

# **Section 1: Kitchener's vision for Complete Streets**

A comprehensive Complete Streets approach uses every roadway (re)construction project as an opportunity to improve the design and functionality of a street for all users.

#### **Vision**

Every street in Kitchener is safe, comfortable and convenient for all.

## **Design goals**

To achieve the vision, the city has three design goals for every street to prioritize: design for safety, improve transportation choice and advance sustainability.



#### **Design for safety**

Kitchener's streets will embrace designs that protect the most vulnerable road users - pedestrians and cyclists.

Regardless of street classification, priority is given to the safety of pedestrians, cyclists, public transit users and motorists, in this order.

Kitchener's streets emphasize slower speeds through street design that makes it natural and intuitive for people to drive at safer speeds. This approach means that Kitchener's streets will embrace designs that protect the most vulnerable road users - pedestrians and cyclists.



#### Improve transportation choices

Kitchener's streets will provide connected networks with direct routes to major destinations for all modes of transportation.

Streets should be designed to make it possible for individuals to choose between different forms of transportation, depending on their unique needs. Planning for intermodal connectivity – meaning the ability to transition between different types of travel within a single trip – makes walking, cycling and public transit even more attractive and viable. Paying careful attention to the little details that can take away the stress of traveling is key. In doing so, the city can maximize the comfort and attractiveness of those travel options.



#### **Advance sustainability**

Kitchener's streets will advance our economic and environmental performance.

Vibrant and active streetscapes attract businesses, talent and investment through lively shopping districts, stress-free commuting options and efficient movement of goods and people. Complete streets make it easy for individuals to choose low energy and low carbon modes of transportation; helping to address climate change. Urban forestry and stormwater management can also be enhanced through street design and contribute to the city's corporate environmental goals.

## **Design principles**

Complementing the design goals are several design principles that foster a holistic approach to street design. Each principle acts as an important "lens" in which to view street design.



#### Foster a sense of place

Kitchener's streets are part of unique neighbourhoods with places to gather, celebrate, and connect with neighbours. They often contain vibrant greenery, beautiful art and practical amenities. Some streets can also be heritage landscapes.



#### **Encourage social connections and equity**

Kitchener's streets encourage people to connect and build relationships. Balanced and well-designed streets can improve equity among all ages, gender identities, abilities, ethnicities, incomes, sexual identities and underrepresented populations.



#### **Promote healthy lifestyles**

Kitchener's streets encourage physical activity, improve mental health, reduce stress, protect air quality and provide more options to access nutritional, health and support services.



#### **Deliver services**

Kitchener's streets provide a connected corridor for service delivery. Streets ensure that emergency vehicles are able to respond quickly, and support snow removal activities, garbage collection and other municipal services. Streets contain the veins and arteries of the city with services like hydro, stormwater, sanitation and water.



#### Plan for all seasons

Kitchener's streets support people in getting around by all forms of transportation through all seasons. Designing with operational considerations in mind helps the city meet or exceed legislated or mandated requirements for maintenance, through things like understanding where snow can be stored, how maintenance vehicles can access services and how seasonal maintenance can occur.



#### **Prepare for temporary conditions**

Kitchener's streets provide accommodations or signed detour routes that maintain a high level of service for pedestrians, cyclists, transit users and motor vehicles during temporary closures for construction or special events.





## **Section 2: Street Classifications**

Every street can be a complete street, while maintaining or enhancing its unique character. There are a variety of ways to make a street more complete, depending on the function and context.

The City of Kitchener's Official Plan maintains a hierarchy of streets to ensure the desired movement of people and goods within and through the city.

Four types of streets make up Kitchener's street system: Local Streets, Minor Neighbourhood Collector Streets, Major Community Collector Streets and Arterial Streets. Each street classification has different functions and capacities, including types of active transportation facilities and expected motor vehicle volumes and speeds. In addition, Scenic Heritage Roads, which possess unique historical significance, are protected in accordance with the city's Official Plan and heritage conservation policies.

An integral part of a transportation network is established through a working partnership with other levels of government. The Region of Waterloo's street classification system facilitates movement between municipalities and townships in Waterloo Region. Major highways are planned and maintained by the Province of Ontario.

Streets perform both a mobility function and a place function. Depending on the local context, some streets will prioritize moving people and goods while some will prioritize attracting people, encouraging them to enjoy all that a street has to offer.

Note: All cross-sections are for illustrative purposes only. Exact conditions may vary depending on street context and constraints.



#### **Local streets**

Local Streets provide access to properties and are not intended to carry high volumes of through motorized traffic.

Examples of local streets include Cotton Grass Street, Brock Street and Tanglewood Avenue. Local streets are the most common form of street in Kitchener, making up 72% of the city's overall road network. Local streets prioritize active neighbourhood life and social interactions between neighbours going for walks, sitting on their front porch, or at a neighbourhood street party.

#### Preferred cross-section for local streets (18.0 m Right-of-Way)





Pedestrian View

Cyclist and motorist view





## Minor neighbourhood collector streets

Minor neighbourhood collector streets prioritize active neighbourhood life, multi-modal connections and facilitate movement within neighbourhoods.

Examples of minor collector streets include Driftwood Drive, Manchester Road and Bechtel Drive. Minor collector streets connect local streets to higher order streets and primarily accommodate residential land use. Commercial and retail land uses can be expected in proximity to significant intersections. These streets may mark the entrance to a neighbourhood, with urban design features that celebrate the neighbourhood's unique identity.

#### Preferred cross-section for minor collector streets (20.0 m ROW)







Pedestrian view

Cyclist and motorist view

## **Major community collector streets**

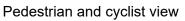
Major community collector streets balance the mobility of people between neighbourhoods with land accesses.

Examples of major collector streets include Guelph Street, Westheights Drive, and Wilson Avenue. These streets facilitate movement from local and minor collector streets to higher order streets while providing a high-level of streetscape appeal for businesses, homes and other properties located along the street.

#### Preferred cross-section for major collector streets (26.0 m ROW)









Motorist view





#### **Arterial streets**

Arterial streets provide mobility for people and goods throughout the city while also providing a positive image of the city and fostering economic development.

Examples of arterial streets include King Street, Strasburg Road and River Road. These streets carry high volumes of all modes of movement, including pedestrians, cyclists, transit, motor vehicles and freight vehicles. Arterial streets often provide the most direct and convenient access to major destinations in the city, making it essential that all four travel modes are balanced effectively.

#### Preferred cross-section for main street scenarios (30.0 m ROW)

This cross-section is used in high density, pedestrian-oriented, commercial urban centres.







Pedestrian and cyclist view

Motorist view

## Preferred cross-section for thoroughfare arterials (30.0 m ROW)

This cross-section is used in high density, mixed use corridors.







Pedestrian and cyclist view

Motorist view





# **Section 3: Street design**

## Pedestrian design

Walking and rolling is the most common form of transportation in Kitchener. Every trip – including those involving cycling, transit or an automobile - begins and ends as a pedestrian.

#### Sidewalk zones

The pedestrian throughway is an unobstructed path for pedestrian travel, a minimum of 1.8 m wide.



#### **Curb extensions**

Curb extensions, also known as bulb outs or narrowings, extend the sidewalk or curb line into the street, to shorten crossing distance and calm traffic.



## Pedestrian refuge islands

Pedestrian refuge islands, or medians, allow pedestrians to cross in two stages, rather than wait for gaps to clear in both directions.

#### Raised crosswalks

A raised crosswalk enhances a standard crosswalk by adding additional height and visibility of pedestrians.



## Pedestrian crossovers (PXOs)

PXOs provide pedestrians with protected crossing opportunities by requiring motorists to yield to pedestrians within the crosswalk.



#### **Pedestrian amenities**

Amenities can add significantly to a feeling of safety on a street, as well as encourage longer travel distances through rest areas and interesting streetscapes. Examples include pedestrian-scale lighting, benches, trees, art, hanging baskets and patios.

## **Cycling design**

Cycling is one of the most efficient forms of transportation. It can be significantly faster and cover longer distances than walking, while still gaining health benefits of using human-powered travel.

#### Cycle tracks

Cycle tracks, also known as raised or boulevard bike lanes or bike paths, are located outside of the travelled portion of the roadway, and include barrier curb separation.



#### Separated bike lanes

Separated bike lanes provide space exclusively for bicycles and include a form of physical separation from the motorized portion of the roadway, such as bollards, curbs, planter boxes, raised medians or parking.



#### **Boulevard multi-use trails**

A boulevard multi-use trail provides two-way travel for both pedestrians and cyclists, adjacent to the roadway in the boulevard.



#### Neighbourhood bikeways

Neighbourhood bikeways, also known bicycle priority streets, are quiet, local streets that can be enjoyed in a low-stress environment without designated space.



#### Painted bike lanes

Painted bike lanes are a designated space for exclusive use by cyclists. In most cases, a painted bike lane does not provide a level of comfort and safety to be appropriate for all ages and abilities.







## **Transit design**

Transit expands people's access to the places they need to go throughout the city and contributes to an equitable, sustainable and efficient transportation network. Transit has the highest capacity for moving people in a limited space, so more of the street can be dedicated to other uses. In Kitchener, transit services are provided by Grand River Transit (GRT) and the Region of Waterloo.

#### **Transit locations**

Bus stop locations are defined by their relationship to intersecting streets. Generally, there are three placement locations for stops: nearside, farside, and midblock.

#### Transit stops and amenities

Transit stops can be designed to improve transit speeds and enhance the sustainability and accessibility of the streetscape with green infrastructure and well-designed public spaces.

#### **Transit curb-out**

Transit "curb-outs" or "bus bulbs" provide a loading area for the bus that extends past onstreet parking lanes. "Curb-outs" allow the buses to board and alight passengers from the travel lane, removing the requirement for the bus to merge back into vehicle traffic, and saving time for transit vehicles.

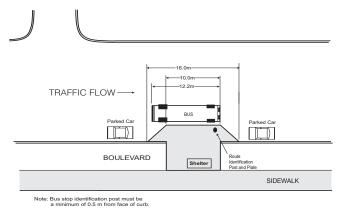


Image source: Grand River Transit. Bus Stop Zones Guidelines, July 2001.

## "Floating bus stops"

A floating bus stop is a concrete platform built between a cycling facility and the roadway. Cyclists are directed behind the bus stop, reducing or eliminating most conflicts between

buses and cyclists. Floating bus stops also benefit pedestrians, as the floating bus stop doubles as a pedestrian refuge, which can shorten crossing distances.



Image source: AC Transit. *Multimodal Corridor Guidelines*. 2018.

#### **Shared cycle track stops**

A cycle track (or separated bike lane) runs alongside the boarding area, rather than running behind the boarding area. Cyclists can ride through the boarding area when no transit vehicles are present, but must yield the space to boarding and alighting passengers when a bus or streetcar light rail vehicle stops.



## Motor vehicle design

Motor vehicles provide movement of people and goods, facilitate emergency services and provide maintenance services. Types of motor vehicles include personal vehicles, taxis, ridesharing and larger classes of vehicles that deliver essential services to the community.

#### Vehicle lanes

Lane widths have an impact on driver behavior and travel speed and must balance the safety and comfort of all street users, by using the narrowest lane width possible. For streets servicing transit, the desired lane width is 3.3 m and should not exceed 3.5 m. For streets without transit and little truck traffic, the desired lane width is 3.0 m.

#### **Emergency services**

The space and operational needs of first responders, such as fire, paramedics and police, are important factors in the design of a street. Fire trucks have the largest emergency response vehicle.

Improving safety on city streets is a primary goal of Complete Streets, reducing the number and severity of collisions that require emergency services. Collaborative efforts between staff and emergency services are essential in meeting mandated response times.

#### **Maintenance**

Streets and related utility services require regular maintenance to function reliably and efficiently. Roadway design must consider the space and operational needs of snow plows, graders, sweepers, leaf collection, utility trucks and more.

## **Parking**

Parking serves an important need for motorists and persons with disabilities. Parking can be provided on-street or in designated lots or garages. Consideration needs to be given to how the parking supply might encourage greater automobile use.

#### **Traffic calming**

Traffic calming includes a range of strategies to manage vehicle speeds and volumes.

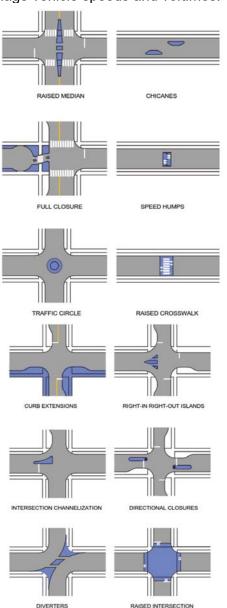


Image source: Brian Patterson and Sarah Freigang."Bike Facilities Design Workshop" (Waterloo: Institute for Transportation Engineers and Urban Systems), September 21, 2018.





## Intersection design

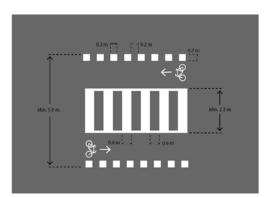
Intersections provide transitions between different streets, allowing navigation through the street network. They often serve as meeting places for neighbourhoods or the city as a whole and attract commercial and cultural activity. Intersections are also the site of "conflicts" between travel modes as each person navigates the intersection according to their own specific travel path. Providing effective design guidance to navigate these conflicts is essential to improving road safety for all users. In Kitchener, all signalized intersections are managed by the Region of Waterloo.

#### Design vehicle and control vehicle

In the past, many streets and intersections were designed to accommodate the largest possible vehicle on the road. This often leads to higher motor vehicle speeds of the most common type of vehicle – passenger cars. Today, focus has shifted to maximizing safety for a wide variety of road users.

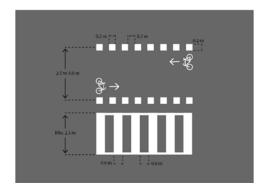
#### Combined crosswalk/crossride

Pedestrians are intended to make use of the central area, and cyclists use the outer parts.



## Separated crosswalk/crossride

Appropriate for signalized intersections and all way stops, especially where cycle tracks and sidewalks are side by side.



#### Corner radii

Larger radii are less safe for bicycles and pedestrians because they allow for higher vehicle speeds through the turn and result in larger crossing distances. Streets should be constructed with the smallest corner radii possible, generally 6 – 8 m.

#### Separated cycling intersections

Maintain comfort and safety for cyclists through an intersection. Crossrides identify the path of travel and corner safety islands provide a physical barrier. For left turns, a cyclist proceeds in two stages.

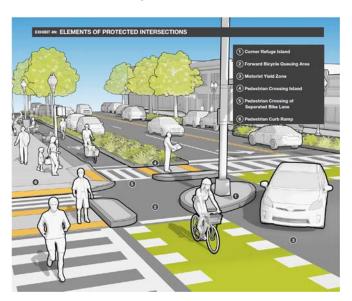


Image source: Massachusetts Department of Transportation, *Separated Bike Lane Planning and Design Guide* (Boston, 2015), 69

## Sustainable infrastructure design

Sustainable infrastructure enhances environmental sustainability and helps the city reach its sustainability goals and policies. The City of Kitchener aims to achieve a healthy and livable community by proactively mitigating and adapting to climate change, conserving natural resources and protecting air and water quality.

#### Climate action

Design every street to maximize low-carbon modes of travel. Reduce the heat island effect. create carbon sinks and incentivize electric vehicles.



#### **Urban forestry**

It's hard to imagine a vibrant, caring and innovative city without picturing trees. Trees are a key element of a living city and play a role in filtering the air, enhancing public spaces, providing shade on a sunny day and creating habitat for birds and other creatures.

# Kitchener's approach to stormwater

Low impact development

management focuses on runoff prevention, preserves and acknowledges the benefits provided by natural systems, recognizes rainwater as a resource to be managed rather than a waste and uses 'green' stormwater infrastructure approaches in combination with conventional stormwater management approaches to better and more efficiently manage stormwater and improve the environment.







# **Section 4: Emerging trends**

A complete street is constantly evolving, with several new trends emerging.

## **Mobility hubs**

Hubs are the points of connection in a city's transportation network. Today, people are frequently living multi-modal lives – meaning they use a combination of walking, cycling, transit and the automobile to get around.

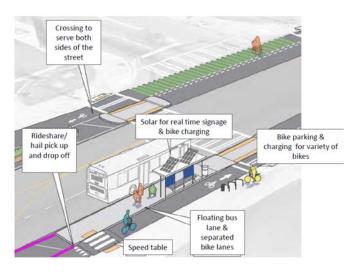


Image source: Kate Whitfield, Kirk Paulsen, Laura Hagerman and Ezra Lipton, "CITE Complete Streets Workshop" (Ottawa: Institute of Transportation Engineers and Alta Planning + Consulting, October 23, 2018), 20.

## **Curbside management**

As cities grow and intensify, curbside areas become highly contested, with many functions desiring space and access to the curb. Pedestrian functions, separated bike lanes, micromobility and green infrastructure all require curbside space, plus passenger cars, delivery vehicles, and buses seek use of limited curb space to access shops, restaurants, housing, offices, and community facilities.

## **Micromobility**

Micromobility includes forms of personal transportation that are built for one passenger at a time. They may be entirely rider-powered or have electric power sources, such as an electric throttle or an electric-assist system. The most common forms of micromobility used today are the bicycle, e-bikes and e-scooters. The adoption of micromobility is rapidly growing with the entrance of privately operated sharing companies.



## Section 5: Making it happen

## **Kitchener's Complete Streets scorecard**

A Complete Streets approach uses every street reconstruction project as an opportunity to make improvements. A key tool to assist in applying Complete Streets principles to every project is the Complete Streets scorecard. It will be used on every street reconstruction, early in the design stage.

The scorecard has several purposes:

- Encourage a culture shift in support of the Complete Streets vision
- Put a stronger emphasis on sustainable modes of transportation and other street uses
- Assist in prioritizing different street elements, especially when constraints require difficult trade-offs

The scorecard will be used by several audiences.

Audience	How they'll use the tool
City staff (often project managers/project teams)	Compare "before and after" scenarios for various street designs, in order to determine the best possible design prior to reconstructing a street.
Corporate Leadership Team	Utilize a consistent benchmark to evaluate overall progress towards the Complete Streets Vision.
City Council	Understand highest benefit streets to allocate funding to, and communicate to constituents the benefits of proposed street designs.
Residents	Understand why certain changes are proposed for their street and the benefits it can bring to the community.

#### How the scorecard works

The scorecard assists a project manager and project team in comparing before and after scenarios.

- Step 1. Assess the current state
- Step 2. Identify opportunities
- Step 3. Complete interim design(s)
- Step 4. Identify capital and operating costs of proposed designs
- Step 5. Finalize design





## Implementation & evaluation plan

Realizing the Complete Streets vision will require strategic efforts on behalf of city staff, city council, industry partners and the entire community. A detailed action plan will make the Complete Streets vision a reality.

#### Alignment with city strategies

- Coordinate with the Urban Design Manual.
- 2. Update the Development Manual.
- 3. Conduct an Official Plan amendment and integrate into Planning policies and secondary plans.

#### **Change management**

- 4. Conduct annual staff training sessions.
- 5. Establish a Complete Streets corporate committee.
- 6. Review equipment requirements and operational changes required to maintain Complete Streets.
- 7. Integrate the scorecard analysis into every street reconstruction design process.
- 8. Review warrant requirements for PXOs and signalized trail crossings.
- Work with the Region and other municipalities to develop "complete level-of-service" measurements for signal function and prioritization.

#### Community engagement

10. Develop and host community engagement pop-up workshops.

- 11. Work with residents to pilot a woonerf.
- 12. Communicate the Complete Streets vision during street reconstruction public engagement.

#### Street design applications

- 13. Develop a standard drawing for raised pedestrian/cyclist crossings.
- 14. Integrate pedestrian and bike facilities at bus stops.
- 15. Establish fund or mechanism to fill network gaps caused by construction limits.
- 16. Create a new Green Street crosssection for environmentally sensitive areas.

# Data collection, monitoring and evaluation

- 17. Expand use of active transportation counting technologies.
- 18. Monitor maintenance and life-cycle aspects of Complete Streets.
- 19. Prepare Complete Street reports.
- 20. Monitor progress, update the document and return to City Council in 2024.

# Section 6: Changing Kitchener – for the better

## **People-friendly transportation**

Our streets should be safe, connected, and inclusive – meaning that whether you're eight or you're eighty, you can move through Kitchener by foot or wheels. Kitchener's vision is to make every street in Kitchener safe, comfortable and convenient for all. Together, we can make change – for the better.



## **Liability statement**

Kitchener's Complete Streets guidelines are based on recent experiences designing and constructing streets and extensive consultation with city divisions, agencies, the public, councillors, industry and community stakeholders, as well as best practices from local, provincial, national and international sources. It integrates and builds upon the latest available city policies, standards and guidelines. It is consistent with other provincial, federal and nongovernmental organizations, including the Ontario Traffic Council (OTC), Transportation Association of Canada (TAC), Institute of Transportation Engineers (ITE), National Association of City Transportation Officials (NACTO) and other sources. These guidelines also work within existing Provincial and Federal legislation pertaining to street design and operations, such as the Ontario Highway Traffic Act and Accessibility for Ontarians with Disabilities Act.

The Guidelines are based on the principle that all streets are different, and that no single design solution exists. A street's design will be tailored for the particular needs and opportunities created by local context, existing and future uses and users and dimensions of each street. Street design is an evolving practice. In the coming years, design strategies used elsewhere, and technologies that do not yet readily exist in Kitchener, will affect how we design our streets. Street designers should stay up-to-date on the latest best practices.





MULTI-MODAL CONNECTIONS

# **DESIGN FOR SAFETY**

**VIBRANT PUBLIC SPACE** 

ADVANCE SUSTAINABILITY

LOW IMPACT DEVELOPMENT

ALL AGES AND ABILITIES

REDUCED TURNING RADIUS

COMPLETE STREETS KITCHENER

WIDER SIDEWALKS

ENHANCED ACCESS TO TRANSIT

**MORE TREES** 

SLOWER VEHICLE SPEEDS

STREETS FOR ALL

SAFE PEDESTRIAN CROSSING

# **IMPROVE TRANSPORTATION CHOICES**

UPGRADED BICYCLE STANDARDS

NARROWER VEHICLE LANES DIRECT & CONNECTED ROUTES