

## Appendix A3 – Design Criteria

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**Project Memo:** Revision 6

**Project Number:** RQQ-2018-PPDD-244

**Date:** February 18, 2022

**To:** Kristin Demasi, Metrolinx

**From:** David Hopper, Parsons  
Margaret Parkhill, IBI Group

**cc:** Project Working Group

**Subject:** DRAFT Design Criteria Memorandum  
Durham-Scarborough Bus Rapid Transit

## BACKGROUND AND OBJECTIVES

The purpose of this memorandum is to confirm and document the following key items with respect to the proposed right-of-way (ROW) design and streetscape standards for the Durham-Scarborough Bus Rapid Transit (DSBRT):

1. Provide a summary of the existing design standards for all jurisdictions within the study area.
2. Provide justification and rationale (references, current applicable standards etc.) for the proposed standard.
3. Summarize and propose a design standard to be carried forward for this project.

As background, **Table 1** summarizes location details for the proposed DSBRT.

**TABLE 1: PROPOSED DSBRT DETAILS**

<b>TYPE OF PROJECT:</b>	Bus Rapid Transit network within an existing road corridor
<b>LOCATION:</b>	Ellesmere Rd., Kingston Rd., Dundas St., King St., and Bond St. between McCowan Rd. (west) and Simcoe St. (east)
<b>LENGTH:</b>	Approximately 35 km
<b>MUNICIPALITIES:</b>	City of Toronto, City of Pickering, Town of Ajax, Town of Whitby, City of Oshawa, Durham Region

## ROADWAY CLASSIFICATION AND R.O.W. WIDTHS

Table 2 below shows the road classification for all segments of the corridor.

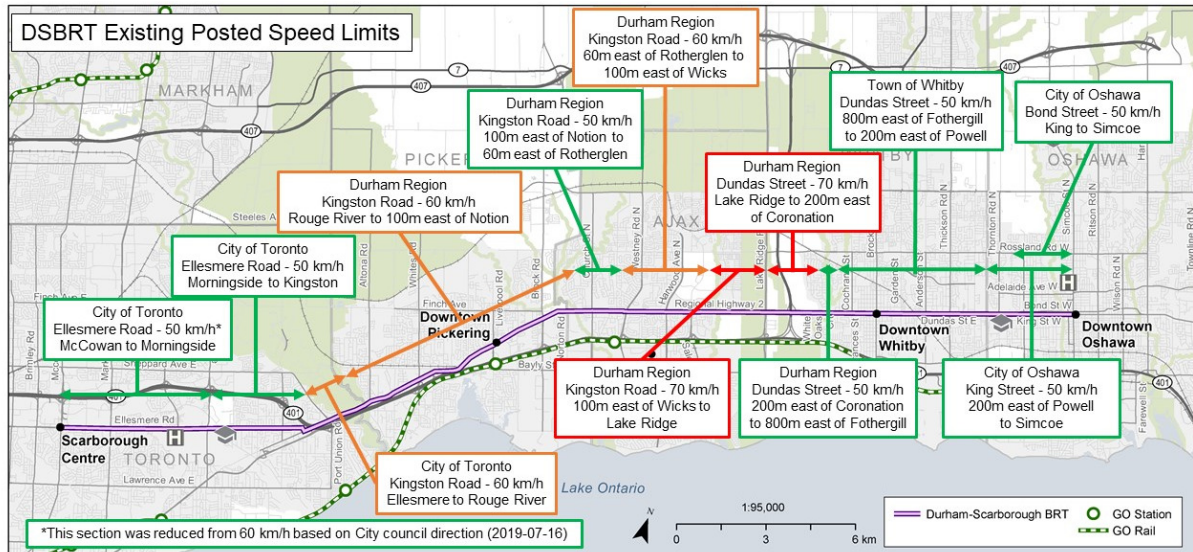
**TABLE 2: ROAD CLASSIFICATION**

LOCATION	CLASSIFICATION	R.O.W WIDTH
<b>CITY OF TORONTO</b>		
Ellesmere Road (McCowan Road to Morningside Avenue)	Major Arterial	36 metres
Ellesmere Road (Morningside Avenue to Military Trail) <i>Note: Integration with EELRT conceptual planning required as noted in Table 6.</i>	Minor Arterial	36 metres (shared with future EELRT)
Ellesmere Road (Morningside Avenue to Kingston Road)	Minor Arterial	36 metres
Kingston Road (Ellesmere Road to Highway 401)	Minor Arterial	27 metres
Kingston Road (Highway 401 to City Boundary)	Major Arterial	Non-uniform width, to be retained as existing at the time of Plan adoption
<b>CITY OF PICKERING</b>		
Kingston Road (City boundary to Notion Road)	Durham Type B Arterial Transit	45 metres
<b>TOWN OF AJAX</b>		
Kingston Road (Pickering Village)	Oshawa Type B Arterial	30 – 36 metres
Kingston Road (Rotherglen Road to Lake Ridge Road)	Durham Type B Arterial Transit	45 metres
<b>TOWN OF WHITBY</b>		
Dundas Street (Lake Ridge Road to Bell Drive)	Durham Type B Arterial Transit	45 metres
Dundas Street (Bell Drive to Annes Street)	Durham Type B Arterial Transit	42 metres
Dundas Street (Annes Street to Garden Street)	Durham Type B Arterial	20 – 36 metres
Dundas Street (Garden Street to Kendalwood Road)	Durham Type B Arterial Transit	42 – 45 metres
<b>CITY OF OSHAWA</b>		
Dundas Street (Kendalwood Road to Bond Street)	Oshawa Type B Arterial	30 – 36 metres
King Street (Bond Street to Simcoe Street)	Oshawa Type B Arterial	30 – 36 metres
Bond Street (King Street to Simcoe Street)	Oshawa Type B Arterial	30 – 36 metres
<b>REFERENCES</b>		
Durham Regional Official Plan (consolidated 2017) <a href="https://www.durham.ca/en/doing-business/resources/Documents/PlanningandDevelopment/Official-Plan/2017-Durham-Regional-Official-Plan-Consolidation.pdf">https://www.durham.ca/en/doing-business/resources/Documents/PlanningandDevelopment/Official-Plan/2017-Durham-Regional-Official-Plan-Consolidation.pdf</a>		
Durham Regional Official Plan Schedule C Road Network (consolidated 2017) <a href="https://www.durham.ca/en/doing-business/resources/Documents/PlanningandDevelopment/Official-Plan/Schedule-C.pdf">https://www.durham.ca/en/doing-business/resources/Documents/PlanningandDevelopment/Official-Plan/Schedule-C.pdf</a>		
City of Oshawa Official Plan (2018) <a href="https://www.oshawa.ca/business-and-investment/resources/City-of-Oshawa-Official-Plan.pdf">https://www.oshawa.ca/business-and-investment/resources/City-of-Oshawa-Official-Plan.pdf</a>		
City of Toronto Road Classification (2018) <a href="https://www.toronto.ca/wp-content/uploads/2018/11/9287-TS_Road-Classification_City-Streets-2018.pdf">https://www.toronto.ca/wp-content/uploads/2018/11/9287-TS_Road-Classification_City-Streets-2018.pdf</a>		
City of Toronto Road Classification Map (2018) <a href="https://www.toronto.ca/wp-content/uploads/2018/12/965f-TS_Road-Classification_CityWide-Map.pdf">https://www.toronto.ca/wp-content/uploads/2018/12/965f-TS_Road-Classification_CityWide-Map.pdf</a>		

## PROPOSED DESIGN SPEEDS

Figure 1 below shows the current posted speed limits along the BRT corridor.

**FIGURE 1: CURRENT POSTED SPEED LIMITS**



The proposed design speeds were selected in accordance with TAC design speed approach given site context, surrounding area, roadway users, and estimated operating speeds. Based on City of Toronto direction, the proposed design speed is equal to the current posted speed.

**TABLE 3: POSTED AND DESIGN SPEEDS**

Municipality	Segment	Current Posted Speed	Proposed Design Speed
City of Toronto	Ellesmere Rd from McCowan Rd to Morningside Ave	50 km/hr	50 km/hr
	Ellesmere Rd from Morningside Ave to Kingston Rd		60 km/hr 80 km/hr (within MTO right-of-way)
Region of Durham – City of Pickering	Kingston Rd from Ellesmere Rd to City Boundary	60 km/hr	70 km/hr 80 km/hr (within MTO right-of-way)
Region of Durham – Town of Ajax	Kingston Rd from 100 m east of Notion Rd to 60 m east of Rotherglen Rd		50 km/hr
Region of Durham – Town of Whitby	Kingston Rd from 60 m east of Rotherglen Rd to 100 m east of Wicks Dr	60 km/hr	70 km/hr
	Kingston Rd from 100 m east of Wicks Dr to Lake Ridge Rd N	70 km/hr	80 km/hr
Region of Durham – Town of Whitby	Dundas St from Lake Ridge Rd N to 200 m east of Coronation Rd	50 km/hr	60 km/hr
	Dundas St from 200 m east of Coronation Rd to Kendalwood Rd		60 km/hr

Municipality	Segment	Current Posted Speed	Proposed Design Speed
Region of Durham – City of Oshawa	Dundas St from Kendalwood Rd to Bond St W		
	King St W from to Bond St W to Simcoe St N		
	Bond St W from to King St W to Simcoe St N		

## ROADWAY PROPOSED DESIGN STANDARDS

**Table 4** below identifies the existing applicable standards for all agencies with jurisdiction within the DSBRT corridor. Proposed design standards are based on the current standards and standardizing the design elements where possible. References are included below **Table 4**.

**TABLE 4: CURRENT AND PROPOSED ROADWAY STANDARDS**

	CURRENT STANDARD				PROPOSED DSBRT		
	City of Toronto	Durham Region	Town of Whitby	City of Oshawa	City of Toronto	Durham / Whitby/ Oshawa	MTO
Transit Lane	3.3 m (min)	-	-	-	3.5 m	3.5 m <sup>C</sup>	3.5m
Transit Lane Striped Buffer	-	-	-	-	0.3 m	0.3 m	0.3 m
Through Lane	3.0 m - 3.5 m	3.5 m	3.5 m	3.5 m - 3.75 m	50 km/hr - 3.0 m 60 km/hr - 3.3 m	Pref. 3.35 m <sup>C</sup> Pref. Min. 3.3 m <sup>C</sup>	3.5 m
Curb Lane <sup>E</sup>	50 km/hr - 3.30 m <sup>A</sup> 60 km/hr - 3.50 m <sup>A</sup>	3.5 m <sup>B</sup>	-	Through lane width + 0.25 m	50 km/hr - 3.3 m <sup>A</sup> 60 km/hr - 3.5 m <sup>A</sup>	Abs. Min. 3.2 m <sup>C</sup> Abs. Min (Oshawa) 3.0m <sup>H</sup>	
Lane Shift	Pref. 0.6 m <sup>G</sup> Max. 1.0 m	0 m	0 m	0 m	0.5 m - 1.0 m 0 m (BRT)	0 m	0 m
Dedicated Left Turn Lane	3.0 m	3.3 m (with median)	3.25 m	3.50 m	3.0 m	3.3 m <sup>C</sup>	3.0 m-3.25 m
Left Turn Lane Taper <sup>D</sup>	-	30:1 - 40:1	15:1 - 48:1 <sup>F</sup>	8:1 - 30:1 <sup>F</sup>	20:1 <sup>F</sup>	30:1 - 40:1 <sup>D</sup>	60 km/hr - 100 m 70 km/hr - 115 m 80 km/hr - 130 m
Left Turn Deceleration Length	-	43 m - 84 m <sup>D</sup>	-	-	-	43 m - 84 m <sup>D</sup>	60 km/hr - 130 m 70 km/hr - 155 m 80 km/hr - 180 m
Dedicated Right Turn Lane	3.0 m <sup>A</sup>	3.5 m <sup>B</sup>	3.25 m <sup>B</sup>	3.5 m <sup>B</sup>	3.0 m	3.3 m <sup>C</sup>	3.25 m (min)

	CURRENT STANDARD				PROPOSED DSBRT		
	City of Toronto	Durham Region	Town of Whitby	City of Oshawa	City of Toronto	Durham / Whitby / Oshawa	MTO
Right Turn Taper <sup>D</sup>	-	65 m – 85 m	14:1 – 24:1 <sup>F</sup>	11:1 – 17:1 <sup>F</sup>	17:1 <sup>F</sup>	55 m – 70 m <sup>D</sup>	60 km/hr – 50 m <sup>I</sup> 70 km/hr – 60 m <sup>I</sup> 80 km/hr – 70 m <sup>I</sup>
Right Turn Deceleration Length	-	40 m – 60 m <sup>D</sup>	40 m – 130 m <sup>F</sup>	-	60 m <sup>F</sup>	40 m – 60 m <sup>D</sup>	60 km/hr – 80 m 70 km/hr – 105 m 80 km/hr – 130 m
Turn Lane Storage	-	Min. 15m + traffic volumes	Traffic volumes	Traffic volumes	Based on traffic volumes		
Curb and Gutter	0.5 m	0.6 m	0.5 m	0.6 m	0.5 m <sup>I</sup>	0.6 m	0.625 m
Dedicated Parking Lane	2.0-2.8 m	-	2.0 m	2.75 m	-	2.75 m	-
Roadway Median	2.0 m	1.7 m	-	-	2.0 m	1.7 m	2.0 m
Planted Roadway Median	3.0 m (min)	-	-	-	3.0 m (min)	-	-

**NOTE**

- A. Measured to face of curb
- B. Measured to edge of pavement
- C. Based on direction provided by Durham Region (D.Dunn, email 2020-07-14). Absolute minimums only used at pinch points.
- D. Based on design speed
- E. Minimum 5.0 m pavement width required to accommodate snow clearing. Refer to Pinch Point section for additional discussion.
- F. Based on TAC guidance
- G. Confirmed by City of Toronto (A. Au, July 17, 2020 via. email).
- H. Based on direction provided by Durham Region (D.Dunn, Design Submission #2 comment 2020-09-02).
- I. Curb and gutter is intended throughout the length of Toronto. Only 0.2 m curb is shown on the design plans for illustration purposes since the lane widths are measured to face of curb.
- J. To be multiplied by appropriate factor based on road grade.

**TABLE 5: PEDESTRIAN AND CYCLING STANDARDS**

	CURRENT STANDARD				PROPOSED DSBRT		
	City of Toronto	Durham Region	Town of Whitby	City of Oshawa	City of Toronto	Durham / Whitby / Oshawa	MTO
Sidewalk	2.1 m (min.)	1.8 m	1.5 m – 2.0 m	1.5 m	2.1 m	1.8 m Abs. Min. 1.5 m	1.5 m (min)
Multi-Use Path	4.0 m	3.0 m	3.0 m	3.0 m	4.0 m	3.0 m	3.0 m – 4.0 m
Uni-Directional On Street Bike Lane	2.1 m	1.5 m	1.5m	-	2.1 m	1.5m	1.5 m – 1.8 m
On Street Bike Lane Buffer	1.0 m	0.5 m	1.0 m	-	1.0 m	0.5m	0.5 m – 1.5 m
Uni-Directional Cycle Track	2.1 m	1.8 m – 2.5 m	1.5 m	-	2.1 m	1.5 m to 2.0 m	1.5 m – 2.0 m

	CURRENT STANDARD				PROPOSED DSBRT		
	City of Toronto	Durham Region	Town of Whitby	City of Oshawa	City of Toronto	Durham / Whitby / Oshawa	MTO
Bi-Directional Cycle Track	2.6 m – 4.0 m	2.5 m – 3.5 m	4.0 m	-	2.6 m - 4.0 m	3.0 m	3.0 m – 4.0 m
Buffer between Sidewalk and Cycle Track	0.6 m to 1.5 m	-	-	-	0.6 m - 1.5 m	0.8 m	0.6 m – 1.5 m
Street buffer (from back of curb to cycling facility)	1.0 m	1.5 m	0.5 m	-	1.0 m	1.5 m	1.0 m - 1.2 m

**NOTE**

A. Only in constrained areas

REFERENCES
City of Toronto - Standards for Designing and Constructing City Infrastructure <a href="https://www.toronto.ca/services-payments/building-construction/infrastructure-city-construction/construction-standards-permits/standards-for-designing-and-constructing-city-infrastructure/">https://www.toronto.ca/services-payments/building-construction/infrastructure-city-construction/construction-standards-permits/standards-for-designing-and-constructing-city-infrastructure/</a>
Toronto Transit Commission – TTC Bus Stop Configuration v4 Not publicly available
Durham Region - Design and Construction Specifications <a href="https://apps.durham.ca/Applications/Works/DCSpecs/List.aspx#">https://apps.durham.ca/Applications/Works/DCSpecs/List.aspx#</a>
Durham Region – Regional Cycling Plan <a href="https://www.durham.ca/en/discovering-durham/resources/Documents/TransportationandTransit/Regional-Cycling-Plan.pdf">https://www.durham.ca/en/discovering-durham/resources/Documents/TransportationandTransit/Regional-Cycling-Plan.pdf</a>
Town of Whitby - Engineering Design Standards <a href="https://whitby.ca/en/townhall/designcriteriaandengineeringstandards.asp#EngineeringDesignStandardsSecti2">https://whitby.ca/en/townhall/designcriteriaandengineeringstandards.asp#EngineeringDesignStandardsSecti2</a>
City of Oshawa - Engineering Design Criteria Manual <a href="https://www.oshawa.ca/business-and-investment/resources/Engineering-Design-Criteria-Manual.pdf">https://www.oshawa.ca/business-and-investment/resources/Engineering-Design-Criteria-Manual.pdf</a>
Ontario Traffic Manual - Book 18 <a href="http://www.raqsb.mto.gov.on.ca/techpubs/eps.nsf/0/825810eb3ddd203385257d4a0063d934/\$FILE/Ontario%20Traffic%20Manual%20-%20Book%2018.pdf">http://www.raqsb.mto.gov.on.ca/techpubs/eps.nsf/0/825810eb3ddd203385257d4a0063d934/\$FILE/Ontario%20Traffic%20Manual%20-%20Book%2018.pdf</a>
MTO Design Supplement for TAC Geometric Design Guide (GDG) for Canadian Roads – April 2020 <a href="http://www.mto.gov.on.ca/phmpmbp/Reference%20Materials/HwyDes-MTO_DS_TAC_GDG-April2020-Final.pdf">http://www.mto.gov.on.ca/phmpmbp/Reference%20Materials/HwyDes-MTO_DS_TAC_GDG-April2020-Final.pdf</a>
TAC Geometric Design Guide for Canadian Roads – June 2017 <a href="https://www.tac-atc.ca/en/publications-and-resources/geometric-design-guide-canadian-roads">https://www.tac-atc.ca/en/publications-and-resources/geometric-design-guide-canadian-roads</a>
Bikeways Design Manual – March 2014 <a href="https://www.library.mto.gov.on.ca/SydneyPLUS/Sydney/Portal/default.aspx?component=AAAAIY&amp;record=2123efe9-b107-4fcc-9d3b-1bde607bdf7b">https://www.library.mto.gov.on.ca/SydneyPLUS/Sydney/Portal/default.aspx?component=AAAAIY&amp;record=2123efe9-b107-4fcc-9d3b-1bde607bdf7b</a>
MTO Structural Manual – September 2016 <a href="https://www.library.mto.gov.on.ca/SydneyPLUS/Sydney/Portal/default.aspx?lang=en-US">https://www.library.mto.gov.on.ca/SydneyPLUS/Sydney/Portal/default.aspx?lang=en-US</a>

## CONSTRAINED AREAS (PINCH POINT) DISCUSSION

There are segments along the project corridor that are identified to be spatially constrained. These constraints include but are not limited to the following:

- narrow existing ROW;
- close proximity to building faces;
- sensitive environmental features; and
- areas of cultural heritage significance.

The design will consider these locations and achieve a reasonable compromise to the proposed desirable design standards in order to mitigate impacts to existing infrastructure while still maintaining traffic and pedestrian safety, constructability and operational feasibility. For operations and maintenance by snow clearing vehicles, a minimum of 4.6 m pavement area between curbs is required. An assumed minimum pavement width of 5.0 m will be provided in these areas.

The following locations have been identified as pinchpoint segments, but there may be isolated locations outside of these segments that can also be identified as pinchpoints. Where constrained areas fall within MTO ROW, the minimum design standards as per MTO requirements shall be adhered to.

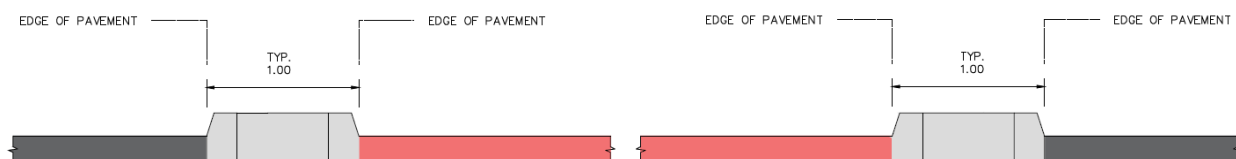
- City of Toronto - Ellesmere Road from Military Trail to Meadowvale Road;
- City of Toronto - Ellesmere Road from Meadowvale Road to Kingston Road;
- Kingston Road from Duffins Creek bridge to Rotherglen Road;
- Dundas Street W from Frances Street to Garden Street; and
- King/Bond Street from Thornton Road to Simcoe Street.

## MEDIAN / BUFFER DESIGN DISCUSSION

Through the BRT corridor, physical barriers are proposed to separate opposing traffic or BRT lanes from adjacent through traffic.

Within the City of Toronto limits of the corridor, raised medians will be placed between BRT lanes and the adjacent lane of traffic, with no separator between the BRT lanes themselves, as shown in Figure 2. These medians will serve to prohibit left turns through the BRT lanes, refuge for snow clearing, and as a location to place signage. This design was agreed to by Toronto's Transportation Services Department along with TTC to provide a reliable transit operation. This design is conditional upon agreement that the City is not responsible for maintenance of the bus lanes. Discussion regarding maintenance is ongoing and the outcome may affect the design within the City.

**FIGURE 2: RAISED OUTSIDE MEDIANS**

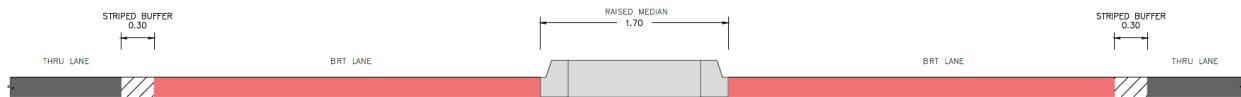


In Durham Region, a 1.7 m-wide raised centre median will be applied between the two centre-running BRT lanes and will include a 0.3 m striped buffer on either side to the adjacent through lanes, as seen in Figure 3. The 1.7 m width follows the median island width as per Durham Region standard (S-300.070). Where ROW is constrained, the raised centre median shall be narrowed upon approval by Durham Region.



Within MTO right-of-way, the proposed design follows the raised centre median configuration depicted in Figure 3; however, a typical median width of 2.0m shall be applied, as per TAC Section 4.5.3.5.

**FIGURE 3: RAISED CENTRE MEDIAN**



In both cases, the separators serve as a means of directing traffic flow as well as for traffic safety. In midblock segments of the corridor, raised median or curbs are especially required for the prevention of left turns at unsignalized intersections. In addition, it is recommended to remove existing turn islands or “porkchop islands” at private entrances and tighten the curb radii since mid-block left turns will be prohibited.

### UTILITY DISCUSSION

Existing utility infrastructure located below and above ground along the corridor will be identified and accounted for in the design process. Mitigation measures will be taken to ensure adequate clearances to utility infrastructure where possible. In Durham Region, a preferred 3 m utility buffer has been provided where possible to accommodate utility infrastructure. In Toronto, an assumed 2 m utility buffer has been provided behind the sidewalk.

Utilities that will be impacted by the proposed DSBRT design and shall require relocation will be documented in the Environmental Project Report. The Toronto Public Utilities Coordination Committee (TPUCC) as well as the associated utility companies in Durham Region will be consulted for inventory, mapping and design guidelines.

Within MTO ROW, the MTO guidelines for utility infrastructure applies. Clear zone requirements for utility infrastructure within MTO ROW shall meet the standards described in the MTO Roadside Design Manual. Relocation plans and specific utility drawing packages will be developed during the detailed design stage. The EA will ensure that an adequate road ROW is considered in the design.

### PLATFORM DESIGN DISCUSSION

The platform is proposed to be either in the centre median or curbside, depending on the BRT lane location. The length is proposed to be 40 m to accommodate 2 articulated buses but can vary due to site constraints. Within Toronto east of Military Trail, the platform length is proposed to be 20 m to accommodate 1 articulated bus. The preferred width is 4.2 m in Durham Region or, but in constrained areas, the width is reduced to 3.6 m. The preferred width is 3.6 m in Toronto.

In both Toronto and Durham Region, typical platform height for centre-median platforms is 14” (355 mm) above finished road surface to accommodate full-level boarding. For curbside stops, the platform height is 6” (152 mm) above finished road surface consistent with typical sidewalk height. Refer to Section 1.4 of Stops Architecture Report for further information and details. Where the BRT lane is a centre median design, a ramp is provided from the crosswalk to the platform maintaining a maximum running slope of 5% per AODA. Where the BRT lane is a curbside design, the platform elevation matches the boulevard elevation (elevated 152 mm from the roadway surface by the curb and gutter) therefore no ramp is required. A banana island styled barrier will be provided at the area where the crosswalk meets the ramp to provide protection for pedestrians and ramp users. This will also serve to accommodate traffic signals.

Roadway profile and ramp lengths were reviewed to accommodate maximum allowable slopes in accordance with accessibility regulations.

Since the raised platform will be located within the roadway, it is considered a roadway obstruction. A shy-line offset has been applied based on site context.

For further information on the platforms, refer to the Stops Architecture Report.

## MTO DESIGN DISCUSSION

The DSBRT corridor passes through areas of MTO owned infrastructure as follows:

- Highway 401 entry and exit ramp (exit 390) for Kingston Rd including bridge structure for highway overpass;
- Highway 401 exit ramp (exit 392) for Sheppard Ave / Port Union Rd;
- Highway 401 entry and exit ramp (exit 394) for Whites Rd; and
- Highway 412 entry and exit ramp (exit 1) for Dundas St including bridge structure for highway underpass.

Any modification to this infrastructure will be coordinated with MTO and meet MTO design standards, otherwise the appropriate justification will be provided.

## STREETSCAPE PROPOSED DESIGN STANDARDS

**Table 6** below identifies the existing applicable streetscape standards for all agencies with jurisdiction within the Highway 2 corridor. These references will be applied throughout the corridor, as required. References for the data shown in **Table 6** are included below in **Table 7**. Proposed street trees must meet clearance requirements from underground utilities and underground municipal infrastructure. To avoid creating roadside hazards, refer to the individual companies for clearance requirements.

During detailed design, street trees soil volumes will be developed to provide suitable growing condition.

For further information on the streetscape design, refer to the Streetscape Report.

**TABLE 6: REFERENCES FOR STREETSCAPE STANDARDS**

	Toronto	Pickering	Ajax	Whitby	Oshawa
<b>Tree Spacing</b>	8.0m-10.0m	6.0m-9.0m	8.0m-15.0m	-	-
<b>Planting Zone Width</b>	2.0m minimum*, where applicable and depending on street.	Refer to standards based on ROW.	-	Refer to standards based on ROW.	900mm (min) Refer to 200 series drawing standards based on ROW.
<b>Planter Setback</b>	0.8m from face of curb	-	-	0m from back of curb.	750mm from face of curb.
<b>Planting Species</b>	Recommended Trees	-	-	Recommended Trees	-
<b>Street Tree Soil Volumes</b>	30m <sup>3</sup> (to meet Toronto Green Standard)	30m <sup>3</sup>	-	-	6m <sup>3</sup>
<b>Streetscape Layout (Hard/Soft Landscape)</b>	Refer to Street Types	Refer to Standards based on ROW Refer to Street Designation	-	Refer to Standards based on ROW	Refer to Standards based on ROW

**TABLE 7: CURRENT AND PROPOSED BRT STREETScape REFERENCES**

	Toronto	Pickering	Ajax	Whitby	Oshawa
<b>Tree Spacing</b>	Streetscape Manual ( <a href="https://www.toronto.ca/city-government/planning-development/official-plan-guidelines/design-guidelines/streetscape-manual/">https://www.toronto.ca/city-government/planning-development/official-plan-guidelines/design-guidelines/streetscape-manual/</a> )	Pickering City Centre Urban Design Guidelines (April 3, 2017) ( <a href="https://www.pickering.ca/en/city-hall/resources/city-centre-urban-design-guidelines.pdf">https://www.pickering.ca/en/city-hall/resources/city-centre-urban-design-guidelines.pdf</a> )	Town of Ajax Design Criteria – Section G Street Tree Planting (January 2011) ( <a href="https://www.ajax.ca/en/business-and-growth/resources/Engineering-Transportation-Services/Design-Criteria-and-Standards/Town-of-Ajax-Design-Criteria-Section-G-Street-Tree-Planting.pdf">https://www.ajax.ca/en/business-and-growth/resources/Engineering-Transportation-Services/Design-Criteria-and-Standards/Town-of-Ajax-Design-Criteria-Section-G-Street-Tree-Planting.pdf</a> )	-	-
<b>Planting Zone Width</b>	Streetscape Manual – Hard/Soft Landscaped Boulevard (Page P-7) ( <a href="https://www.toronto.ca/ext/pln/streetscape/P-7.pdf">https://www.toronto.ca/ext/pln/streetscape/P-7.pdf</a> )	Link to 700 Series Drawings – Geometric Details ( <a href="https://www.pickering.ca/en/business/DCDS700Series.aspx">https://www.pickering.ca/en/business/DCDS700Series.aspx</a> )	-	Whitby 400 Series Drawings - various ( <a href="https://www.whitby.ca/en/townhall/resources/PW-400-Series-2019.pdf">https://www.whitby.ca/en/townhall/resources/PW-400-Series-2019.pdf</a> )	Oshawa Streetscape Vision (May 2018) ( <a href="http://app.oshawa.ca/agentas/joint_committees/2018/06-05/REPORT_DS-18-117.pdf">http://app.oshawa.ca/agentas/joint_committees/2018/06-05/REPORT_DS-18-117.pdf</a> ) Standard Drawings Link ( <a href="https://www.oshawa.ca/business-and-investment/standard-drawings.asp">https://www.oshawa.ca/business-and-investment/standard-drawings.asp</a> )
<b>Planter Setback</b>	Toronto Streetscape Manual ( <a href="https://www.toronto.ca/city-government/planning-development/official-plan-guidelines/design-guidelines/streetscape-manual/">https://www.toronto.ca/city-government/planning-development/official-plan-guidelines/design-guidelines/streetscape-manual/</a> )	-	-	Whitby 500 Series Drawings - various ( <a href="https://www.whitby.ca/en/townhall/resources/PW-500-Series-2019.pdf">https://www.whitby.ca/en/townhall/resources/PW-500-Series-2019.pdf</a> )	Oshawa Streetscape Vision (May 2018) ( <a href="http://app.oshawa.ca/agentas/joint_committees/2018/06-05/REPORT_DS-18-117.pdf">http://app.oshawa.ca/agentas/joint_committees/2018/06-05/REPORT_DS-18-117.pdf</a> )
<b>Planting Species</b>	Tree Species Brochure ( <a href="https://www.toronto.ca/wp-content/uploads/2021/05/9765-Street-Tree-Brochure.pdf">https://www.toronto.ca/wp-content/uploads/2021/05/9765-Street-Tree-Brochure.pdf</a> )	-	Town of Ajax Design Criteria – Section G Street Tree Planting (January 2011) ( <a href="https://www.ajax.ca/en/business-and-growth/resources/Engineering-Transportation-Services/Design-Criteria-and-Standards/Town-of-Ajax-Design-Criteria-Section-G-Street-Tree-Planting.pdf">https://www.ajax.ca/en/business-and-growth/resources/Engineering-Transportation-Services/Design-Criteria-and-Standards/Town-of-Ajax-Design-Criteria-Section-G-Street-Tree-Planting.pdf</a> )	Tree Species List ( <a href="https://www.whitby.ca/en/resources/plx-guidelines_RecommendedTreeSpeciesforuseinDevelopmentProposalsAppendixT.pdf">https://www.whitby.ca/en/resources/plx-guidelines_RecommendedTreeSpeciesforuseinDevelopmentProposalsAppendixT.pdf</a> )	-
<b>Street Tree Soil Volumes</b>	Toronto Green Streets Technical Guidelines (November 2017 V.1) ( <a href="https://www.toronto.ca/ext/digital_comm/pdfs/transportation-services/green-streets-technical-guidelines-document-v2-17-11-08.pdf">https://www.toronto.ca/ext/digital_comm/pdfs/transportation-services/green-streets-technical-guidelines-document-v2-17-11-08.pdf</a> )	Pickering City Centre Urban Design Guidelines (April 3, 2017) ( <a href="https://www.pickering.ca/en/city-hall/resources/city-centre-urban-design-guidelines.pdf">https://www.pickering.ca/en/city-hall/resources/city-centre-urban-design-guidelines.pdf</a> )	-	-	Oshawa Streetscape Vision (May 2018) ( <a href="http://app.oshawa.ca/agentas/joint_committees/2018/06-05/REPORT_DS-18-117.pdf">http://app.oshawa.ca/agentas/joint_committees/2018/06-05/REPORT_DS-18-117.pdf</a> )
<b>Streetscape Layout (Hard/Soft Landscape)</b>	Toronto Streetscape Manual ( <a href="https://www.toronto.ca/city-government/planning-development/official-plan-guidelines/design-guidelines/streetscape-manual/">https://www.toronto.ca/city-government/planning-development/official-plan-guidelines/design-guidelines/streetscape-manual/</a> )	Link to 700 Series Drawings – Geometric Details ( <a href="https://www.pickering.ca/en/business/DCDS700Series.aspx">https://www.pickering.ca/en/business/DCDS700Series.aspx</a> ) Pickering City Centre Urban Design Guidelines (April 3, 2017) ( <a href="https://www.pickering.ca/en/city-hall/resources/city-centre-urban-design-guidelines.pdf">https://www.pickering.ca/en/city-hall/resources/city-centre-urban-design-guidelines.pdf</a> )	-	Whitby 400 Series Drawings - various ( <a href="https://www.whitby.ca/en/townhall/resources/PW-400-Series-2019.pdf">https://www.whitby.ca/en/townhall/resources/PW-400-Series-2019.pdf</a> )	Standard Drawings Link ( <a href="https://www.oshawa.ca/business-and-investment/standard-drawings.asp">https://www.oshawa.ca/business-and-investment/standard-drawings.asp</a> )

	Toronto	Pickering	Ajax	Whitby	Oshawa
<b>Tree Planting in Hard Surfaces</b>	Tree Planting in Hard Surfaces ( <a href="https://www.toronto.ca/services-payments/streets-parking-transportation/enhancing-our-streets-and-public-realm/green-streets/tree-planting-in-hard-surfaces/">https://www.toronto.ca/services-payments/streets-parking-transportation/enhancing-our-streets-and-public-realm/green-streets/tree-planting-in-hard-surfaces/</a> )	-	-	-	-
<b>TRCA</b>	Link to TRCA mapping of Regulatory Limit ( <a href="https://camaps.maps.arcgis.com/home/signin.html?returnUrl=https%3A%2Fcamaps.maps.arcgis.com%2Fapps%2Fwebappviewer%2Findex.html%3Fid%3D7e8ad37534c34f68852cf0c051f9f78">https://camaps.maps.arcgis.com/home/signin.html?returnUrl=https%3A%2Fcamaps.maps.arcgis.com%2Fapps%2Fwebappviewer%2Findex.html%3Fid%3D7e8ad37534c34f68852cf0c051f9f78</a> )				
<b>CLOCA</b>	Link to CLOCA mapping of Regulatory Limit – Public Browser ( <a href="https://maps.cloca.com/Html5Viewer/Index.html?configBase=https://maps.cloca.com/Geocortex/Essentials/REST/sites/GenericRegulations/viewers/genregs/virtualdirectory/Resources/Config/Default">https://maps.cloca.com/Html5Viewer/Index.html?configBase=https://maps.cloca.com/Geocortex/Essentials/REST/sites/GenericRegulations/viewers/genregs/virtualdirectory/Resources/Config/Default</a> )				

\*Due to constrained space within the City of Toronto, an absolute minimum planting zone width of 1.80 m has been adopted given sufficient length to provide the necessary soil volume.

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## ADDITIONAL CONSIDERATIONS

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Several additional considerations were identified, which need to be included in this assessment as they influence the design but are not considered to be design standards:

- Streetscape standards for Durham Region to apply unless a more stringent municipal standard exists
- Eglinton East LRT (EELRT) Design
  - The EELRT is at 5% design/ conceptual design. The DSBRT design is under review in this area to avoid conflicts with the EELRT design.
  - An interim stop at Military Trail at the existing location has been proposed.
- City of Toronto - Complete Street Guideline
  - The guideline should be consulted for general conformance during the functional design.
  - Complete guideline: <https://www.toronto.ca/services-payments/streets-parking-transportation/enhancing-our-streets-and-public-realm/complete-streets/complete-streets-guidelines/>
  - Chapter 6: Street Design for Transit: <https://www.toronto.ca/wp-content/uploads/2017/11/9126-Chapter-6.pdf>