

## 6.2 DRIVEWAYS

Conflicts between vulnerable users and vehicles at driveways can be a major issue in urbanized areas where driveways often carry heavy volumes of traffic. Whenever possible, driveways should be limited, consolidated and/or formalized through an access management review along corridors with expected high volumes of pedestrian and cycling use. Where driveways are unavoidable, it is important that the design of driveways clarifies the right of way and enhances visibility of facilities to minimize risk to pedestrians and cyclists..

The Highway Traffic Act (HTA) requires that drivers entering a public roadway from a private road or driveway that is not controlled by a traffic control signal yield the right-of-way to all traffic approaching on the highway so closely that to enter would constitute an immediate hazard. Since pedestrians and cyclists qualify as traffic operating on a multi-use path or cycle tracks within the right-of-way of a road, drivers entering the road are required to yield the right-of-way where the facility crosses the driveway.

Although an uncontrolled driveway crossing is not a crosswalk as defined in the HTA, the intention is that drivers yield to conflicting users in the crossing similarly to a crosswalk. Thus, the recommended pavement markings draw on the OTM Book 18 recommendations for crossrides, as well as intersection concepts presented in Section 5.2.

**Conflicts between vulnerable users and vehicles at driveways can be a major issue in urbanized areas**

In addition to the signage and pavement marking applications discussed in these guidelines, it is critical that appropriate sightlines be provided so that vehicles entering and exiting the driveways can see both vulnerable users and motor vehicles on the main roadway. In instances where on-street parking is provided, parking set-backs should consider the need for visibility of pedestrians and cyclists for drivers entering driveways. Parking restrictions should be considered at least 6 m in advance of, and departing each driveway, but this distance may be higher depending on the speed of the Regional road.

For the purposes of these guidelines, three broad categories of driveway types are considered:

- Single Family Residential
- Multi-Family Residential
- Driveways serving higher density residential uses (i.e. townhouses, condos and/or high rises)
- Commercial/Industrial or any driveways with >100 vehicles per hour (entering/exiting) during the peak hour of traffic

In all cases, the pedestrian or cycling facilities should be carried through unsignalized driveways (refer to Exhibit 6-12). Where a driveway is signalized, this can be treated as an intersection, and appropriate treatments applied (refer to Section 5.2).

Exhibit 6-12. Sidewalk continued through driveway at Aurora Heights Public School



Facilities crossing driveways with heavier conflicting volumes should incorporate appropriate pavement markings to improve conspicuity of crossing pedestrians and cyclists. Exhibit 6-13 summarizes the recommended driveway treatments across various driveway types, including references to illustrations of the concepts.

In addition to the pavement marking and signage of driveways, consideration should be given to bending facilities in or out at driveways, in accordance with the recommendations in Exhibit 5-1.

Exhibit 6-13. Summary of Driveway Treatments across Various Driveway Types

Facility type	Single Family	Multi-Family Residential	Commercial/Industrial Or Volume > 100 VPH
Multi-use Path	No pavement markings. Facilities should be carried through the driveway i.e. sidewalk continuous across driveway etc.	Elephant's feet Refer to <b>Exhibit 6-14</b>	Multi-use path carried through the driveway and marked as a Mixed Crossride Refer to <b>Exhibit 6-15</b>
Sidewalk + Dedicated Cycling Facility		No pavement markings on sidewalk + On-road cycling facility: Buffer carried through the intersection (solid) + optional bike symbol (typical one per lane or every 3m) Refer to <b>Exhibit 6-16</b>	No pavement markings on sidewalk + On-road cycling facility: Buffer dash through the driveway (with internal hatching dropped) + bike symbol (typical one per lane or every 3m) + optional green pavement marking Refer to <b>Exhibit 6-17</b>
Sidewalk + In-Boulevard Separated Cycling Facility (Raised Cycle Track or In-Boulevard Cycle Track)		Sidewalk: No pavement markings + In-boulevard cycling facility: Elephant's feet + optional bike symbol & arrow Refer to <b>Exhibit 6-19</b>	Sidewalk: No pavement markings + In-boulevard cycling facility: Elephant's feet + bike symbol & arrow + optional green pavement marking Refer to <b>Exhibit 6-20</b>



## Multi-use Path crossing a Multi- Family Residential Driveway

This treatment will help to improve the conspicuity of the path in low visibility conditions and is recommended for multi-family residential driveways.

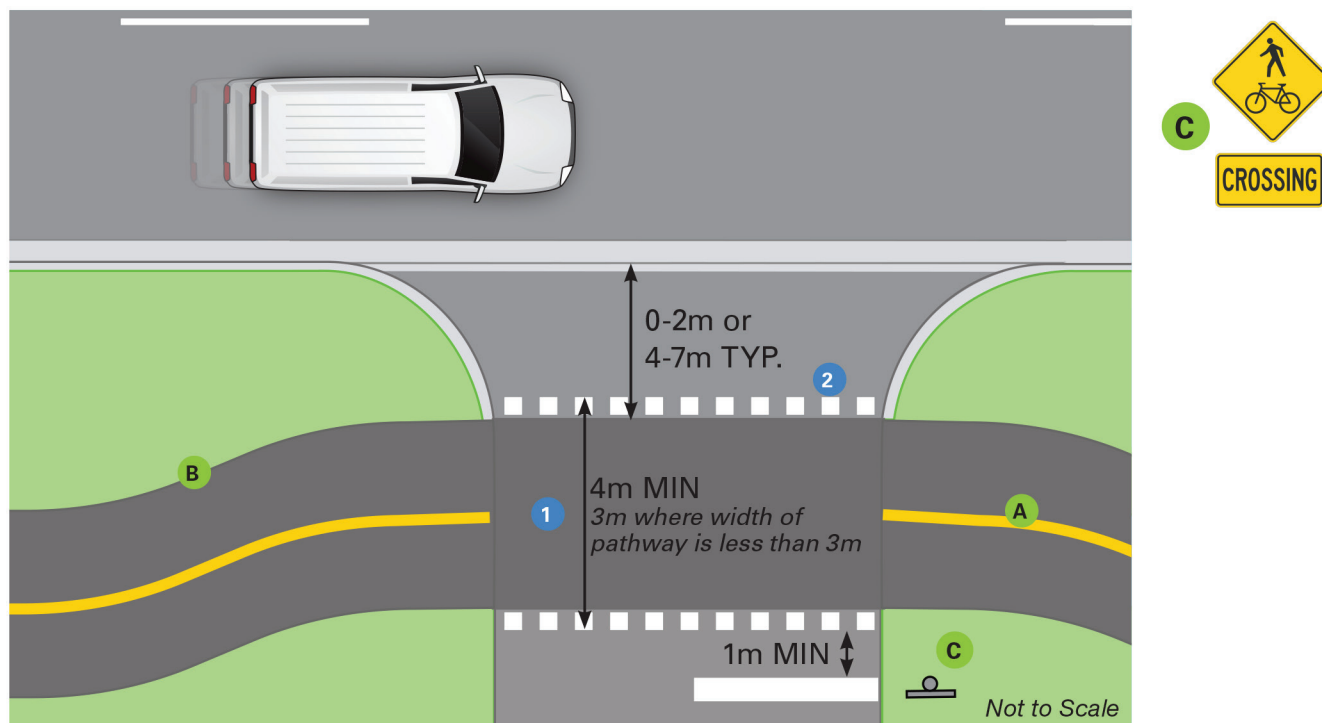
### Minimum

- 1 Facility carried through the driveway
- 2 Elephant's feet markings (refer to Section 7 for details)

### Preferred

- A A yellow dividing line can be applied to the multi-use path approaching the driveway to reduce conflicts
- B Gentle curve in multi-use path may be used to slow cyclists approaching the driveway
- C Optional 'Stop' sign (Ra-1 – OTM) and corresponding stop bar, or 'Yield' sign (Ra-2 – OTM) without stop bar. Where neither stop or yield conditions are warranted, consider applying a 'Pedestrian and Bicycle Crossing Ahead Sign' and tab (Wc-15 - OTM & Wc-32t - OTM)

Exhibit 6-14. Multi-use Path crossing a Multi-Family Residential Driveway



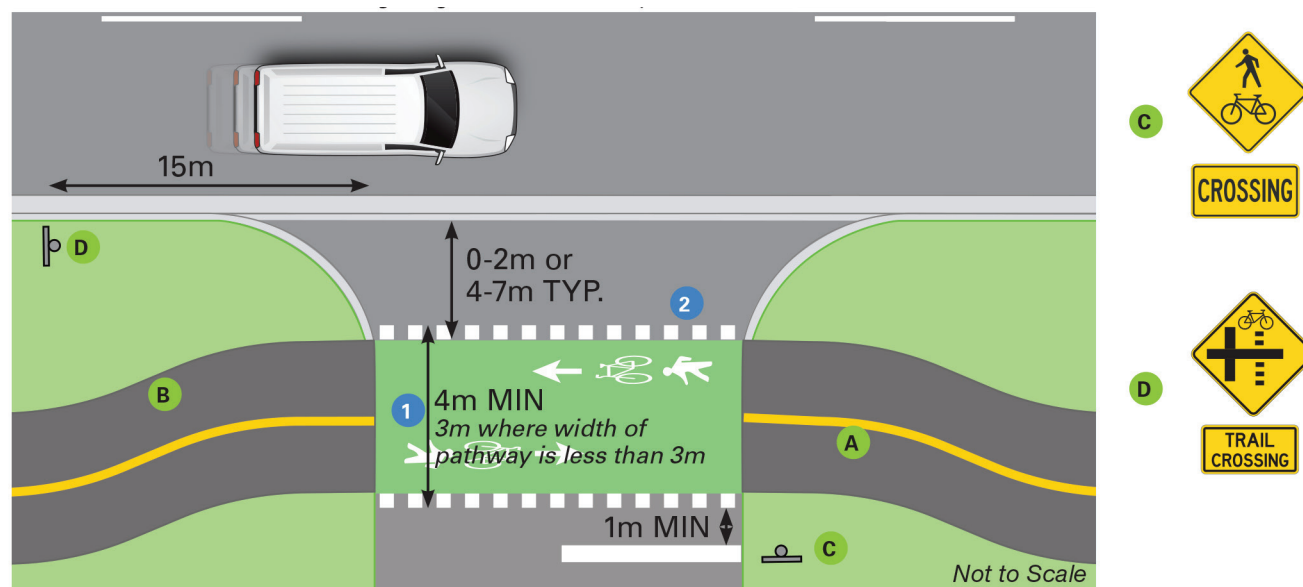


## Multi-use Path crossing a Commercial/Industrial/High-Volume Driveway

This treatment to be applied at higher volume driveways or where blocking of the driveway by drivers entering the street or visibility of the path to drivers entering the driveway is of concern.

Minimum	Preferred
<ol style="list-style-type: none"> <li>1 Facility carried through the driveway</li> <li>2 Combined crossside markings (refer to Section 7 for details)</li> </ol>	<ol style="list-style-type: none"> <li>A A 100 mm solid yellow dividing line can be applied to the multi-use path approaching the driveway to reduce conflicts</li> <li>B Gentle curve in multi-use path may be used to slow cyclists approaching the driveway</li> <li>C Optional 'Stop' sign (Ra-1 – OTM) and corresponding stop bar, or 'Yield' sign (Ra-2 – OTM) without stop bar. Where neither stop or yield conditions are warranted, consider applying a 'Pedestrian and Bicycle Crossing Ahead Sign' and tab (Wc-15 - OTM &amp; Wc-32t - OTM)</li> <li>D Bicycle Trail Crossing Side Street Sign' signage and optional 'Trail Crossing' tab (WC-44 + WC-44T – TAC) can be applied to alert drivers to the potential presence of cyclists crossing the driveway. WC-44L should be placed in the median to alert left turners about a crossing to their left, and WC-44R should be placed on the right side of the roadway to alert right turning traffic</li> <li>E Green conflict zone pavement marking</li> </ol>

Exhibit 6-15. Multi-use Path crossing a High Volume Driveway



## Separated On-Road Bikeway crossing a Multi-Family Residential Driveway

This treatment will help to improve the conspicuity of the on-road facility and is recommended for multi-family residential driveways.

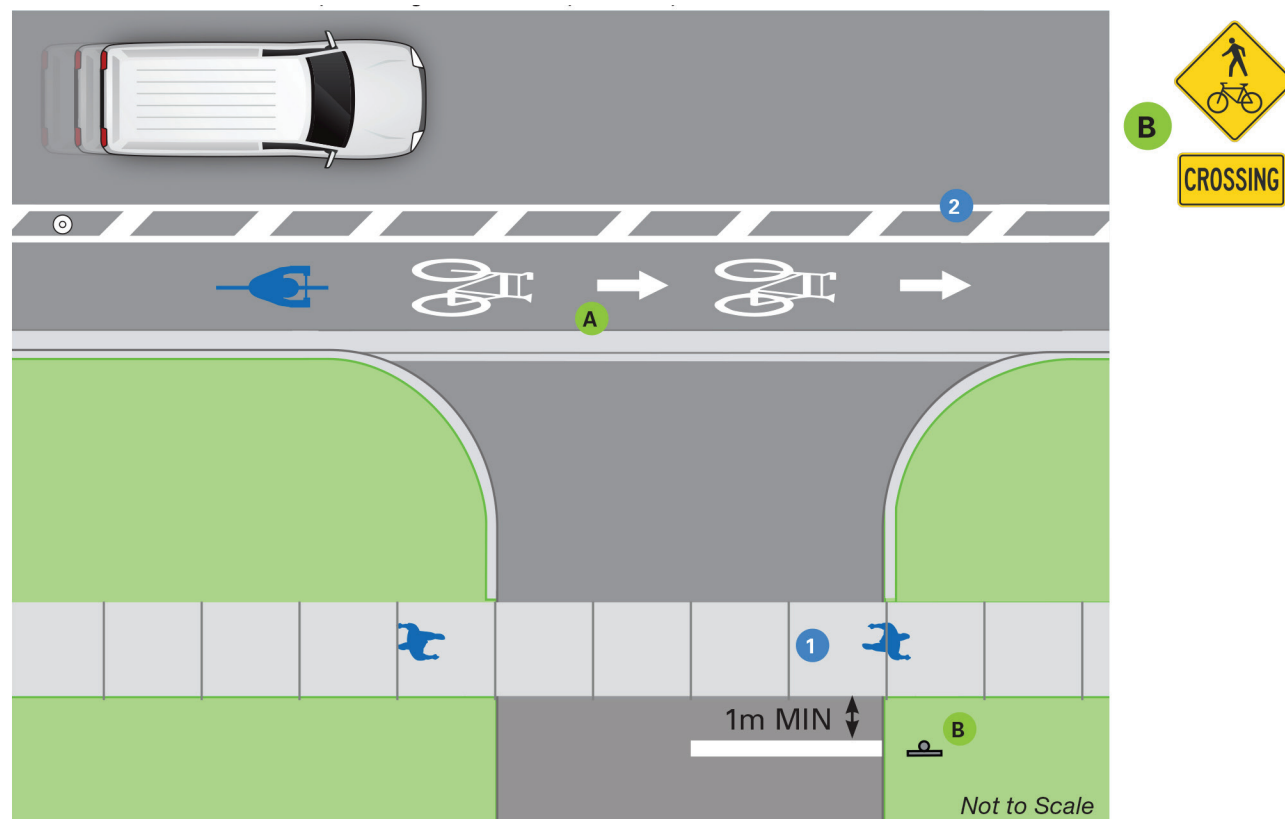
### Minimum

- 1 Sidewalk carried through the driveway
- 2 Buffer of cycling facility carried through the driveway to emphasize that through cyclists have right of way over vehicles entering the roadway from the driveway

### Preferred

- A Application of bike symbols across lanes of the driveway
- B Optional 'Stop' sign (Ra-1 – OTM) and corresponding stop bar, or 'Yield' sign (Ra-2 – OTM) without stop bar. Where neither stop or yield conditions are warranted, consider applying a 'Pedestrian and Bicycle Crossing Ahead Sign' and tab (Wc-15 - OTM & Wc-32t - OTM)

Exhibit 6-16. On-Road Bikeway crossing a Multi-Family Driveway



## Separated On-Road Bikeway crossing a Commercial/Industrial/High-Volume Driveway

This treatment to be applied at higher volume driveways or where blocking of the driveway by drivers entering the street or visibility of the path to drivers entering the driveway is of concern.

Minimum	Preferred
<ol style="list-style-type: none"> <li>1 Sidewalk carried through the driveway</li> <li>2 Buffer of cycling facility to be dashed through the driveway to alert cyclists of the potential for vehicles to enter the roadway from the driveway and include application of bike symbols across lanes of the driveway</li> <li>3 Where delineators are used in the buffer of the cycling facility, they should be set back from the point of tangent of the driveway radius by a minimum of 2 m</li> </ol>	<ol style="list-style-type: none"> <li>A Green conflict zone pavement markings</li> <li>B Customized 'Turning Vehicles Yield To Bicycles' (RB-37 – TAC) signage to alert turning drivers that they must yield to through cyclists</li> <li>C Optional 'Stop' sign (Ra-1 – OTM) and corresponding stop bar, or 'Yield' sign (Ra-2 – OTM) without stop bar. Where neither stop or yield conditions are warranted, consider applying a 'Pedestrian and Bicycle Crossing Ahead Sign' and tab (Wc-15 - OTM &amp; Wc-32t - OTM)</li> </ol>

Exhibit 6-17. On-Road Bikeway crossing a High Volume Driveway

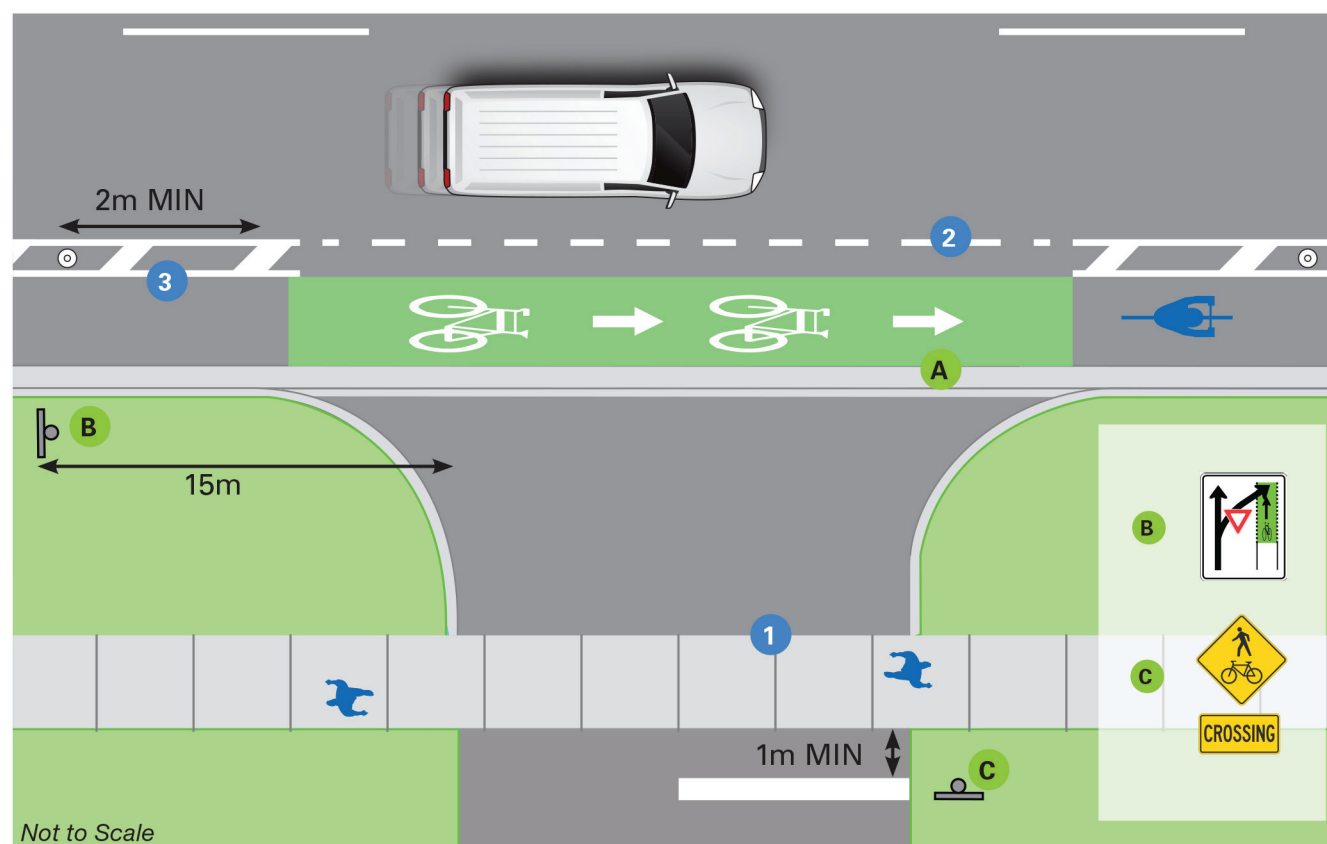




Exhibit 6-18. Solid buffer of separated bikeway carried across a multi-family residential driveway



Source: IBI Group

## In-Boulevard Cycle Track crossing a Multi-Family Residential Driveway

This treatment will help to improve the conspicuity of the cycle track and is recommended for multi-family residential driveways.

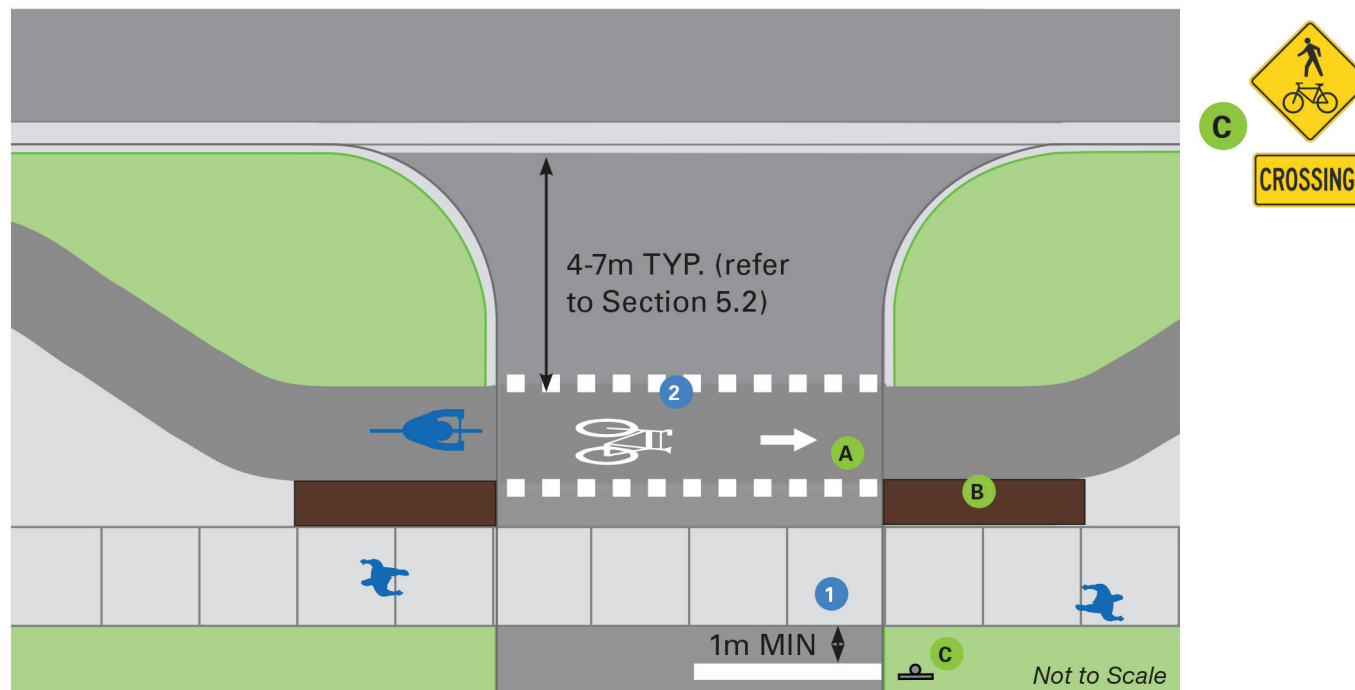
### Minimum

- 1 Sidewalk carried through the driveway
- 2 Elephant's feet markings (refer to Section 7 for details)

### Preferred

- A Application of bike symbol and arrow across lanes of the driveway
- B Delineation of cycling and pedestrian space where the two facilities approach each other through the application of paving stones or other high contrast treatment
- C Optional 'Stop' sign (Ra-1 – OTM) and corresponding stop bar, or 'Yield' sign (Ra-2 – OTM) without stop bar. Where neither stop or yield conditions are warranted, consider applying a 'Pedestrian and Bicycle Crossing Ahead Sign' and tab (Wc-15 - OTM & Wc-32t - OTM)

Exhibit 6-19. In-Boulevard Cycle Track crossing a Multi-Family Driveway



## In-Boulevard Cycle Track crossing a Commercial/Industrial/High-Volume Driveway

This treatment to be applied at higher volume driveways or where blocking of the driveway by drivers entering the street or visibility of the path to drivers entering the driveway is of concern.

Minimum	Preferred
<ol style="list-style-type: none"> <li><b>1</b> Sidewalk carried through the driveway</li> <li><b>2</b> Elephant's feet markings (refer to Section 7 for details) with application of bike symbol and arrow across lanes of the driveway</li> </ol>	<ol style="list-style-type: none"> <li><b>A</b> Green conflict zone pavement marking</li> <li><b>B</b> Customized 'Turning Vehicles Yield To Bicycles' (RB-37 – TAC) signage to alert turning drivers that they must yield to through cyclists</li> <li><b>C</b> Optional 'Stop' sign (Ra-1 – OTM) and corresponding stop bar, or 'Yield' sign (Ra-2 – OTM) without stop bar. Where neither stop or yield conditions are warranted, consider applying a 'Pedestrian and Bicycle Crossing Ahead Sign' and tab (Wc-15 - OTM &amp; Wc-32t - OTM)</li> <li><b>D</b> Delineation of cycling and pedestrian space where the two facilities approach each other through the application of paving stones or other high contrast treatment</li> </ol>

Exhibit 6-20. In-Boulevard Cycle Track crossing a High-Volume Driveway

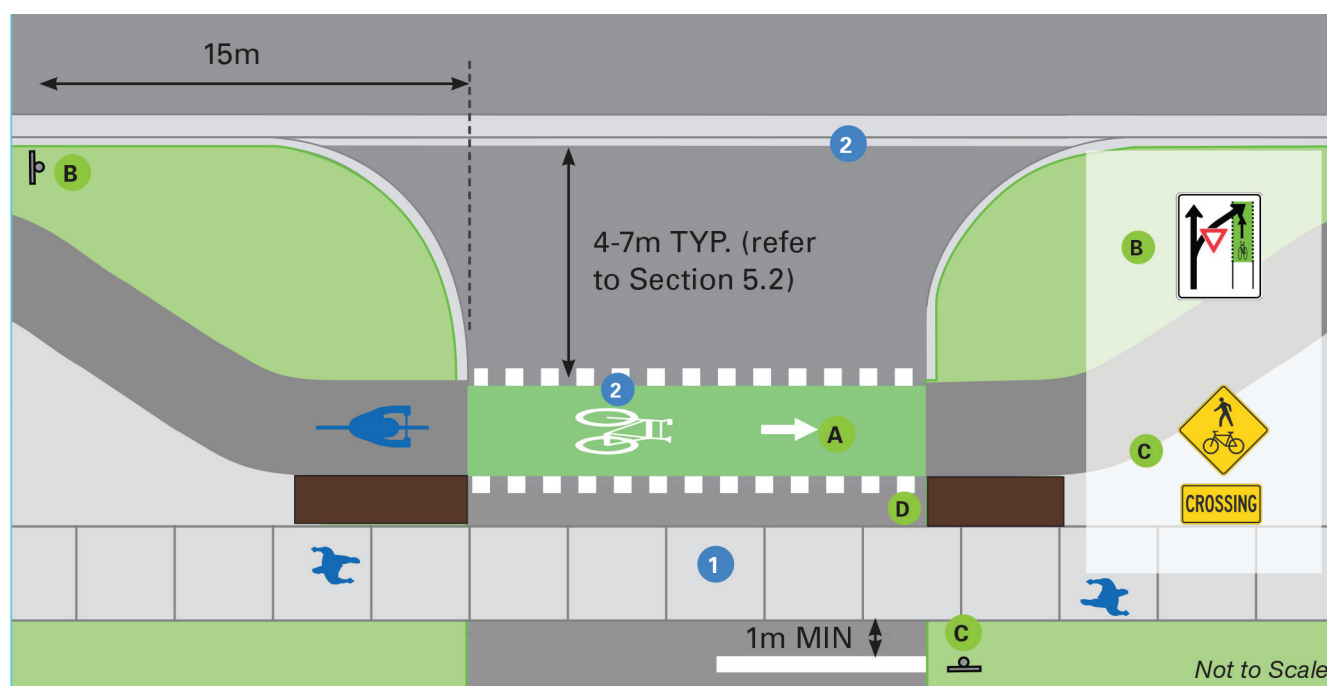




Exhibit 6-21. Example of high visibility treatments for cycle tracks at driveways



Source: IBI Group



Exhibit 6-22. Example of a Multi-use Path bent behind a Transit Shelter in York Region



Source: York Region

