

## TECHNICAL APPENDIX E

# Design Guidelines

A consistent set of design guidelines should be used and referenced as the town proceeds with implementation of the active transportation network, including but not limited to, the use of the following guidelines / standards:

- » Ontario Traffic Manual (OTM) Book 18: Cycling Facilities ([here](#));
- » Ontario Traffic Manual (OTM) Book 15: Pedestrian Crossing Treatments ([here](#));
- » Ministry of Transportation Ontario (MTO) Bikeways Design Guidelines;
- » National Association of City Transportation Officials (NACTO) Urban Bikeways Design Guide and Urban Street Design Guide ([here](#));
- » American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities ([here](#));
- » Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads ([here](#));
- » Transportation Association of Canada (TAC) Bikeway Traffic Control Guideline for Canada ([here](#)); and
- » Accessibility for Ontarians with Disabilities Act (AODA) – Built Environment Standards ([here](#)).

These resources are intended to guide the design of active transportation facility types within Oakville and complement existing town guidelines, which include:

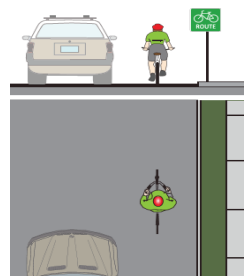

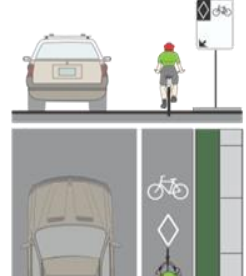
- » Town of Oakville Streetscape Strategy (2014);
- » Design Guidelines for Stable Residential Communities (2013);
- » North Oakville Urban Design and Open Space Guidelines (2009);
- » Oakville Universal Design Standards for Town Facilities (2015);
- » Old Bronte Road/Khalsa Gate Streetscape Plan (2012); and
- » Downtown Transportation and Streetscape Strategy (2015).

The following sections provide an overview of key design elements that should be considered when planning and implementing the active transportation network. It should be used – along with the other guidelines noted above – as the active transportation design guide for the Town of Oakville.





### E.1 Understanding the Facility Types

There are a number of facilities that have been identified as part of the existing and proposed Oakville active transportation network. There are also some facility types being recommended that do not currently exist within the network, such as a buffered bike lane. It is important to define the key design considerations for each of the specific active transportation facilities. provides an overview of the description, applicable location, context, roadway characteristics, signage and pavement markings regarding each facility type proposed in the active transportation network.

Table 1 - Overview of Proposed Facility Types

Facility Type	Cross Section	Description	Location		Context			Volume	Speed	Minimum Width	Signage				Pavement Markings	
			O*	W*	U*	S*	R*				Green Bike Route Sign	Bike Lane Sign	Share the Road	Multi-use Pathway	Bike Stencil	Painted Line
Signed Bike Route		Motorists and cyclists share the same vehicular travel lane. Bicycle route signs are used to provide route guidelines. Could be supplemented by a Share the Road Sign in select locations (i.e. poor sightlines).		•	•	•		▼	▼	N/A	×		×			
Paved Shoulder		Cyclists are provided with a designated space on the road platform. The route could be signed as a bicycle route and could include supplementary share the road signage in select locations.		•		•		▶	▶	1.5m	×		×			×
Bike Lane		Cyclists are provided with a designated space which is identified by pavement markings and signage. Bike lanes could include green painted treatment along key corridors. When approaching an intersection, dash lines to allow for passing.		•	•	•		▲	▲	1.5m		×			×	×

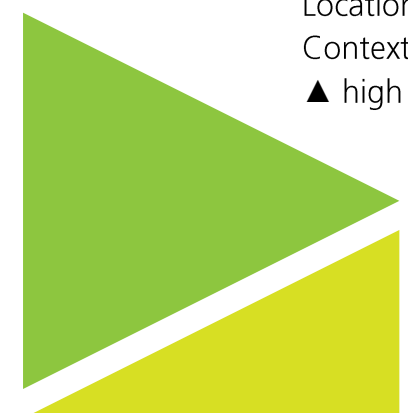


Facility Type	Cross Section	Description	Location		Context			Volume	Speed	Minimum Width	Signage				Pavement Markings	
			O*	W*	U*	S*	R*				Green Bike Route Sign	Bike Lane Sign	Share the Road	Multi-use Pathway	Bike Stencil	Painted Line
Buffered Bike Lane		On roads with higher volume and speed within urban and suburban areas, a buffer may be implemented to provide more separation between the cyclist and motor vehicles.		•	•	•		▲	▲	Lane 1.5m Buffer 0.5m		×			×	×
In-boulevard Trails		A separated space found within the boulevard of the roadway which accommodates both pedestrians and cyclists in a shared space. Can be used for uni or bi-directional travel. The in-boulevard trail can be installed in place of a sidewalk or in conjunction with a sidewalk, but not abutting each other (i.e. separated by a grass boulevard).	•		•	•		▲	▲	3.0m				×	×	
Off-road Trail		A separated space, typically through a natural area or corridor, that accommodates pedestrians and cyclists. The surface type can range from natural surface to asphalt depending on the location.	•		•	•	•	N/A	N/A	3.0m						
Sidewalk		A space within the boulevard which accommodates pedestrians.	•		•	•	•	▲	▲	1.5m						

Location Notes: \*O – Outside of the Road Right of Way; \*W – Within the Road Right of Way

Context Notes: context pertains to the type of land-use / neighbourhood where the facility type might be more appropriate \*U – Urban; \*S – Semi-Urban; \*R – Rural

▲ high traffic volume or speed; ► moderate traffic volume or speed; ▼ low traffic volume or speed



## E.2 Complete Streets

Complete streets provide safe, attractive and comfortable travel for users of all ages and abilities including pedestrians, cyclists, motorists and transit users. A complete streets approach reflects the understanding that streets must accommodate the mobility, social, recreational and ecological needs of its users. As noted in the Livable by Design Manual (Part A) – Urban Design Direction for Oakville, the benefits of creating complete streets are:

- » Achieving circulation alternatives other than cars;
- » Increased health benefits through walking and biking;
- » Improvements to safety;
- » Lower transportation costs;
- » Creating a sense of identity; and
- » Providing opportunities for social interaction.

An example of a complete street is presented in **Figure 1**. The graphic on the top illustrates the current conditions of Robinson Street. The graphic on the bottom illustrates the planned design concept identified in the Downtown Transportation and Streetscape Strategy. Robinson Street is planned to include 2.0m buffered bike lanes (0.5m buffer), 2.2m on-street parking on the north side only (elimination of parking on the south side) and 2.0m – 2.5m sidewalks.

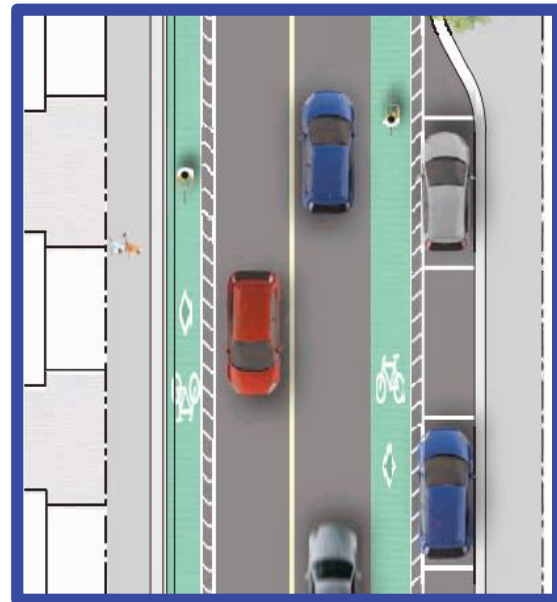
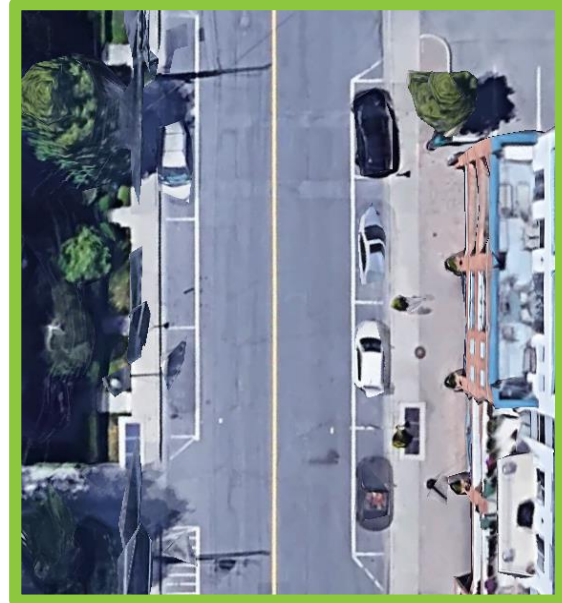


Figure 1 – Example of Planned Complete Streets on Robinson Street  
Source – Google Earth (top), Downtown Transportation and Streetscape Study (bottom)

When designing new streets or enhancing existing streets, the implementation of complete streets can result in:

- » Multi-modal travel choices;
- » Convenient connections;
- » Prioritized pedestrian and cyclist use / comfort;
- » Barrier-free access;
- » Safe and unobstructed routes;
- » Ecologically sustainable modes;
- » Space for public life;
- » Sense of enclosure and comfort for pedestrians; and
- » Distinctive and recognizable identities.

As such, a complete streets approach should address land use, road function in the overall transportation network, traffic volumes, existing transportation modes, cyclist and pedestrian demand, and utilities. The implementation of complete streets requires coordination between engineers, planners, decision makers, businesses, stakeholders and residents. Examples of complete streets planned in the Town of Oakville are presented in Figure 2.



Figure 2 - Example of Complete Streets  
Source – Downtown Transportation and Streetscape Study



## E.3 Transition Points

Integrating walking and cycling into the overall transportation system can create conflicts between the active modes and other road users at intersections. Building new facilities both within and outside of the road right-of-way can cause confusion at points of transition.

To maximize connectivity, pedestrians and cyclists should be able to transition between facilities and cross conflict points in a way that is considered to be both safe and comfortable. Most conflicts occur at intersections as they are the most common location where different modes cross paths. A conflict typically occurs when a right or left turn is being made. There are a number of treatments which can help to improve a user's ability to cross a roadway or transition between facility types more comfortably and safely. They are described in more detail in section 5.0 of OTM Book 18. The following are select examples of crossing treatments.

### BIKE BOXES

A bike box is a designated area between the crosswalk and the stop bar that is meant to be used by cyclists while waiting for a signal to change. This allows cyclists to wait ahead of queuing traffic during the red signal phase at an intersection. The bike box is intended to increase a cyclist's visibility for motorists and allows cyclists to proceed ahead of motorists on the green traffic signal. The bike box can also extend across the entire intersection enabling cyclists to transition from the right side of the roadway to the left in order to make a left turn movement rather than weaving through motorized traffic. The photos on the right present examples where bike boxes have been installed in comparable municipalities.



OTTAWA



HAMILTON

## SIGNAGE & PAVEMENT MARKINGS

Signage and pavement markings are painted visual cues on the pavement which increase awareness of the presence of cyclists on the road and to provide cyclists with a space to use when going through an intersection or transitioning to another facility. Pavement markings can include lines to designate the space, stencils of pedestrians and cyclists, or sharrows.

At some locations in Oakville, the Region has implemented green coloured pavement along cycling facilities at the approach to intersections. The intent is to clearly mark the designated space for cyclists and make motorists aware of their presence. As an example, this treatment is applied at the intersection of Ninth Line / Ford Drive and Upper Middle Road East - see Figure 3.

Cross-rides are a crossing treatment which can be used by both pedestrians and cyclists. It allows cyclists to proceed through the intersection without having to dismount and prevents potential conflicts at the crossing. An example of an existing cross-ride in Oakville is shown in Figure 4.



Figure 3- Example of Pavement Markings at intersection of Ninth Line / Ford Drive and Upper Middle Road E.



Figure 4 - Cross-ride at intersection of Dundas Street and Third Line

## E.4 Signage and Wayfinding

A connected and continuous active transportation network requires signage for a variety of purposes. There are a number of different signs types that can be implemented – also known as a “family” – to communicate information to all pedestrians, cyclists and other road users. Typical signs in a “family” include:

**Regulatory Signage:** used to indicate traffic laws for all road users. This sign should be installed at regular intervals to highlight existing cycling infrastructure on the roadway.



**Directional Signage:** informs users of the direction and distance to a nearby destination. This sign should be installed at locations where directional guidance is required.



**Trail Entry Signage:** can include information regarding level of difficulty, trail name, trail map, trail length and branding logo.



**Information Signage:** installed on off-road routes to inform users of restricted activities (as per municipal by-laws). This sign can be installed above trail entrance signs.





**Route Marker Signage:** implemented at regular intervals or in locations where additional guidance may be needed (e.g. change in direction on a trail).








The application of bike route marker signs, bike lane signs, pathway signs and signage at transition points will be needed once components of the active transportation network are built. **Table 2** provides an overview of the proposed signs to be implemented as part of the network in Oakville.

**Table 2 - Regulatory and Wayfinding Signage**

Sign Type & Dimensions	Description	Application	Reference	Other Information
<p>Bicycle Route Marker Sign</p>  <p>M511 (OTM) 450mm x 450mm</p>	<p>To be used on segments of a shared roadway that are designated as a bicycle route</p>	<ul style="list-style-type: none"> <li>» Signed Bike Route</li> <li>» Buffered Paved Shoulder</li> </ul>	<p>OTM Book 18, Section 4.1.1.2 (page 44)</p>	<ul style="list-style-type: none"> <li>» Placed every 2.0km on rural roadways</li> <li>» Placed every 400m to 800m on urban roadways</li> <li>» Installed on the far side of major intersections or other major decision points</li> </ul>
<p>Share the Road Sign</p>  <p>Wc-19 (OTM) 600mm x 600mm</p> <p>Wc-19t(OTM) 300mmx 300mm</p>	<p>Intended to caution all road users on the approach to locations where there may be a change in the road configuration</p>	<ul style="list-style-type: none"> <li>» Signed Bike Route</li> <li>» Signed Bike Route with Sharrows</li> </ul>	<p>OTM Book 18, Section 4.1.1.2 (page 46)</p>	<ul style="list-style-type: none"> <li>» In locations where motorists are discouraged from passing cyclists, (i.e. where lane widths are narrow) the 'Shared Use Single File' sign (Wc-24, OTM) and supplementary tab sign (Wc-24t, OTM) should be installed</li> </ul>

Sign Type & Dimensions	Description	Application	Reference	Other Information
<p>Shared Pathway Sign</p>  <p>Rb-71 (OTM) 300mm x 450mm</p>	<p>To be installed along in-boulevard shared-use facilities to indicate that users are expected to share the space</p>	<ul style="list-style-type: none"> <li>» In-boulevard Trails</li> </ul>	<p>OTM Book 18, Section 4.4.1.2 (page 117)</p>	<ul style="list-style-type: none"> <li>» Signs should be mounted with a minimum clearance of 2.5m between the pavement surface and lower edge of the sign</li> <li>» Installed on the far side of major intersections or other major decision points</li> </ul>
<p>Reserved Bicycle Lane Sign</p>  <p>RB-91 (TAC) 600mm x 750mm</p>	<p>Used to designate an on-road lane for the exclusive use of cyclists</p>	<ul style="list-style-type: none"> <li>» Bike Lane</li> <li>» Buffered Bike Lane</li> </ul>	<p>OTM Book 18, Section 4.2.1.2 (page 63)</p>	<ul style="list-style-type: none"> <li>» Maximum spacing between signs is 200m</li> <li>» Signs should be installed after every intersection</li> <li>» Oversized version may be used where traffic conditions warrant greater visibility</li> </ul>
<p>Reserved Bicycle Lane Sign</p>  <p>RB-92 (TAC) 600mm x 750mm</p>	<p>Used to designate the terminus an on-road lane for the exclusive use of cyclists</p>	<ul style="list-style-type: none"> <li>» Bike Lane</li> <li>» Buffered Bike Lane</li> </ul>	<p>OTM Book 18, Section 4.2.1.2 (page 63)</p>	<ul style="list-style-type: none"> <li>» Should be installed up to 15 metres upstream of the end of a bicycle lane</li> <li>» Share the Road sign should be installed following the end of a bicycle lane to indicate to users that they are entering a shared space</li> </ul>

## E.5 Active Transportation and Transit

Walking and cycling can be a cost effective way to complete the first or last mile of a trip to work, school, or frequent destination. When combined with transit, it can reach farther distances and create greater access. All conventional Oakville Transit buses have bike racks and are fully accessible with curb-level kneeling capabilities and mobility aid ramps. Bus stops are located along major routes which provide direct access to neighbourhoods and destinations. In addition, both GO Transit stations located in Oakville (Bronte GO and Oakville GO) contain covered bike parking. Examples of a bike rack on an Oakville Transit bus and bike parking at Bronte GO station are illustrated in the photos to the right.

Consideration should be given for active transportation routes identified along the existing transit network. Larger vehicles should be considered when implementing bicycle routes along the transit network to help minimize potential conflicts. Depending on the context, a cyclists' level of comfort and safety may be compromised due to large vehicles. Where on-road cycling routes are proposed and transit routes exist, there is the potential for conflict where buses are required to merge over proposed facilities.

In these scenarios, the applications of left-side bike lanes or other design treatments could be considered (see section 5.4.2 in OTM Book 18 for additional design treatments). The transit system can be further enhanced to accommodate pedestrians and cyclists by providing other amenities such as route maps, wayfinding and signage markers, and / or bicycle parking at more frequently used stops.



## E.6 Accessibility

Approximately one in eight Canadians must live with a form of physical or mental disability. Mobility, agility and pain-related disabilities are by far the most common, each accounting for approximately 10% of reported disabilities nationally. The Accessibility for Ontarians with Disabilities Act (AODA) promotes the goal of making Ontario accessible for people with disabilities by 2025.

The Accessibility Standards for the Built Environment applies to pathways, trails and sidewalks. The intent is to help remove barriers to buildings and outdoor spaces. The standard only applies to new construction and extensive renovation and is not mandatory for the design of on-road cycling facilities. That said, when designing and implementing off-road cycling facilities and multi-use trails, reference should be made to the guidelines outlined in the Built Environment Standards to ensure that they are met. Sections 80.8 and 80.10 of the Accessibility Standards for the Built Environment provide the technical requirements for multi-use recreational trails.

Where possible the AODA requirements and guidelines should be met to the greatest extent possible. However, it is important to note that this may not be possible in all proposed locations within the network. Specifically, for trails, one must take into consideration the context of each trail, including but not limited to; the location, the surrounding environment, and the type of trail experience that is desired. In some locations it may not be possible to implement an accessible trail. In these cases, the town should provide sufficient information to all potential users to make them aware of the conditions and the expected experience.

