neighbourhood Connectors	
Local Streets	
<b>Industrial Streets</b>	✓
Shared Streets	

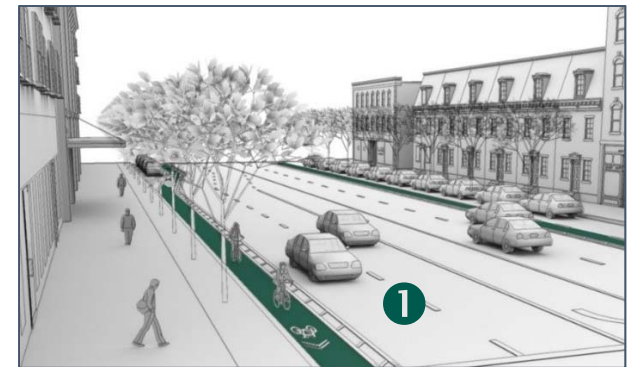


Figure 44 - Bicycle Lanes (Optional Buffer)

## BICYCLE BOULEVARDS

Bicycle boulevards are recommended on streets with low volumes and speeds that typically serve neighbourhood travel. Most applications of bicycle boulevards provide an alternate route where bicycle facilities on parallel arterial streets may not be appropriate. Bicycle boulevards are shared roadways with operating conditions that prioritize people bicycling on the street and that have been designed to limit exposure to motor vehicles.

### Key Design Considerations:

- Bicycle boulevards are critical to achieving the goals for the AAA bicycling network by providing a high standard of safety and comfort to a broad cross-section of people
- Bicycle boulevards are most suitable for roads classified as local streets or shared streets with less than 2,000 vehicles per day
- Bicycle boulevards should have signs, pavement markings, traffic calming measures and specialized crossing treatments that calm traffic and discourage through-trips by motor vehicles
- As part of the AAA bicycle network, bicycle boulevards should be priority routes for snow removal to bare asphalt within 24 hours of snowfalls
- An important component of bicycle boulevards are intersection treatments with major roadways
- Vehicle movements may be restricted to discourage shortcutting vehicles and maintain low traffic speeds and volumes

Street Typology	Primary Application
Freeways & Expressways	
Limited Access Arterials	
City Arterials	
Community Arterials	
Suburban Centre Arterials	
Urban Main Streets	
Downtown Commercial Streets	
Parkways	
Neighbourhood Connectors	
<b>Local Streets</b>	✓
Industrial Streets	
<b>Shared Streets</b>	✓

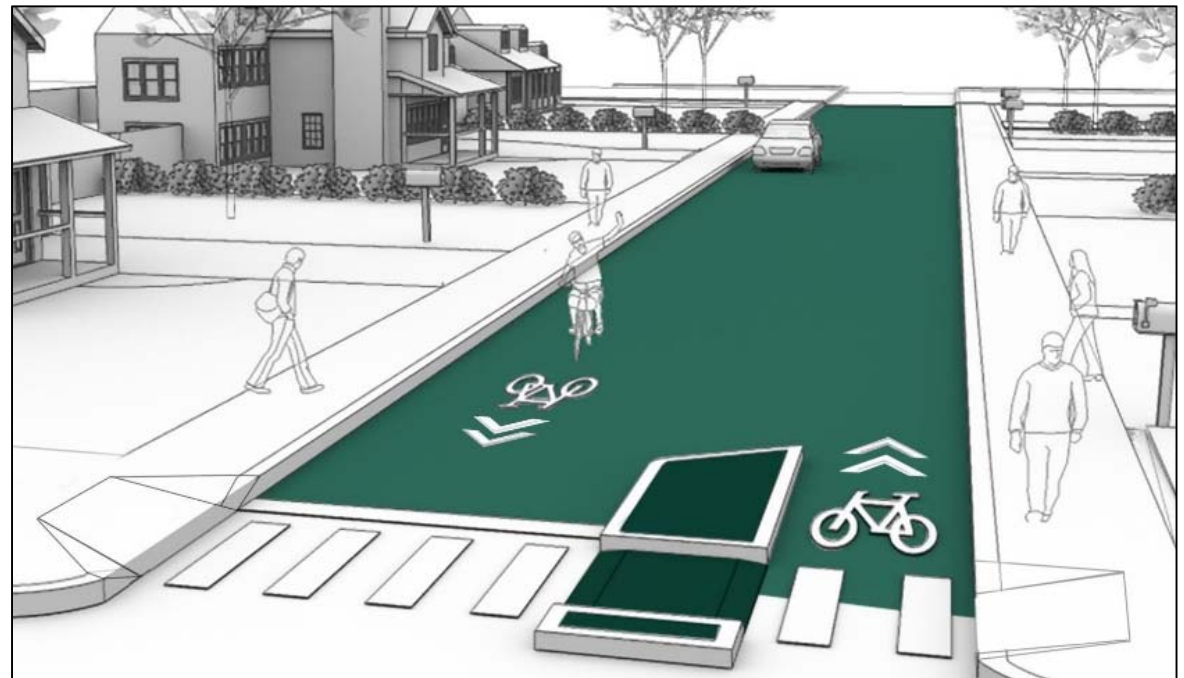


Figure 45 - Bicycle Boulevards

## SHARED-USE LANES

Where it is not feasible or appropriate to provide separated bicycle lanes, there may be some streets where bicyclists, motorists, and transit vehicles share travel lanes. Saskatoon has historically utilized shared lanes throughout downtown. Marked shared bicycle lanes are indicated by specific bicycle symbol called shared lane markings or ‘sharrows.’ Sharrows are meant to remind road users that bicycles will share the street lanes as a vehicle when facilities are not present. **The AT Plan suggests that no additional shared-use lanes be installed as every street in Saskatoon has shared use space for people driving, riding transit or bicycling.**

### Key Design Considerations:

- Although the **AT Plan** does not promote implementing additional marked shared lanes, they are recognized in this toolkit for maintenance purposes and where other treatments may not be viable
- Should not be used on streets with greater than 50km/hr speed limits, or where traffic volumes are higher than 5,000 vehicles per day
- Shared lane markings should be placed on a location that is outside the door zone of parked vehicles
- Consider removal of travel and/or parking lanes as well as median areas to accommodate a bicycle lane before using marked shared use lanes
- Marked shared use lanes are flexible to the presence of on-street parking and driveways

Street Typology	Primary Application
Freeways & Expressways	
Limited Access Arterials	
City Arterials	
Community Arterials	
Suburban Centre Arterials	
Urban Main Streets	
Downtown Commercial Streets	
Parkways	
<b>Neighbourhood Connectors</b>	✓
<b>Local Streets</b>	✓
Industrial Streets	
Shared Streets	

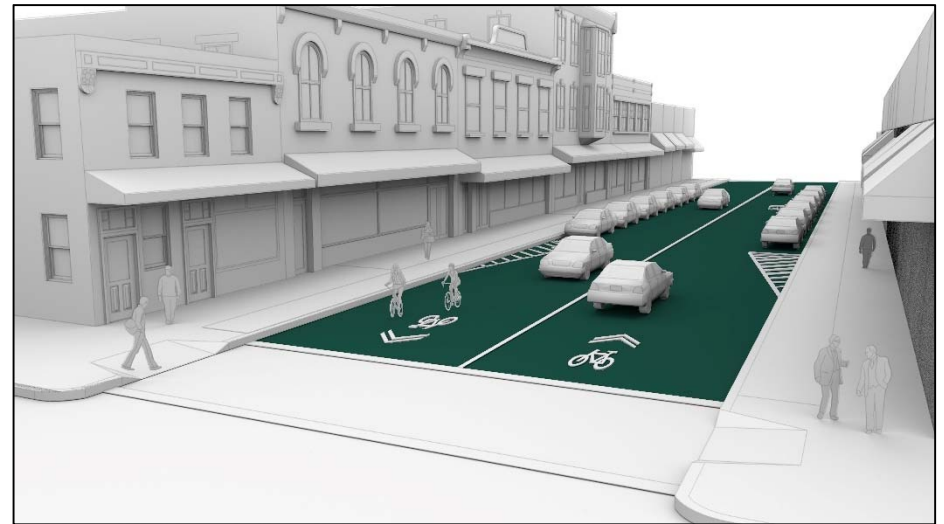


Figure 46 - Shared Use Lanes



## 5.2.2 Transit

Ultimately, rapid transit is intended to provide attractive transportation choice while at the same time shaping and supporting higher density growth with a mixture of land uses. Rapid transit systems are also unique from the rest of the transit system providing identifiable corridors, mostly or entirely separated travel lanes, and enhanced transit stations for the comfort of passengers.

Saskatoon's **Growth Plan** identifies Bus Rapid Transit (BRT) corridors that will form the spine of the transit system. As bus service increases across Saskatoon, more routes will be directed toward the Red Line BRT illustrated in **Figure 9**. Blue Line BRT will be implemented as required. Customers will experience a bus every 5 minutes along major corridors such as 22nd Street, College Drive, Preston Avenue, and 8th Street. In the long-term, the Red Line BRT corridor will provide approximately 22 km of bus-only lanes and 25 stations between Blairmore, University Heights and Holmwood, with direct connections to the Downtown and University areas.

The following discussion within this section of **the Guide** describes the three forms of bus lanes – curb, centre and side running. In most communities, curb bus lanes are often the starting point for higher capacity BRT facilities. In turn, the higher capacity facilities such as centre and side running may eventually be the pre-condition to Light Rapid Transit if ridership increases significantly.



## CURB BUS LANES

Curb bus lanes operate on the right side of multi-lane roadways, typically alongside the curb and sidewalk area. Along streets with bulb-outs, curb bus lanes may be off-set or separated by parking or transit stop areas. As a minimum, curb bus lanes can be distinguished by pavement markings and overhead signage. Coloured asphalt depicting segments of bus lanes is used in some communities to increase awareness through conflict zones, but is not essential. These lanes are generally open to right turn vehicles at intersections and function as turn lanes to driveways for adjacent sites. Where space permits, bus lanes in many communities can also operate as shared bus/bicycle lanes.

### Key Design Considerations:

- Standard markings and signage separating bus lanes is essential to discourage use of bus lanes by other traffic
- Curb bus lanes are typically created with the removal of a travel lane, parking lane or other street treatments such as centre medians and/or boulevards
- Periods of operation for bus only may be flexible and expanded from peak only to all-day use as service frequency and ridership increases.
- Timeframes should ensure sufficient service operation to avoid ‘empty lane’ syndrome
- Bus lanes may be separated to bypass buses at stations
- Curb-side parking should ideally be limited or restricted on corridors with curb bus lanes
- Measures to reduce conflicts with right-turn vehicles should be considered through signage, particularly at minor intersections
- Stops or stations on curb bus lanes are generally spaced more than **400m** apart in urbanized areas and over **800m** in suburban parts of the community
- The minimum width of a bus lane should be no less than the permissible curb width for typical travel lanes, possibly wider if shared with bicyclists

- Station dimensions should be typically designed for anticipated passenger loads with the ability to support two spaces for buses. In the downtown areas of the City, the length of stations will be longer to support multiple routes picking up and dropping off passengers at multiple locations
- Bus stops and lanes must be a priority for snow clearance
- Monitoring and enforcing of unauthorized vehicle use is essential
- Camera enforcement with tow-away service is usually needed for peak-only curb bus lanes

Street Typology	Primary Application
Freeways & Expressways	
<b>Limited Access Arterials</b>	✓
City Arterials	
Community Arterials	
<b>Suburban Centre Arterials</b>	✓
<b>Urban Main Streets</b>	✓
<b>Downtown Commercial Streets</b>	✓
Parkways	
Neighbourhood Connectors	
Local Streets	
Industrial Streets	
Shared Streets	

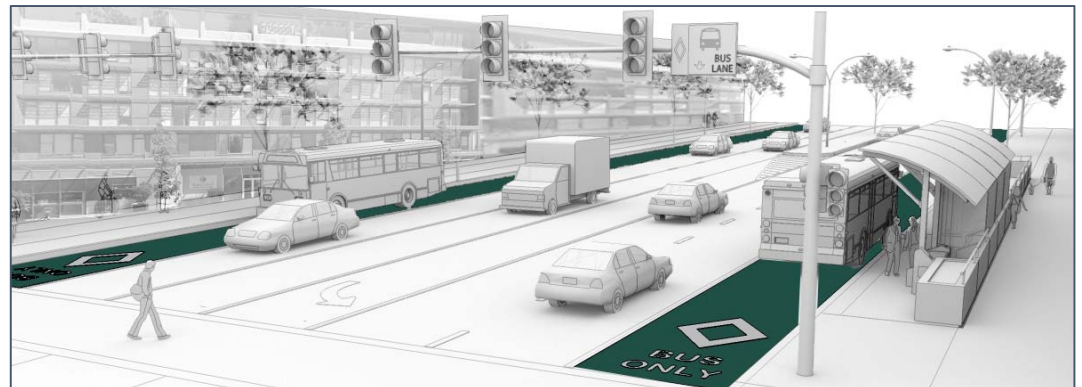


Figure 47 - Curb Bus Lanes

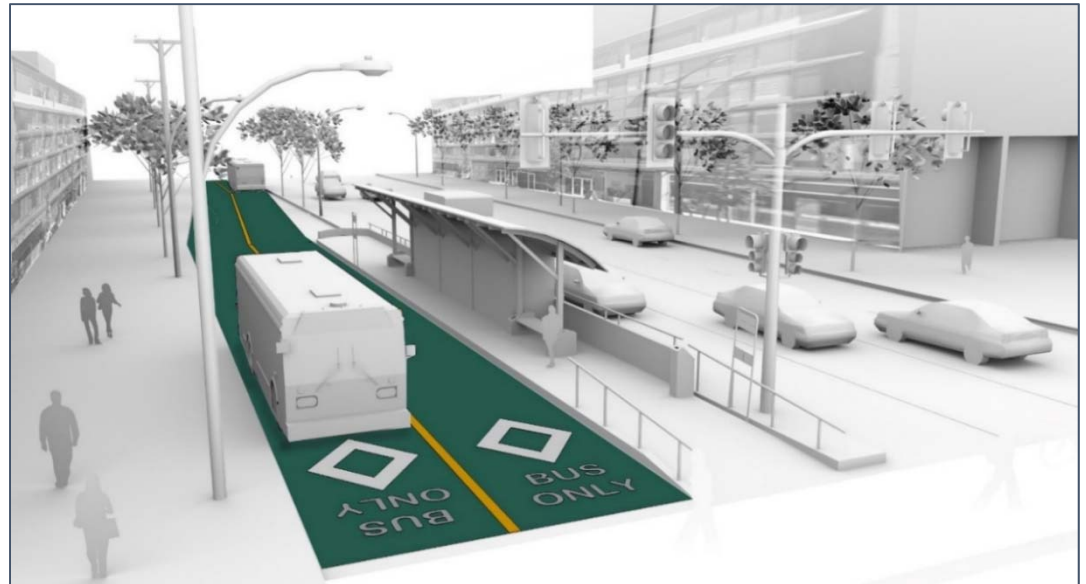
## SIDE BUS LANES

Side running bus lanes provide dedicated space for bus use only. As a separated area of the road, conflicts with general purpose traffic are limited to signalized intersections and minor cross-streets where applicable. In comparison to curb bus lanes, side bus lanes serve to reduce transit travel times and increase reliability for transit customers. The configuration of side running bus lanes prevents use for general purpose traffic or parking at any time and would eliminate access to adjacent property driveways and most minor intersections. Side running bus lanes are typically most effective on street blocks without driveway access and where passenger activity is highest on one side of the street.

### Key Design Considerations:

- Side bus lanes could potentially be used on the Red Line BRT corridors identified in the **Growth Plan**
- Side-running bus lanes typically require reallocation of space for vehicles and involve major changes to the roadway and utilities
- Consider the impacts on general purpose traffic across the network of roadways, not just the street supporting BRT
- Access to minor cross-streets and properties are restricted along the side of the street accommodating side running bus lanes
- Snow clearance of stop areas and bus lanes must be a priority
- Stops or stations on side bus lanes are generally **400m** apart in urbanized areas and over **800m** in suburban parts of the community
- Standard pavement markings and signage is essential for discouraging use of bus lanes by other traffic
- The bus lane width should be sufficiently wide enough to support two-way bus services and to ultimately support conversion to LRT
- Station dimensions should be typically designed for anticipated passenger loads with the ability to support two spaces for buses. In the downtown and university areas of the City, the length of stations will be longer to support multiple routes picking up and dropping off passengers at multiple locations

Street Typology	Primary Application
Freeways & Expressways	
<b>Limited Access Arterials</b>	✓
City Arterials	
Community Arterials	
<b>Suburban Centre Arterials</b>	✓
<b>Urban Main Streets</b>	✓
<b>Downtown Commercial Streets</b>	✓
Parkways	
Neighbourhood Connectors	
Local Streets	
Industrial Streets	
Shared Streets	



**Figure 48 - Side Bus Lanes**



## CENTRE BUS LANES

Centre bus lanes provide dedicated space for bus use only. Unlike curb bus lanes, conflicts with general purpose traffic are limited to signalized intersections where left turn vehicles must be accommodated – typically with left turn lanes – and mid-block left turn access is restricted. Centre bus lanes eliminate any impacts from right turn vehicles, including mid-block access to minor streets and adjacent properties. Right turn access to all properties and adjacent intersections could be maintained throughout. The separation from other traffic allows centre bus lanes to provide better service and capacity with fewer conflicts that may impact travel time and reliability relative to curb bus lanes.

### Key Design Considerations:

- Centre bus lanes could potentially be provided on the Red Line BRT corridors identified in the **Growth Plan** in the long-term
- Space for centre bus lanes are created with the removal of travel lanes, parking lanes or other street treatments such as centre medians and/or boulevards
- Consider the impacts on general purpose traffic across the network of roadways, not just the street supporting BRT
- Consider the impacts on property access and circulation patterns along the corridor, especially left turn restrictions
- Stops or stations on centre bus lanes are generally spaced **400m** apart in urbanized areas and over **800m** in suburban parts of the community
- Standard pavement markings and signage is essential for discouraging use of bus lanes by other traffic
- The bus lane width should be sufficiently wide to support two-way bus services and ultimately conversion to LRT
- Station dimensions should be typically designed for anticipated passenger loads with the ability to support two spaces for buses. In the downtown and university areas of the City, the length of

stations will be longer to support multiple routes picking-up and dropping-off passengers at multiple locations

- Snow clearance of stop areas and bus lanes must be a priority
- Coloured pavement may be used to highlight the prominence of bus lanes to other drivers, but is not essential

Street Typology	Primary Application
Freeways & Expressways	
<b>Limited Access Arterials</b>	✓
City Arterials	
Community Arterials	
<b>Suburban Centre Arterials</b>	✓
<b>Urban Main Streets</b>	✓
<b>Downtown Commercial Streets</b>	✓
Parkways	
Neighbourhood Connectors	
Local Streets	
Industrial Streets	
Shared Streets	

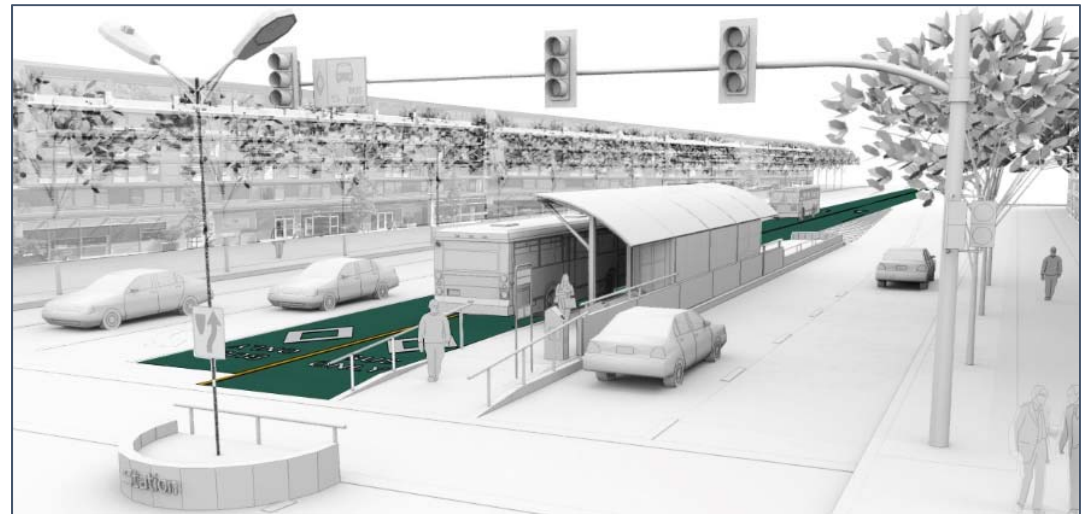


Figure 49 - Centre Bus Lane

### 5.2.3 Alternative Curbside Treatments

The **Growth Plan** supports long-term policies for sustainable modes of travel as well as creating vibrant street environments in the downtown, along high priority growth corridors and in suburban centres. In support of improving mobility for everyone and encouraging sustainable modes, **the Guide** identifies alternative curbside treatments and uses along downtown commercial street, urban main street and suburban centre arterial street typologies.

Continuing to increase accessible parking stalls in critical locations where sidewalk areas and crossings are also accessible is essential to improving mobility for people with physical and cognitive challenges. Curbside space may also be used for on-street bicycle parking or even bike share stations if the City considers such a program as well as supporting other sustainable modes that include electric vehicle charging stations and car share parking spaces.

As extensions of the urban realm in urban areas, Saskatoon may consider curbside space being used to support sidewalk activity. The City currently allows the implementation of parking patios – or temporary platforms installed over parking space for public seating areas.





## ACCESSIBLE ON-STREET PARKING

Accessible on-street parking contributes toward overall mobility and accessibility of an area, and by providing for people with physical disabilities, street designs support everyone. The City designates accessible parking throughout the busiest areas of the city such as the downtown and main street areas. In Business Improvement Districts (BIDs), vehicles with accessibility placards can park in loading zones for the same fully allotted time period as allowed in standard parking stalls (typically 3 hours) and in standard stalls for as long as they need.

### Key Design Considerations:

- Accessible parking should only be considered where there is parallel on-street parking
- The City designates accessible parking on a request basis
- Accessible parking should only be provided on roadways with a less than 2% slope where there are accessible curb ramps nearby
- Accessible parking should be located in areas that are close to accessible building entrances, ideally nearby public facilities such as health care facilities, and libraries
- Parking spaces should be marked with standard signage and pavement markings to increase compliance. Signage should be placed at the head of each parking stall for visibility
- Residents using accessible parking must have accessible parking placards placed clearly on their dashboard inside the vehicle
- Accessible parking stalls can be accommodated on a request basis anywhere on-street parking is permitted

Street Typology	Primary Application
Freeways & Expressways	
Limited Access Arterials	
City Arterials	
Community Arterials	
Suburban Centre Arterials	
<b>Urban Main Streets</b>	✓
<b>Downtown Commercial Streets</b>	✓
Parkways	
<b>Neighbourhood Connectors</b>	✓
<b>Local Streets</b>	✓
Industrial Streets	
Shared Streets	

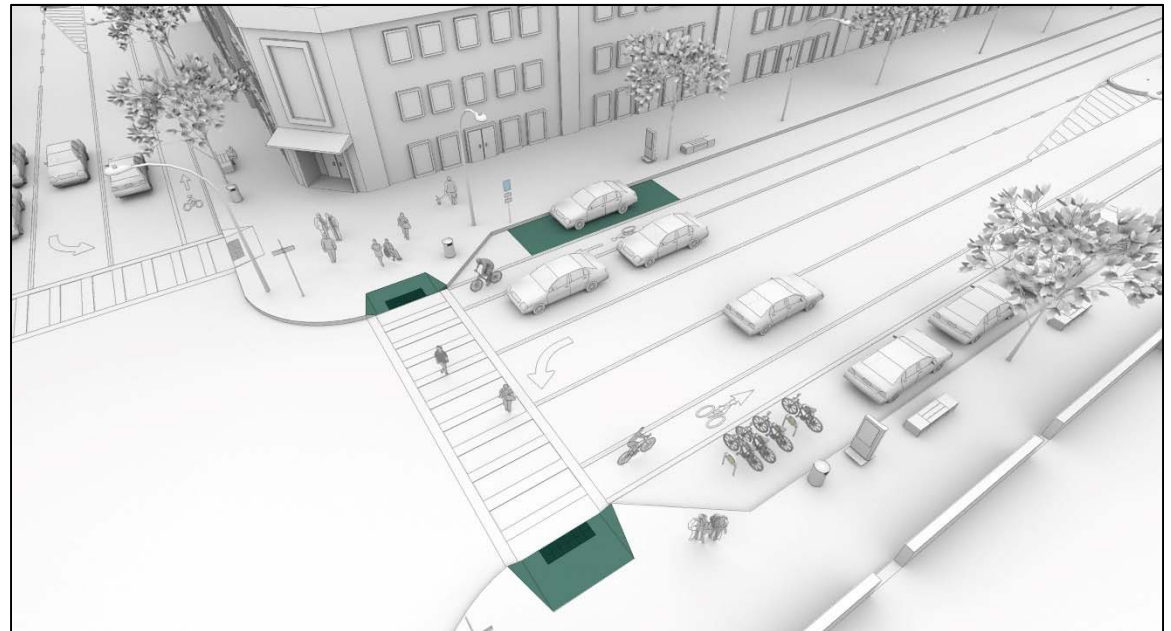


Figure 50 - Accessible On-Street Parking



## ON-STREET BICYCLE PARKING

Secure, visible bicycle parking is essential for encouraging bicycling to the City's downtown and main street areas. Although public bicycle parking is typically provided within the furnishing zone of the sidewalk area, on-street bicycle parking should also be considered in the busiest areas of the City. As AAA bicycling facilities in the City's downtown area increase, the City may wish to consider implementation of a bike share program. Design for bike share parking is similar to on-street bicycle parking treatments.

### Key Design Considerations:

- Consider provision of on-street bicycle parking where demand is high and the furnishing zone width is constrained
- Bicycle racks must be permanently installed to a paved surface and protected by bollards or other fixed methods ①
- The typical length of an on-street parking stall can accommodate 10 or more bicycle parking stalls
- Bicycle racks must need minimal maintenance with adequate clearances from adjacent parking stalls ②
- Bicycle rack designs should support the frame of the bike at two points, provide access for all different bike sizes, allow locking at two locations, and be easily accessible
- No matter the size or number of bicycle stalls provided, bicycle racks must be installed so that parked bicycles do not block adjacent travel or bike lanes

Street Typology	Primary Application
Freeways & Expressways	
Limited Access Arterials	
City Arterials	
Community Arterials	
Suburban Centre Arterials	
<b>Urban Main Streets</b>	✓
<b>Downtown Commercial Streets</b>	✓
Parkways	
Neighbourhood Connectors	
Local Streets	
Industrial Streets	
Shared Streets	



Figure 51 - On-Street Bicycle Parking

## 5.2.4 Calming Treatments for Urban Streets

With street treatments for each mode as previously described, the City will want to ensure that traffic operates at speeds suitable to the context of the roadway. Vehicle speeds on urban main street, downtown commercial street and suburban center arterial street typologies must be sensitive to the larger presence of people walking, bicycling, and using transit, as well as the vibrancy of land uses that surround them. In many cases, these people may be crossing streets to visit destinations between nearby intersections. Higher traffic volumes combined with higher speeds can remain a barrier for all modes regardless of the design treatments, and will impact desirability for street-oriented land uses. Along these streets, drivers should expect to move at slower speeds despite being a non-residential area with higher traffic volumes.

**Neighbourhood Traffic Management Guidelines and Tools** is a document developed by the City to address concerns about traffic in residential areas on public lanes, local, and collector streets. The report also identifies the types of traffic calming measures that will be considered to address neighbourhood traffic related issues. These treatments include horizontal deflection (curb extensions, raised medians, roundabouts, and choker points), vertical deflection (raised crosswalk, textured crosswalk, raised intersection, speed hump, speed table, and speed cushion) as well as obstructions (diverter, right-in/right-out island, full closure, directional closure, and intersection channelization).

Beyond the neighbourhood traffic calming measures that apply to local and collector roadways, **the Guide** provides a toolkit of treatments that may be considered to manage travel speeds on non-residential street typologies – urban main streets, downtown commercial streets, suburban centre arterials and community arterials.

## DESIRED LANE WIDTHS

In built up urban areas, the configuration and width of roadways impacts the availability of space on Saskatoon's streets. Every metre of the right-of-way should be treated as valuable space where trade-offs are typically required to support mobility, comfort for travel, and creating spaces for people. Conversely large lane widths for vehicles can significantly reduce the space that is most needed for priority modes such as bicycling and pedestrians.

In newer or expanding areas of the City where the right-of-way is less constrained, design standards have been established in the **City of Saskatoon Design and Development Standards Manual**. For example, recommended arterial and collector road travel lane widths are set at **3.6m**. Bike and parking lane width standards are generally set at **1.5m** and **2.4m** respectively. As is the case in most cities, these vehicle travel lane standards are conservatively large, and the widths for bicycle, parking and pedestrian facilities often reflect a minimum acceptable dimension.

The travel lane widths used on urban streets can vary from one community to the next, whereas minimum bicycle and parking lane widths are similar to those used in Saskatoon. A wide travel lane that is referred to in the **Design and Development Standards Manual** for collector and arterial roads may be appropriate on high volume streets and/or truck routes. In these cases, wider lanes are important to ensure safe, efficient movement of larger vehicles on higher speed corridors.

On streets where there is a larger presence of pedestrians and bicyclists as well as street-oriented land uses, most types of motor vehicles can operate with **3.2m** lane widths for through travel lanes and **3.0m** for turn lanes. Narrower lane widths will typically manage traffic speeds and increase comfort and safety for vulnerable road users.

**Transportation Association of Canada** research has found that there is limited safety benefit for automobiles derived by widening lanes beyond **3.2m**. In fact, the research found that widening beyond **3.7m** may be a detriment to road safety.

For freeways and limited access street typologies, the City may continue to utilize the wider lane widths and provide protected space for bicyclists and pedestrians where present. For city arterials, community arterials, suburban centre arterials, urban main street and downtown commercial street typologies, consideration should be given toward reducing travel lane width design standards. Narrower lane widths will improve safety and comfort in those areas where pedestrians and bicyclists are most present and will further support street-oriented lane use patterns. In some short road segments, mid-block pinch points and through intersections, lane widths for all modes may be reduced to manage space while maintaining visibility and awareness.

### Key Design Considerations:

- Consider using narrower travel lane widths on streets with high volumes of pedestrians and bicyclists
- In some areas, short sections of travel lane may reduce even further at mid-block pinch points or intersections
- Wide bicycle and parking lanes should be discouraged
- With narrower lane widths, the appropriate boulevard/furnishing zone should be present to accommodate snow storage



Figure 52 - Desired Lane Width



## MID-BLOCK NARROWINGS

Mid-block narrowing is already found along many non-residential streets of Saskatoon such as 2<sup>nd</sup> Ave downtown. Beyond creating a narrower lane width, this treatment functions as a ‘pinch point’ on the roadway with extensions of the curb on both sides of the street. Mid-block narrowing has been demonstrated to reduce vehicle speeds on major roadways during all periods of the day and can provide a street crossing where there are land uses with high pedestrian activity between intersections.

### Key Design Considerations:

- Mid-block narrowing is most effective on two lane roadways with parking on either side of the street ❶
- The location and landscape treatments should not impact driver sight-lines
- Mid-block narrowing should be as wide as the nearby parking space and of sufficient length to be visible and increase driver awareness
- Minimum lane widths for all modes as previously described can be used through the mid-block narrowing area
- Lanes for bicyclists should continue through the narrowing where space permits. ❷ Otherwise, shared lane markings should be used to increase driver awareness. This shared use lane configuration should be avoided in locations where bicyclists must ride uphill
- Crossings should be universally accessible for all ages and abilities with proper ramp design ❸
- Consideration may also be given toward using tactile warning strips
- Areas may be used for temporary snow storage while clearing during winter months. Snow plow operators require visual queues to the edge of curb when narrowing is not visible

Street Typology	Primary Application
Freeways & Expressways	
Limited Access Arterials	
City Arterials	
<b>Community Arterials</b>	✓
<b>Suburban Centre Arterials</b>	✓
<b>Urban Main Streets</b>	✓
<b>Downtown Commercial Streets</b>	✓
<b>Parkways</b>	✓
<b>Neighbourhood Connectors</b>	✓
Local Streets	
Industrial Streets	
Shared Streets	

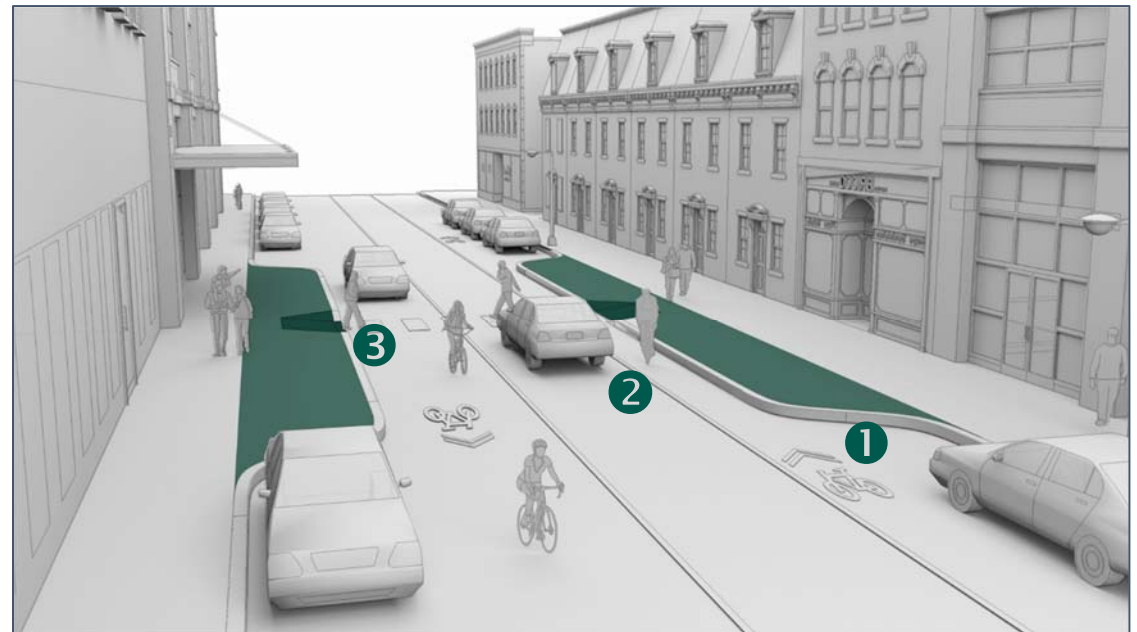


Figure 53 - Mid-Block Narrowing

## MID-BLOCK CENTRE MEDIAN ISLANDS

Centre median islands located between intersections can provide another form of ‘pinch point’ in the roadway to manage speeds and improve pedestrian crossings on urban streets in Saskatoon. Centre medians narrow the travel lanes from the middle of the roadway. Provided that there is ample space for landscaping, they can serve to ‘green’ the roadway and absorb storm water.

### Key Design Considerations:

- Median islands with pedestrian crossings should be placed at locations where land uses on both sides of the roadway attract pedestrians **1**
- Islands should be sufficiently wide for pedestrians to stand comfortably, protected from traffic, and long enough to be a visible change to the roadway
- Pavement markings should be used to increase visibility of the median island for drivers on both approaches **2**
- The crossing for pedestrians should be designed to be universally accessible
- On busier four lane roadways, the pedestrian crossing should be angled through the median so that pedestrians are facing oncoming traffic
- Centre median islands can be designed with or without mid-block narrowing
- Space for sidewalks should not be constrained, and bicycle lanes should continue through the median island treatment area **3**
- Where shared use lanes are used, pavement markings will increase driver awareness. The shared use lane configuration should be avoided in locations where bicyclists must ride uphill

Street Typology	Primary Application
Freeways & Expressways	
Limited Access Arterials	
City Arterials	
<b>Community Arterials</b>	✓
<b>Suburban Centre Arterials</b>	✓
<b>Urban Main Streets</b>	✓
<b>Downtown Commercial Streets</b>	✓
<b>Parkways</b>	✓
<b>Neighbourhood Connectors</b>	✓
Local Streets	
Industrial Streets	
Shared Streets	

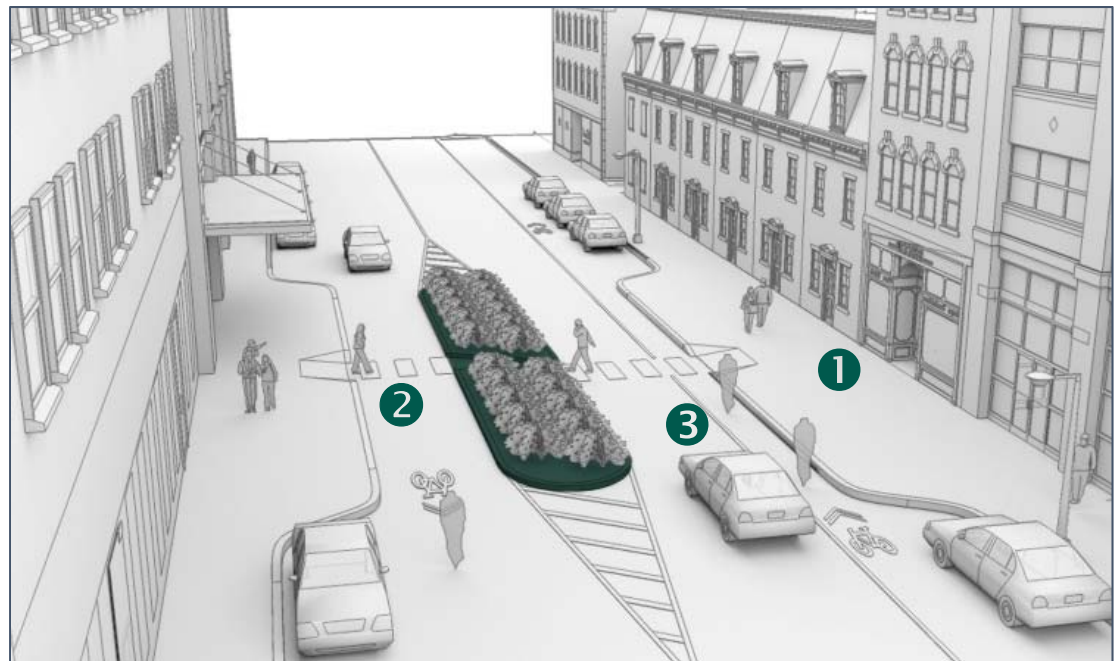


Figure 54 - Mid-Block Centre Median Islands

## 5.3 Intersections

While sidewalk area and street design treatments can provide reasonable separation between modes and street users, most intersections bring every mode together. There are 12 different movements that vehicles, transit, bicycles and pedestrians each can take at an intersection – most of which have conflicts with each other.

While much emphasis in the design of intersections has typically been placed on minimizing delays for vehicles, this is where most collisions occur for all travellers. As the most vulnerable street users, the consequences of collisions for pedestrians and bicyclists are significant, and large intersections in most cities cumulatively form barriers for walking and bike trips as well as transit customers. This is particularly true for people with disabilities.

Good intersection design must strive to make all modes comfortable and safe. Reducing the barriers for all modes and making them accessible will ultimately make the City's intersections supportive of people of all ages and abilities. As a minimum, the space and travelled pathway for all modes entering the intersection should be clear and visible, and, ideally, dedicated space will increase awareness and respect when crossing paths of different users. This makes intersections more intuitive and predictable for all modes passing through.

This section of **the Guide** provides a 'toolkit' of treatments for accommodating pedestrians, bicyclists, transit, and vehicles within the intersection environment. Much like streets, the toolkit does not offer a template for intersections, but rather a range of treatments for each mode on the most critical features of complete streets.

Any changes to retrofit intersections must be cognizant of the long-term goals and needs for all modes while considering context. In the transit-oriented areas of the City where walking, bicycling, and transit use is expected to grow, steps should be taken to accommodate this change before the needs or demands are present.

### 5.3.1 Pedestrian Treatments for Urban Street Intersections

Beyond the sidewalk area treatments described earlier in **the Guide**, pedestrian treatments at intersections are vitally important to the walkability and accessibility of Saskatoon. Wide sidewalks with attractive street furnishings and active uses within the frontage zones cannot overcome the barriers to walking created by poorly designed intersections. Along with bicyclists, pedestrians can be the most vulnerable travellers entering signalized and un-signalized intersections, and the cumulative impacts of auto-centric intersection designs can ultimately create significant barriers to walking and in turn the vibrancy of streets.

With commitments for increased walking in Saskatoon, the need for attractive streets accommodating people of all ages and mobility levels requires intersection treatments to be designed for pedestrians. Intersections must be designed to reduce vehicles speeds and increase the visibility and safety of pedestrians while minimizing conflicts between vehicles and vulnerable modes. The geometry of intersections must better accommodate people with physical and cognitive disabilities, ensuring that the City is accessible and comfortable for everyone.

This section of **the Guide** highlights a few of the most critical treatments for pedestrian prioritized intersections on those typologies where the prominence of pedestrians is greatest and traffic volumes are highest – such as urban main streets, downtown commercial streets and suburban centre arterials.



## CORNERS & CURB RADII

Perhaps the most significant challenge with intersection geometry is the balance between accommodating larger vehicles and managing speeds of most traffic making turns in the intersection. The design of corner curbs and particularly the radius can also impact crossing distance for pedestrians.

There are two basic design features to consider when determining the appropriate corner radii at an intersection. The first is the effective turn radius ❶ of vehicles turning corners where sufficient clearance is required for larger vehicles. This is essentially the space needed for vehicles to make a right-turn from one lane to another that may cross parking and bicycle lanes. Another consideration is the actual curb radius ❷ of the intersection corner being designed more for pedestrian safety and comfort in mind. Minimizing the actual curb radius will ensure that pedestrian crossing times are reduced. Pedestrian safety and comfort crossing major roadways is essential for urbanized areas of the City, and in high pedestrian areas, use of channelized right-turn islands should be avoided.

### Key Design Considerations:

- Larger corner radii will increase the length of the crosswalk and crossing time for pedestrians
- A smaller corner radius reduces crossing distance, time, and improves design with two pedestrian ramps that are better aligned with the crosswalk
- Vehicle turning speeds should be limited through an intersection (less than 20km/hr) to improve pedestrian safety
- The actual curb radius design should be defined after considering the effective curb radius.
- The effective curb radius may be minimized by choosing the smallest design vehicle possible, allowing vehicles to cross-over beyond the nearest receiving lane and permit emergency vehicles to utilize the full area of the intersection for making turns

- Considerations to determine curb radius should include: the street types, uses, number and width of receiving lanes, the volumes of large vehicles, and other street uses



Figure 55 - Curb Radii (Detail)

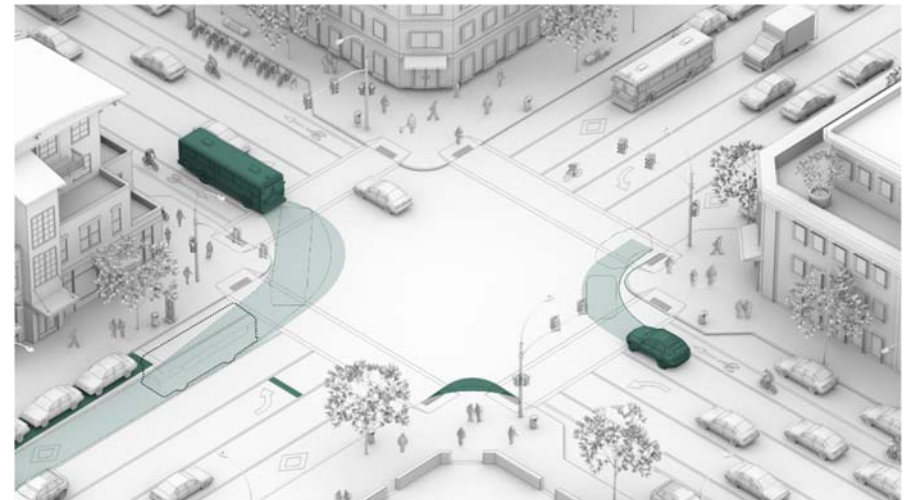


Figure 56 - Curb Radii

## CENTRE MEDIAN CROSSING ISLANDS

In busy pedestrian areas of the City, centre median crossing islands may be provided at signalized and un-signalized locations. They provide pedestrians refuge in the centre of multi-lane streets. For urban main street, downtown commercial street, and suburban centre arterial street typologies with larger volumes of pedestrians crossing the street, median island treatments can be designed to reduce exposure to traffic. Although typically used at signalized intersections, median islands can be used at un-signalized intersections permitting pedestrians to cross in two stages, with a standing area in the middle of the street.

It should be noted that these are different than centre median islands used on major streets to provide separation between higher speed traffic through an intersection and not to accommodate pedestrians.

### Key Design Considerations:

- Crossing islands should be considered on multi-lane streets where crossing distances are four or more lanes
- Centre median crossing islands should extend on both sides of the crosswalk area ❶
- Medians should be the same width as the crosswalk to provide adequate refuge for pedestrians
- The pedestrian crosswalk should extend through the island seamlessly without grade changes to be universally accessible ❷
- Turning vehicles must be accommodated in the design. Larger vehicles will likely cross into other lanes
- Signalized crossings must be timed to allow pedestrians to clear the entire intersection in one stage.
- Pavement markings should be considered to guide motorists around the crossing islands
- Where on-street parking exists, curb extensions may be considered in combination with crossing islands

- The depressed crosswalk through the centre median can accumulate gravel and snow. It is important to keep this area clear

Street Typology	Primary Application
Freeways & Expressways	
Limited Access Arterials	
City Arterials	
Community Arterials	
<b>Suburban Centre Arterials</b>	✓
<b>Urban Main Streets</b>	✓
<b>Downtown Commercial Streets</b>	✓
Parkways	
Neighbourhood Connectors	
Local Streets	
Industrial Streets	
Shared Streets	

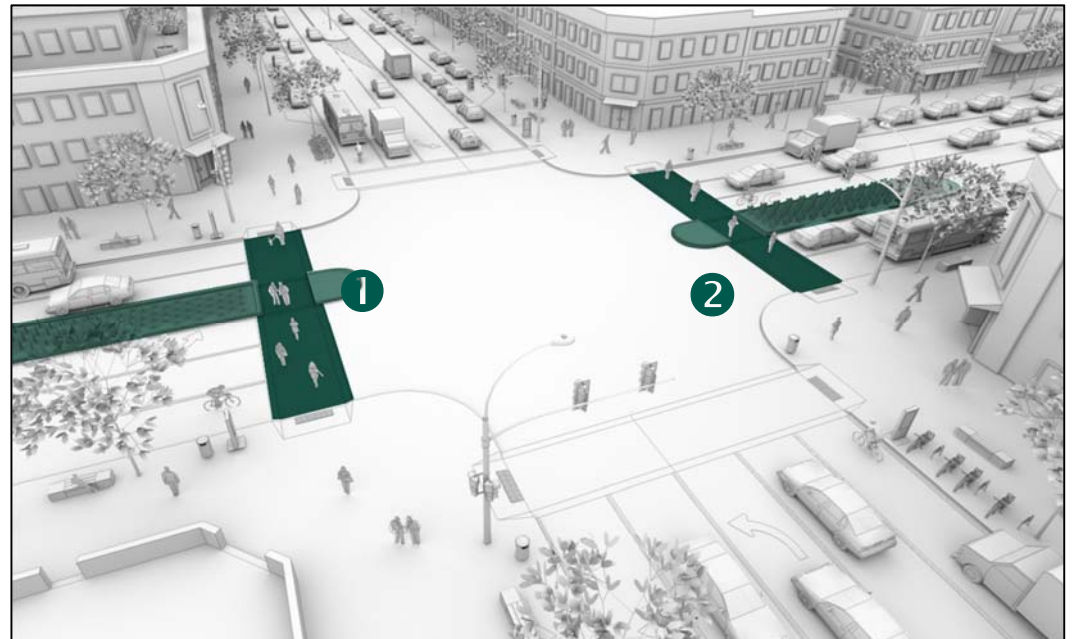


Figure 57 - Centre Median Crossing Islands

## CURB EXTENSIONS & RAMPS

As suggested, curb extensions are essentially extending the sidewalk area around intersection corners. Curb extensions and ramps can be used at both signalized and un-signalized intersections to reduce the crossing distance and exposure for pedestrians. They also provide space for pedestrians to stand comfortably without impacting the pedestrian zone of the sidewalk. Curb extensions narrow the roadway to manage vehicle speeds through the intersection, creating shorter crossing distances and times for pedestrians at signalized intersections, and enhanced traffic and transit flow on these busy streets. Curb extensions and ramps for pedestrians are important at major intersections where pedestrian activity is highest.

### Key Design Considerations:

- Curb extensions may be used on one or multiple corners of the intersection and are typically used in areas where on-street parking is provided ❶
- Intersection curb extensions are important at locations where pedestrian traffic is high and where there are demonstrated pedestrian safety issues
- Consider the impacts on larger vehicles in the design of curb extensions
- The curb extension design should extend into the roadway to the same width as the parking area ❷
- The length of curb extensions should be consistent with parking setbacks or restrictions from major intersections
- Travel and bike lanes can be narrowed to minimum lane widths through the intersection to accommodate curb extensions ❸
- Curb ramps must be universally accessible, contained within the crosswalk and have limited slope between sidewalk and roadway. Detectable warning strips should be considered in busy pedestrian areas ❹
- Curb extensions can be used for temporary snow storage and should be marked for snow clearing equipment
- Considering and retaining the location of existing storm drainage early in the design will minimize costs
- Curb extensions can also form bus bulbs described later in [the Guide](#)

Street Typology	Primary Application
Freeways & Expressways	
Limited Access Arterials	
City Arterials	
<b>Community Arterials</b>	✓
<b>Suburban Centre Arterials</b>	✓
<b>Urban Main Streets</b>	✓
<b>Downtown Commercial Streets</b>	✓
<b>Parkways</b>	✓
<b>Neighbourhood Connectors</b>	✓
Local Streets	
Industrial Streets	
Shared Streets	

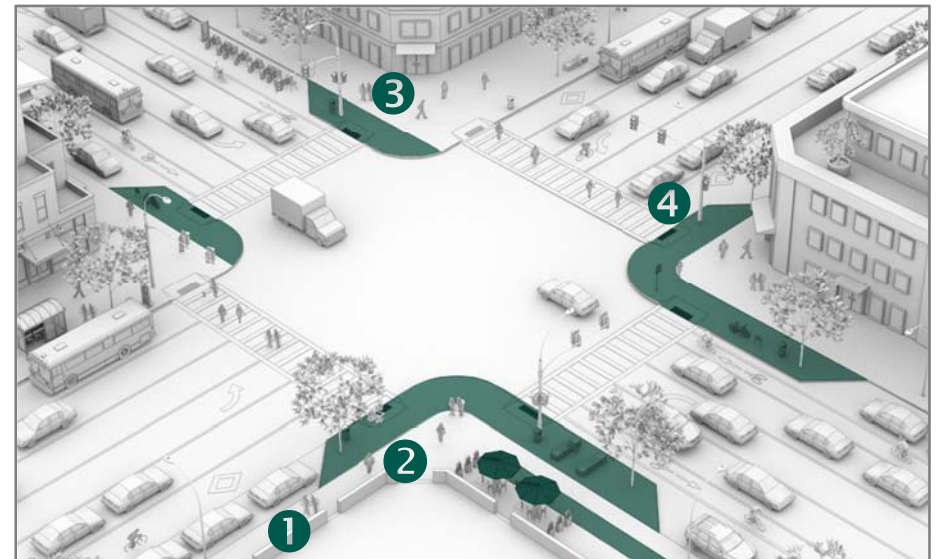


Figure 58 - Curb Extension & Ramps



## STANDARD AND ENHANCED CROSSWALKS

Crosswalks for signalized and un-signalized intersections not only define the space for pedestrians to cross, but are also essential to increase driver awareness. The space provided must be visible and of sufficient size to support the pedestrian demand. On busier streets with higher pedestrian activity, crosswalks form the protected space for people of all ages and mobility levels to safely cross the street.

Saskatoon has two principal crosswalk design treatments. The most common or standard treatment consists of two parallel lines with a stop bar located behind the crosswalk area. ❶ This standard crosswalk treatment is used at both signalized and un-signalized intersections on all classes of roadways. The more enhanced form of crosswalk – zebra style – is more visible for drivers as they approach and travel through the intersection. They consist of bars running perpendicular to pedestrian traffic across the intersection. ❷

### Key Design Considerations:

- Crosswalks should be located and aligned to maximize visibility of pedestrians and to reflect the desired walk path – thus minimizing walk times
- The enhanced crosswalk treatment should be considered where driver awareness needs to be heightened
- Enhanced crosswalks may be suited to intersections near transit stops and stations, adjacent to schools, seniors' homes, hospital facilities, and other areas with high pedestrian activity
- Ramps for pedestrians to cross should be universally accessible with reasonable grades between sidewalk and street areas
- Standard crossings may be used at most other locations outside the busiest pedestrian areas of the City and where standard signalized and un-signalized intersections exist
- Pedestrian crosswalk requests must adhere to the policy **C07-018 Traffic Control at Pedestrian Crossing**. This policy provides the following hierarchy of typical pedestrian crossing applications: Standard Crosswalk, Zebra

Crosswalk, Pedestrian Corridor, Active Pedestrian Corridor, and Pedestrian Actuated Signal

Street Typology	Standard Crosswalk Applications	Enhanced Crosswalk Applications
Freeways & Expressways		
Limited Access Arterials	✓	
City Arterials	✓	
Community Arterials	✓	✓
Suburban Centre Arterials	✓	✓
Urban Main Streets		✓
Downtown Commercial Streets		✓
Parkways	✓	✓
Neighbourhood Connectors	✓	
Local Streets	✓	
Industrial Streets	✓	
Shared Streets	✓	

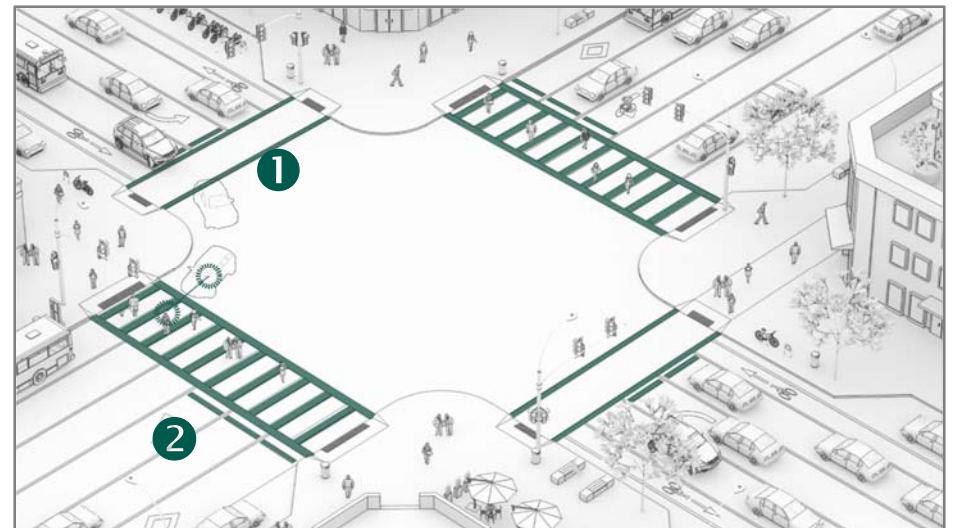


Figure 59 - Standard & Enhanced Crosswalks

## TRAFFIC SIGNALS

Intersection traffic signals are installed in Saskatoon when warranted by traffic volumes, pedestrian activity and other considerations. They are typically implemented to manage delays at busy intersections and to reduce overall travel times for vehicles on cross-streets. As such, implementation of traffic signals is generally centred on cross-streets of major roadways such as the city arterial, suburban centre arterial, urban main street and downtown commercial street typologies.

Many streets can be made more complete simply through signal timing and other design measures. Roadway and intersection traffic signals can be designed to achieve many goals – sometimes in support of each other. Signal timings can be arranged to minimize delays for vehicles by optimizing isolated intersection and/or through coordination of green times between signals on major streets. The timing and features of traffic signals can also be designed to accommodate walking and bicycling and increase safety and priority for vulnerable road users. Areas of high pedestrian activity can have automatic pedestrian signals, instead of requiring the button to be pushed. While faster speeds without signals can reduce travel times for automobiles and transit, the comfort and safety for pedestrians and bicyclists cannot be compromised.

### Key Design Considerations

- Consider multi-modal benefits and impacts of the design and timing of all signalized intersections
- Synchronized or coordinated signal timings are preferred on most arterial roadways and should be set at or below the posted speed suited for the street typology. Signals on other roadways such as community arterials, urban main streets and downtown commercial streets should be coordinated for 30km/hr to 40km/hr.
- Install bicycle signal-heads for signalized intersection on existing and planned bicycle routes

- Signals on bicycle routes should be timed and designed for bicycle commute trip speeds of 15 to 20km/hr
- Countdown signals for pedestrians should be considered at all signalized intersections with high pedestrian activity
- Consider installing accessible pedestrian signals at all intersections with high pedestrian activity such as on downtown commercial street, urban main street, and suburban centre arterial typologies to help users who are visually impaired
- All legs of a signalized intersection should have a marked crosswalk unless there is no pedestrian access on either corner
- Curb extensions and transit bulbs can be used to reduce the crossing times for pedestrians at signalized intersections and improve overall mobility for traffic in many cases
- Advanced right-turn on red where pedestrian and traffic volumes are highest such as on downtown commercial streets may be warranted
- In areas where pedestrian demands may consume much of the green time for traffic, an advanced right-turn signal for traffic will permit a few more vehicles to get through the area while pedestrians wait.
- Signals and signage prioritizing transit should be implemented on the Red and Blue Line BRT corridors and all timing along these routes should be designed to prioritize buses



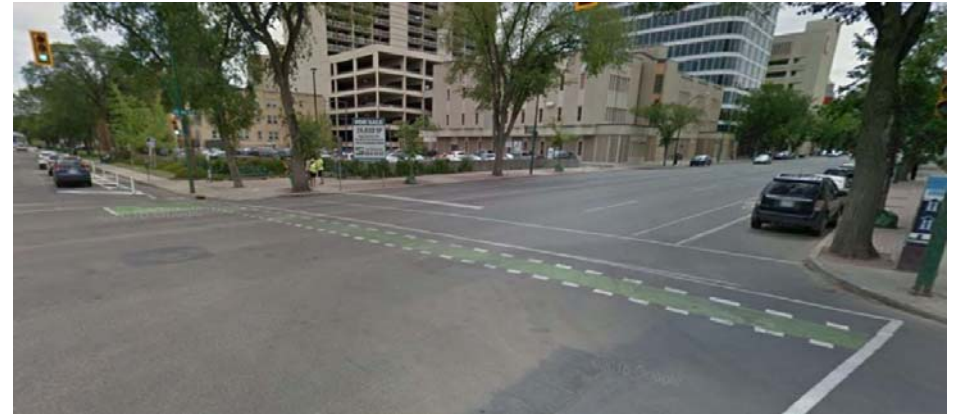
### 5.3.2 Bicycle Facilities at Intersections

The **Active Transportation Plan (AT Plan)** envisions the implementation of 350km of bicycling facilities across the City over the next 30 years. Bicyclists are among the most vulnerable road users, with many collisions occurring at intersections resulting in significant injuries or fatalities. As illustrated in **Figure 60**, many of the collisions involving bicyclists occur along some of the busiest corridors within the Central Business District, along 8<sup>th</sup> Street East, 22<sup>nd</sup> Street West, 20<sup>th</sup> Street West, 33<sup>rd</sup> Street West, and Idylwyld Drive.

Good intersection design can make bicycling more comfortable, more attractive, and reduces conflicts between motor vehicles and pedestrians. Some of the principles used to guide the design of bicyclists through the intersection include:

- Providing a continuous and clear route for bicyclists through the intersection
- Ensuring visibility of bicyclists for motorists approaching and entering the intersection using pavement markings and signage
- Managing conflicts with turning vehicles as well as pedestrians crossing at the intersection
- Designing signals to accommodate clearance times for bicyclists through the intersection

This section of **the Guide** outlines specific design treatments for bicycle facilities through intersections that must be addressed when implementing the **AT Plan**. For more detailed information on the design standards for those treatments presented in **the Guide**, the **National Association of City Transportation Officials (NACTO) Bicycle Guide** and **Massachusetts Department of Transportation Separated Bike Lane Planning and Design Guide** provides excellent guidance on designing protected bicycle lanes at intersections.





## BICYCLE LANES AT INTERSECTIONS

Bicycle friendly intersections offer continuous, designated lanes through cross-streets for the comfort and safety of bicyclists and the visibility and awareness of other modes. The City has used both dashed pavement markings and coloured pavement markings to delineate the provision of bicycle lanes through intersections.

### Key Design Considerations:

- Dedicated bicycle lanes through the intersection should be provided for all major signalized intersections served by protected, buffered and standard bicycle lanes
- When combined with right-turn lanes for vehicles, bicycle lanes should remain on the left side of the turn lane ❶
- Intersection crossing markings such as dashed lines, shared lane markings, coloured pavement markings or a crossride can be used through the intersection to define space for bicyclists ❷
- Parking spaces should be set back from the intersection to limit conflicts with bicyclists
- Bicycle lanes through the intersection may be slightly narrower than the standard bicycle lane width in recognition of space constraints – a minimum of 1.3m ❸
- At roundabouts, bicycle lanes should be designed for bicyclists to either merge with traffic on the approach or use a separated space around the intersection parallel to the sidewalk area
- Signal timing designs must be considerate of travel speeds by bicyclists in terms of minimum green intervals and clearance times to allow safe passage
- Signal loops and detectors for bicyclists at the intersection should be placed before the crosswalk to prompt the green phase in much the same way as an actuated pedestrian signal. In some cases, mounted activation buttons may be used for bicyclists on the curb lane
- Bicycle signal heads should be separated and positioned for best visibility of bicyclists to protect from conflicting movements

- Protected signal phases may be used to eliminate conflict between turning motorists and people bicycling through the intersection

Street Typology	Primary Application
Freeways & Expressways	
Limited Access Arterials	✓
City Arterials	✓
Community Arterials	✓
Suburban Centre Arterials	✓
Urban Main Streets	✓
Downtown Commercial Streets	✓
Parkways	✓
Neighbourhood Connectors	
Local Streets	
Industrial Streets	✓
Shared Streets	



Figure 60 - Bicycle Lanes at Intersections

## BIKE BOXES

Bike boxes at signalized intersections offer dedicated space for bicyclists to wait and make turns in protected areas. Bike boxes can either be placed on the near-side approach to the intersection or far-side. The near-side placement of bike boxes ❶ allows bicyclists to move to the front of traffic at a red light in order to make a left-turn. Far-side bike boxes allow for bicyclists to turn left after the signal on the cross-street turns green in two stages to avoid potential conflicts with through traffic. ❷

### Key Design Considerations:

- Near-side bike boxes allow bicyclists to comfortably move ahead of traffic before the signal changes to turn alongside left-turn vehicles with the assistance of a turn signal
- Near-side bike boxes should be designed with sufficient depth for bicyclists to comfortably access a space between the stop bar for vehicles and the crosswalk in order to proceed to the front of traffic when the signal is red
- Far-side bike boxes are designed for a two-stage left-turn movement.
- Bicyclists seeing a green light can proceed through the intersection in the bike lane and then wait in the bike box to await the green signal for the cross-street travel.
- Far-side bike boxes can be used with protected and buffered bike lanes on the cross-street or where there is parking on the cross-street
- This protected area provides space for bicyclists to wait before proceeding to complete the left-turn movement in two stages
- When right-turn lanes for vehicles are provided at an intersection, bike boxes can be used to allow bicyclists to proceed to the front of the queue before vehicles turn right

Street Typology	Primary Application
Freeways & Expressways	
Limited Access Arterials	✓
City Arterials	✓
Community Arterials	✓
Suburban Centre Arterials	✓
Urban Main Streets	✓
Downtown Commercial Streets	✓
Parkways	
Neighbourhood Connectors	
Local Streets	
Industrial Streets	✓
Shared Streets	

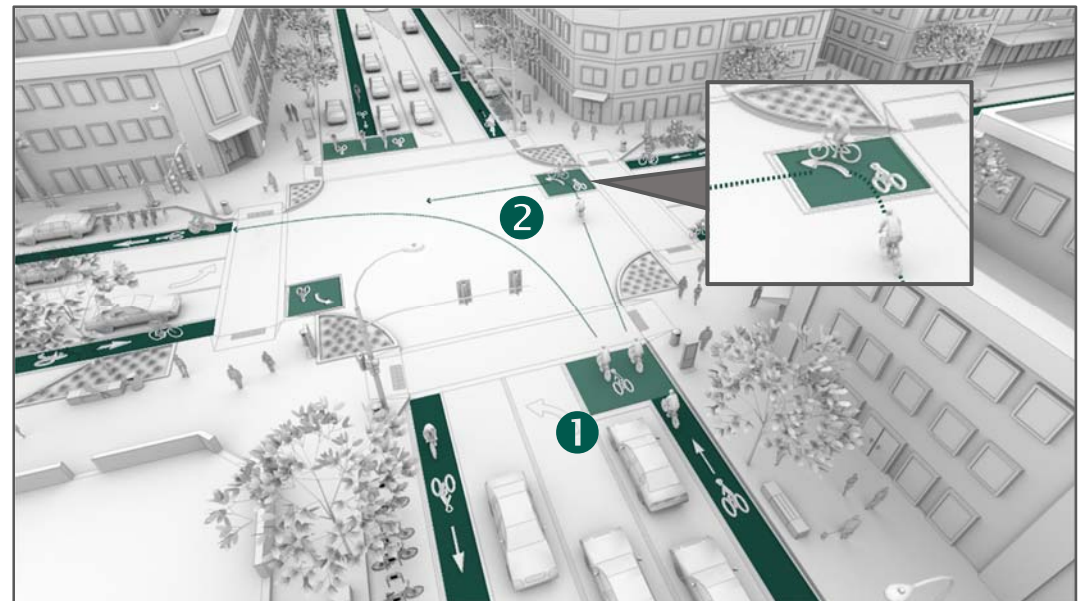


Figure 61 - Bike Boxes

## PROTECTED BICYCLE LANES AT INTERSECTIONS

Protected bike lanes provide physical separation from adjacent travel lanes. This can be achieved through a combination of methods including a parking lane, painted medians, flex posts and/or elevated sections. Approaching intersections, bicyclists using protected bicycle lanes must be visible to drivers and other modes. As such, managing the conflicts between bicyclists within protected bike lanes and turning traffic as well as other modes through design is critical to the successful implementation of the **AT Plan**.

### Key Design Considerations:

- On the near-side approaching major intersections, the buffered or protected area for bicyclists should continue to the stop bar **1**
- Parking restrictions should be set back from the stop bar to ensure that bicyclists approaching the intersection are visible to drivers **2**
- Pavement markings and coloured asphalt should extend through the intersection to increase visibility and awareness of space for bicyclists, especially for right-turn traffic on cross-streets
- In some cases, narrower width bike lanes may be used to both slow bicyclists through the intersection and to manage available space
- Separate bicycle signal heads should be considered to increase awareness and to manage conflicts with turning vehicles **3**
- Left-turn bicycle movements may be accommodated on the far-side of the intersection with a bike box **4**
- Far-side bus stops should be implemented alongside protected bike lanes without impeding the function of the bike lane behind the bus stop / shelter **5**
- At minor intersections, similar treatments are required to increase visibility, safety, and comfort for bicyclists in protected bicycle lanes

Street Typology	Primary Application
Freeways & Expressways	
<b>Limited Access Arterials</b>	✓
<b>City Arterials</b>	✓
Community Arterials	
Suburban Centre Arterials	
<b>Urban Main Streets</b>	✓
<b>Downtown Commercial Streets</b>	✓
Parkways	
Neighbourhood Connectors	
Local Streets	
Industrial Streets	
Shared Streets	

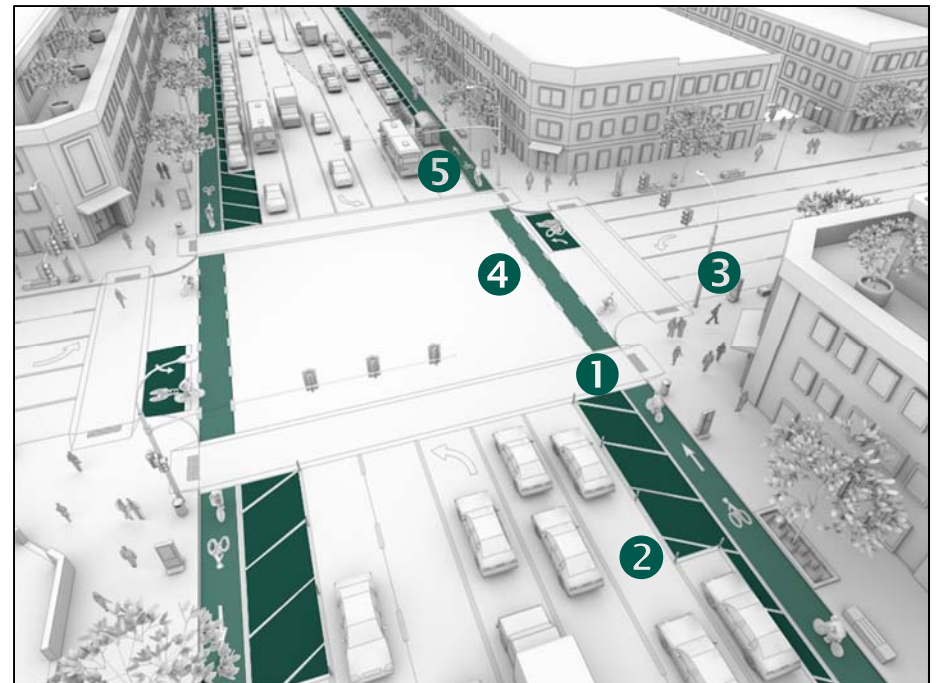


Figure 62 - Protected Bicycle Lanes at Intersections

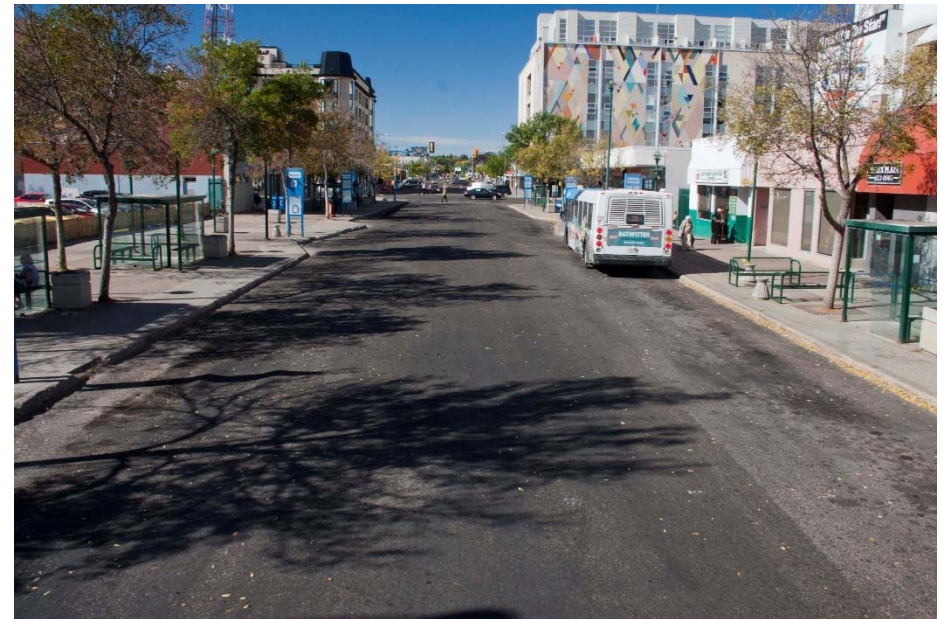


### 5.3.3 Transit Accommodation at Intersections

The **Growth Plan** outlines the overall direction for transit in Saskatoon for the next 25 years. Considerable resources will be directed toward providing more frequent, direct, reliable and comfortable transit services for customers by building a Bus Rapid Transit (BRT) network that serves major corridors transforming them into urban ‘main streets.’

Consistent treatments at intersections are vitally important to transit travel time, reliability of transit, and the customer experience. Intersections are where most transit stops occur and interactions with passengers happen, and waiting at signalized intersections and major stops can account for a significant amount of delay experienced by passengers and the transit operator.

This section of **the Guide** addresses key treatments to minimize delays to buses at signalized intersections in terms of locating stops, providing transit priority treatments as well as off-fare collection areas at rapid transit stations that must be integrated with treatments for BRT lanes as described in Section 4.2.3. While transit accommodation is emphasized, it will be important to consider conflicts between transit vehicles and vulnerable travelers such as pedestrians and bicyclists through intersections. Where space at intersections cannot be provided for each mode, safety of the most vulnerable road users must take precedent in the design of intersections.



## BUS STOP LOCATIONS

Bus stops are located and designed on a site-by-site basis, and can be used to manage delays to transit customers as well as overall costs of transit operations. Ultimately, their location and design must reflect the needs for transit passengers, minimize operator delays, and the safe operation for other modes. In most cases, bus stops should be located at intersections – preferably the far-side. That way, passengers can easily connect with other transit services using appropriately designed crosswalks.

### Key Design Considerations:

- While the number of stops can ensure access to more passengers, their spacing can increase travel times for passengers
- Bus stops should ideally be spaced according to the land uses that surround them and anticipated passenger activity
- In dense urbanized areas of the City, stop spacing may be as little as **400m**, while at least **800m** or more in more suburban areas of the City
- Far-side stops allow buses to utilize signal progression, thus reducing delays at red lights, minimizing conflicts with and delays for right-turn vehicles **1**
- This reduces conflicts with pedestrians that cross behind the bus
- Near-side stops can minimize interference on cross-street traffic when multiple buses arrive at the same time, enabling passengers to board the bus close to intersections and can reduce conflicts to other traffic as pull-outs are available **2**
- Mid-block stops should only be considered in select locations where significant passenger generators are located. When parking restrictions and passenger space is available, mid-block stops can result in fewer conflict points with traffic and other modes at intersections **3**

Street Typology	Primary Application
Freeways & Expressways	
<b>Limited Access Arterials</b>	✓
<b>City Arterials</b>	✓
<b>Community Arterials</b>	✓
<b>Suburban Centre Arterials</b>	✓
<b>Urban Main Streets</b>	✓
<b>Downtown Commercial Streets</b>	✓
<b>Parkways</b>	✓
<b>Neighbourhood Connectors</b>	✓
<b>Local Streets</b>	✓
<b>Industrial Streets</b>	✓
Shared Streets	

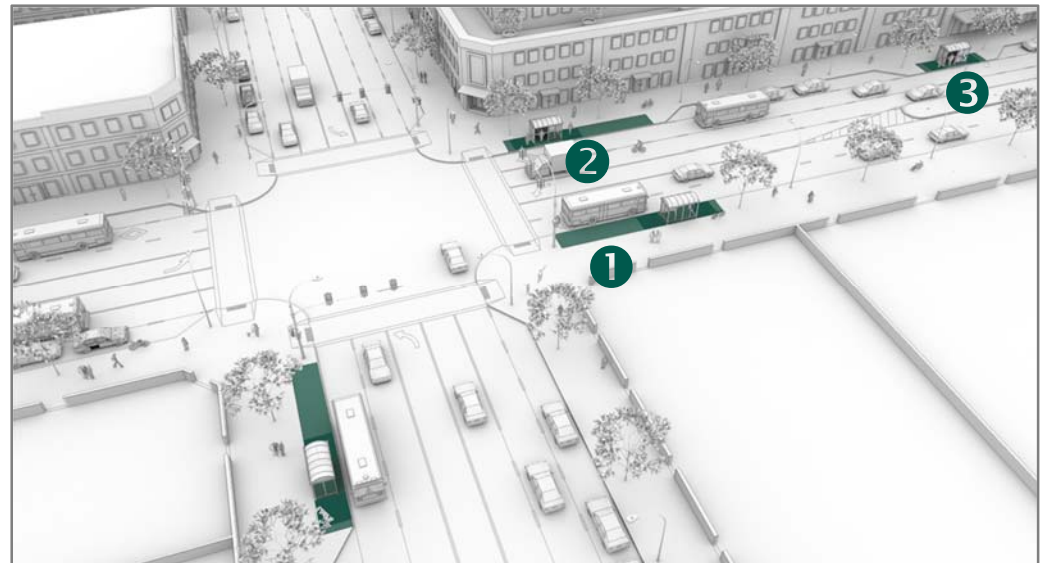


Figure 63 - Bus Stop Locations

## TRANSIT PRIORITY AT INTERSECTIONS

In an effort to make transit more reliable and minimize travel times for customers, the City may wish to consider transit priority treatments at all intersections that experience recurring delays, on routes supporting frequent transit services, and on planned Bus Rapid Transit (BRT) corridors. Transit priority treatments may include, but are not be limited to, signal coordination, queue jumpers at intersections, and bus only lanes. In some areas, the City will want to implement bus only lanes in the most congested areas along the Red BRT Line. In other locations with frequent transit services, other transit priority treatments should be considered.

### Key Design Considerations:

- Signal timing and coordination that prioritizes frequent and rapid transit corridors should be considered for all signalized intersections on both the Red and Blue BRT Lines
- As a minimum, priority can be given to minimize delays in the direction of the rapid transit corridors. Additionally, green times can be extended for buses as they approach a signal or shortened when buses are waiting at the intersection.
- Bus queue jump lanes at signalized intersections can be used to not only bring transit to the front of the queue past traffic, they can also take advantage of the signal priority treatments noted above
- In urban areas of Saskatoon, right-turn lanes can also be used as a bus queue jump lane with priority through the intersection when the light turns green. ❶
- Bus queue jump lanes can be used at intersections with or without a bus stop on the near- or far-side
- Overhead signage is required to support right-turn vehicles only, with the exception of buses ❷
- Transit operators must be trained on the different forms of transit priority at intersections and how best to manage interactions with other modes

Street Typology	Primary Application
Freeways & Expressways	
<b>Limited Access Arterials</b>	✓
<b>City Arterials</b>	✓
<b>Community Arterials</b>	✓
<b>Suburban Centre Arterials</b>	✓
<b>Urban Main Streets</b>	✓
<b>Downtown Commercial Streets</b>	✓
Parkways	
Neighbourhood Connectors	
Local Streets	
Industrial Streets	
Shared Streets	

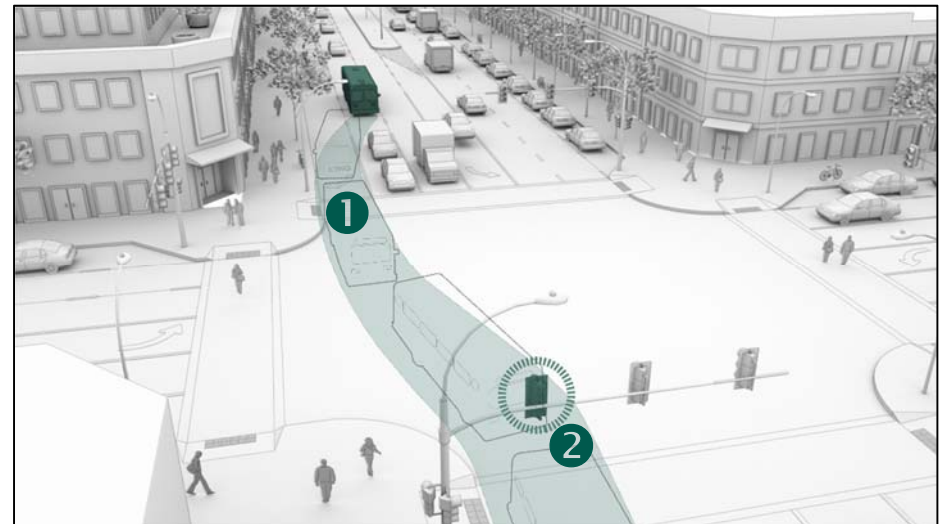


Figure 64 - Transit Priority at Intersections



## BUS BULBS

To reduce the time for buses to pull out of and back into traffic, bus bulbs have been used in Saskatoon to keep transit in the curbside travel lane. This reduces delays to transit and can also serve to enhance stop areas and amenities for passengers.

Bus bulbs are similar to curb extensions found at many intersections. In addition to protecting the parking lane and reducing crossing distance for pedestrians, the extension is much longer allowing for more passenger space and other bus stop functions.

### Key Design Considerations:

- Most appropriate at far-side stops with higher passenger activity
- Bus bulbs at near-side stops are not preferred as they can interfere with right-turn traffic and impact visibility of pedestrians and bicyclists
- The impacts of bus bulbs on traffic operations and safety at the intersection should be considered based on experience elsewhere in the City
- Bus bulbs should be considered on multi-lane roadways to minimize impacts on other traffic ①
- Bus bulbs are only appropriate where on-street parking is present ②
- Consideration must be given toward conflicts with bicyclists through the intersection as well as pedestrian areas
- Bus bulbs will be most effective for reducing transit travel times as well as driver awareness when used in many locations across a corridor

Street Typology	Primary Application
Freeways & Expressways	
Limited Access Arterials	
City Arterials	
<b>Community Arterials</b>	✓
<b>Suburban Centre Arterials</b>	✓
<b>Urban Main Streets</b>	✓
<b>Downtown Commercial Streets</b>	✓
Parkways	
Neighbourhood Connectors	
Local Streets	
Industrial Streets	
Shared Streets	

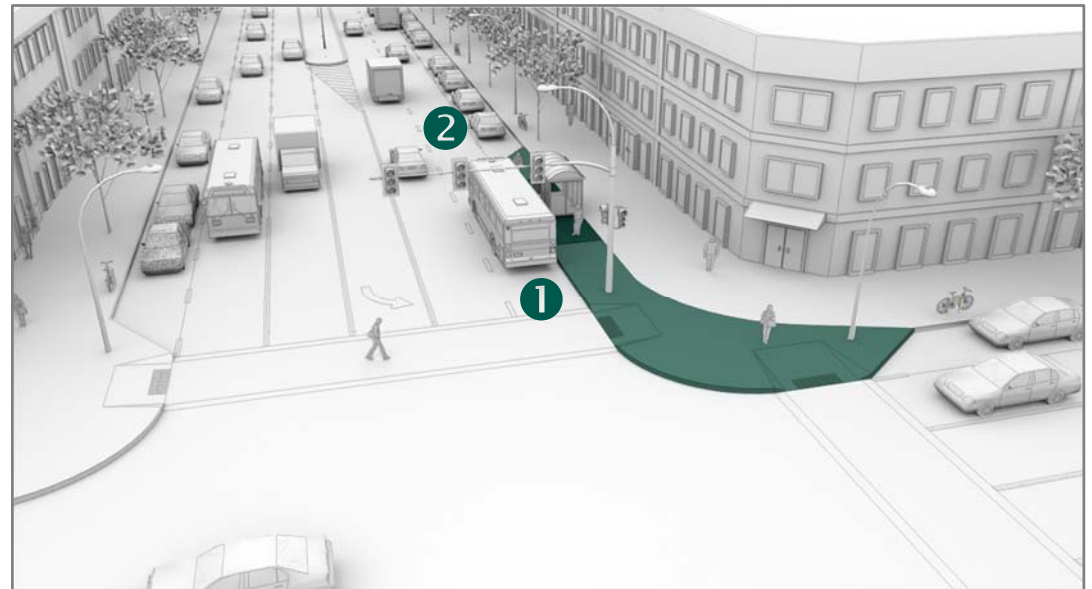


Figure 65 - Bus Bulbs

## FARE PAID ZONES (BRT STOPS)

The boarding and payment process for passengers can add considerable time to the journey, and at some of the busiest stops, it can take more than two minutes of dwell time for every 20 passengers boarding the bus. Fare paid zones are designed to reduce the dwell times for buses on planned rapid transit routes. Rather than making a payment or swiping transit passes while entering the bus, passengers can make their payment before entering the fare paid zone at a BRT bus stop and are permitted to enter all doors. This will significantly reduce travel times for passengers and improve effectiveness of increased service levels on rapid transit corridors.

### Key Design Considerations:

- Fare paid zones should be concentrated at those stops/stations that are located on the BRT corridors where passenger activity is highest ①
- Sufficient space is required in the design of BRT stations/stops to support entry, fare payment as well as a fare paid zone with passenger seating/waiting and loading/off-loading areas
- In high demand stops, separate fare payment kiosks serving those passengers with and without smart transit cards may be required
- Proof of payment on buses needs to be monitored and enforced to reduce misuse of the prepayment boarding system

Street Typology	Primary Application
Freeways & Expressways	
<b>Limited Access Arterials</b>	✓
<b>City Arterials</b>	✓
<b>Community Arterials</b>	✓
<b>Suburban Centre Arterials</b>	✓
<b>Urban Main Streets</b>	✓
<b>Downtown Commercial Streets</b>	✓
Parkways	
Neighbourhood Connectors	
Local Streets	
Industrial Streets	
Shared Streets	

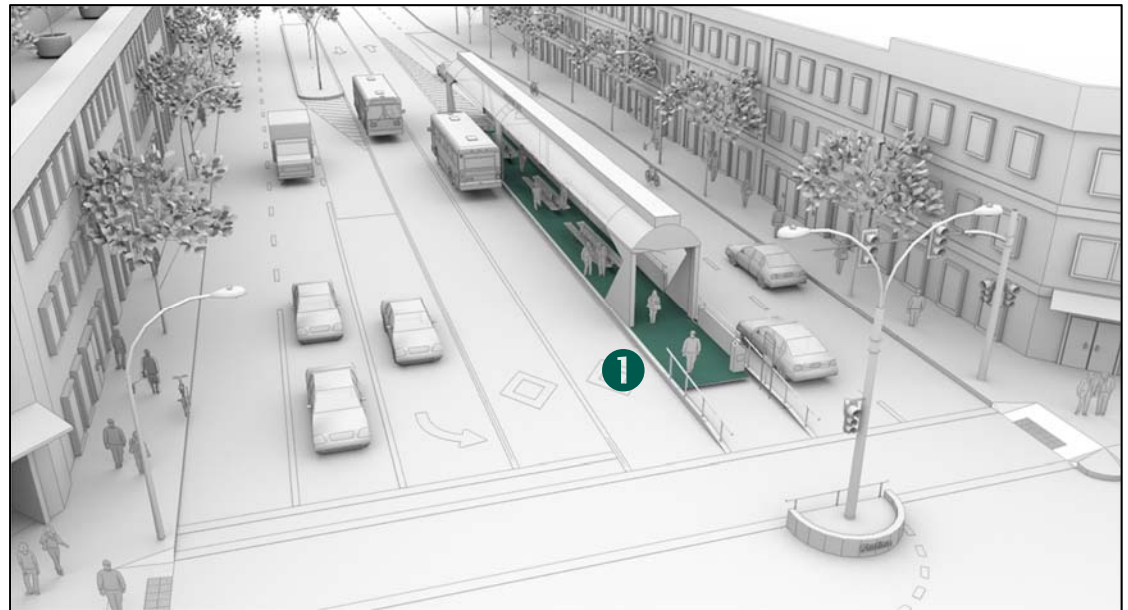
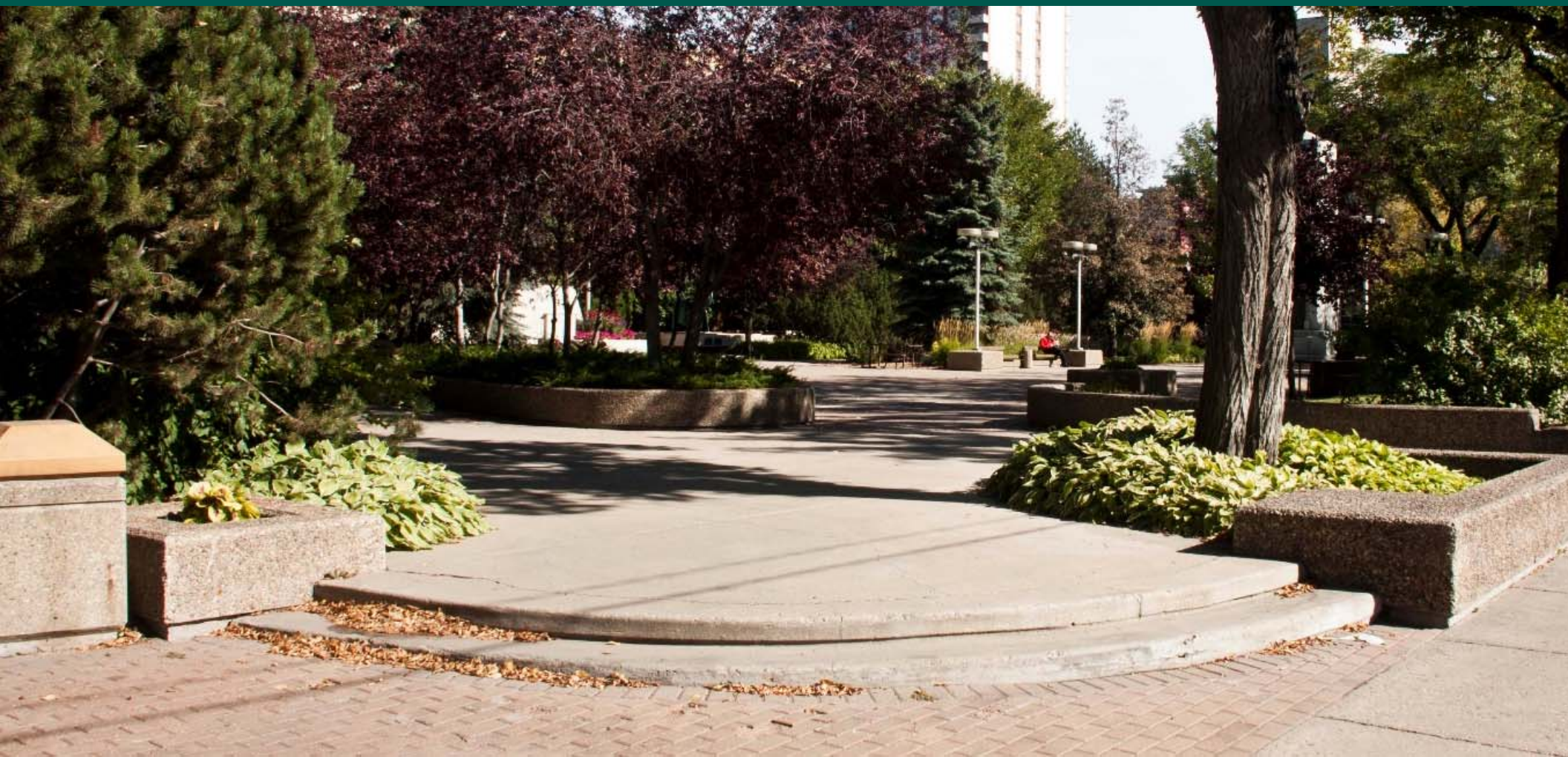


Figure 66 - Fare Paid Zones

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## PART 6: Opportunities for Implementation



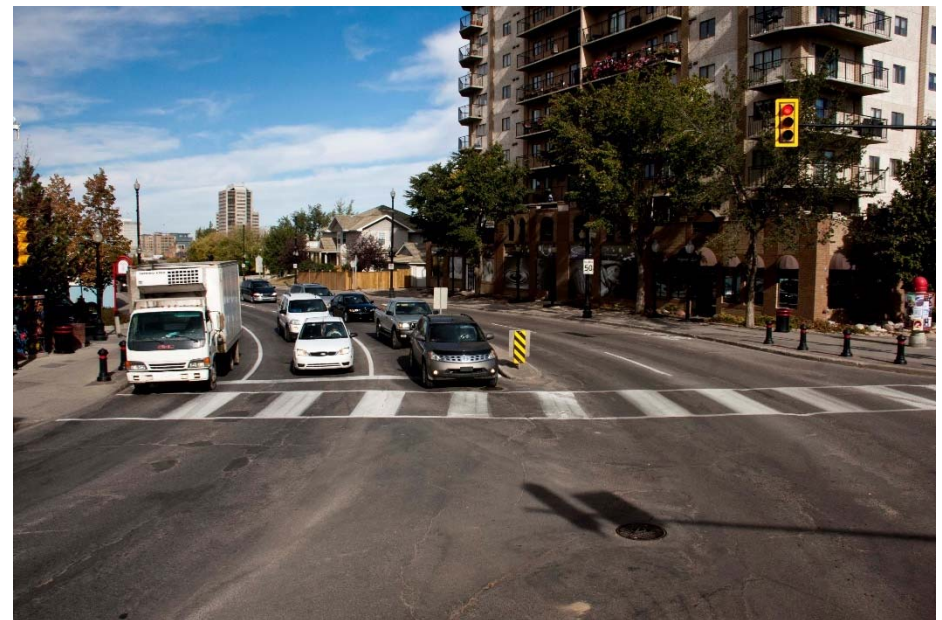


**The Complete Streets Policy and Design Guide** provides a new way of planning and designing street space. It is as much a process to consider changes to the street environment as it is an outcome to improve balance between travel modes and to ensure that streets are supportive of the communities that surround them. **The Guide** ensures that the area and street contexts today and in the long-term are used to inform any changes to the street space.

**The Guide** is the starting point to shape conversations about changes to the design of existing and new streets in the City. For example, City staff may use **the Guide** to support ongoing initiatives and discussions with Council. Similarly, Council may use **the Guide** to discuss capital investments with residents and the significance of the changes that will be required to improve choices for travel, making better communities. In the end, **the Guide** must be accessible to the public to broadly understand how city streets in Saskatoon may change in coming years.

Although it will take time to make material changes to city streets, successful implementation of **the Guide** dictates early changes to ‘how’ streets are being planned, designed, constructed, operated, and maintained. It requires interdisciplinary considerations of the context and aspirations for the surrounding areas and for the corridor itself, based on current day conditions and planned changes.

This section of **the Guide** presents actions to begin the implementation of a new process for advancing complete streets. Rather than creating new initiatives centred specifically on complete streets, this section outlines strategies for building complete streets into the activities already undertaken by the City. More importantly, many of the existing processes for planning, designing, operating, and maintaining streets should involve perspectives from different departments. Through the **Growth Plan** process and other City initiatives, much of the ground work toward engaging interdisciplinary thinking has already begun throughout the organization.



## AMEND THE DESIGN & DEVELOPMENT STANDARDS MANUAL (<2 YEARS)

The City's **Design & Development Standards Manual (the manual)** provides guidance on typical standards for new streets and treatments for existing streets to support all modes of travel. **The Guide** outlines new treatments that are critical ingredients to realize complete streets across the city.

Beyond the design considerations referred to in **the Guide**, the City should amend **the manual** based on the specific treatments outlined in this document. **The manual** should speak to alternative standards that may be suitable for a specific treatment in various circumstances (i.e. on two lane versus multi-lane roadways if different). **The manual** should be designed for application in both retrofit situations as well as new neighbourhood development. Updates to **the manual** should promote flexibility in dealing with constraints such as right-of-way limitations or potential integration of street uses.

As part of this review process, the City will want to understand the financial implications of incorporating complete street designs in new neighbourhood development areas and should update the levy structure as required to accommodate these new standards.

## UPDATES OF STREET TYPOLOGIES (ONGOING)

Complete street treatments will play a vital role in transforming many major roadways in the City into active streets that promote greater integration between land uses and the right-of-way that surround and serve them.

Street typologies referred to in **the Guide** reflect the integrated aspirations for many major corridors in the city. A map of the complete street typologies was created based on the context for area, corridor conditions and aspirations as presented in the **Growth Plan** and other relevant plans developed by the City. The context of a street may change as new plans are developed over time. As such,

the City may wish to refine the typology maps presented in **the Guide** to ensure the process of setting context incorporates the most current planning information that is available, possibly through a living document.

## LOCAL AREA PLANS OR TRAFFIC REVIEW PROGRAMS FOR ESTABLISHED NEIGHBOURHOODS (ONGOING)

The City has Local Area Plans (LAP's) for many of the existing neighbourhoods. It will be important to ensure context forms the basis of discussions when neighbourhood residents are considering land use, neighbourhood safety, transportation, and how development can contribute to the evolution of their neighbourhoods.

As part of the LAP or NTR process, stakeholders are given the opportunity to review and analyze key attributes that form a healthy and inclusive community. As part of the Neighbourhood Traffic Review (NTR) process, the community is involved in reviewing the transportation network and identifying traffic concerns and issues. By leveraging the residents' familiarity of community behaviours, land use concerns, and opportunities, the City can then use this information to ensure the appropriate street typologies are applied through the development of neighbourhood plans. These concept plans can then be taken back to the community for review and feedback through the LAP or NTR engagement process that is included as part of the overall community plan with neighbourhood stakeholders.

## MAJOR AND MINOR CAPITAL PROJECTS (ONGOING)

Each year, the City implements both major and minor improvements to streets across Saskatoon. Streets in new neighbourhoods are typically designed and implemented by the development community in accordance with the City's **Design and Development Standards Manual**. In existing areas, minor and major capital improvements are planned and implemented to support all modes of



travel. For example, dedicated funds are set in place for annual improvements to sidewalk and bicycling infrastructure. The City should consider incorporating complete streets in the design of major and minor capital projects.

The process would begin with reaffirming the primary needs of the project, considering the broader context, local area needs, and aspirations for a corridor as presented in **the Guide**. The typology of the street presented in **the Guide** may be used to confirm this context and to provide insights on the types of treatments that may be most relevant to the street.

The process would involve expanded participation from other departments in City Hall, but may also involve the community in a broader discussion about the vision and goals for the street including possible treatments that are being considered to achieve these goals. Following completion of these capital projects, the City may consider monitoring how the process went both internally and externally with community stakeholders.

## INFRASTRUCTURE REHABILITATION INITIATIVES (<2 YEARS)

The City's annual infrastructure rehabilitation projects include changes to surface conditions and underground utilities. To leverage financial resources, the City may incorporate complete street treatments in the rehabilitation process (e.g. Victoria Avenue Corridor Review project, 8<sup>th</sup> Street to 11<sup>th</sup> Street).

This process should determine not only the additional costs to alter the street form to reflect the broader context of the street, but also the incremental cost of incorporating complete street treatments within an existing rehabilitation project. The process may involve the community in a broader discussion about the vision and goals for the street and possible treatments that are being considered to achieve these goals. The City may consider monitoring how the process went both internally and externally with community stakeholders.

The outcomes from these initiatives should be considered in the context of finding economic ways of enhancing streets within Saskatoon at the same time as undertaking necessary rehabilitation projects.

## DEVELOPMENT REVIEW PROCESS (ONGOING)

The Development Review process is a natural opportunity for the City to ensure that proposed developments align with **the Guide**. As development proposals are received, Administration could add an additional level of analysis that includes compliance with approved street typologies and design treatments. This could be achieved by evolving the City's current review process (Posse system) to include considerations of **the Guide**.

As developer proposals are received, the Neighbourhood Concept Plan review process must ensure that proposed developments are supportive of the typology and design treatments that have been identified for the respective street. The desired treatments or typologies could be reaffirmed through the Local Area Plan, Corridor Plan or land development process. Further mechanisms to embed the street typology as a consideration within the land development process and/or zoning, should be explored.

The draft and final design submissions put forth by the Developer should include and support the treatments that are included in **the Guide**.

## COMMUNITY OUTREACH (ONGOING)

Awareness and understanding of the **Complete Streets Policy and Design Guide** within the community is essential. Investments in outreach will serve to increase awareness of the growing need to balance the allocation of street space to support land use and transportation priorities. With greater knowledge and understanding, staff, residents, and City Councillors will be equipped to provide more meaningful guidance and feedback on community street designs as they are being developed and implemented. **The Guide** and associated street treatments should be visible throughout the community using various forms of digital and direct communications and engagement.

## MONITORING COMPLETE STREET APPLICATION (EVERY 2-3 YEARS)

Monitoring of both performance and progress is critical to the implementation of any successful policy. The City may consider monitoring the application of the **Complete Streets Design and Policy Guide** both internally and externally with community stakeholders. Monitoring should assess the strengths and weaknesses of **the Guide**, and whether there has been measurable change by incorporating complete streets into various City departments. This effort could also examine strategies for further enhancing and broadening application of **the Guide**.

## OPERATING POLICIES REVIEW (ONGOING)

**The Guide** outlines elements that will change the form and function of the streets in Saskatoon. Some streets will change quite a bit while others not as much. This will be a gradual shift as scheduled capital projects are combined with street improvements across the City. Policies that the City has in place for operating and maintaining these streets need to be updated to reflect the principles outlined in **the Guide**. This process will have to evolve as the streets in Saskatoon are modified. Snow removal, lane closures, pavement markings, and new construction procedures are just a few of the policies that will need to be reviewed and revised.

## SUMMARY OF WHO'S INVOLVED

The change that is required to implement **the Guide** is not simply in how streets are considered and designed. It will require a fundamental shift in terms of who is involved in the process at the City, and when. The successful application of **the Guide** will be reliant on broadening the perspectives and involvement in how streets are planned, designed, operated, and maintained.

Incorporating complete street treatments in existing and new streets will require support from the public and City Council. Applying **the Guide** to different circumstances will require increasing community awareness of complete streets and involvement with the options being considered.

In short, it will require interdisciplinary thinking to incorporate different perspectives and to ensure that the street designs ultimately reflect City plans. There needs to be an organized effort to involve the appropriate departments within the City administration to ensure **the Guide** is successfully implemented.





