

## Complete Streets Typologies

This appendix provides a description of the eight CLB Streets Typologies. The written descriptions are taken from the Complete Liveable Better (CLB) Streets Background Report to the 2018 Transportation Master Plan (TMP) Review and Update. The renderings are influenced by the CLB Streets Background Report, while the sample CLB streets, based on Hamilton streets, are identified by the street context using the draft CLB Streets Decision Support and Audit Tool.

### 1. Urban Avenues

Urban Avenues are located in the most dense, mixed-use urban centres, such as downtown Hamilton. Development along Urban Avenues is street oriented and streets are very busy. These streets carry high volumes of all modes of movement, including transit, cyclists, pedestrians, private automobiles and goods movement vehicles.

Street design generally accommodates transit and provides safe and dedicated facilities for pedestrians and cyclists. In order to promote safety on such busy streets, the design of these streets can include narrow lane widths and a reduction in the number of lanes to devote more space for on-street parking, tree growth, transit, and active transportation (e.g. dedicated transit lanes, more comfortable transit stops, Rapid Transit, wider sidewalks).

The rights-of-way range for Urban Avenues is dependent on context. Generally, most Urban Avenues in the older built-up areas of the City are historically 20 m, and it is feasible to achieve 26-30 m through development and redevelopment if heritage constraints and existing built form allow. As such, in these constrained corridors, trade-offs will need to be made.

In greenfield areas, larger rights-of-way are possible, and it is possible to achieve a 36 m ROW, or greater in some cases. Even with a 36 m ROW, it is necessary to make trade-offs, especially for designated rapid transit corridors.

## Urban Avenues

Located in the most dense, mixed-use urban centers like Downtown Hamilton.  
High people-movement capacity with priority for transit and active transportation.



**Example Urban Avenue:**

## Barton St E (West of Victoria)



Functional Classification	Minor Arterial
Context	Urban
Typical ROW	20 m
Setbacks	Narrow
Land use	Mixed use
Built form	Low to mid-rise
Access control	Moderate (some driveways)
On-street parking	Off-peak parking
Lanes of traffic	5 (incl. turn lane)
Traffic volume (ADT)	14,750
Posted speed	50 km/h
Sidewalks	Both sides
Cycling facilities	None

**Potential CLB Typology**  
Urban Avenue or  
Transitioning Avenue or  
Main Street

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## 2. Transitioning Avenues

Transitioning Avenues are major streets that cross the city east-west or north-south. They are generally located in commercial or residential areas that are transitioning to a more urbanized and mixed-use context. These streets are expected to undergo a transition from a built form context such as large format retail to medium or high-density mixed-use development or from low-density residential to medium or high density residential. As this occurs, it is expected that new development will be more street oriented. Transitioning Avenues could be Rapid Transit corridors.

Transitioning Avenues will continue to be designed to accommodate transit and active transportation and higher vehicle capacity. As such, transit vehicles, cyclists and pedestrians should have a greater proportion of dedicated space within the planned ROW. Transitioning Avenues are also major goods movement corridors. They may additionally include a centre median and dedicated turning lanes.

# Transitioning Avenues

Major streets that cross the city east-west or north-south.  
Medium/high people-movement capacity with a high degree of access control.



Example Transitioning Avenue:

## Wilson St W (West of McClure)



Functional Classification	Major Arterial
Context	Suburban
Typical ROW	45 m
Setbacks	Wide
Land use	Commercial
Built form	Low-rise
Access control	Moderate
On-street parking	None
Lanes of traffic	5 (incl. turn lane)
Traffic volume (ADT)	14,000
Posted speed	60 km/h
Sidewalks	None
Cycling facilities	None

Potential CLB Typology  
Transitioning Avenue

### 3. Main Streets

These roads historically have narrow ROWs and are found in urban areas and hamlets, often with a mix of at-grade retail and residential uses. Main streets exist in each of the former municipalities that make up Hamilton. They are often traditional shopping streets that are very pedestrian-oriented, with mixed-uses and smaller-scale buildings. They may contain heritage buildings and have a heritage character. Development along Main Streets is street-oriented and often surrounded by stable residential neighbourhoods.

Pedestrians should be prioritized with slower traffic, wide sidewalks and enhanced pedestrian amenities, and on-street parking. The quality of the boulevard is very important to the Main Street typology. The Main Street typology has an urban cross-section with an emphasis on streetscaping. Street amenities can include wide sidewalks, pedestrian oriented lighting, street trees, transit amenities, and opportunities for public art. The street is to be transit supportive with transit-oriented land uses.

## Main Street

Streets with historical narrow rights-of-way found in urban areas.  
Low/medium people movement capacity with street-oriented mixed uses.



## Example Main Street:

# Kenilworth Ave N (North of Roxborough)



Functional Classification	Major Arterial
Context	Urban
Typical ROW	20 m
Setbacks	Narrow
Land use	Residential and commercial
Built form	Low rise
Access control	Minimal
On-street parking	Off-peak
Lanes of traffic	4
Traffic volume (ADT)	23,500
Posted speed	40 km/h
Sidewalks	Both sides
Cycling facilities	None

### Potential CLB Typology

Urban Avenue or  
Transitioning Avenue or  
**Main Street**

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## 4.Connectors

Connectors are primarily found in residential areas and link residential neighbourhoods to each other and to other areas of the City. Development along the street is fairly stable but may be transitioning from low to medium density residential. Buildings are generally set back from the street fronting onto a wide boulevard.

Connectors accommodate a higher vehicle capacity than local streets. Given that they pass through residential areas, these streets should support active transportation with wide sidewalks and multi-use paths or dedicated cycling facilities. These wide and busy streets should also include ample soft landscaping and mature trees to buffer adjacent uses.

## Connectors

Link residential and employment areas together and to other parts of the city.  
Medium people-movement capacity with moderate access control.



Example Connector Street:

### Fennell Ave W (At Governors Blvd)



Functional Classification	Collector
Context	Urban
Typical ROW	20 m
Setbacks	Narrow
Land use	Residential
Built form	Low rise
Access control	Moderate (some residential driveways)
On-street parking	One side
Lanes of traffic	2 (turn lane added at intersections)
Traffic volume (ADT)	3,100
Posted speed	50 km/h
Sidewalks	Both sides
Cycling facilities	Sharrows

#### Potential CLB Typology

Main Street or  
Connector

## 5. Neighbourhood Streets

Neighbourhood Streets provide direct access to residential areas. They have lower volumes of traffic and are most often used by people residing within the neighbourhood. As Neighbourhood Streets are surrounded by residential uses, traffic calming, minimizing through-traffic, and minimizing goods movements are important considerations. Neighbourhood Streets can be bicycle boulevards as well.

Neighbourhood Streets should accommodate comfortable and safe pedestrian and cyclist movement, as well as development of a mature street canopy.

## Neighborhood Streets

Provide direct access to residential areas.  
Lower speed streets with minimal through-traffic.



Source: City of Hamilton Complete-Livable-Better Streets Background Report

Example Neighbourhood Street:

## South Bend Rd E (East of Upper Wellington)



Functional Classification	Local
Context	Suburban
Typical ROW	20 m
Setbacks	Narrow
Land use	Residential
Built form	Low rise
Access control	Minimal
On-street parking	One side
Lanes of traffic	2 (no marked centreline)
Traffic volume (ADT)	1,500
Posted speed	50 km/h
Sidewalks	Both sides
Cycling facilities	Signed bike route

**Potential CLB Typology**  
**Neighbourhood Street**

## 6. Rural Roads

Rural Roads are located outside Hamilton’s urban core, primarily in agricultural and natural areas, or in industrial areas within the urban boundary. Their primary function is to move private and goods movement vehicles. However, they should include recreational cycling facilities (for example, a paved shoulder or multi-use path) and may accommodate transit. The edges of rural roads should also include drainage swells.

## Rural Roads

Roads outside of Hamilton’s core, primarily in agricultural and industrial areas.



Example Rural Roads Street:

## White Church Rd E (At Tisdale)



Image: Google

Functional Classification	Collector
Context	Rural
Typical ROW	20 m
Setbacks	Wide
Land use	Agricultural, residential
Built form	Low-rise
Access control	Moderate
On-street parking	None
Lanes of traffic	2
Traffic volume (ADT)	3,000
Posted speed	60 km/h
Shoulders	Gravel
Cycling facilities	None

Potential CLB Typology  
Rural Road

## 7. Rural Settlement Areas

Rural Settlement Areas are small communities found throughout the rural areas of Hamilton. They are portions of Rural Roads that pass-through villages and provide services serving local residents as well as through-traffic. Rural Settlement Areas are often centred around an intersection or a section of highway, and may include residential frontages or a small number of commercial or other uses that serve the community.

In contrast with the rest of a Rural Road, Rural Settlement Areas should slow traffic through small settlements. These roads will be designed to support the local community and calm traffic as they transition into a village setting. As they are associated with clusters of low density residential or commercial development, boulevards should include sidewalks, street trees, cycling facilities, on-street parking, and other amenities to support local residential and retail activity.

## Rural Settlement Areas

Found within small communities throughout rural areas of Hamilton.  
Portions of rural roads that slow traffic as they pass through villages.



## Example Rural Settlement Areas Street:

### Old Highway 8 (At Sheffield Rd)



Functional Classification	Local
Context	Rural Settlement
Typical ROW	18-22 m
Setbacks	Narrow
Land use	Residential and commercial
Built form	Low rise
Access control	Minimal
On-street parking	None
Lanes of traffic	2
Traffic volume (ADT)	800
Posted speed	50 km/h
Sidewalks	None
Cycling facilities	None

Potential CLB Typology  
Rural Settlement Road

## 8. Industrial Roads

Industrial Roads are important goods movement corridors. They provide access by all mode of travel to industrial, warehouses, and other employment areas.

### Industrial Streets

Industrial streets are important goods movement corridors. They provide access by all modes of travel to industrial, warehousing, and other employment areas.

Transit in mixed traffic

Bike lanes, cycle tracks or multi-use paths

Pedestrian crossings at mid-block and intersections locations



No on-street parking

Goods movement corridor

Sidewalks or multi-use paths on both sides of the street

## Example Industrial Street:

# Nebo Rd (At Lansing)



Functional Classification	Minor Arterial
Context	Industrial
Typical ROW	26 m
Setbacks	Wide
Land use	Employment
Built form	Low-rise
Access control	Minimal
On-street parking	None
Lanes of traffic	4
Traffic volume (ADT)	6,500
Posted speed	50 km/h
Sidewalks	None
Cycling facilities	None

Potential CLB Typology  
Industrial Street or  
Transitioning Avenue

## CLB Street Design Decision Support and Audit Tool

### Audit Tool Template

#### Step 1: Input data

Provide some information about the street you're reviewing. The functional classification and context are used to inform the CLB Typology.

Street name	_____	Right of way width (m)	_____
Location	_____	Traffic volume (ADT)	_____
Functional classification	_____	On BLAST network?	_____
Context			

#### Step 2: Select Typology

Select the preferred CLB Typology, considering the information provided in Step 1. Suggested typologies are highlighted.

Selected CLB typology	_____	CLB Typologies
		Urban Avenue      Neighbourhood Street
		Transitioning Avenue      Rural Road
		Main Street      Rural Settlement Road
		Connector

*Select a typology above. Suggested typologies are highlighted to the right.*

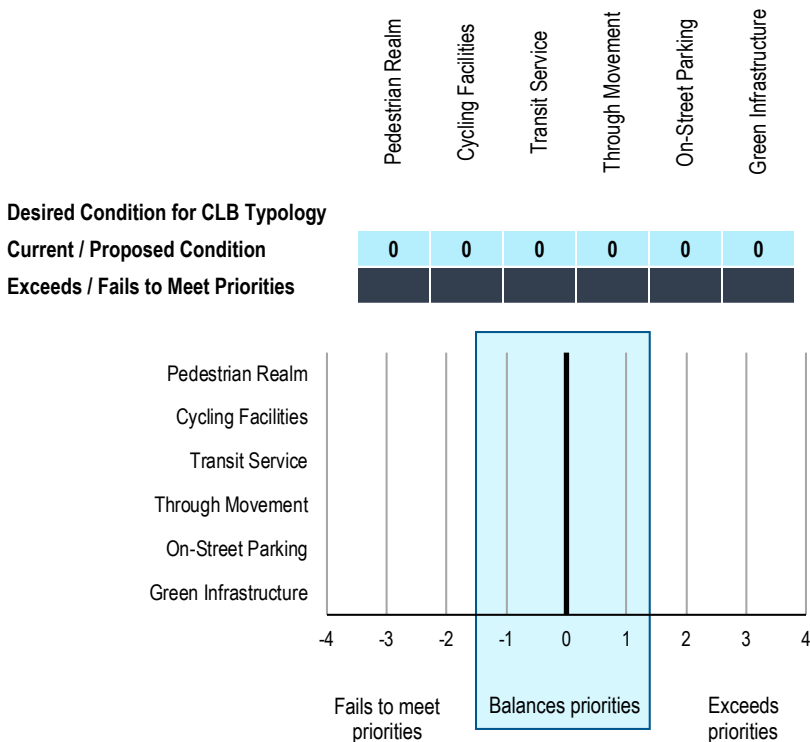
#### Step 3: Assess Current/Proposed Street Conditions

Enter a value from 1 to 5 for each of the street elements, considering either the existing conditions or potential future conditions. Refer to the Condition Definitions for a description of each of the condition values.

Pedestrian Realm	_____	Through Movement	_____
Cycling Facilities	_____	On-Street Parking	_____
Transit Service	_____	Green Infrastructure	_____

#### Step 4: Review Results

Review the results shown below. Priorities are balanced if all street elements fall within the shaded area. If some street elements exceed priorities, consider reallocating street space to improve conditions for elements that are failing to meet priorities. Return to Step 3 and make adjustments until a satisfactory result is achieved.



## Condition Definitions

# Pedestrian Realm

	Urban	Rural
1	No sidewalk or multi-use path (MUP)	Possible granular/soft shoulder
2	1.5 m pedestrian clearway (may be adjacent to curb)	1.2 m paved shoulder
3	1.8 m pedestrian clearway with 0.5 m edge zone (measured from back of curb) - or - 3.0 m MUP with 0.6 m edge zone  Street trees / furnishing zone if feasible	1.5 m paved shoulder
4	2.0 m pedestrian clearway with 1.0 m edge zone - or - 3.5 m MUP with 1.5 m edge zone  Street trees and pedestrian amenities in planting/furnishing zone	3.0 m MUP, physically separated from travelled portion of roadway
5	2.5 m ped clearway with 1.0 m edge zone  Animated pedestrian corridor with street trees, pedestrian amenities, active street frontages and public art	3.0 m MUP, beyond clear zone of roadway

## Cycling Facilities

	Urban	Rural
1	<b>No cycling facilities</b> , sub-standard facilities, or facilities that are not contextually appropriate (based on Book 18 nomograph)	Possible granular/soft shoulder
2	<b>Shared operations</b> , preferably on roadway with no marked centreline.  Posted speed: Max 40 km/h (30 km/h preferred) Volume: Max 3,000 ADT (<1,500 ADT preferred)	<b>1.2 m paved shoulder</b>
3	<b>Bike lane</b> , buffered bike lane, or advisory bike lane, in conditions supported by Book 18 nomograph.  - or -  <b>Separated bike lane</b> , cycle track, or MUP, minimum <b>1.5 m</b> (one way), <b>3.0 m</b> (two way). Separation may be semi-permeable (e.g. flex bollards or mountable curb).	<b>1.5 m paved shoulder</b>  - or -  Advisory bike lane
4	Separated bike lane, cycle track, or MUP, minimum <b>1.8 m</b> (one way), <b>3.5 m</b> (two way)  Separation elements are non-permeable (e.g. barrier curb, low-wall concrete barrier)  Minimum <b>0.6 m</b> buffer or edge zone.	<b>Buffered paved shoulder</b>  - or -  <b>3.0 m MUP, physically separated</b> from travelled portion of roadway
5	Cycle track or MUP, minimum <b>2.0 m</b> (one way), <b>4.0 m</b> (two way)  Minimum <b>1.5 m</b> edge zone (may be reduced to 1.0 m for one-way cycle tracks on 40-50 km/h roads).	<b>3.0 m MUP, beyond clear zone</b> of roadway

## Transit Service

1	No transit service or transit service where stop has no hard surface pad
2	Local transit service. Stops have <b>hard surface pad</b> allowing passenger boarding/alighting from all doors
3	Frequent local transit service. Most stops have <b>shelters and basic amenities</b>
4	Frequent local service or limited stop express service with significant <b>transit priority elements</b> (e.g. queue jump lanes, transit signal priority) Most stops have <b>enhanced amenities</b> (e.g. interior heating, real-time arrival information, fare vending machines)
5	Rapid transit service with <b>dedicated transit lanes</b> and comprehensive priority measures Most stops have <b>enhanced amenities</b> consistent with category 4

## Through Movement (Vehicles and Freight)

	Urban	Rural
1	<p>Design treatments promote slow speeds and divert through traffic.</p> <p>No marked centreline.</p> <p>Drivers may need to alternate directions, yielding to oncoming traffic.</p>	<p><b>Less than 6.0 m pavement</b> No paved shoulder</p>
2	<p>Maximum <b>one lane per direction</b>, two lanes total (mid-block).</p> <p>Centreline may or may not be marked.</p> <p>No continuous centre turn lane. May include auxiliary turn lane at intersections.</p>	<p>6.0 to 7.0 m pavement Centreline may or may not be marked <b>No paved shoulder</b></p>
3	<p>Maximum one lane per direction, three lanes total (mid-block).</p> <p>May include <b>continuous centre turn lane</b>. May include auxiliary turn lanes at intersections.</p> <p>Total mid-block lane width &lt; <b>10 m</b> (excluding bike lanes and dedicated parking lanes).</p>	<p>Two lane roadway with marked centreline <b>Minimum 1.0 m paved shoulders</b></p>
4	<p><b>Maximum two lanes per direction</b>, four or five lanes total (mid-block).</p> <p>May include centre median or continuous centre turn lane. May include auxiliary turn lanes at intersections.</p> <p>Total mid-block lane width &lt; <b>16 m</b>.</p>	<p>Two lane roadway with marked centreline <b>Minimum 1.5 m paved shoulders</b></p>
5	<p><b>More than two lanes per direction</b> or more than five lanes total.</p> <p>- or -</p> <p>Two or more left turn lanes at intersections.</p> <p>- or -</p> <p>Total mid-block lane width &gt;= <b>16 m</b></p>	<p>Three or more lane roadway</p>

## On-Street Parking

<b>1</b>	<b>On-street parking is not provided.</b>
<b>2</b>	<p>Permanent or <b>off-peak</b> parking if there is sufficient space in the ROW and demand cannot be met with off-street supply.</p> <p>Parking may be provided in <b>specific locations</b> only (where needed, or where curbside space is available), and <b>may not be provided on every block</b>. Parking may be on one or both sides of the street.</p>
<b>3</b>	<p>Permanent or <b>off-peak</b> parking is provided.</p> <p>Parking is <b>provided on most blocks</b> along the majority of the curb on one or both sides of the street.</p>
<b>4</b>	<p><b>Permanent parking on one side</b> of the street in dedicated parking lane, typically with curb bulb-outs at intersections and crossings.</p> <p>Passenger drop-off, freight loading, and accessible parking where required.</p>
<b>5</b>	<p><b>Permanent parking on both sides</b> of the street in dedicated parking lane with curb bulb-outs at intersections and crossings.</p> <p>Passenger drop-off, freight loading, and accessible parking where required.</p>

## Green Infrastructure

1	Street trees and stormwater management practices are not actively provided.
	Tree canopy fails to meet coverage guideline.
	Planting arrangement has substandard soil volumes and planting configuration.
2	Tree canopy at maturity meets coverage guideline in some locations.
	Design incorporates low impact development (LID) features where possible.
3	Tree canopy at maturity meets coverage guideline in most locations.
	Species diversity is achieved.
	Design incorporates low impact development (LID) features where possible.
4	Tree canopy at maturity exceeds coverage guideline.
	Species diversity is achieved.
	Design incorporates low impact development (LID) features.
5	Tree canopy at maturity exceeds coverage guideline
	Sustainability, resilience and ecological principles are primary themes of the design.
	LID incorporated in a comprehensive manner.

### Desired Conditions for CLB Typologies

	Pedestrian Realm	Cycling Facilities	Transit Service	Transit Service (on BLAST network)	Through Movement	On- Street Parking	Green Instructure
Urban Avenue	4	4	4	5	3	2	3
Transitioning Avenue	5	5	4	5	4	1	3
Main Street	4	4	3	4	2	4	4
Connector	4	4	3	3	2	2	4
Industrial Street	4	4	3	3	3	1	2
Neighbourhood Street	3	2	1	1	1	3	4
Rural Road	1	4	1	3	4	1	2
Rural Settlement Road	4	3	2	3	3	3	3

# City of Hamilton Complete, Livable, Better Streets Design Manual



**Background Review & Jurisdictional Scan**

*October 8<sup>th</sup>, 2020*



**Hamilton**

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# 1 Introduction & Overview

Complete Streets policies are increasingly being adopted by municipalities across Canada and the United States. Complete, Livable, Better Streets are the City of Hamilton's version of Complete Streets. The CLB Streets approach represents a shift from the traditional "centreline out" approach to road design, which is primarily focused on motor vehicle throughput. By contrast, CLB Streets takes an "outside in" approach that equitably considers the needs of all road users, and that recognizes the importance of streets not only as conduits to move from one place to another, but also as public spaces and an integral component of the public realm.

In 2020, the City of Hamilton retained WSP to assist in developing a Complete, Livable, Better Streets Design Manual (CLBSDM). This fulfills one of the actions of the 2018 Transportation Master Plan Review and Update, which provides explicit direction to create a CLBSDM. The manual will provide City staff with a transformative document that will assist practitioners in all aspects of CLB Streets projects, including design, implementation and maintenance. This Background Review and Jurisdictional Scan is among the first deliverables for this assignment. It summarizes the current state of CLB Streets within the City of Hamilton's policies, identifies the role of the upcoming CLBSDM, and provides an overview of the key principles that have been applied in design manuals developed by other jurisdictions.

## 2 Policy Review & Understanding

An effective CLB Streets program requires policies that hold municipal staff and practitioners accountable to investing and implementing these streets. While manuals and guidelines may outline processes, designs, and best practices for implementation, policies are what dictate when and how guidelines are applied. Policies related to CLB Streets may be incorporated into high-level planning documents to help reinforce the importance of advancing the CLB Streets program in support of other planning objectives. When developing a design manual, it is important to understand how it must comply with existing policy and identify gaps that must be filled by the design manual itself or by new policy.

### 2.1 Understanding Policy

Policy is an essential component of an effective CLB Streets program. Policy is a planning tool which provides statutory and regulatory direction on where and how community elements are guided and implemented. Policies serve as mechanisms to enact planning direction and hold municipal staff accountable to regulatory promises established by their governing body. All municipalities are required to plan, adopt, and uphold policies ranging from topic-specific standards and guidelines to higher-order long-term visions.

A street design manual does not typically serve as a policy document but as a set of guidelines and best practices related to design, implementation and maintenance. It is therefore imperative that other planning documents and policies reference the CLB Streets Design Manual to necessitate its use in future roadway construction and reconstruction projects.

## 2.1.1 The Policy Hierarchy

CLB Streets or Complete Streets policies have been referenced in the City of Hamilton's Urban (2009) and Rural (2006) Official Plans (OPs), and in its 2018 Transportation Master Plan (TMP) Review and Update. The policies in the urban and rural OPs support the development of guidelines as implementation tools to meet the City's objectives. The TMP identifies the need for the development of a CLB Streets Design Manual (or guidelines) and recommends policy changes (for example, an OP amendment) to support the implementation of CLB Streets. **Table 1** illustrates the planning policy hierarchy and the role of the CLB Streets Design Manual within the policy structure.

<b>Provincial Statutes</b>	Provincial legislative documents that must be enacted and upheld without deviation or interpretation.
<b>Provincial Policies</b>	Provincial statutory documents that outline implementable processes and actions that may interpreted differently depending on context.
<b>Official Plans</b>	Municipal statutory documents that are required by the Provincial Planning Act and Policy Statement that outline how the City will use land, how it will allocate resources to its departments and services, and how it is planning for future growth.
<b>Transportation Master Plan</b>	Municipal statutory document that reflects the objectives of the Official Plan and outlines actions to implement the City's vision for transportation infrastructure and services.
<b>Complete, Livable, Better Streets Design Manual</b>	A municipal document that reflects the City's street design, implementation, and maintenance objectives for Complete, Livable, Better Streets. The guidance included within this document will be flexible and may be interpreted differently depending on context.

**Table 1** - *Transportation planning policy hierarchy.*

## 2.1.2 Policy Best Practices

While a street design manual provides guidance on the design, implementation, and maintenance of CLB Streets, policy holds decision-makers and municipal staff accountable to applying the design manual when designing municipal roads. Furthermore, policy may identify the process and timeframe in which CLB Streets will be implemented. Higher-level documents, such as Official Plans and Transportation Master Plans, should include CLB Streets policy to support their implementation and reinforce their importance within the transportation planning paradigm. The National Complete Streets Coalition (NCSC) identifies 10 components of the model Complete Streets policy, which include:

- 1 **Vision & Intent.** A clear vision on how the community wants to complete its streets, specifying at least four modes that include walking and cycling.
- 2 **Diverse Users.** Benefits and equitably supports transportation by road users of all abilities and modes, particularly vulnerable road users.
- 3 **Commitment in All Projects and Phases.** Applicable to the design, implementation, and maintenance of new construction and reconstruction/retrofit projects.
- 4 **Clear, Accountable Expectations.** Holds decision-makers accountable to applying Complete Streets guidance and requires both public notice and a clear approval process before exceptions are made on Complete Streets projects.
- 5 **Jurisdiction.** Requires coordination and collaboration between governmental departments and partner agencies on Complete Streets projects.
- 6 **Design.** Directs the applications of current best practices in design guidelines and establishes a timeframe for implementation.
- 7 **Land-use & Context Sensitive Approach.** Considers the existing and planned community context surrounding any Complete Street.
- 8 **Performance Measures.** Establishes measurable performance metrics that are specific, equitable, and available to the public.
- 9 **Project Selection Criteria.** Establishes project selection criteria that encourage funding for implementing and maintaining Complete Streets design.
- 10 **Implementation Steps.** Identifies next steps to implement Complete Streets policy and design.

## 2.2 Policy Review & Results

### 2.2.1 Policy Review Approach

To complete the policy review, the consultant project team performed a key terms search in the City's Urban and Rural Official Plans and Transportation Master Plan (TMP). Additional policies and background papers referenced by the TMP and provided by City staff were also reviewed. Policies were reviewed based on their relevance to the CLB Streets policy, noting potential implications and relevance to the design, implementation, and maintenance of streets.

### 2.2.2 Existing Policies

The City of Hamilton has identified CLB Streets or Complete Streets in several policies. **Table 2** describes the City's CLB Streets policies and their relevance to the development and implementation on the CLB Streets Design Manual.

Policy/Action	Description	Relevance to CLB Streets Design Manual
<b>Urban Hamilton Official Plan (Adopted 2009)</b>		
<b>Policy A.1.6</b>	<p>The OP relies on guidelines as implementation tools to meet City directions and provincial requirements.</p> <p>Both the City and Province have adopted subject-based guidelines to provide a greater level of explanation for the implementation of a policy or the completion of a further study.</p>	Defines a relationship between the OP and guideline documents.
<b>Policy C.4.2.8</b>	New secondary plans and designs for major transit generators shall incorporate Complete Streets design directions.	Requires complete streets design directions to be incorporated in secondary plans and certain designs.
<b>Policy C.4.5.6.5</b>	The City may waive or accept less lands to be dedicated than the maximum right-of-way dedication and/or daylighting triangle requirements where the City's objectives for sustainable infrastructure, complete streets and mobility can be achieved.	Identifies complete streets objectives as a consideration in determining whether to accept a reduced right-of-way.

<b>Policy/Action</b>	<b>Description</b>	<b>Relevance to CLB Streets Design Manual</b>
<b>Rural Hamilton Official Plan (Adopted 2006)</b>		
<b>Policy A.1.5</b>	<p>The OP relies on guidelines as implementation tools to meet City directions and provincial requirements.</p> <p>Both the City and Province have adopted subject-based guidelines to provide a greater level of explanation for the implementation of a policy or the completion of a further study.</p>	Defines a relationship between the OP and guideline documents.
<b>Policy C.4.5.6.5</b>	The City may waive or accept less lands to be dedicated than the maximum right-of-way dedication and/or daylighting triangle requirements where the City's objectives for sustainable infrastructure, complete streets and mobility can be achieved.	Identifies complete streets objectives as a consideration in determining whether to accept a reduced right-of-way.
<b>Transportation Master Plan Review and Update (2018)</b>		
<b>Action #35</b>	Adopt a CLB streets policy for road design, operation and maintenance. The CLB streets approach emphasizes routine accommodation in order to ensure designs consider the needs of users of all ages and abilities.	Provides direction to adopt a CLB streets policy.
<b>Action #36</b>	Develop a CLB streets design manual for each typology, harmonizing existing applicable guidelines. A Vision Zero lens will be applied to the design of streets in new neighbourhoods and redesign of streets in existing neighborhoods.	Provides explicit direction to develop the CLB Streets Design Manual.
<b>Action #37</b>	Harmonize the road classification and descriptions in the Official Plan with the CLB streets approach and undertake an Official Plan Amendment.	Provides direction to incorporate the CLB streets typology in the OP.

<b>Policy/Action</b>	<b>Description</b>	<b>Relevance to CLB Streets Design Manual</b>
<b>Action #38</b>	Use the multi-modal level of service (MMLOS) approach to evaluate road designs and facilitate the implementation of CLB streets. The MMLOS approach will also be integrated into Transportation Impact Study Guidelines as part of a major update to these guidelines (see Action 57).	Provides direction to consider all modes when evaluating roadway level of service.
<b>Action #39</b>	Integrate stormwater management Low Impact Development (LID) opportunities as part of CLB Streets designs where feasible.	Provides direction to consider Low Impact Development in CLB Streets design.
<b>Action #40</b>	Provide paved shoulders on rural roads where cycling is prevalent and/or where paved shoulders could benefit farm vehicles.	Provides direction to consider cycling and farm vehicle uses on rural roads.
<b>Action #41</b>	Evaluate options for providing sidewalks or multi-use trails in rural areas where the road leads to a school or community facility.	Provides direction to consider pedestrian/cycling facilities in rural areas.
<b>Action #42</b>	Operationalize the one-way to two-way decision-making framework identified in this TMP. Consider street conversions as a potential alternative within CLB streets evaluation.	Provides direction to consider one-way to two-way conversions within the CLB Streets evaluation.
<b>Action #51</b>	Integrate the goals and principles of Vision Zero into the CLB streets design manual and Engineering Guidelines.	Provides direction to integrate Vision Zero principles in the CLBSDM.
<b>Action #54</b>	Apply speed reduction techniques through the implementation of CLB streets as well as through other opportunities such as the introduction of protected cycling facilities.	Provides direction to consider speed reduction techniques.
<b>Action #58</b>	Update Road Right-of-Way policies within the Official Plan to ensure that future development protects for future multi-modal capacity needs, municipal services and utilities, while adhering	Provides direction to update right-of-way policies.

Policy/Action	Description	Relevance to CLB Streets Design Manual
	to the principles of CLB streets and Vision Zero.	
<b>Action #62</b>	Adopt off-street and on-street parking policies and designs that ensure an adequate parking supply to support growth and economic development, contribute to the achievement of the mode share targets of the TMP, and implement the CLB streets and Vision Zero objectives of the TMP.	Provides direction to develop off-street and on-street parking policies.

**Table 2 – Existing City of Hamilton Policies & Relevance to CLB Streets Design Manual**

### 2.2.3 Other Policy Supports & Documentation

As part of the 2018 TMP Review and Update, several background reports were prepared that include information related to CLB Streets. Although these background reports do not constitute policy, they provide an understanding of how the City envisions CLB Streets as a key component of its future transportation network.

Apart from the TMP background reports, the City also has several guidelines and standards that may support the planning, design and implementation of CLB Streets. **Table 3** identifies the various supporting documents that have been reviewed. Following the development of the CLBSDM, City guidelines and standards (such as those shown in this table) may need to be updated for consistency with the CLBSDM in order to support the implementation of the CLB Streets vision.

Of particular importance to CLB Streets, the Comprehensive Development Guidelines and Financial Policies manual provides design standards for municipal roads. These include minimum standards for parameters such as pavement width and corner radii. **Table 4** provides an excerpt of the Geometric Road Design Table (Table C.1) of this document, which illustrates some of the standards related to street design in the City of Hamilton.

Document	Description
<b>TMP Background Reports</b>	
<b>Complete-Livable-Better (CLB) Streets Background Report</b>	<ul style="list-style-type: none"> <li>— Introduces the concept of a CLB Street</li> <li>— Identifies a CLB Street Typology</li> <li>— Proposes CLB Streets policies</li> <li>— Includes a decision-making framework for CLB Streets</li> </ul>
<b>Cycling Master Plan Review and Update</b>	<ul style="list-style-type: none"> <li>— Provides potential cycling accommodations (e.g. cycle tracks, bike lanes, paved shoulders) for each of the CLB Street Typologies</li> </ul>
<b>Goods Movement Review Background Report</b>	<ul style="list-style-type: none"> <li>— Provides recommendations related to goods movement, curbside use and other operational considerations within the context of Complete Streets</li> <li>— Provides comparisons to other jurisdictions that have incorporated goods movement considerations in complete streets guidelines</li> </ul>
<b>Road Safety Background Report</b>	<ul style="list-style-type: none"> <li>— Recommends integrating Vision Zero goals and principles in the CLBSDM</li> <li>— Recommends applying speed reduction techniques through the implementation of CLB Streets</li> </ul>
<b>Role of Health Background Report</b>	<ul style="list-style-type: none"> <li>— Discusses the health benefits of active and sustainable travel</li> <li>— Identifies CLB Streets as supportive of a balanced transportation system that facilitates healthy choices</li> </ul>
<b>Street Conversions (One-to Two-way) Background Report</b>	<ul style="list-style-type: none"> <li>— Includes CLB principles in the evaluation criteria for screening street conversion requests</li> <li>— Recommends that street conversions be considered as a potential alternative within the CLB streets evaluation</li> </ul>
<b>Sustainable Mobility Background Report</b>	<ul style="list-style-type: none"> <li>— Identifies a relationship between CLB Streets and sustainable mobility</li> </ul>

Other Supporting Documents	
<b>Comprehensive Development Guidelines and Financial Policies Manual (2019)</b>	— Provides geometric design standards (e.g. pavement width, corner radius) for municipal roads
<b>Construction and Material Specifications (revised 2020)</b>	— Contains standard engineering drawings for the construction of roads in the City of Hamilton
<b>Site Plan Guidelines</b>	<ul style="list-style-type: none"> <li>— Provides guidance and technical standards to development projects</li> <li>— Includes standards related to emergency vehicle access and parking</li> </ul>
<b>Road Classification and Right-of-Way Width Project (2009)</b>	— Provides background material related to the existing functional road classification defined in the Urban and Rural OPs

**Table 3** – *Description of TMP Background & Supporting Documents*

Geometric Detail	Local Road Urban Residential	Minor Collector Urban Residential	Major Collector Urban Residential	Local Road Rural Residential, Crescents and Cul-de-sacs	Minor Collector Rural Residential Straight-through Roads	Major Collector Rural Residential	Local Road Industrial/ Commercial Crescents and Cul-de-sacs	Minor Collector Industrial/ Commercial	Major Collector Industrial/ Commercial
Min. ROW (m)	20	20	20	20	20	26	26	26	26
Design speed (km/h)	50	50	60	50	60 to 80	80 to 100	60	60	60
Posted speed (km/h)	50	50	60	50	50 to 70	60 to 80	50	50	60
Min. curb radius at intersection (m)	9	9	12	9	12	15	-	-	-
Pavement asphalt width (m)	8.0	8.0	11.0	6.7 plus shoulders	6.7 plus shoulders	9.0 plus shoulders	9.25	11.0	14.0

**Table 4** – Excerpt from Table C.1 – Geometric Road Design Table from the City of Hamilton Comprehensive Development Guidelines and Financial Policies Manual

## 2.3 Design Guidelines & Standards

A number of provincial, national, and international design guidelines inform the development of complete streets and multi-modal transportation design. As part of this background review, the project team reviewed several documents that focus on different user groups. **Table 5** below identifies the various design guidelines and standards that inform the development and implementation of complete streets and complete streets policy, along with their relevance to different key user groups. The design guidelines identified in Table 4 will be referenced throughout the development of the Hamilton CLB Streets Design Manual.

Design Guideline	Pedestrian Relevance	Cyclist Relevance	Transit Relevance	Vehicle Relevance	Intersection Relevance
OTM Book 12A	Low	Medium	Low	Low	High
OTM Book 15	High	Low	Low	Low	High
OTM Book 18	Medium	High	Low	Medium	High
MTO Freight-Supportive Guidelines	Low	Low	Low	High	Medium
MTO Transit-Supportive Guidelines	Medium	Low	High	Low	Low
Ontario Minimum Maintenance Standards	Low	Low	Low	High	Low
TAC Geometric Design Guide	Low	Medium	Medium	High	High
NACTO Urban Bikeway Design Guide	Low	High	Low	Low	Medium
NACTO Urban Street Design Guide	High	Medium	Medium	Medium	High
NACTO Transit Street Design Guide	Medium	Medium	High	Low	Low
NACTO Global Street Design Guide	High	High	High	High	High
NACTO Urban Street Stormwater Guide	Low	Low	Low	Low	Low

**Table 5 – Relevance of Design Guidelines and Standards**

## 3 Review & Application of Best Practice Guidelines

As part of the background review for phase 1 of the Hamilton CLB Streets Design Manual assignment, the project team undertook a jurisdictional scan of five municipalities with existing complete streets design guideline/manual documents.

The intention of performing the jurisdictional scan is to identify common themes and best practices that can be integrated into the Hamilton CLB Streets Design Manual. The jurisdictional scan focused on identifying the particular design principles that inform the typology-specific design interventions presented in the various design guideline documents.

These principles apply to every street typology presented with the particular design manual. The focus on design principles is intended to provide the City of Hamilton with an understanding of the guiding principles that have been identified for different user groups, principles that are not specific to any one municipality.

### Jurisdictional Scan

- London Complete Streets Design Manual
- Toronto Complete Streets Guidelines
- Kitchener Complete Streets Design Guidelines
- Edmonton Complete Streets Design Standards
- Boston Complete Streets Guidelines

### 3.1 Guideline Summary

**Table 6** on the following page identifies the existing Functional Road Classifications, along with the complete streets typologies presented in each of the five jurisdictional scan documents. This table makes it possible to identify common themes between the complete streets typologies identified in the various design guidelines and manuals reviewed, with typologies addressing common built forms found in each of these five municipalities.

**Table 7** identifies principles across the five complete streets guidelines based on different user groups. This table illustrates design principles that apply to the different user groups identified in these complete streets documents, spanning all complete streets typologies. The design principles identified in this table convey the significance of considerations when designing for different user groups. For instance, the City of Boston's design considerations for intersections include references to "reduce clutter", "smart tags", and "sensors", among others. These considerations speak to the need to thoughtfully lay out utilities, traffic signals, fire hydrants etc., to ensure that the intersection is organized in a simple and straightforward manner, with publicly accessible Wi-Fi incorporated into next generation intersection infrastructure, and an overall emphasis on incorporating technology to provide the City with real-time data collection and monitoring.

<b>Jurisdictional Document</b>	<b>Functional Road Classifications</b>	<b>Complete Streets Typologies</b>
<b>London Complete Streets Design Manual</b>	<ul style="list-style-type: none"> <li>— Arterial</li> <li>— Primary/Secondary Collector</li> <li>— Local</li> <li>— Rural Roads</li> </ul>	<ul style="list-style-type: none"> <li>— Rapid Transit Boulevard</li> <li>— Main Street</li> <li>— Urban Thoroughfare</li> <li>— Civic Boulevard</li> <li>— Neighbourhood Connector</li> <li>— Neighbourhood Street</li> <li>— Rural Thoroughfare</li> <li>— Rural Connector</li> </ul>
<b>Toronto Complete Streets Guidelines</b>	<ul style="list-style-type: none"> <li>— City Expressway</li> <li>— Major Arterial</li> <li>— Minor Arterial</li> <li>— Collector</li> <li>— Local</li> <li>— Other</li> <li>— Laneway</li> <li>— Busway</li> <li>— Access Road</li> <li>— Park Road</li> </ul>	<ul style="list-style-type: none"> <li>— Civic Street</li> <li>— Downtown &amp; Centres Main Street</li> <li>— Downtown &amp; Centres Residential Street</li> <li>— Apartment Neighbourhood Residential Street</li> <li>— Neighbourhood Residential Street</li> <li>— Mixed Use Connector Street</li> <li>— Residential Connector Street</li> <li>— Scenic Street</li> <li>— Park Street</li> <li>— Employment Street</li> <li>— Mixed Use Access Street</li> <li>— Shared Street</li> <li>— Residential Shared Street</li> <li>— Mixed Use Lane</li> <li>— Residential Lane</li> </ul>
<b>Kitchener Complete Streets Design Guidelines</b>	<ul style="list-style-type: none"> <li>— Arterial</li> <li>— Major Collector</li> <li>— Minor Collector</li> <li>— Local</li> </ul>	<ul style="list-style-type: none"> <li>— Local</li> <li>— Woonerf</li> <li>— Green Streets</li> <li>— Minor Collector Streets</li> <li>— Major Collector</li> <li>— Arterial (Main Streets)</li> <li>— Arterial (Thoroughfares)</li> <li>— Arterial (Industrial Streets)</li> <li>— Pedestrian-Only Streets</li> </ul>
<b>Edmonton Complete Streets Design Standards</b>	<ul style="list-style-type: none"> <li>— Freeway</li> <li>— Arterial</li> <li>— Collector</li> <li>— Local</li> <li>— Alley</li> <li>— Shared Street</li> <li>— Pedestrian Only Street</li> </ul>	<ul style="list-style-type: none"> <li>— Freeway</li> <li>— Arterial</li> <li>— Collector</li> <li>— Local</li> <li>— Alley</li> <li>— Shared Street</li> <li>— Pedestrian Only Street</li> </ul>
<b>Boston Complete Streets Guidelines</b>	<ul style="list-style-type: none"> <li>— Arterial</li> <li>— Collector</li> <li>— Local</li> </ul>	<ul style="list-style-type: none"> <li>— Downtown Commercial</li> <li>— Downtown Mixed-Use</li> <li>— Neighborhood Main Street</li> <li>— Neighborhood Connector</li> <li>— Neighborhood Residential</li> <li>— Industrial</li> <li>— Shared Streets</li> <li>— Parkways</li> <li>— Boulevards</li> </ul>

**Table 6 – Functional Road Classifications and Complete Streets Typologies**

Jurisdiction Design Guideline	Pedestrian Design Principles	Cyclist Design Principles	Transit Design Principles	Vehicle Design Principles	Intersection Design Principles
London Complete Streets Design Manual	<div><div>— Prioritize safety</div><div>— Design for accessibility</div><div>— Create a comfortable environment</div><div>— Provide connectivity</div></div>	<div><div>— Make context-sensitive design decisions</div><div>— Provide continuity and guidance</div><div>— Prioritize vulnerable users</div><div>— Provide convenient cycling-supportive facilities</div></div>	<div><div>— Minimize delay / give transit priority</div><div>— Mitigate conflicts with vulnerable users</div><div>— Plan for multi-modal travel</div><div>— Provide a comfortable user experience</div></div>	<div><div>— Select an appropriate design speed</div><div>— Select and appropriate design vehicle</div><div>— Consider induced demand when determining capacity</div></div>	<div><div>— The London Complete Streets Design Manual provides specific design interventions for pedestrian, cyclist, transit, and motor vehicle facilities.</div></div>
Toronto Complete Streets Guidelines	<div><div>— Accessibility and mobility</div><div>— Provide a network of continuous sidewalks</div><div>— Design for safe crossings</div><div>— Placemaking</div><div>— Design for comfort</div><div>— Greening infrastructure and stormwater management</div><div>— Design for efficient maintenance</div><div>— Coordination with utilities</div></div>	<div><div>— Apply context-appropriate designs</div><div>— Design for both present and future users</div><div>— Prioritize the most vulnerable road users</div><div>— Visible, intuitive cycling facilities</div><div>— Intersection safety and mixing zones</div><div>— Supply adequate bicycle parking and Bike Share access</div><div>— Design and maintain bike-friendly curbside conditions</div><div>— Surface conditions</div></div>	<div><div>— Enhance transit users’ experience</div><div>— Make connections safe, convenient, and seamless</div><div>— Visible, safe and convenient transit stops</div><div>— Universally accessible transit stops and facilities</div><div>— Curbside design to support transit efficiency</div><div>— Traffic signals control strategies</div><div>— Transit streets are safe for walking and cycling</div><div>— Transit streets and linear public spaces</div><div>— Design for growth</div></div>	<div><div>— Multi-modal transportation</div><div>— Safety</div><div>— Context-sensitive target speed and reliable travel</div><div>— Placemaking</div><div>— Greening and stormwater management</div></div>	<div><div>— Safety first</div><div>— Predictability</div><div>— Visibility</div><div>— Multi-modal</div><div>— Accessibility</div><div>— Compact design and shorter crossings</div><div>— Active transportation</div><div>— Transit</div><div>— Placemaking</div><div>— Maintenance and operations</div><div>— Manage stormwater</div></div>
Kitchener Complete Streets Design Guidelines	<div><div>— Prioritize safety</div><div>— Design for accessibility</div><div>— Ensure direct, continuous and connected routes</div><div>— Provide sidewalks on both sides of the street</div><div>— Create beautiful and enjoyable places</div><div>— Make it comfortable</div></div>	<div><div>— Prioritize safety</div><div>— Design for all ages and abilities</div><div>— Ensure direct and connected routes</div><div>— Provide guidance</div><div>— Make it maintainable</div><div>— Provide a comfortable experience</div></div>	<div><div>— Provide safe and convenient active transportation access</div><div>— Facilitate multimodal connections</div><div>— Include adequate space for transit amenities</div><div>— Facilitate transit efficiency</div><div>— Design for all users</div><div>— Create vibrant places</div></div>	<div><div>— Design for safe speeds</div><div>— Set context-sensitive speed limits</div><div>— Accommodate the needs of large vehicles</div><div>— Consider induced demand when determining capacity</div><div>— Optimize use of street space</div></div>	<div><div>— Prioritize vulnerable users</div><div>— Balance comfort and convenience of all travel modes</div><div>— Maximize visibility</div><div>— Reduce turn speeds</div><div>— Maintain consistency and foster predictable movements</div><div>— Accommodate large vehicles appropriately</div></div>
Edmonton Complete Streets Design Standards	User-specific design principles are not identified within the Edmonton Complete Streets Design Standards				<div><div>— Make approaching, entering, and using an intersection easy for people walking and wheeling of all ages and abilities;</div><div>— Provide streets and intersections that are both convenient and safe for all users, particularly those with mobility issues;</div></div>

				<div><div>— Emphasize dignity and independence, providing those features that will allow all people to function in their day-to-day activities;</div><div>— Consider accessibility in all seasons and conditions; and</div><div>— Be successfully integrated with an intersection’s function and form.</div></div>
<div>Boston Complete Streets Guidelines</div>	<div><div>— Accessible to all</div><div>— All-weather access</div><div>— Vibrant walking environment</div><div>— Ease of maintenance</div><div>— Intelligent systems</div><div>— Stormwater management</div><div>— Efficient technologies</div></div>	<div><div>— Road diets, lane diets, and the consideration or removal of on-street parking should be considered in order to provide adequate space for bicycle facilities</div><div>— The potential hazard of opening car doors should be considered when developing appropriate designs for bicycle facilities</div><div>— Coloured pavement should be considered to increase awareness of bicycle facilities at curbside locations, beginning of block segments, and through intersections</div><div>— Roadways should be designed to provide the most direct and appropriate bicycle route, and minimize convoluted or out-of-way routing</div><div>— Where possible, the installation of bicycle facilities should be coupled with an evaluation of pavement conditions and improvements to ensure smooth riding surfaces</div></div>	<div><div>— Multimodal</div><div>— Smart</div><div>— Green</div></div>	<div><div>— Accessible for all</div><div>— Ease of maintenance</div><div>— Reclaiming space</div><div>— Minimum signal cycle lengths</div><div>— Traffic controls</div><div>— Reduce clutter</div><div>— Balancing users’ needs</div><div>— Emissions reductions</div><div>— Smart tags</div><div>— All-weather access</div><div>— Stormwater management</div><div>— Obeying the law</div><div>— Sensors</div></div>

Table 7: Complete Streets Principles by User Group

## 3.2 Comparison & Highlights

The five jurisdictional documents reviewed identified a number of common themes and design principles. The following section summarizes three key principles related to each user group. This is intended to provide a high-level summary of design principles that should be considered moving forward with the development of the CLB Streets Design Manual.

### Pedestrian Design Principles

Three key pedestrian design principles were identified:

1. Prioritize the safety of pedestrians;
2. Ensure that pedestrian facilities are accessible to all; and
3. Create vibrant and comfortable pedestrian environments.

The plans displayed an overwhelming focus on ensuring that the safety of pedestrian is prioritized above all design principles. This is due to pedestrians being the most vulnerable road users, particularly pedestrians with disabilities. Ensuring that all pedestrian facilities — regardless of the location or street typological context — prioritize safety and ensures access to all is paramount. The creation of vibrant and comfortable environments reinforces pedestrian safety and access, and welcomes users to these spaces.

### Cyclist Design Principles

Three key cycling design principles were identified:

1. Apply context-sensitive facilities on streets;
2. Ensure cycling facilities are direct, intuitive, and comfortable; and
3. Provide continuity in the network and sufficient user guidance.

The key design principles relevant to cyclists focused on developing cycling networks that are well thought out, with context-sensitive cycling facilities that connect with one another to form an integrated network. Continuity was identified as a recurring key design principle as municipalities seek to fill gaps in their respective cycling networks.

### Transit Design Principles

Three key transit design principles were identified:

1. Provide safe and comfortable access to transit facilities;
2. Accommodate multi-modal travel (e.g. bike parking at transit stops); and
3. Facilitate transit efficiency by providing transit vehicles with priority access.

The key design principles that relate to transit touch on those related to pedestrian and cycling design. The transit user design principles focus on ensuring that transit stops are safe to travel to and from, as

well as comfortable and inviting while waiting for the transit vehicle to arrive. Transit stops should focus on enabling multi-modal trips, such as through the provision of bicycle parking at transit stop locations or ensuring that connecting routes are located in a manner that accommodates convenient and intuitive transfers. Where feasible, physical interventions should be explored, such as adding bus queue jump lanes at intersections or dedicated priority lanes along busy corridors.

## **Motor Vehicle Design Principles**

Three key motor vehicle design principles were identified:

1. Select appropriate design speeds when designing a roadway;
2. Consider induced demand when determining vehicular capacity; and
3. Implement context-sensitive speed limits that reflect the surrounding built form and land uses.

A key takeaway from the review of motor vehicle design principles is that practitioners should carefully select an appropriate design speed prior to design and construction of a roadway. This in turn, will influence the posted speed limit. For existing roadways not undergoing reconstruction, design practitioners should set speed limits that are context-sensitive, reflecting the surrounding land uses and user groups that are using that roadway. Induced demand was identified as a key consideration, as decisions around adding vehicular capacity to a corridor have direct implications on inducing vehicular demand and potentially detracting from shifting demand to other modes of travel.

## **Intersection Design Principles**

Three key principles related to intersection design were identified:

1. Ensuring that pedestrian facilities are accessible to all;
2. Prioritizing the safety of pedestrians; and
3. Creating vibrant and comfortable pedestrian environments.

The final design principles focused on those relating to intersections and intersection design. The recurring themes and key design principles identified as part of the jurisdictional scan highlighted a significant amount of overlap with the design principles identified for the other user groups, namely pedestrians and cyclists. Intersections represent a potential point of conflict for all road users, particularly vulnerable road users such as pedestrians and cyclists. As such, intersection design must prioritize the safety of pedestrians and cyclists, ensuring that intersections are accessible to all. The use of technology at intersections was also identified as a key design principle, with intersections giving municipalities the opportunity to enhance other modes of travel such as transit, through the use of transit signal priority technology. Another example is the use of cameras to count and monitor intersections in real time, allowing for real-time information to be provided to departments overseeing the broader transportation network.

## 4 Conclusions and Next Steps

This Background Review Discussion Paper is a resource that may be used by the project team throughout the development of the Hamilton CLB Streets Design Manual. It identifies and describes the City's policies, guidelines, that outline a purpose and commitment to the CLB Streets Design Manual. It has also summarized provincial, national, and international roadway design guidelines and standards that should be reflected in the guidance of the City's CLB Streets Design Manual. The tabulated breakdown of design, implementation, and maintenance guidance at the various levels of government, both within Canada and the United States, as well as the table description of the City's Complete Streets typologies, may serve as tools for the project team's consideration in future phases. This section describes some highlights from these detailed reviews and the next phase of the Hamilton CLB Streets Design Manual.

### 4.1 Key Outcomes

The Background Review & Jurisdictional Scan has highlighted the City's progress-to-date in framing CLB Streets on its roadways. While CLB Streets have yet to be implemented, the City has published high-level planning documents and background reports that identify a need for CLB Streets and a means to implement them moving forward. The need for a CLB Streets Design Manual that is catered to the Hamilton transportation context has been recognized as paramount to the success of designing, implementing, and maintaining the City's proposed CLB Streets typologies. The Hamilton CLB Streets Design Manual project reflects the City's commitment to developing the tools and guidance necessary to enact its Complete Streets vision.

### 4.2 Next Steps

With a number of City policies and plans having been reviewed, as well as a jurisdictional scan of sample complete streets guidelines, a foundation has been established to guide in the development of the CLB Streets Design Manual. However, a number of questions will need to be answered moving forward, including:

- What roadways does the CLB Streets Design Manual apply to?
- What type of projects are eligible for CLB Streets design?
- What are barriers to implementing CLB Streets in Hamilton?
- What groups must be consulted prior to implementing a CLB Streets project?
- What type of roadway modifications are permitted when implementing CLB Streets design into road rehabilitation or reconstruction projects?

Answering these questions in Phase 1 is critical to understanding how best to proceed with the development of the CLB Streets Design Manual, ensuring that all recommendations can be implemented in a context-sensitive manner and in keeping with the broader Hamilton policy landscape.



## **Illustrative Applications of Complete Streets Design Strategies to Existing Streets**

The application of complete streets design strategies to existing streets often presents challenges given Right-of-Way (ROW) constraints, existing built form and differing needs for various users, and uses, of the street. This appendix provides some illustrative applications of complete street design strategies to existing streets in Hamilton in order to show what it might look like to apply the typologies and related design features that are under consideration for the CLB Streets Design Manual.

It is important to note that these are illustrative examples only and do not necessarily reflect specific design plans for specific streets.

The illustrative examples reflect only one possible concept for each street typology and have not been subject to a formal alternatives analysis process or Environmental Assessment (EA).

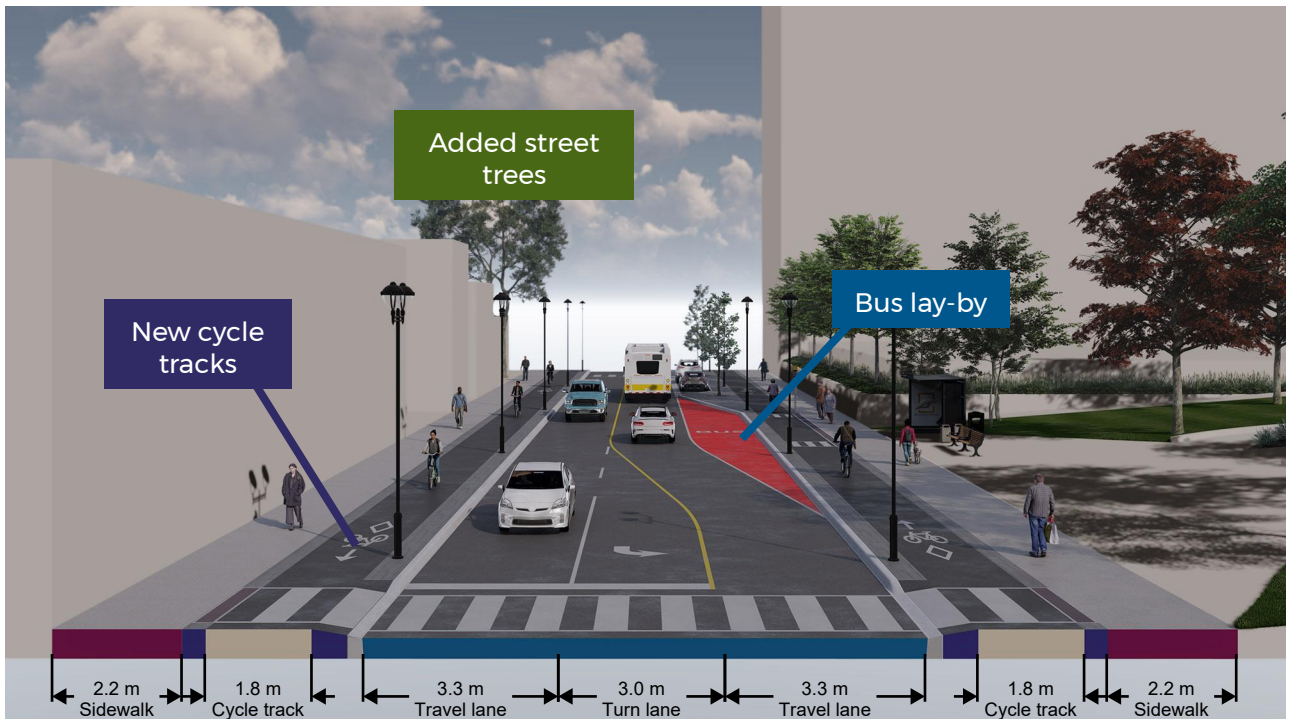
Additionally, while the images of existing streets reflect actual conditions in Hamilton, the selection of these locations are simply intended to show a typical street that would fall under each typology and should not be taken as representing an approved or planned proposal. Examples of streets by typology can be found in Table 1: Proposed Street Typologies for the City of Hamilton of Report PED 21020/PW21002.

# URBAN AVENUE

## EXISTING CONDITION (20 m ROW)



## DESIGN CONCEPT (20 m ROW)



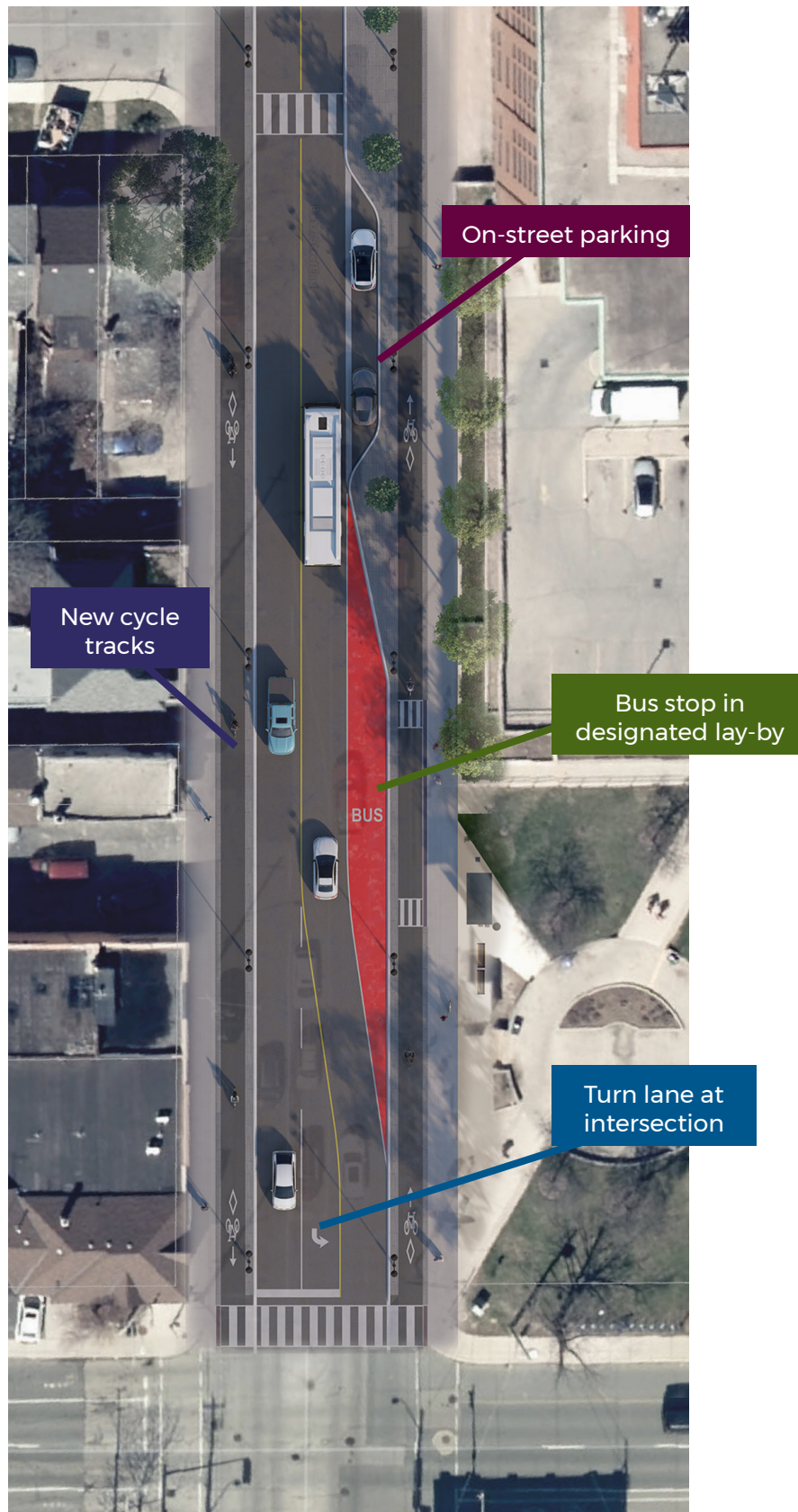
Urban Avenues provide high people-movement capacity with priority for transit and active transportation. In a narrow right-of-way, priorities are balanced by varying the street design along the length of the block with dedicated turn lanes at intersections and lay-bys at bus stops. At other locations, on-street parking, planting zones, patios, or other amenities may be introduced.

## EXAMPLE DESIGN CONCEPTS

CITY OF HAMILTON COMPLETE, LIVABLE, BETTER STREETS DESIGN MANUAL

## URBAN AVENUE

### DESIGN CONCEPT

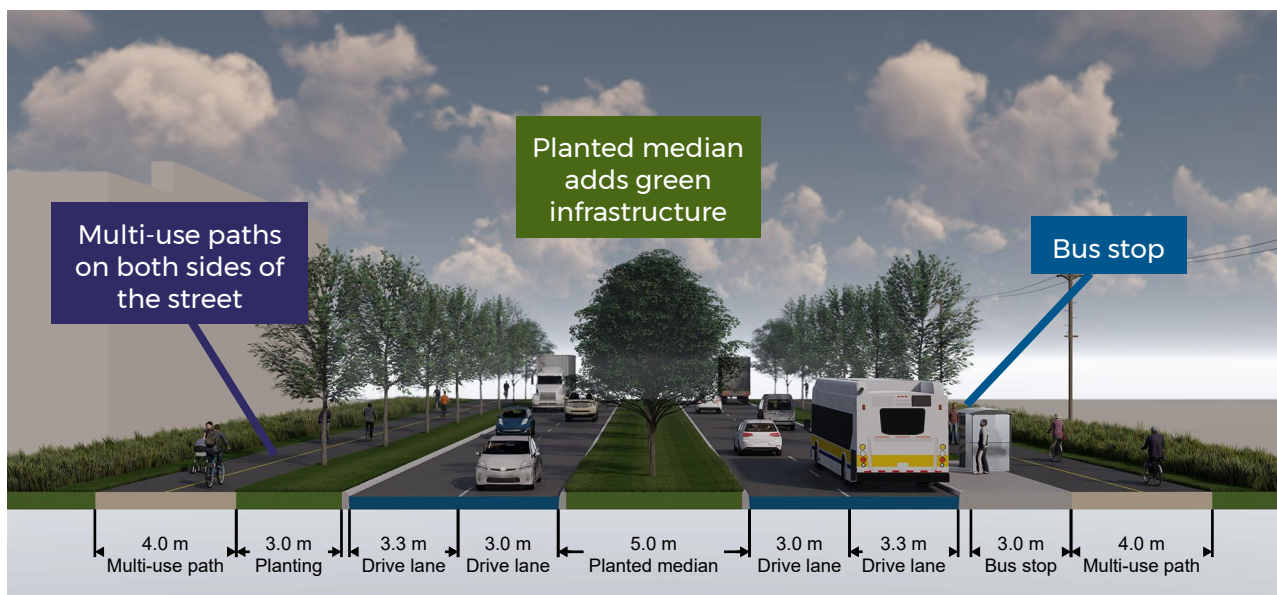


# TRANSITIONING AVENUE

## EXISTING CONDITION (45 m ROW)



## DESIGN CONCEPT (45 m ROW)



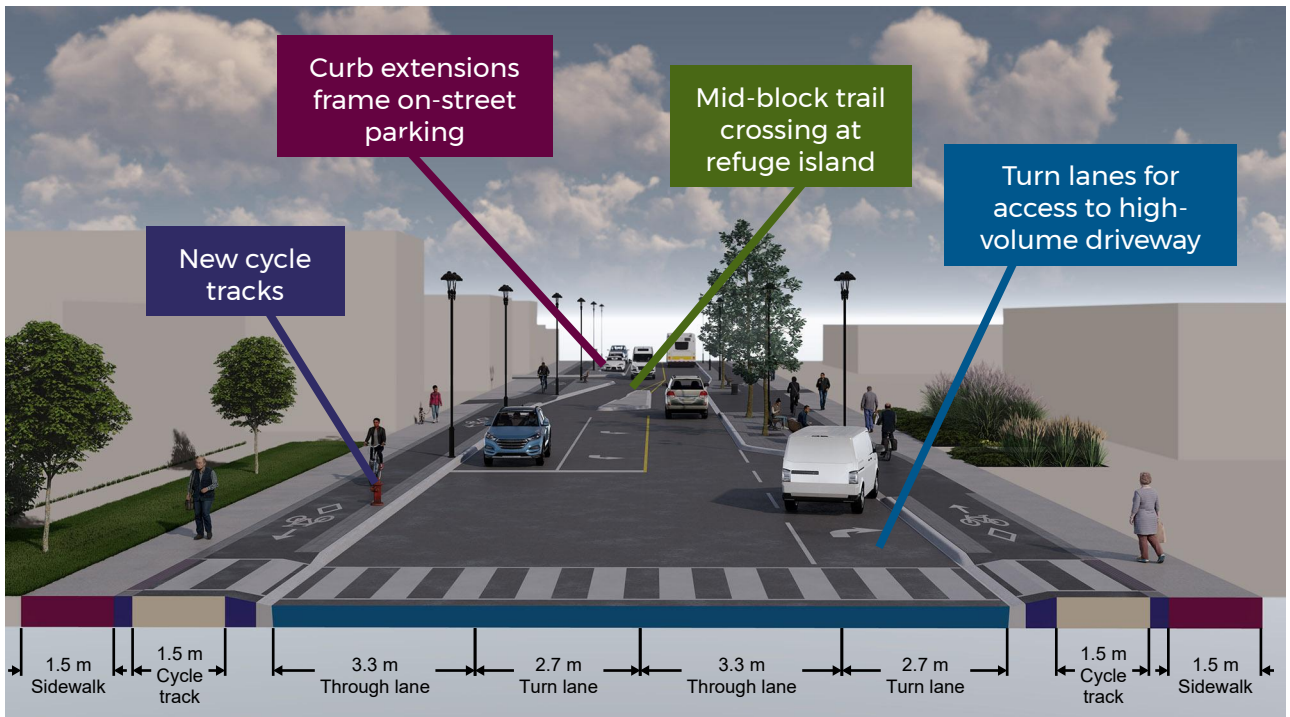
Transitioning avenues are major streets that cross the city east-west or north-south. They provide medium to high people-movement capacity and incorporate a high degree of access control. The wider right-of-way in this example allows for a planted median, which may narrow to provide dedicated turning lanes at intersections. A multi-use trail may be provided on both sides of the street to allow people walking, cycling or using transit to access destinations on either side of the street.

# MAIN STREET

## EXISTING CONDITION (20 m ROW)



## DESIGN CONCEPT (20 m ROW)



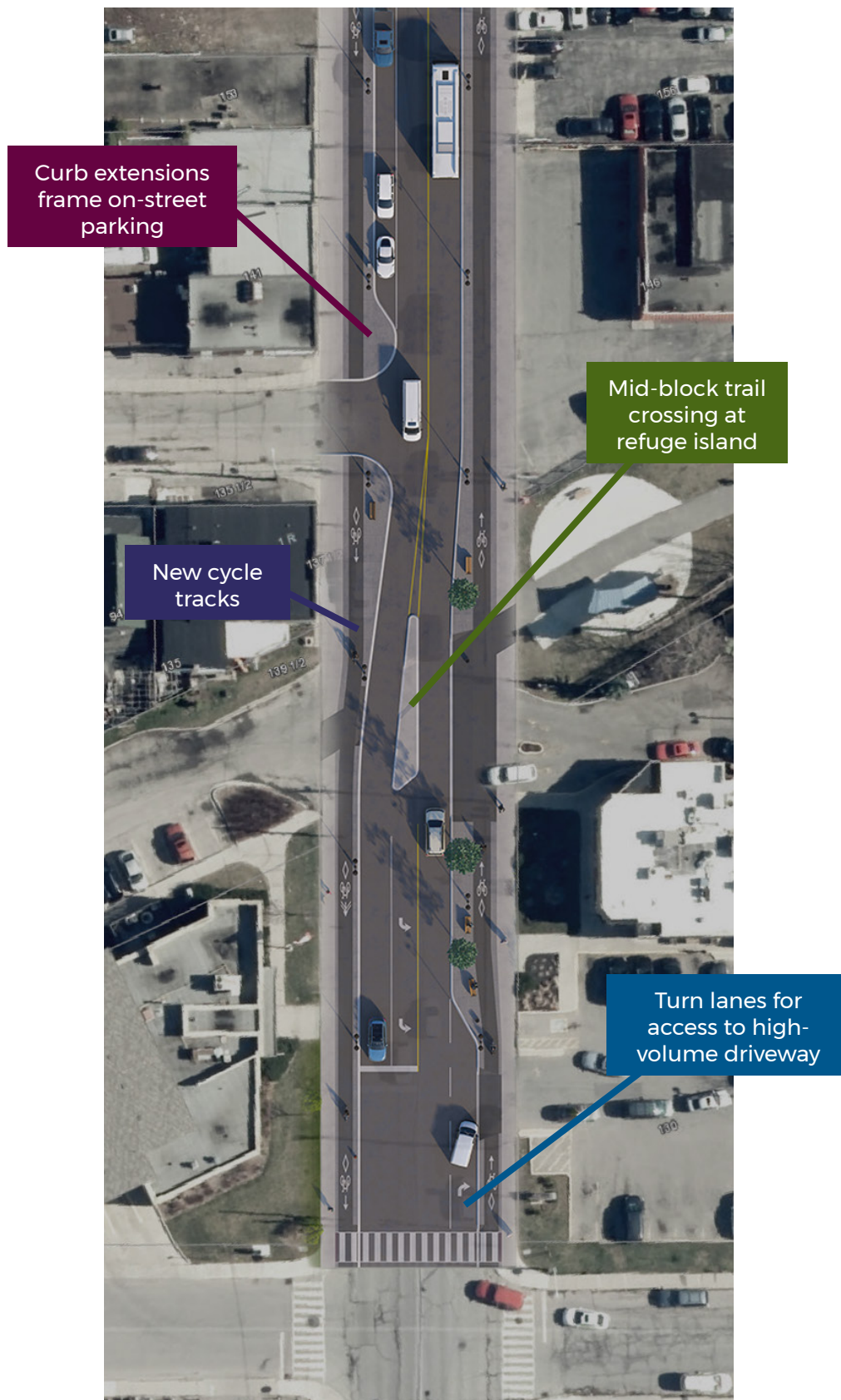
Main Streets have narrow rights-of-way, and are typically pedestrian-oriented streets with mixed uses and smaller-scale buildings. At this location, dedicated turn lanes may be provided for vehicles accessing the high-volume commercial driveway in the foreground. In the background, the roadway may narrow to two lanes, with on-street and street trees along with wider sidewalks and cycle tracks.

## EXAMPLE DESIGN CONCEPTS

CITY OF HAMILTON COMPLETE, LIVABLE, BETTER STREETS DESIGN MANUAL

## MAIN STREET

### DESIGN CONCEPT

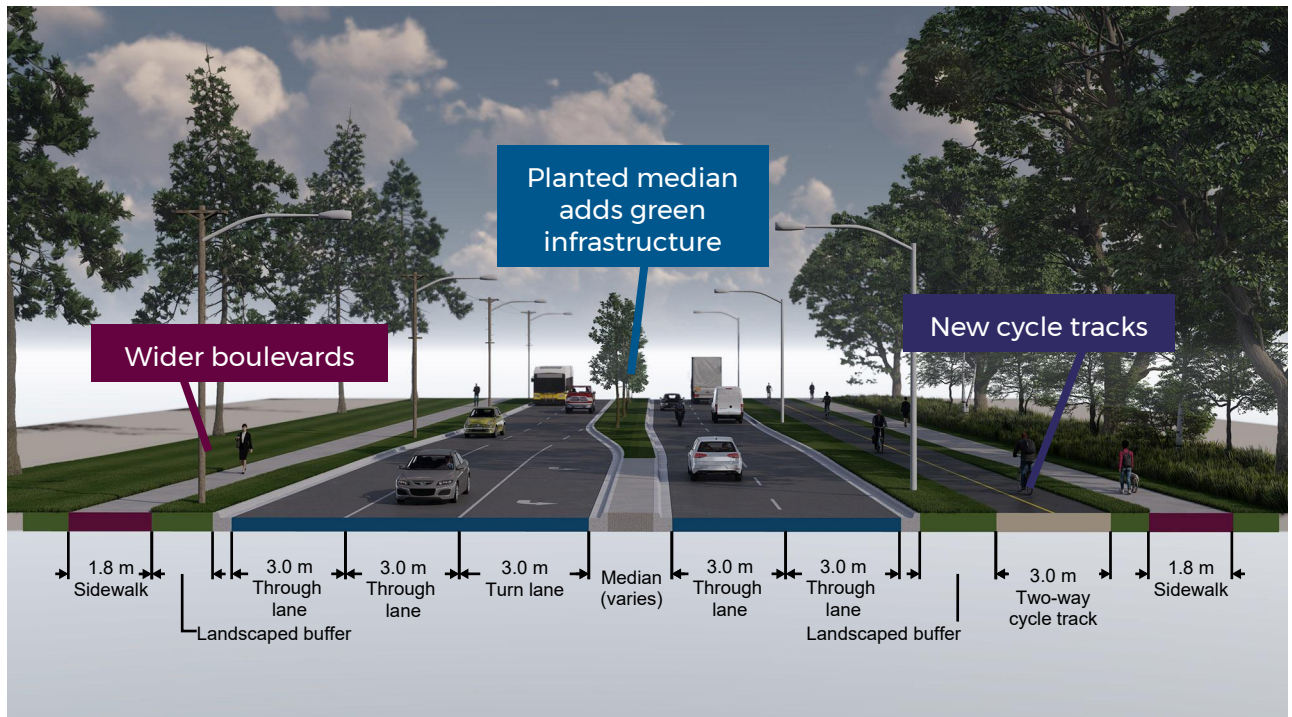


# CONNECTOR

## EXISTING CONDITION (28-32 m ROW)



## DESIGN CONCEPT (30 m ROW)



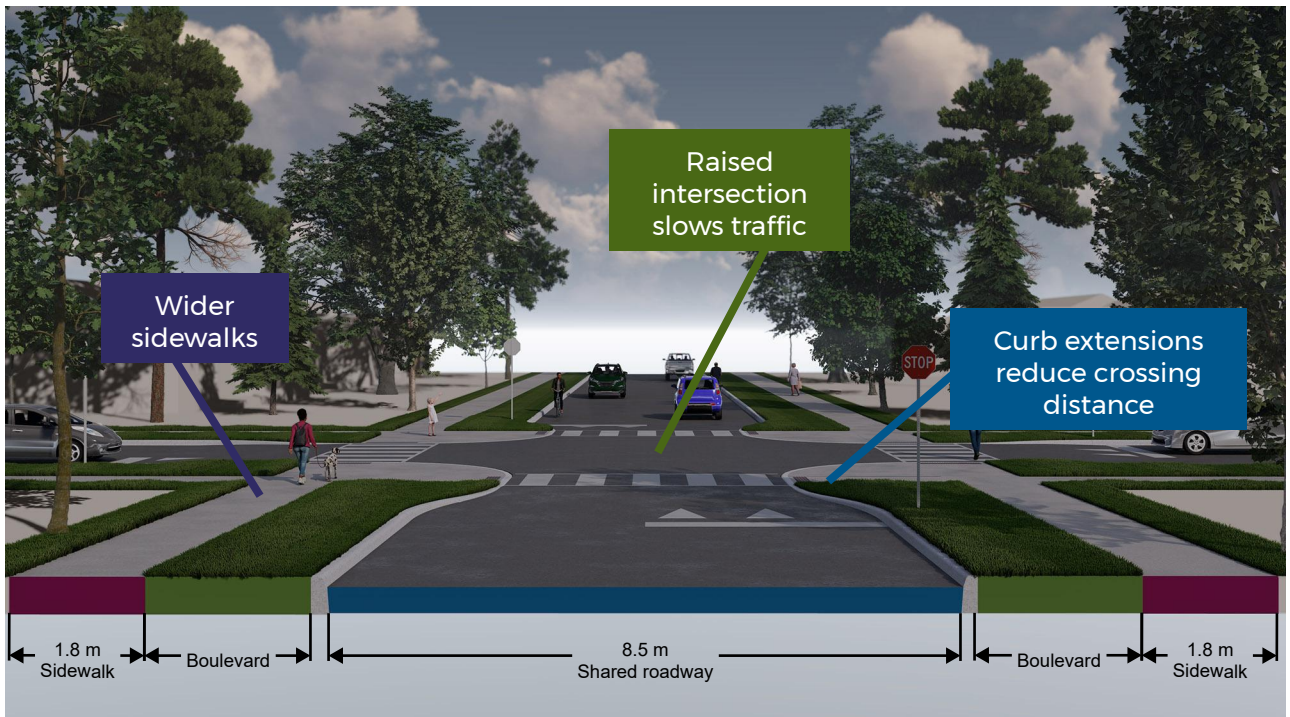
Connectors link neighbourhoods to each other and to other areas of the City. Buildings are generally set back from the street fronting onto a wide boulevard. On this street, a two-way cycle track may be provided on the higher-activity side of the street, to accommodate trips destined to and from Mohawk College.

# NEIGHBOURHOOD STREET

## EXISTING CONDITION (20 m ROW)



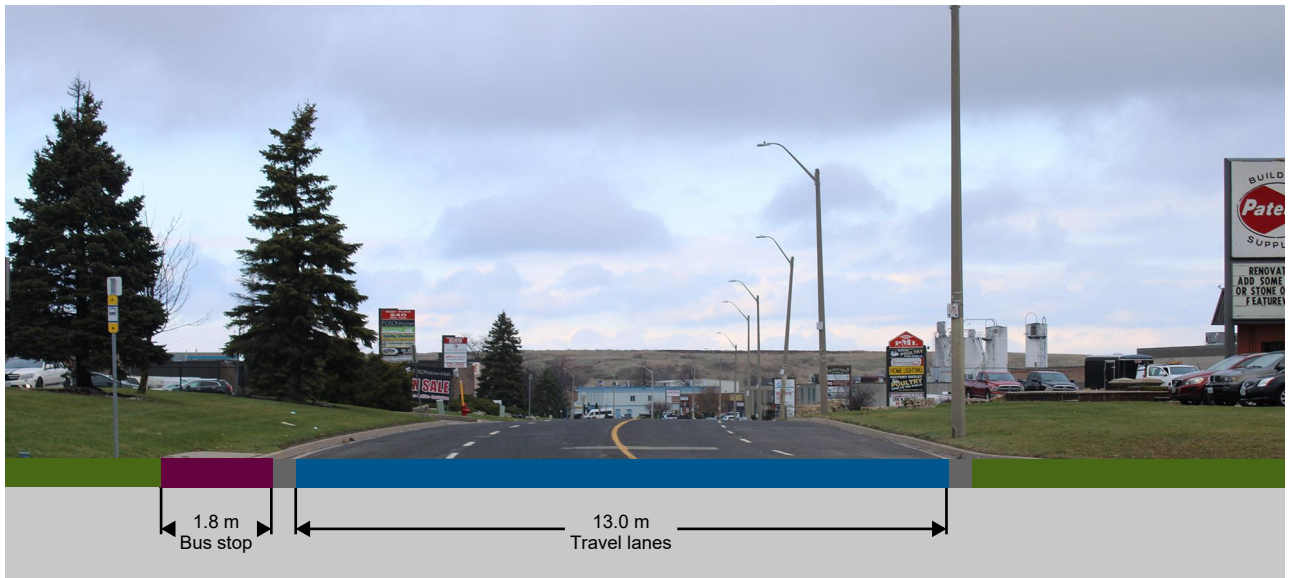
## DESIGN CONCEPT (20 m ROW)



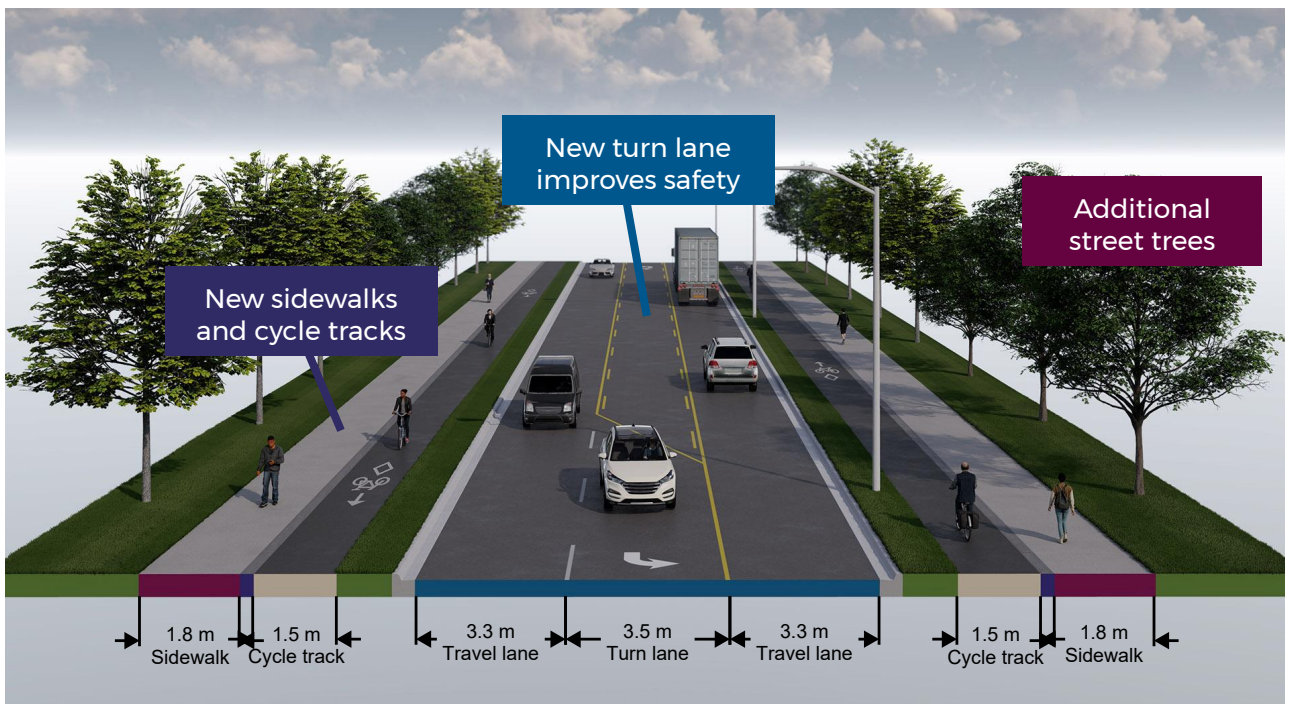
Neighbourhood Streets provide direct access to residential areas. Traffic calming and minimization of through traffic are important to provide a safe and comfortable environment for people walking and cycling.

# INDUSTRIAL ROAD

## EXISTING CONDITION (26 m ROW)



## DESIGN CONCEPT (26 m ROW)



Industrial Roads are important goods movement corridors. They provide access by all modes of travel to industrial, warehousing, and other employment areas. In the example shown, cycle tracks may be implemented in a full road reconstruction scenario. In a retrofit scenario, on-street separated bicycle lanes may be implemented in conjunction with a 4-to-3 lane reconfiguration.

## EXAMPLE DESIGN CONCEPTS

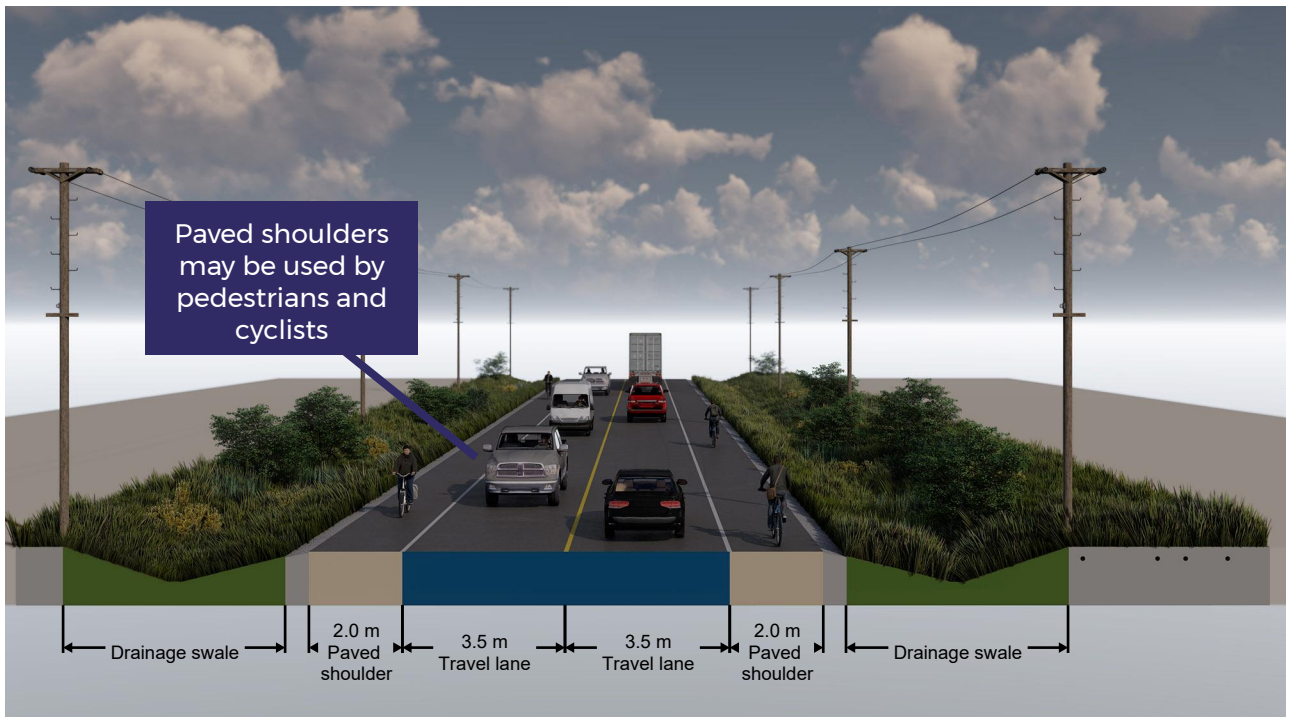
CITY OF HAMILTON COMPLETE, LIVABLE, BETTER STREETS DESIGN MANUAL

## RURAL ROAD

### EXISTING CONDITION (20 m ROW)



### DESIGN CONCEPT (26 m ROW)



Rural Roads are primarily located in agricultural and natural areas. Their primary function is to move private and goods movement vehicles. In this example, paved shoulders may be used by pedestrians, cyclists and by motor vehicles stopped in emergency situations. The paved shoulder also provides additional lateral support for the pavement structure of the roadway.

### EXAMPLE DESIGN CONCEPTS

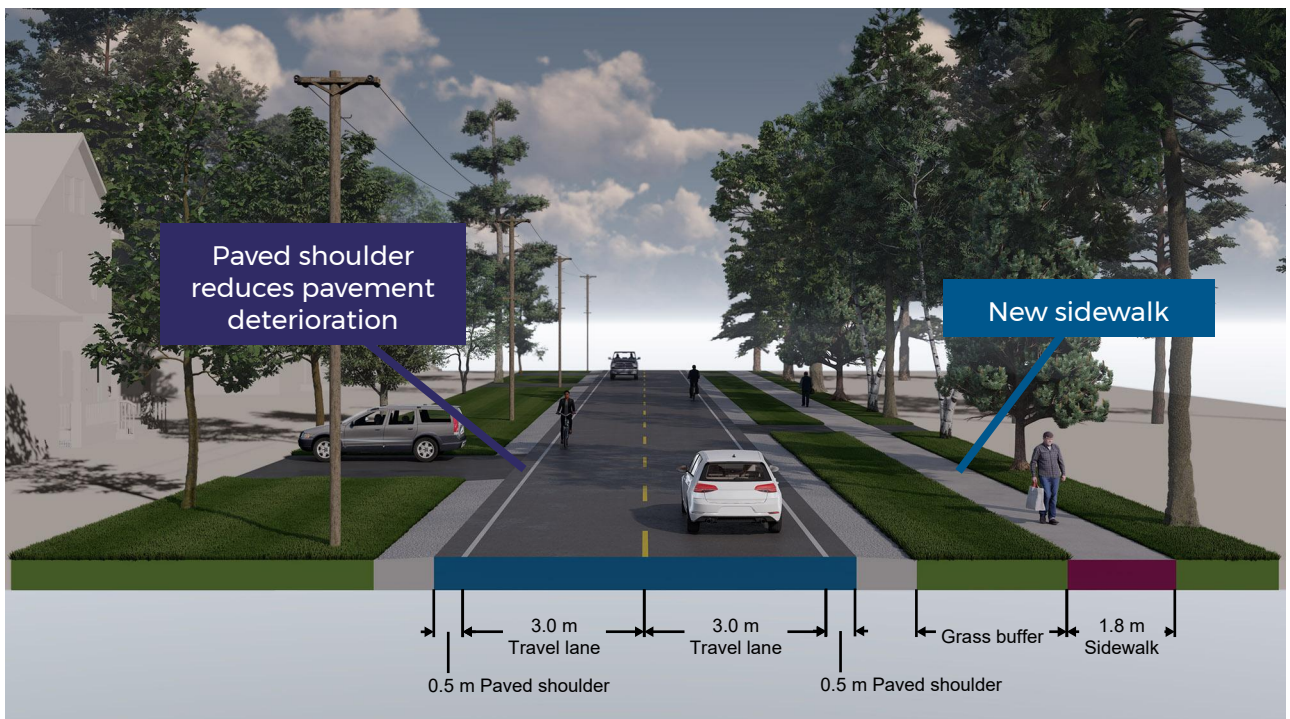
CITY OF HAMILTON COMPLETE, LIVABLE, BETTER STREETS DESIGN MANUAL

## RURAL SETTLEMENT ROAD

### EXISTING CONDITION (18-22 m ROW)



### DESIGN CONCEPT (20 m ROW)



Rural Settlement Roads are portions of Rural Roads that pass through village, and may include residential frontages or commercial uses. In this example, traffic volumes and speeds are relatively low, and a small paved shoulder is provided to improve pavement longevity and reduce maintenance costs.

# City of Hamilton Complete, Livable, Better Streets Design Manual



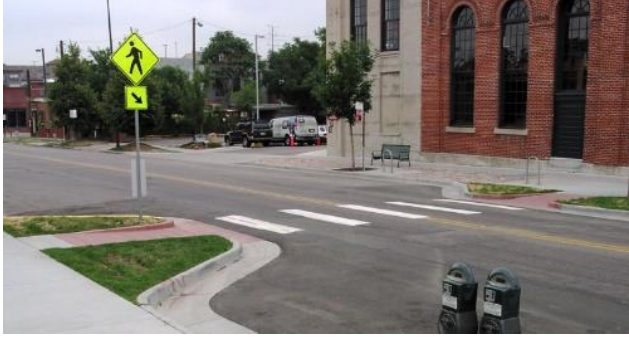
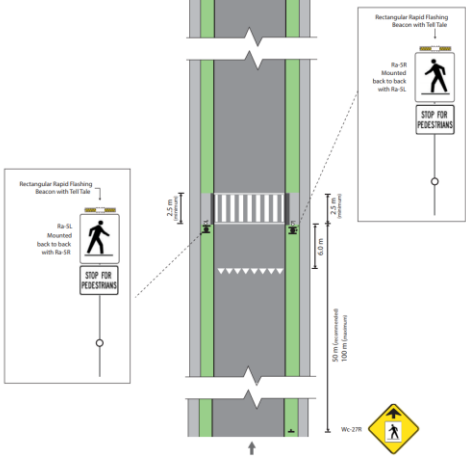
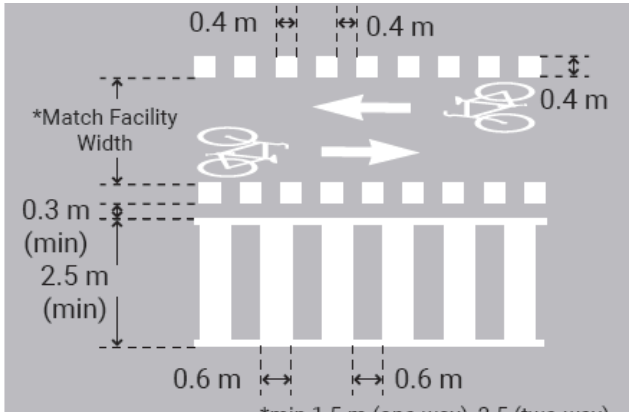
**Typical Complete Streets Design Features**




*December 2<sup>nd</sup>, 2020*

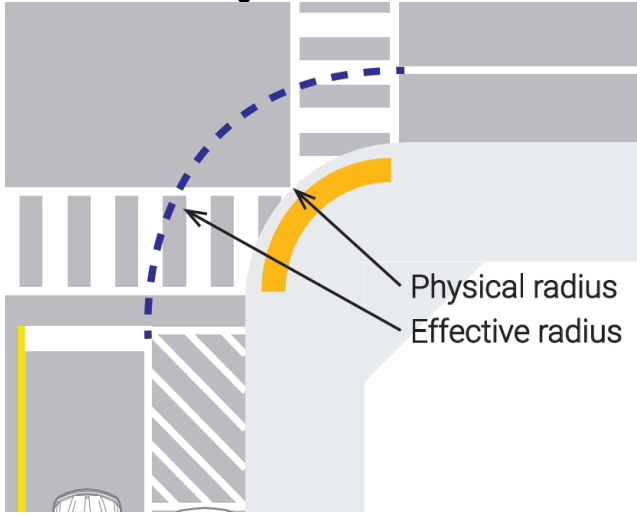

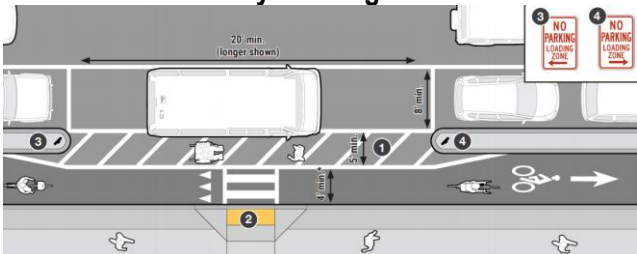



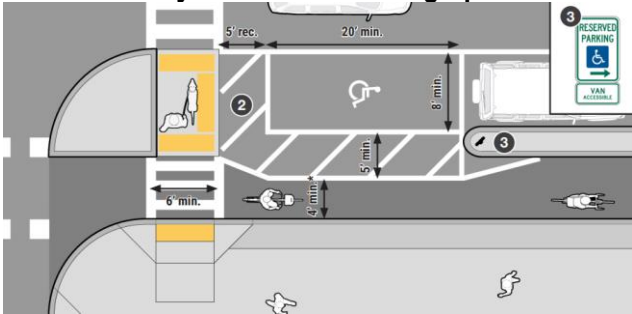
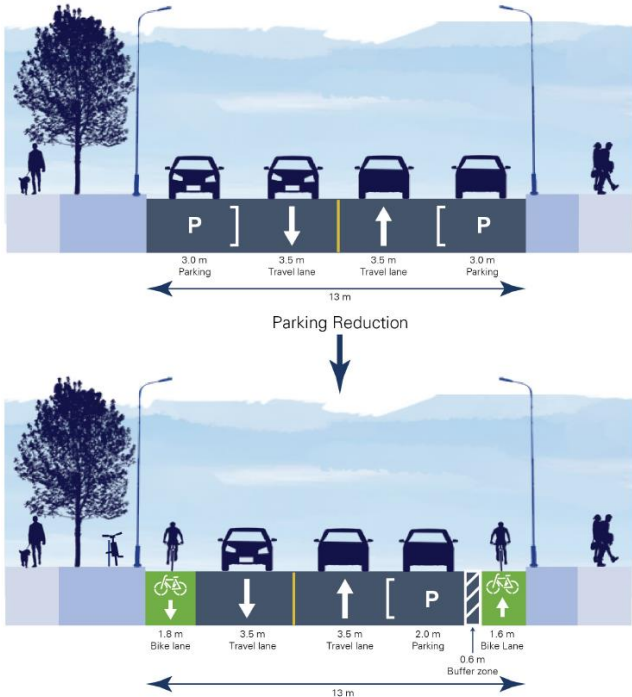
**Hamilton**

# 1 Typical Complete Streets Design Features

	Design Feature	Description
Crossing Treatments	<p><b>Bulb-outs</b></p>  <p>Source: Richard Drdul, 2006</p>	<p>A bulb-out is an extension of the curb into the roadway that establishes a shorter crossing distance for pedestrians. Typically, bulb-outs extend the length of an on-street parking lane and make pedestrians more visibly to through motorists at crossing locations. Bulb-outs may also provide a traffic calming function.</p>
	<p><b>Mid-Block Pedestrian Crossovers (PXO's)</b></p>  <p>Level 2 Type D PXO Source: OTM Book 15, 2016</p>	<p>Mid-Block Pedestrian Crossovers are midblock pedestrian crossings designated by pavement markings, signage, and actuated signals depending on roadway context. At these locations, motor vehicles and cyclists must yield the right-of-way to pedestrians. The Ontario Traffic Manual Book 15 defines four types of pedestrian cross-over with increasing levels of control depending on the speed and volume of motor vehicles.</p>
	<p><b>Cross-rides</b></p>  <p>*min 1.5 m (one-way), 2.5 (two-way)</p>	<p>Cross-rides are pavement markings at roadway crossing locations that delineate space for people walking and cycling. Where cross-rides are implemented, cyclists need not dismount when crossing the road. The Ontario Traffic Manual Book 18 defines three types of cross-rides that may be applied in a range of crossing environments, including midblock crossings of multi-use trails and other multi-use intersection crossing locations.</p>



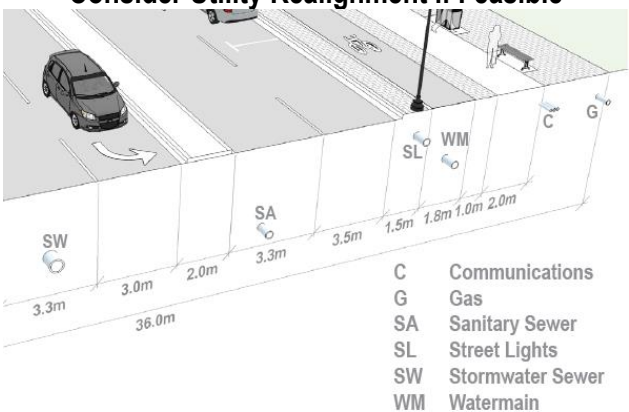
	Design Feature	Description
Crossing Treatments	<p>Source OTM Book 18, Draft, 2020</p> <p><b>Bicycle Traffic Signals</b></p>  <p>Source: WSP, 2018</p>	<p>Bicycle Traffic Signals are traffic signals that control the movement of cyclists at controlled crossing locations. Compared to General Traffic Signals, Bicycle Traffic Signals have smaller lenses that include bicycle stencils. They should be implemented at any controlled intersection where cyclists approach from a facility separated from motor vehicle traffic and at controlled midblock multi-use crossing locations.</p>
Speed Management	<p><b>Narrow Travel Lanes</b></p>  <p>Source: NACTO, 2013</p>	<p>Narrow travel lanes in the context of Complete Streets describes width reductions to general travel lanes. The purpose of this treatment is to force motorists to be more attentive to their path of travel and reduce their speeds. This can be accomplished by repainting travel lanes, increasing shoulder widths, and introducing bike lanes or on-street parking lanes.</p>
	<p><b>Reduce Posted Speed Limits</b></p>  <p>Source: Ken Gigliotti, 2014</p>	<p>Reductions in posted speed limits are a common Vision Zero and Road Safety strategy. Motor vehicle travel speed has demonstrated a positive correlation with the severity of injury among vulnerable road users when involved in motor vehicle collisions. Furthermore, breaking distances for motorists increase as operating speeds increase.</p>


	Design Feature	Description
Speed Management	<p><b>Tighter curb radii</b></p>  <p>Source: OTM Book 18, Draft 2020</p>	<p>Reducing or ‘tightening’ curb radii at intersections forces motorists to reduce their speed when turning, giving them more time to check mirrors, blind spots, and crossings for vulnerable road users. Mountable truck aprons with larger curb radii may be implemented at intersection locations that support infrequent turning movement by larger vehicles such as trucks or transit vehicles.</p>
	<p><b>Introduce Curbside Management</b></p>  <p>Source: OTM Book 18, Draft 2020</p> <p><b>Identify Loading Zones</b></p>  <p>Source: MassDOT Separated Bike Lane Planning and Design Guide, 2015</p>	<p>Curbside management is a set of strategies to organize competing curbside uses such as on-street parking, cycling infrastructure, transit, and pick-up/drop-off. Designing curbside space using such strategies can alleviate conflicts between various users and guide the use of limited space efficiently. The introduction of parking laybys, designation of specific loading zones through pavement markings, and providing alternative spaces for loading or parking off of main streets are examples of curbside management strategies</p> <p>Loading zones are curbside spaces designated for the use of short-term delivery and loading. These locations are typically documented in local bylaw and signed in the boulevard. Optional hatched pavement markings may be used to further delineate these locations and deter motor vehicles encroachment when parked.</p>

	Design Feature	Description
Curbside Management	<p><b>Moving On-Street Parking to Side Streets or to Nearby Municipal/Private Parking Lots</b></p>  <p>Source: City of Toronto</p>	<p>On roadway retrofit or reconstruction projects, on-street parking may be removed on one or both sides to provide adequate space for active transportation infrastructure or dedicated transit lanes, among other roadway improvements. To reduce impacts on corridor parking supply, vehicular parking may be moved or promoted on side streets and off-street parking lots.</p>
	<p><b>Identify Accessible Parking Spaces</b></p>  <p>Source: MassDOT Separated Bike Lane Planning and Design Guide, 2015</p>	<p>Accessible parking spaces are curbside spaces designated for the use of parking by motorists with accessible parking permits. These spaces are typically located at or near curb ramps, such as at intersections, or near entrances to civic buildings and other public amenities.</p>
Active Transportation	<p><b>Reduce On-Street Parking to One Side of The Street and Repurpose Space for Bikeway Facilities</b></p>  <p>Source: OTM Book 18, Draft 2020</p>	<p>On narrow roadways with on-street parking on both sides of the streets, on-street parking may be reduced to one side to provide space for the implementation of cycling infrastructure between the curb.</p>

	Design Feature	Description
Active Transportation	<p><b>Widen Boulevards and Increased Pedestrian Clearways / Sidewalk Widths</b></p>  <p>Source: Hamilton Farmers Market, 2016</p>	<p>Widening boulevards and sidewalks may be appropriate in areas with high volumes of pedestrian traffic. Wider unobstructed pedestrian pathways (clearway) provides the space necessary for pedestrians to pass, push strollers, or navigate using mobility assistive devices.</p>
	<p><b>In-Boulevard Multi-Use Trail</b></p> 	<p>An in-boulevard multi-use path is a two-way travelled path shared by cyclists and pedestrians. These facilities are physically separated from motor vehicle traffic because they are placed above the curb (typically) with a horizontal buffer that may also be used for snow storage.</p>
	<p><b>Boulevard Bike Parking</b></p>  <p>Source: OTM Book 18, Draft 2020</p>	<p>Bike parking describes any end-of-trip facility that is designated for locking bicycles. Bike racks are a common form of bike parking typically placed in the boulevard. These facilities are used for short-term parking and should be located where pedestrian traffic is high to deter vandalism and theft through passive surveillance.</p>
	<p><b>Cycle Tracks</b></p>  <p>Source: OTM Book 18, Draft 2020</p>	<p>Cycle tracks are a one-way or two-way cycling facility that physically separate cyclists from motor vehicle traffic, typically in roadway conditions where motor vehicle traffic volumes and speeds are high. Physical separation is achieved by placing the cycle track above the curb with a horizontal buffer zone.</p>

Design Feature		Description
Active Transportation	<b>Buffered and Physically Separated Bike Lanes</b>  <p>Source: OTM Book 18, Draft 2020</p>	<p>Bike lanes are portions of the roadway that are designated for cyclists. On roadways with more than two through lanes or where warranted by motor vehicle speed and volume, a painted horizontal buffer may be applied to deter encroachment into the bike lane. Where motor vehicle speeds and volumes are high, physical separation may be placed in the buffer space to create a physically separated bike lane.</p>
	<b>Boulevard Café Space</b>  <p>Source: City of Toronto</p>	<p>Boulevard space may be temporarily allocated for use by fronting businesses on corridors with generous boulevard space to create vibrant, intimate environment and increase the placemaking function of a street. It is important to ensure that boulevard café space does obstruct the pedestrian clearway.</p>
Streetscaping	<b>Street Trees and Planters</b>  <p>Source: City of Hamilton, 2020</p>	<p>Streets trees and planters are typically placed in the planting / furniture zone of the roadway. They improve local streetscaping objectives that may attract pedestrian traffic and promote the placemaking functions of the street. It is important to ensure that the placement of these features near intersections and midblock crossings does not negatively impact sightlines for motorists.</p>
	<b>Pedestrian Level Lighting</b>  <p>Source: Hamilton Halton Brant</p>	<p>Improving pedestrian level lighting will help illuminate, enhance aesthetics and mitigate shading from street trees in the streetscape. Pedestrian level lighting helps improve accessibility, security, and safety.</p>

	Design Feature	Description
Streetscaping	<p><b>Street Furniture</b></p>  <p>Source: London Complete Streets Design Manual, 2018</p>	<p>Adding street furniture, such as street benches, bike racks, and trash receptacles enhances the aesthetics of the streetscape. Having accessible street furniture encourages pedestrians to use the space to rest and socialize and to keep the area clean from litter.</p>
	<p><b>Road Diets (Repurpose Existing Curb to Curb Space)</b></p>  <p>Source: Region of Waterloo</p>	<p>Road diets include any roadway retrofit project where roadway space is reallocated to support other modes, particularly cycling infrastructure. Strategies to allocate more space for other modes include:</p> <ul style="list-style-type: none"> <li>• Reducing lane widths toward accepted minimums</li> <li>• Converting a 4-lane cross-section to a 2-lane cross-section with a centre-left turn lane</li> <li>• Removing on-street parking on one side of the street</li> </ul>
Other	<p><b>Consider Utility Realignment if Feasible</b></p>  <p>Source: London Complete Streets Design Manual, 2018</p>	<p>Where existing above ground utilities located in the boulevard present a sightline obstruction or barrier to implementation of boulevard infrastructure, a decision may be made to move utilities if feasibly as part of a major road reconstruction project.</p>

	Design Feature	Description
Other	<p data-bbox="381 258 808 296"><b>Transit and Cycle Track mixing zone</b></p>  <p data-bbox="459 814 732 846">Source: Google Maps, 2020</p>	<p data-bbox="943 258 1406 516">When a bicycle lane or cycle track crosses a transit stop practitioners may consider incorporating the bicycle facility into the transit platform. Designers should take care to minimize conflicts with passengers boarding, alighting or waiting for transit.</p> <p data-bbox="943 552 1422 877">The bicycle facility should feature a ramp up to the platform to slow cyclists as they approach the conflict area. It is also recommended that the area where passengers board and alight be surrounded by bright yellow tactile paving. This clearly defines the conflict zone for all users, including those who are visually impaired.</p>

# **CITY OF HAMILTON**

**2021**

**ADVISORY COMMITTEES**

**BUDGET SUBMISSION**

**KEEP HAMILTON CLEAN & GREEN ADVISORY COMMITTEE**

## **PART A: General Information**

### **ADVISORY COMMITTEE MEMBERS (Voting & Non-Voting):**

<b>Felicia Van Dyke (Chair)</b>
<b>Lennox Toppin (Vice Chair)</b>
<b>Leisha Dawson</b>
<b>Theresa Movre</b>
<b>Brenda Duke</b>
<b>Heather Donison</b>
<b>Sue Dunlop (HWDSB Representative)</b>
<b>Kerry Jarvi (BIAAC Representative)</b>
<b>Marisa DiCenso (HWCDSD Representative)</b>
<b>Paulina Szczepanski (HWCDSD Youth Representative)</b>
<b>Jen Baker (Environmental Representative)</b>
<b>Steve Watts (Environmental Representative)</b>
<b>Councillor Nrinder Nann (Council Representative)</b>

### **MANDATE:**

Reporting through the Public Works Committee, the Keep Hamilton Clean & Green (KHCG) Committee will provide input and advice to staff and Council on engaging citizens to take greater responsibility for improving our community environments. The KHCG's focus is to encourage behaviours and attitudes conducive to a clean, healthy and safe community through leadership and action.

The KHCG Committee will provide input and guidance to City staff, Council and other stakeholders on community involvement, private sector involvement and identification of resources to sustain Clean & Green Hamilton programs and initiatives that aim to beautify our community, promote environmental stewardship and prevent litter, illegal dumping and graffiti.

## PART B: Strategic Planning

### STRATEGIC OBJECTIVES:

#### Litter

- Support the development and marketing of a coordinated cigarette litter prevention program.
- Lead the promotion and collaboration with community partners for the implementation of Team Up to Clean Up.
- Administer Keep America Beautiful Community Appearance Index survey in 2021.
- Support and promote City and community litter remediation and prevention initiatives.

#### Illegal Dumping

- Support the development of educational and communication tools to prevent illegal dumping.

#### Graffiti

- Support stakeholder engagement strategies and victim assistance initiatives with prevention and remediation tools.

#### Beautification

- Recognize volunteer contributions to beautification initiatives and projects that support the Clean & Green Hamilton Strategy.
- Support neighbourhood beautification and greening initiatives as needed.

#### Environmental Stewardship

- Support and promote the engagement of citizen volunteers in programs and initiatives that encourage ecological integrity and minimize human impact on natural habitats and ecosystems on public and private properties.

### ALIGNMENT WITH CORPORATE GOALS:

Please check off which Council approved Strategic Commitments your Advisory Committee supports			
1) Community Engagement & Participation	✓	2) Economic Prosperity & Growth	
3) Healthy & Safe Communities	✓	4) Clean & Green	✓
5) Built Environment & Infrastructure	✓	6) Culture & Diversity	
7) Our People & Performance			

## **PART C: Budget Request**

### **INCIDENTAL COSTS:**

Meeting Expenses	\$500
Keep America Beautiful Affiliate Fee / Training and Development	\$1,600
<b>SUB TOTAL</b>	<b>\$2,100</b>

### **SPECIAL EVENT/PROJECT COSTS:**

Cigarette Litter Prevention	\$2,500
Team Up to Clean Up	\$5,050
Graffiti	\$2,000
Volunteer recognition	\$600
Clean & Green Neighbourhood Grants	\$6,000
<b>SUB TOTAL</b>	<b>\$16,150</b>

<b>TOTAL COSTS</b>	<b>\$18,250</b>
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<b>Funding from Advisory Committee Reserve (only available to Advisory Committees with reserve balances)</b>	<b>\$0</b>
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<b>TOTAL 2021 BUDGET REQUEST (net of reserve funding)</b>	<b>\$18,250</b>
<b>PREVIOUS YEAR (2020) APPROVED BUDGET</b>	<b>\$18,250</b>

**CERTIFICATION:**

Please note that this document is a request for a Budget from the City of Hamilton Operating budget. The submission of this document does not guarantee the requested budget amount. Please have a representative sign and date the document below.

**Representative's Name:** **Felicia Van Dyke (Chair)**

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**Signature:** 

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**Date:** **December 8, 2020**

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**Telephone #:** Staff Liaison Diane Butterworth ext. 5089