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Matthew Williams (City of Mississauga)

Date: July 20, 2021

Project: Dundas BRT

cc:

Project #: 60645291

From: Kevin Phillips  
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# Memorandum

Subject: **Dundas BRT – TPAP / PD / PDBC – Pinch Point Analysis, Segment B Cooksville**

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AECOM has prepared this technical memorandum for Metrolinx and the City of Mississauga as a continued analysis of the pinch point locations that are being considered in the Dundas BRT TPAP, PD and PDBC study.

The purpose of this memo is to advance the evaluation of the short listed pinch point locations in the corridor. This will build off the previous two technical memos (which identified a long list, and a subsequent refined short list of pinch point locations along the Dundas Street corridor). These memos characterized the constraints present at each location which require the generation and evaluation of alternative designs to consider these constraints.

As noted in the initial virtual engagement materials published April 19, 2021, pinch points are areas of special interest where necessary road widening is constrained by the existing environment or where other design challenges are present.

The Cooksville area in the City of Mississauga has been identified as a pinch point. A median BRT route along Dundas Street in the Cooksville area is in a constrained right-of-way (ROW) from Confederation Parkway to Jaguar Valley Drive, comprising many existing structures with shallow setbacks from the street, heritage properties and congested traffic operations. Key considerations for the Cooksville pinch point include:

- Existing narrow right-of-way in many locations
- Property acquisition required to achieve the Official Plan right-of-way to accommodate all contemplated infrastructure needs (dedicated BRT guideway, four general purpose lanes, cycle tracks, sidewalks and amenity/utility space)
- Some buildings located close to the property/right-of-way line
- Significant development intensification
- Hurontario LRT track and station stop
- Minimal natural heritage features
- Some cultural heritage resources

## Metrolinx / City of Mississauga

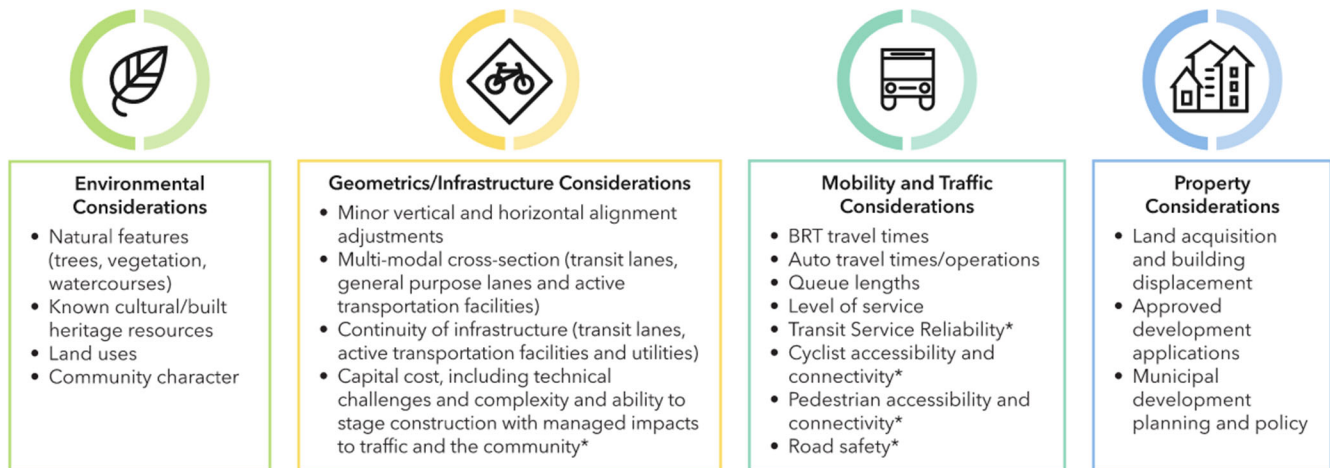
Dundas BRT TPAP, PD and PDBC – Pinch Point Analysis, Segment B Cooksville

The pinch point is subject to a technical screening to consider impacts and evaluate alternatives in order to identify an optimum design balancing impacts and project needs.

This process consists of a desktop overview utilizing existing available information such as mapping and aerial photography, traffic data, and available technical reports. A variety of documents were referenced in the screening evaluation, including:

- Dundas BRT – Mississauga Project, Stage 1 Archaeological Assessment (50% Draft, 2021)
- Dundas BRT – Mississauga Project, Cultural Heritage Report (50% Draft, 2021)
- Dundas BRT – Mississauga Project, Socio-Economic and Land Use Study (50% Draft, 2021)
- Dundas BRT – Mississauga Project, Climate Change and Sustainability Report (50% Draft, 2021)
- Dundas Street Corridor Master Plan Study – Preliminary Review of Existing Environmental Conditions Memo (2017)
- City of Mississauga - Official Plan, 2020 Consolidation; various schedules such as: Schedule 3 – Natural Systems, Schedule 5 – Road Network, Schedule 6 – Transit, Schedule 7 – Cycling, and Schedule 8 – Rights-of-way
- City of Mississauga - Cycling Master Plan (2018)
- City of Mississauga – Transportation Master Plan (2019)
- City of Mississauga – Planning Information Hub

This screening evaluation considered a variety of technical categories as summarized below pertaining to the natural, cultural and built environment at the pinch point location.



The technical screening factors were initially presented during the first round of virtual engagement (April 19 to 30, 2021).

The criteria were also refined to reflect commentary from the Pinch Point Working Group (Cooksville) as well as due to themes of comments arising from the first round of virtual engagement. The majority of virtual engagement respondents who provided input on the pinch points in Mississauga highlighted the importance of physically protected bike lanes, cautioned against adding additional traffic lanes (where there are already six lanes), and integrating / connecting Dundas BRT to the Hurontario LRT corridor.

## Metrolinx / City of Mississauga

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Further to that, when asked “please rank the following pinch point screening considerations from 1 (most important) to 4 (least important) in your perspective” at the first round of virtual engagement, the majority of respondents ranked Environmental Considerations as the highest of importance and Property Considerations as the lowest of importance. The ranking was as follows.

- Environmental considerations (ranked most important)
- Geometric / Infrastructure considerations (ranked second most important)
- Traffic considerations (ranked second least important)
- Property considerations (ranked least important)

Based on the aforementioned, key additions to the criteria and evaluation included:

- Traffic / mobility: added Transit Service Reliability
- Traffic / mobility: broadening the scope of the Traffic factor to be more multi-modal in nature and reflect all users of the corridor. This resulted in the addition of new sub-categories for
  - Cyclist accessibility and connectivity
  - Pedestrian accessibility and connectivity(These were not combined under the banner of ‘active transportation’ since protected cyclist provisions was such a prominent theme throughout the virtual engagement comments)
- Traffic / mobility: added safety as a measure of compliance with road design guidelines and ability to protect vulnerable road users
- Engineering / infrastructure: broadened capital cost sub-category to also reflect technical challenges and complexity, and ability to stage construction with managed impacts to traffic and to the area community

This memo considers alternative designs that have been developed, and the potential impacts, for the pinch point in the Cooksville area of Segment B - Mississauga.

AECOM first established draft design criteria outlining geometric and design standards in the City of Mississauga for the segment to serve as design guidance for the alternative concept designs. The alternative designs were developed in accordance with the relevant draft design criteria, with modifications as required to balance design requirements and site-specific constraints (the preferred design will subsequently be adjusted to reflect design comments and mitigations in the forthcoming 10% and 30% design process). The developed preliminary alternative design concepts at the pinch point were presented as part of workshop discussions with Metrolinx and the City of Mississauga. The following alternatives were considered:

- Alternative 1: Full dedicated BRT median guideway with a widening about the centreline.
- Alternative 2: Full dedicated BRT median guideway, but with a single general purpose lane per direction.
- Alternative 3: Full dedicated BRT median guideway, and with turn prohibitions at Hurontario Street.
- Alternative 4: Buses in curbside mixed traffic general purpose lanes.
- Alternative 5: Full dedicated BRT median guideway with street alignment shifted to the south.
- Alternative 6: Full dedicated BRT median guideway in a tunnel under Dundas Street.

The concept design plans for each alternative are appended to this memo.

The following tables present the technical screening for the alternative designs at the pinch point location and also identify a recommended technically preferred alternative to proceed to a more refined 10% design.

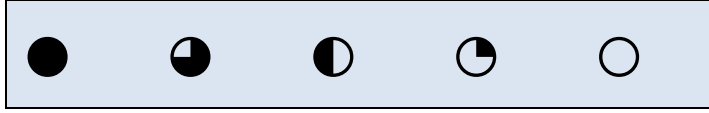
Pinch Point Location SLM-1: Cooksville – Kirwin Avenue / Carmilla Road to Parkerhill Road								
Screening Criteria	Sub-Category	Criteria	Alternative 1 Full Median BRT Widened About Centreline	Alternative 2 Full Median BRT With One GPL / Direction	Alternative 3 Full Median BRT With Left Turn Restrictions	Alternative 4 Buses in Curbside Mixed Traffic GPL	Alternative 5 Full Median BRT Shifted South	Alternative 6 BRT Guideway Tunnel
Mobility and Traffic Considerations	BRT travel times	Ability to accommodate and improve future BRT travel times	● • Provides a full median BRT with no movement modifications, which will improve BRT travel times through Cooksville. Maintains the continuity of median BRT lanes through the corridor.	● • Provides a full median BRT with no movement modifications, which will improve BRT travel times through Cooksville. Maintains the continuity of median BRT lanes through the corridor.	● • Provides a full median BRT with no movement modifications, which will improve BRT travel times through Cooksville. Maintains the continuity of median BRT lanes through the corridor.	● • Does not maintain continuity of median BRT lanes through the corridor. Imparts 2 minutes of delay in either direction for BRT vehicles through Cooksville as a result of operating in mixed-traffic lanes.	● • Provides a full median BRT with no movement modifications, which will improve BRT travel times through Cooksville. Maintains the continuity of median BRT lanes through the corridor.	● • Provides a full median BRT with no movement modifications, and no delays at Confederation Parkway or Hurontario Street, which will improve BRT travel times through Cooksville. Maintains the continuity of median BRT lanes through the corridor.
	Transit service reliability	Ability for transit to maintain schedule	● • A full median BRT will allow for BRT vehicles to consistently remain on schedule, with predictable travel times and higher service reliability.	● • A full median BRT will allow for BRT vehicles to consistently remain on schedule, with predictable travel times and higher service reliability.	● • A full median BRT will allow for BRT vehicles to consistently remain on schedule, with predictable travel times and higher service reliability.	● • Since BRT travels in mixed traffic, bus efficiency and service is less reliable, and subject to general traffic impedance and delays.	● • A full median BRT will allow for BRT vehicles to consistently remain on schedule, with predictable travel times and higher service reliability.	● • A full median BRT will allow for BRT vehicles to consistently remain on schedule, with predictable travel times and higher service reliability.
	Transportation Accessibility (Cyclists)	Removes existing barriers and enhances connections; and provision of new, physically separated, continuous cycling facilities	● • Continuous, dedicated, physically separated cycling facilities provided on both sides of Dundas Street through Cooksville corridor.	● • Dedicated, physically separated cycling facilities generally provided on both sides of Dundas Street. Separated facilities are not continuous, as MUP provided at locations of heritage buildings.	● • Continuous, dedicated, physically separated cycling facilities provided on both sides of Dundas Street through Cooksville corridor.	● • Dedicated, physically separated cycling facilities generally provided on both sides of Dundas Street. Separated facilities are not continuous, as MUP provided at locations of heritage buildings on north side of Dundas Street.	● • Continuous, dedicated, physically separated cycling facilities provided on both sides of Dundas Street through Cooksville corridor.	● • Continuous, dedicated, physically separated cycling facilities provided on both sides of Dundas Street through Cooksville corridor.
	Transportation Accessibility (Pedestrians)	Removes existing barriers and enhances connections, and provision of new and wider pedestrian facilities	● • Continuous, dedicated, physically separated pedestrian facilities provided on both sides of Dundas Street through Cooksville corridor. • Accommodates potential new mid-block pedestrian crossings at Cooks Street and Jaguar Valley Drive.	● • Dedicated, physically separated pedestrian facilities generally provided on both sides of Dundas Street. Separated facilities are not continuous, as MUP provided at locations of heritage buildings. • Accommodates potential new mid-block pedestrian crossings at Cooks Street and Jaguar Valley Drive.	● • Continuous, dedicated, physically separated pedestrian facilities provided on both sides of Dundas Street through Cooksville corridor. • Accommodates potential new mid-block pedestrian crossings at Cooks Street and Jaguar Valley Drive.	● • Dedicated, physically separated pedestrian facilities generally provided on both sides of Dundas Street. Separated facilities are not continuous, as MUP provided at locations of heritage buildings on north side of Dundas Street. • Accommodates potential new mid-block pedestrian crossings at Cooks Street and Jaguar Valley Drive.	● • Continuous, dedicated, physically separated pedestrian facilities provided on both sides of Dundas Street through Cooksville corridor. • Accommodates potential new mid-block pedestrian crossings at Cooks Street and Jaguar Valley Drive.	● • Continuous, dedicated, physically separated pedestrian facilities provided on both sides of Dundas Street through Cooksville corridor. • Accommodates potential new mid-block pedestrian crossings at Cooks Street and Jaguar Valley Drive.

Pinch Point Location SLM-1: Cooksville – Kirwin Avenue / Carmilla Road to Parkerhill Road								
Screening Criteria	Sub-Category	Criteria	Alternative 1 Full Median BRT Widened About Centreline	Alternative 2 Full Median BRT With One GPL / Direction	Alternative 3 Full Median BRT With Left Turn Restrictions	Alternative 4 Buses in Curbside Mixed Traffic GPL	Alternative 5 Full Median BRT Shifted South	Alternative 6 BRT Guideway Tunnel
	Safety	Compliance with road design standards and improvement of safety for vulnerable road users	● • Design to be compliant with road design guidelines. • New dedicated, physically separated cycling and pedestrian facilities.	● • Design to be compliant with road design guidelines. • New dedicated, physically separated cycling and pedestrian facilities generally. Potential for safety conflict concerns at MUP (at heritage buildings) due to high pedestrian volumes in the Cooksville centre.	● • Design to be compliant with road design guidelines. • New dedicated, physically separated cycling and pedestrian facilities.	● • Design to be compliant with road design guidelines. • New dedicated, physically separated cycling and pedestrian facilities generally. Potential for safety conflict concerns MUP (at heritage buildings) due to high pedestrian volumes in the Cooksville centre.	● • Design to be compliant with road design guidelines, but with notable alignment deflection to south. • New dedicated, physically separated cycling and pedestrian facilities.	● • Design to be compliant with road design guidelines, but with vertical grades required for guideway tunnel. • New dedicated, physically separated cycling and pedestrian facilities.
	Auto travel times / operations	Maintains or improves auto travel times	● • Operates at capacity with acceptable auto travel times through Cooksville.	● • Auto travel-times approximately double relative to other alternatives through Cooksville.	● • WB thru traffic at Confederation Parkway is degraded due to increased EBL green time at the intersection. Overall WB auto travel times are increased.	● • Approximate 2-minute increase in WB auto travel times due to BRT stops through Cooksville with buses operating in mixed traffic.	● • Operates at capacity with acceptable auto travel times through Cooksville.	● • Operates at capacity with acceptable auto travel times through Cooksville.
	Queue lengths	Maintains or improve future queue lengths	● • Operates at capacity with acceptable delay times at the intersections through Cooksville. No appreciable change to existing queue lengths.	● • Significant queuing is anticipated due to reduction in general purpose lanes to 1 lane in each direction. At times the queuing extends to Mavis Road to the west, and Cawthra Road to the east.	● • Increased WB queuing resulting from increased EBL green time at the Confederation Parkway intersection.	● • Minor increase in delay times at Cooksville intersections relative to Alternatives 1, 5 and 6, resulting from BRT bus stops. No appreciable change to existing queue lengths.	● • Operates at capacity with acceptable delay times at the intersections through Cooksville No appreciable change to existing queue lengths.	● • Operates at capacity with acceptable delay times at the intersections through Cooksville No appreciable change to existing queue lengths.
	Level of service	Maintains or improves LOS at intersections	● • LOS F at Confederation Parkway, LOS E at Hurontario Street, LOS D at Kirwin Avenue.	● • LOS F at Confederation Parkway, LOS F at Hurontario Street, LOS F at Kirwin Avenue.	● • LOS F at Confederation Parkway, LOS D at Hurontario Street, LOS F at Kirwin Avenue.	● • LOS E at Confederation Parkway, LOS E at Hurontario Street, LOS E at Kirwin Avenue.	● • LOS F at Confederation Parkway, LOS E at Hurontario Street, LOS D at Kirwin Avenue.	● • LOS F at Confederation Parkway, LOS E at Hurontario Street, LOS D at Kirwin Avenue.
	<b>Summary</b>		●	○	●	●	●	●
	<b>Rationale</b>		<ul style="list-style-type: none"> <li>Alternative 1 are 6 are most preferred. The full median BRT corridor, with no reductions in GPL capacity or intersection movement modifications will maintain or improve traffic conditions through Cooksville for both auto and transit users. These alternatives provide improved accessibility for both pedestrians and cyclists with dedicated, physically separated facilities that are continuous on both sides of Dundas through Cooksville.</li> <li>Alternative 5 is moderately preferred. Similar to Alternatives 1 and 6, the full median BRT corridor, with no reductions in GPL capacity or intersection movement modifications will maintain or improve traffic conditions through Cooksville for both auto and transit users, and also provides improved accessibility for both pedestrians and cyclists with continuous dedicated, physically separated facilities; however this alternative has a notable alignment deflection through Cooksville.</li> <li>Alternative 3 is less preferred. The restriction of turning movements in Alternative 3 reduces auto travel operations in the area.</li> <li>Alternative 4 is less preferred dues to negative impacts to transit travel times and service reliability, and since continuous dedicated, physically separated facilities for both pedestrians and cyclists are not provided throughout Cooksville.</li> <li>Alternative 2 is least preferred. The reduction to one GPL in Alternative 2 creates significant auto travel delays through the corridor.</li> </ul>					

LEGEND	
Most Preferred	Least Preferred

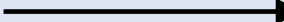
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Pinch Point Location SLM-1: Cooksville – Kirwin Avenue / Carmilla Road to Parkerhill Road									
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Geometrics / Infrastructure Considerations	Minor vertical and horizontal alignment adjustments	Minimizes complexities of vertical and horizontal road geometry							
			<ul style="list-style-type: none"> <li>Maintains existing linear horizontal and vertical alignment.</li> <li>Widening of existing platform is required.</li> </ul>	<ul style="list-style-type: none"> <li>Maintains existing linear horizontal and vertical alignment.</li> <li>Widening of existing platform is required.</li> </ul>	<ul style="list-style-type: none"> <li>Maintains existing linear horizontal and vertical alignment.</li> <li>Widening of existing platform required.</li> </ul>	<ul style="list-style-type: none"> <li>Maintains existing horizontal and vertical alignment, as well as existing platform width.</li> <li>Minor localized widening of existing platform is required.</li> </ul>	<ul style="list-style-type: none"> <li>Requires a significant horizontal jog to the south, which is geometrically not desirable for auto and BRT travel.</li> </ul>	<ul style="list-style-type: none"> <li>Requires complex vertical realignment of BRT below grade, which introduces significant 6% grades to reduce the overall impacts of the grade separation.</li> </ul>	
	Multi-modal cross-section	Accommodating transit lanes, GPL's and active transportation facilities in a balanced multimodal corridor							
			<ul style="list-style-type: none"> <li>Provides dedicated median BRT lanes while accommodating auto traffic, cyclists and pedestrians with two GPL's and full active transportation facilities.</li> <li>Dedicated BRT guideway could potentially be used for improved EMS travel in emergencies.</li> </ul>	<ul style="list-style-type: none"> <li>Provides dedicated median BRT lanes, however it does not accommodate auto traffic adequately due to reduction to one general purpose lane per direction.</li> <li>Dedicated BRT guideway could potentially be used for improved EMS travel in emergencies.</li> </ul>	<ul style="list-style-type: none"> <li>Provides dedicated median BRT lanes while accommodating auto traffic, cyclists and pedestrians with two GPL's and full active transportation facilities.</li> <li>Dedicated BRT guideway could potentially be used for improved EMS travel in emergencies.</li> </ul>	<ul style="list-style-type: none"> <li>Generally accommodates all modes of transportation with BRT in mixed-traffic curbside lanes.</li> <li>No improved EMS travel in emergencies since in mixed traffic.</li> </ul>	<ul style="list-style-type: none"> <li>Provides dedicated median BRT lanes while accommodating auto traffic, cyclists and pedestrians with two GPL's and full active transportation facilities.</li> <li>Dedicated BRT guideway could potentially be used for improved EMS travel in emergencies.</li> </ul>	<ul style="list-style-type: none"> <li>Provides dedicated median BRT lanes while accommodating auto traffic, cyclists and pedestrians with two GPL's and full active transportation facilities.</li> <li>Dedicated BRT guideway could potentially be used for improved EMS travel in emergencies, however no ability to enter/exit while in tunnel.</li> </ul>	
	Continuity of infrastructure	Accommodating existing multi-modal infrastructure							
			<ul style="list-style-type: none"> <li>Accommodates existing road infrastructure on Dundas Street as well as infrastructure on crossing roads through Cooksville.</li> </ul>	<ul style="list-style-type: none"> <li>Does not accommodate existing road platform through the reduction of GPL capacity.</li> </ul>	<ul style="list-style-type: none"> <li>Generally continues existing infrastructure, with minor reduction in movements through turn restrictions.</li> </ul>	<ul style="list-style-type: none"> <li>Provides continuity through the corridor by maintaining the existing road platform.</li> </ul>	<ul style="list-style-type: none"> <li>Negatively impacts corridor continuity with the impacts on the Hurontario LRT station planned at Dundas Street.</li> </ul>	<ul style="list-style-type: none"> <li>Maintains corridor continuity by providing a sub-grade BRT guideway.</li> </ul>	
	Capital cost and construction complexity	Minimizes capital costs (excluding property), technical challenges and complexity, and ability to stage construction with managed impacts to traffic and to the area community							
			<ul style="list-style-type: none"> <li>Moderate capital cost</li> <li>Order of magnitude ≈\$10 million to widen existing road platform at existing grade.</li> <li>Moderate technical complexity and engineering design. Widening about existing road centreline.</li> </ul>	<ul style="list-style-type: none"> <li>Moderate capital cost</li> <li>Order of magnitude ≈\$10 million to widen existing road platform at existing grade.</li> <li>Moderate technical complexity and engineering design. Widening about existing road centreline.</li> </ul>	<ul style="list-style-type: none"> <li>Moderate capital cost</li> <li>Order of magnitude ≈\$10 million to widen existing road platform at existing grade.</li> <li>Moderate technical complexity and engineering design. Widening about existing road centreline.</li> </ul>	<ul style="list-style-type: none"> <li>Lowest capital cost</li> <li>Order of magnitude ≈\$2 million, as required to complete active transportation works.</li> <li>Low technical complexity and engineering design, with minimal civil construction requirements and lowest access impacts.</li> </ul>	<ul style="list-style-type: none"> <li>High capital cost</li> <li>Order of magnitude ≈\$20-30 million for redesign and potential reconstruction of the Hurontario LRT station and track at Dundas Street.</li> <li>High technical complexity and engineering design due to required horizontal realignment to south and impacts to Hurontario LRT station.</li> </ul>	<ul style="list-style-type: none"> <li>Highest capital cost.</li> <li>Order of magnitude ≈\$100 million to construct subgrade BRT guideway tunnel.</li> <li>Highest technical complexity and engineering design due to BRT guideway tunnel, utility relocations, and access impacts.</li> </ul>	
<b>Summary</b>									
<b>Rationale</b>			<ul style="list-style-type: none"> <li>Alternative 1 is most preferred. A full multi-modal transportation platform is provided through the corridor, with a continuation of general-purpose lanes, transit lanes, and active transportation facilities on both sides of Dundas Street. This alternative requires minor geometric adjustments, with order of magnitude capital costs similar to Alternatives 2 and 3.</li> <li>Alternative 3 is moderately preferred. A full road platform for BRT and autos are provided along with active transportation facilities. However, the restriction of turning movements at Hurontario Street impacts the auto continuity through the corridor.</li> <li>Alternative 4 is less preferred. The existing road platform is generally continued through the corridor, with negligible geometric work, and lowest capital costs, however a dedicated BRT corridor is not continued through Cooksville.</li> <li>Alternative 5 is least preferred. A full road platform is provided along with active transportation facilities. However, the plan impacts the Hurontario LRT design and has high capital costs.</li> <li>Alternative 2 is also less preferred. Although a full median BRT is provided, the reduction to one GPL in both directions negatively impacts the continuity through this corridor.</li> </ul>						

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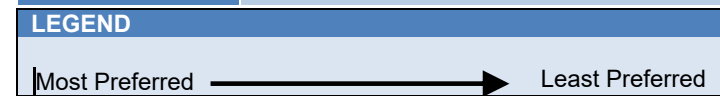
Most Preferred  Least Preferred

- Alternative 6 is also least preferred, due to engineering complexities and the significant capital costs.

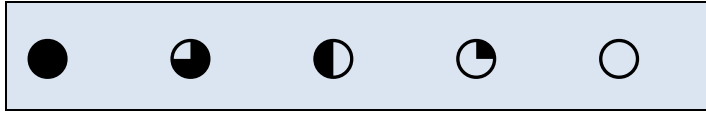


Pinch Point Location SLM-1: Cooksville – Kirwin Avenue / Carmilla Road to Parkerhill Road									
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Property Considerations	Land acquisition and building displacement	Minimizes land acquisition / building displacement requirements							
	Approved development applications	Accommodates site plans of approved developments	<ul style="list-style-type: none"> <li>Requires the taking of approximately four heritage properties, and approximately 11 other properties along Dundas Street in Cooksville.</li> </ul>	<ul style="list-style-type: none"> <li>Requires the taking of approximately one heritage property and approximately eight other properties along Dundas Street in Cooksville.</li> </ul>	<ul style="list-style-type: none"> <li>Requires the taking of approximately four heritage properties and approximately 11 other properties along Dundas Street in Cooksville.</li> </ul>	<ul style="list-style-type: none"> <li>Requires the taking of approximately one heritage property and approximately four other properties along Dundas Street in Cooksville.</li> </ul>	<ul style="list-style-type: none"> <li>Requires the taking of approximately one heritage property and approximately nine other properties along Dundas Street in Cooksville.</li> </ul>	<ul style="list-style-type: none"> <li>Requires ≈4 heritage properties, and ≈11 other properties in Cooksville. Additional ROW and property impacts / displacements may be required for utility relocations and underground station requirements (e.g. access).</li> </ul>	
			<ul style="list-style-type: none"> <li>Minor impacts to the approved townhome development at Confederation Parkway (SE quadrant).</li> <li>Other impacts, but not scored since not 'approved' plans:                             <ul style="list-style-type: none"> <li>Potential minor property area impact associated with proposed Rezoning (85-95 Dundas West), and minimal to no impact to Rezoning (86-90 Dundas East).</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Minimal/no impacts to the approved townhome development at Confederation Parkway (SE quadrant).</li> <li>Other impacts, but not scored since not 'approved' plans:                             <ul style="list-style-type: none"> <li>Potential minor property area impact associated with proposed Rezoning (85-95 Dundas West), and minimal to no impact to Rezoning (86-90 Dundas East).</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Minor impacts to the approved townhome development at Confederation Parkway (SE quadrant).</li> <li>Other impacts, but not scored since not 'approved' plans:                             <ul style="list-style-type: none"> <li>Potential minor property area impact associated with proposed Rezoning (85-95 Dundas West), and minimal to no impact to Rezoning (86-90 Dundas East).</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>No impacts to the approved townhome development at Confederation Parkway (SE quadrant).</li> <li>Other impacts, but not scored since not 'approved' plans:                             <ul style="list-style-type: none"> <li>Potential minor property area impact associated with proposed Rezoning (85-95 Dundas West), and minimal to no impact to Rezoning (86-90 Dundas East).</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Significant impacts to many units in the approved townhome development at Confederation Parkway (SE quadrant).</li> <li>Other impacts, but not scored since not 'approved' plans:                             <ul style="list-style-type: none"> <li>Potential minor property area impact associated with proposed Rezoning (85-95 Dundas West), and minor impact to Rezoning (86-90 Dundas East).</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Significant impacts to some units in the approved townhome development at Confederation Parkway (SE quadrant).</li> <li>Other impacts, but not scored since not 'approved' plans:                             <ul style="list-style-type: none"> <li>Potential minor property area impact associated with proposed Rezoning (85-95 Dundas West), and impacts to Rezoning (86-90 Dundas East).</li> </ul> </li> </ul>	
	Municipal development planning and policy	Conforms with local development planning and policy							
			<ul style="list-style-type: none"> <li>Generally matches the planned Official Plan ROW developed as part of Dundas Connects TMP.</li> <li>Consistent with Mississauga Cycling Master Plan (Cycle Track / Separated Bike Lane).</li> </ul>	<ul style="list-style-type: none"> <li>Not consistent with the planned Official Plan ROW developed as part of Dundas Connects TMP.</li> <li>Inconsistent with Mississauga Cycling Master Plan (Cycle Track / Separated Bike Lane) but does provide continuous MUT's on both sides.</li> </ul>	<ul style="list-style-type: none"> <li>Generally matches the planned Official Plan ROW developed as part of Dundas Connects TMP.</li> <li>Consistent with Mississauga Cycling Master Plan (Cycle Track / Separated Bike Lane).</li> </ul>	<ul style="list-style-type: none"> <li>Not consistent with the planned Official Plan ROW developed as part of Dundas Connects TMP.</li> <li>Somewhat inconsistent with Mississauga Cycling Master Plan (Cycle Track / Separated Bike Lane), provides one cycle track and one MUT.</li> </ul>	<ul style="list-style-type: none"> <li>Somewhat matches the planned Official Plan ROW developed as part of Dundas Connects TMP.</li> <li>Consistent with Mississauga Cycling Master Plan (Cycle Track / Separated Bike Lane).</li> </ul>	<ul style="list-style-type: none"> <li>Not consistent with the planned Official Plan ROW developed as part of Dundas Connects TMP.</li> <li>Consistent with Mississauga Cycling Master Plan (Cycle Track / Separated Bike Lane).</li> </ul>	
	<b>Summary</b>								
	<b>Rationale</b>	<ul style="list-style-type: none"> <li>Alternative 4 is most preferred from a property considerations perspective since it has the least impacts at surrounding properties and planned approved development.</li> <li>Alternative 1 and 3 are moderately preferred since they are generally consistent with planning policy, however these two alternatives impact a number of existing properties and approved planned development.</li> <li>Alternative 2 is less preferred. The reduction to one GPL in either direction reduces the impacts from a widened road platform, however the alternative is not consistent with planning policy.</li> <li>Alternatives 5 and 6 are least preferred due to the notable impacts on a number of existing properties and approved development on Dundas Street.</li> </ul>							



**Metrolinx / City of Mississauga**

Dundas BRT TPAP, PD and PDBC – Pinch Point Analysis, Segment B Cooksville



Screening Criteria	Sub-Category	Criteria	Pinch Point Location SLM-1: Cooksville – Kirwin Avenue / Carmilla Road to Parkerhill Road					
			Alternative 1 Full Median BRT Widened About Centreline	Alternative 2 Full Median BRT With One GPL / Direction	Alternative 3 Full Median BRT With Left Turn Restriction	Alternative 4 Buses in Curbside Mixed Traffic GPL	Alternative 5 Full Median BRT Shifted South	Alternative 6 BRT Guideway Tunnel
Environmental Considerations	Visible natural features	Minimizes impacts to visible natural features (trees, vegetation, watercourses)						
	Known cultural / built heritage resources	Minimizes impacts to known cultural / built heritage resources						
	Land uses	Supports growth intention of the City's Official Plan, policies and guidelines Minimizes impacts to existing and future land uses						
Community Character	Maintains or improves local community character							

Pinch Point Location SLM-1: Cooksville – Kirwin Avenue / Carmilla Road to Parkerhill Road								
Screening Criteria	Sub-Category	Criteria	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
			Full Median BRT Widened About Centreline	Full Median BRT With One GPL / Direction	Full Median BRT With Left Turn Restriction	Buses in Curbside Mixed Traffic GPL	Full Median BRT Shifted South	BRT Guideway Tunnel
	Summary							
	Rationale	<ul style="list-style-type: none"> <li>Alternative 2 is a most preferred solution, since it has only limited/minor impacts to the natural and cultural heritage through the corridor, is consistent with the City OP's designation for the Dundas corridor, and will improve the overall community character.</li> <li>Alternative 4 is a moderately preferred solution, despite not being consistent with the City OP's designation for the Dundas corridor. Although this alternative does not improve the overall community character, it has the least impacts to the natural and cultural heritage through the corridor.</li> <li>Alternative 5 is also moderately preferred. The alternative improves the community character and has the lowest cultural heritage impacts, however had some minor natural environmental impacts through the corridor. The alternative is also consistent with the City OP's designation for the Dundas corridor.</li> <li>Alternatives 1, 3 and 6 are least preferred. This is due to some minor natural and notable cultural heritage environmental impacts, and since these alternatives increase the potential impacts to existing and future land uses in Cooksville.</li> </ul>						

**LEGEND**

Most Preferred Least Preferred

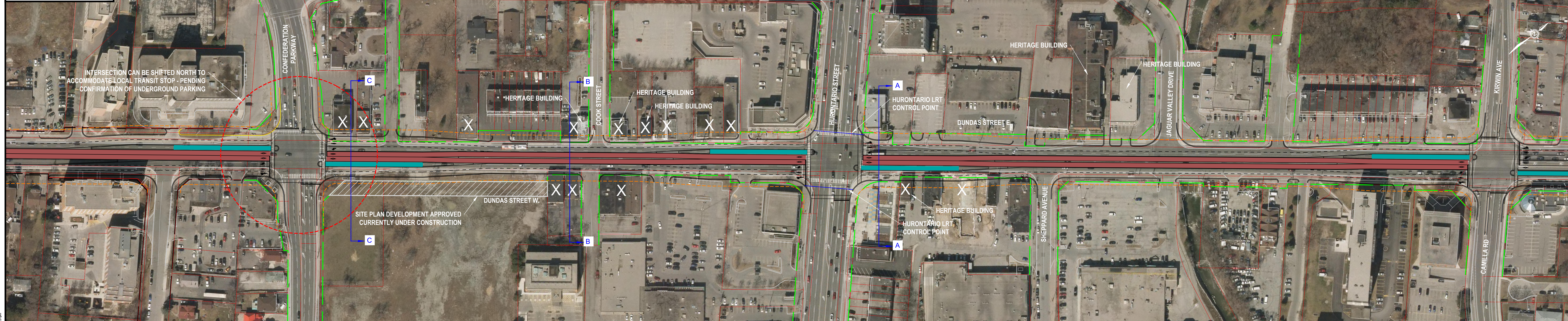
Summary Table - SLM-1: Cooksville – Kirwin Avenue / Carmilla Road to Parkerhill Road

Screening Criteria	Alternative 1 Full Median BRT Widened About Centreline	Alternative 2 Full Median BRT With One GPL / Direction	Alternative 3 Full Median BRT With Left Turn Restriction	Alternative 4 Buses in Curbside Mixed Traffic GPL	Alternative 5 Full Median BRT Shifted South	Alternative 6 BRT Guideway Tunnel
Mobility and Traffic Considerations	●	○	◐	◑	◒	●
Geometric/Infrastructure Considerations	●	◐	◑	◒	◒	◑
Property Considerations	◑	◐	◑	●	◑	○
Environmental Considerations	◐	●	◐	◑	◑	◑
SUMMARY	●	◑	◑	◑	◒	○

**RATIONALE**

- Alternative 1 is the most preferred solution. Despite some minor natural and notable cultural heritage environmental impacts and potential impacts to existing and future land uses in Cooksville, Alternative 1 improves BRT travel times through the Cooksville corridor and ensures BRT vehicles consistently remain on schedule, with predictable travel times and higher service reliability (this is a key consideration given that the project undertaking/purpose is to improve transit service and infrastructure through the Cooksville area). Alternative 1 also maintains auto travel times through the Cooksville corridor and maintains satisfactory LOS at the intersections with no appreciable increase in queue lengths. In addition, Alternative 1 is preferred from a geometrics perspective, by providing a complete multi-modal corridor for all users, with minimal horizontal/vertical alignment adjustments, and with modest capital cost requirements. The alternative also maintains continuity through the corridor with existing and planned infrastructure and does not impact the planned HuLRT station for Dundas Street.
- Alternative 3 is moderately preferred since it provides a full road platform for BRT and autos along with active transportation facilities, and is also generally consistent with planning policy. However, the restriction of left turn movements at Hurontario Street has resulting impacts on the movements at Confederation Parkway. Specifically, the required signal timing at Confederation Parkway creates travel delays for WB thru traffic, including increased queue lengths.
- Alternative 4 is a moderately preferred solution since it has limited property and environmental impacts, despite not being consistent with the City OP’s designation for the Dundas Street corridor. However, the alternative does not provide for enhanced transit service via a dedicated BRT corridor in the Cooksville area (which is a key goal and objective of the project) nor does it contribute to an enhanced transit-oriented community.
- Alternative 5 is less preferred due to geometrics and property considerations. The alternative is somewhat geometrically complex, with adjustments to the existing alignments of Dundas Street. The alternative has notable property impacts to existing lands and the planned townhome development on the southeast quadrant at Confederation Parkway. Alternative 5 also negatively impacts the Hurontario LRT, which would require the redesign and potential reconstruction of the Dundas Street stop location (and additional capital construction costs).
- Alternative 2 is not a preferred solution due to its critical failures from a traffic perspective. The reduction to one GPL in either direction has significant impacts on auto operations through Cooksville, doubling travel times, creating significant queue lengths, and poor LOS at all intersections in the corridor.
- Alternative 6 is least preferred due to geometrics and property considerations. It is the most geometrically complex alternative, with significant adjustments to the existing alignments of Dundas Street and the highest estimated capital costs far greater than other alternatives. The alternative has notable property impacts to existing lands and the planned townhome development on the southeast quadrant at Confederation Parkway. Alternative 6 also has some minor natural and notable cultural heritage environmental impacts.

# **Appendix A – Alternatives Concept Plans**



INTERSECTION CAN BE SHIFTED NORTH TO ACCOMMODATE LOCAL TRANSIT STOP - PENDING CONFIRMATION OF UNDERGROUND PARKING

SITE PLAN DEVELOPMENT APPROVED CURRENTLY UNDER CONSTRUCTION

**LEGEND**

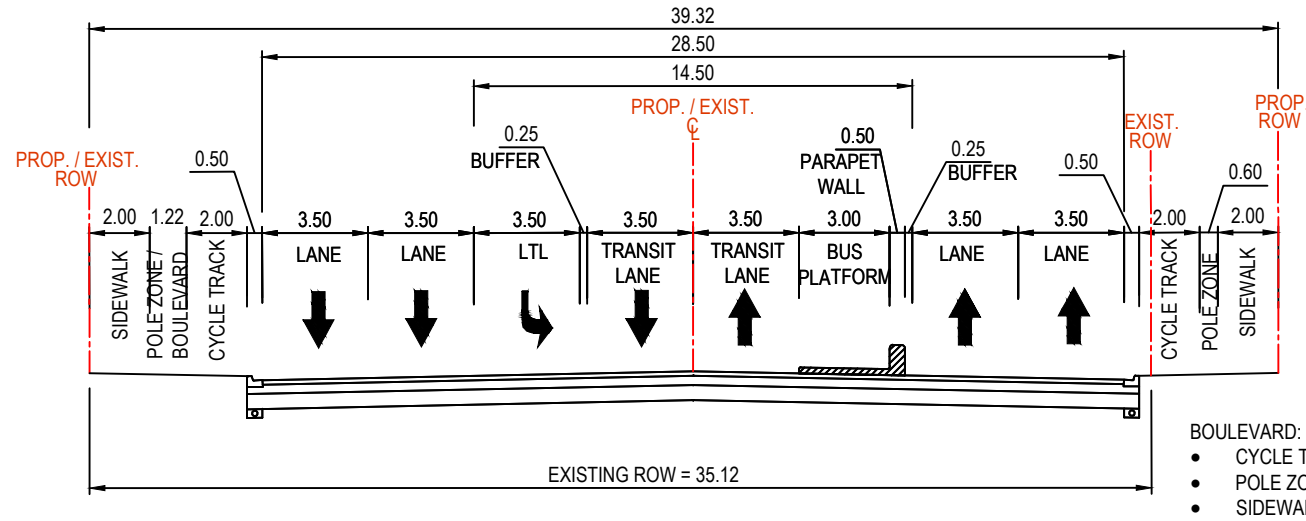
- PROPOSED BRT LANE
- PROPOSED BRT STATION
- EXISTING ROW
- CONCEPT CORRIDOR REQUIREMENT

DUNDAS BRT SEGMENT B ALTERNATIVE PINCH POINT DESIGN

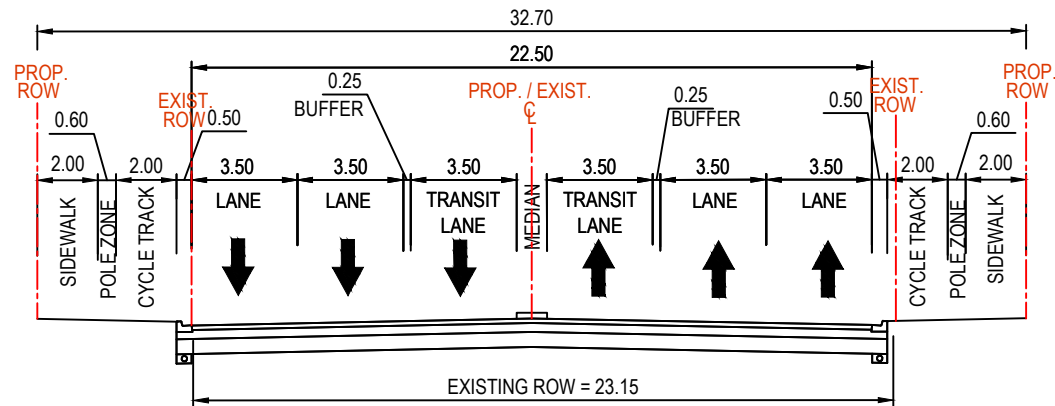
COOKVILLE CORRIDOR ALTERNATIVE 1: FULL MEDIAN BRT WIDENED ABOUT CENTRELINE

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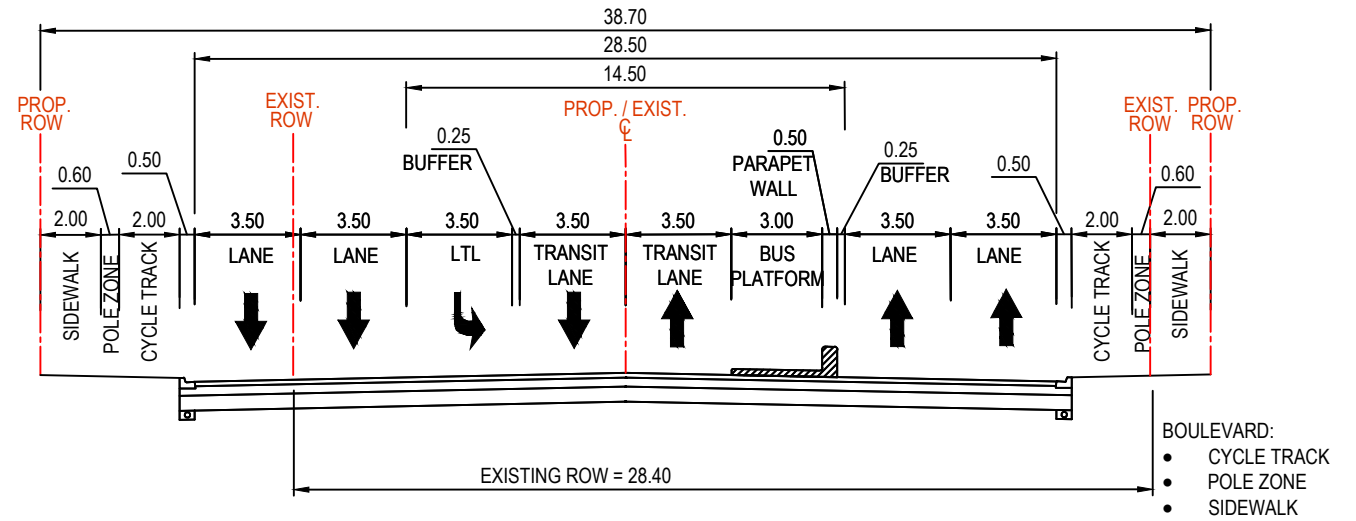
TYPICAL SECTION A-A  
DUNDAS STREET AT HURONTARIO STREET



TYPICAL SECTION B-B  
DUNDAS STREET AT HERITAGE BUILDING



TYPICAL SECTION C-C  
DUNDAS STREET AT CONFEDERATION PARKWAY



DUNDAS BRT - SEGMENT B  
ALTERNATIVE PINCH POINT DESIGN  
TYPICAL SECTIONS

COOKSVILLE CORRIDOR  
ALTERNATIVE 1: FULL MEDIAN BRT  
WIDENED ABOUT CENTRELINE

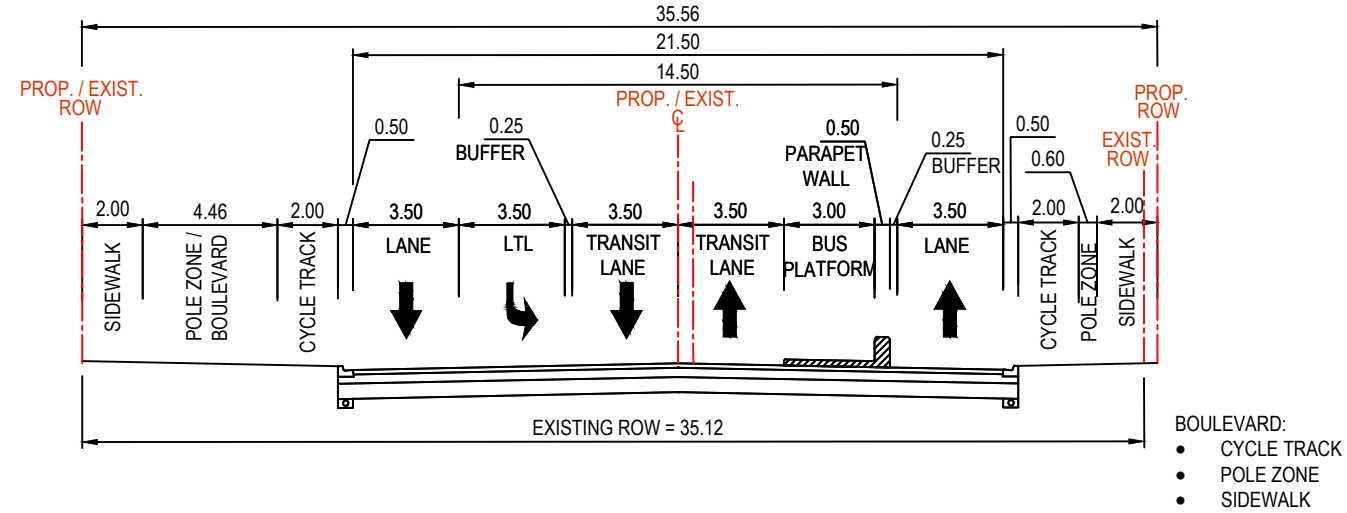
N.T.S.

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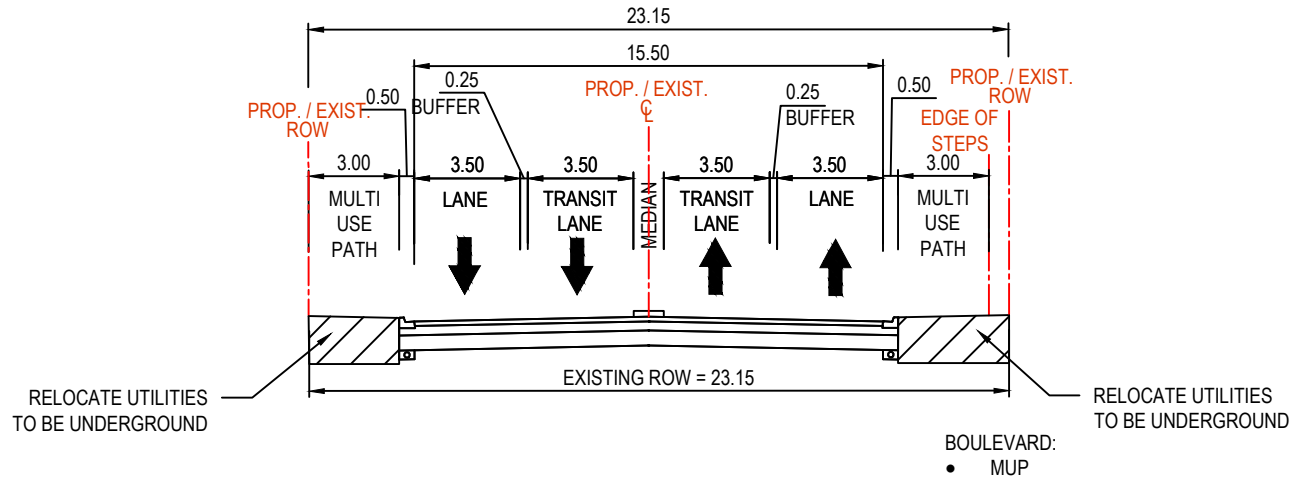




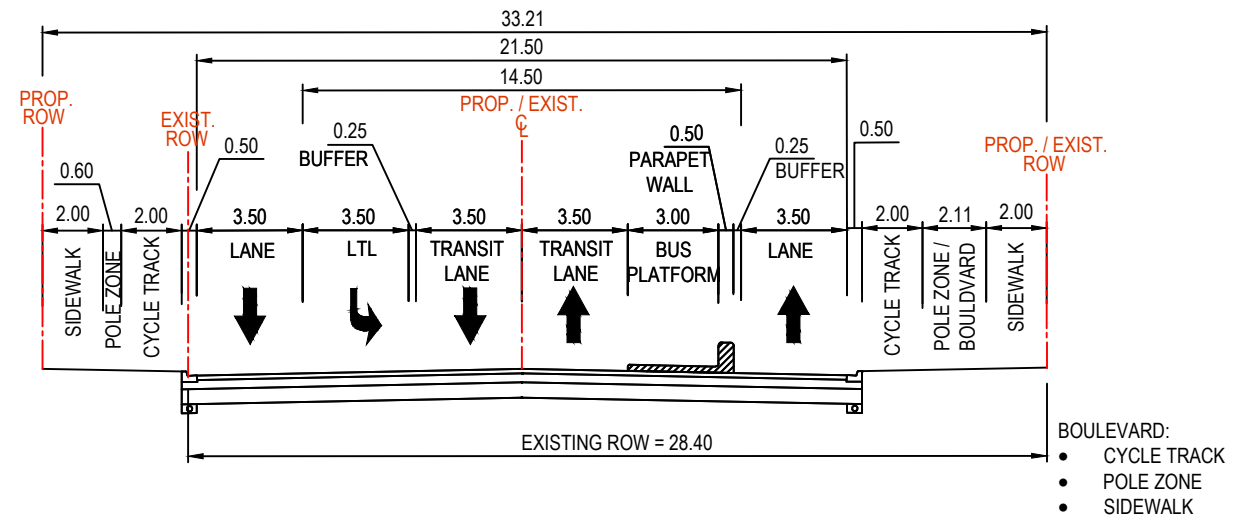
TYPICAL SECTION A-A  
DUNDAS STREET AT HURONTARIO STREET



TYPICAL SECTION B-B  
DUNDAS STREET AT HERITAGE BUILDING



TYPICAL SECTION C-C  
DUNDAS STREET AT CONFEDERATION PARKWAY

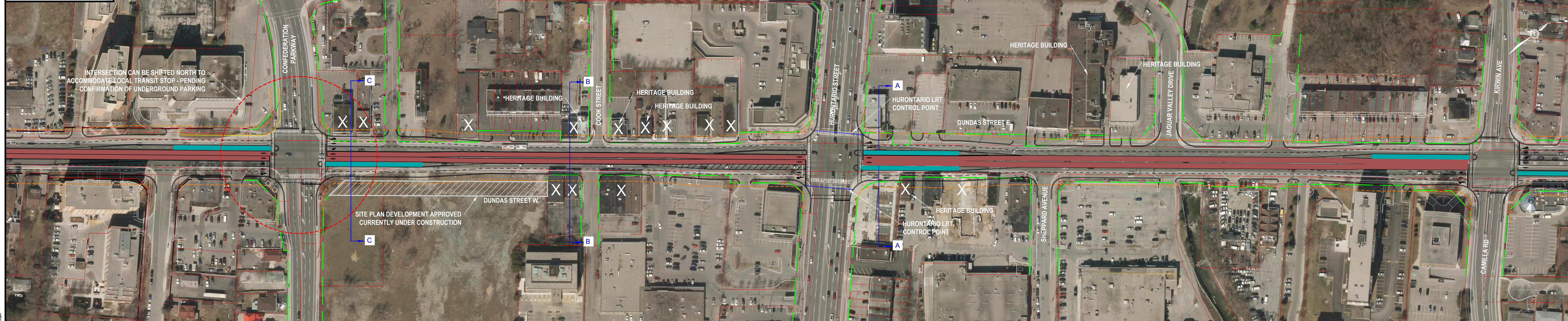


DUNDAS BRT - SEGMENT B  
ALTERNATIVE PINCH POINT DESIGN  
TYPICAL SECTIONS

COOKSVILLE CORRIDOR  
ALTERNATIVE 2:  
ONE GPL PER DIRECTION  
WITH FULL MEDIAN BRT

N.T.S.

FILENAME: C:\Users\DAVID.RAHKKA\AECOM\Directory\Dundas Connects BRT Project Folder - General\40 Technical\409 Roads & PM\Pinch Point Design\Segment B\Cooksville\Cooksville Pinch Point Typical.dwg  
PLOTDATE: Jul 21, 2021 - 2:08pm



INTERSECTION CAN BE SHIFTED NORTH TO ACCOMMODATE LOCAL TRANSIT STOP - PENDING CONFIRMATION OF UNDERGROUND PARKING

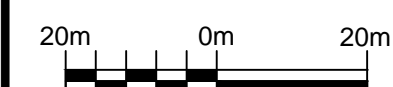
SITE PLAN DEVELOPMENT APPROVED CURRENTLY UNDER CONSTRUCTION

**LEGEND**

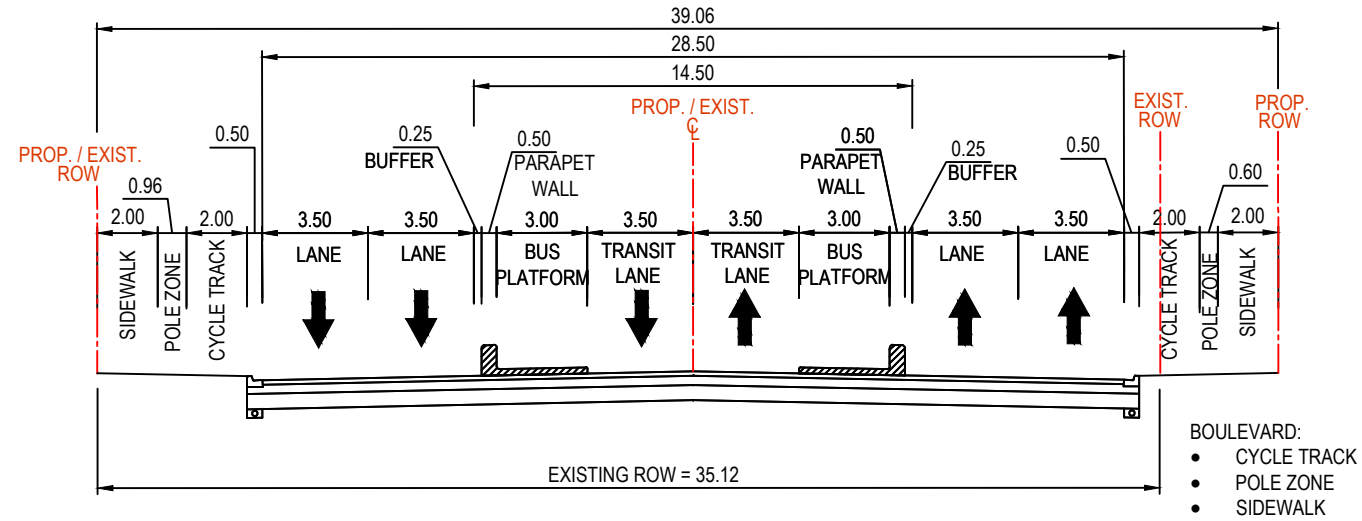
- PROPOSED BRT LANE
- PROPOSED BRT STATION
- EXISTING ROW
- CONCEPT CORRIDOR REQUIREMENT

DUNDAS BRT SEGMENT B ALTERNATIVE PINCH POINT DESIGN

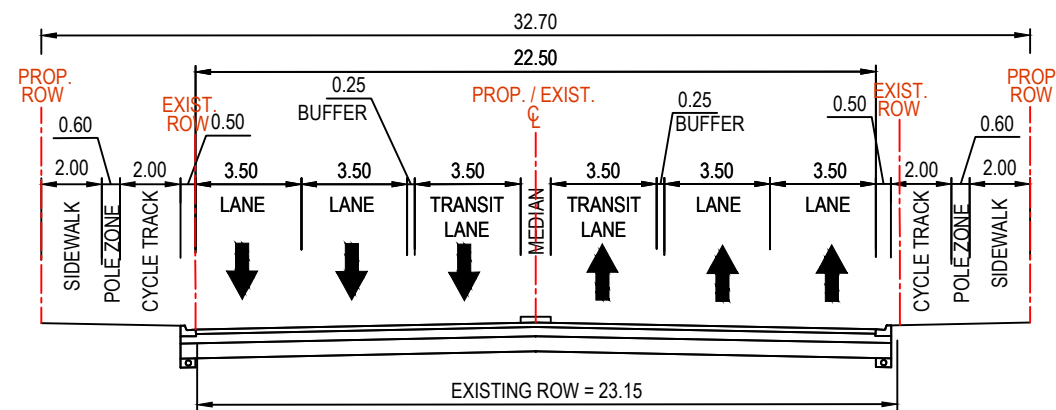
COOKVILLE CORRIDOR ALTERNATIVE 3: FULL MEDIAN BRT WIDENED ABOUT CENTRELINE WITH RESTRICTED LEFT TURNS FROM DUNDAS ST. TO HURONTARIO ST.



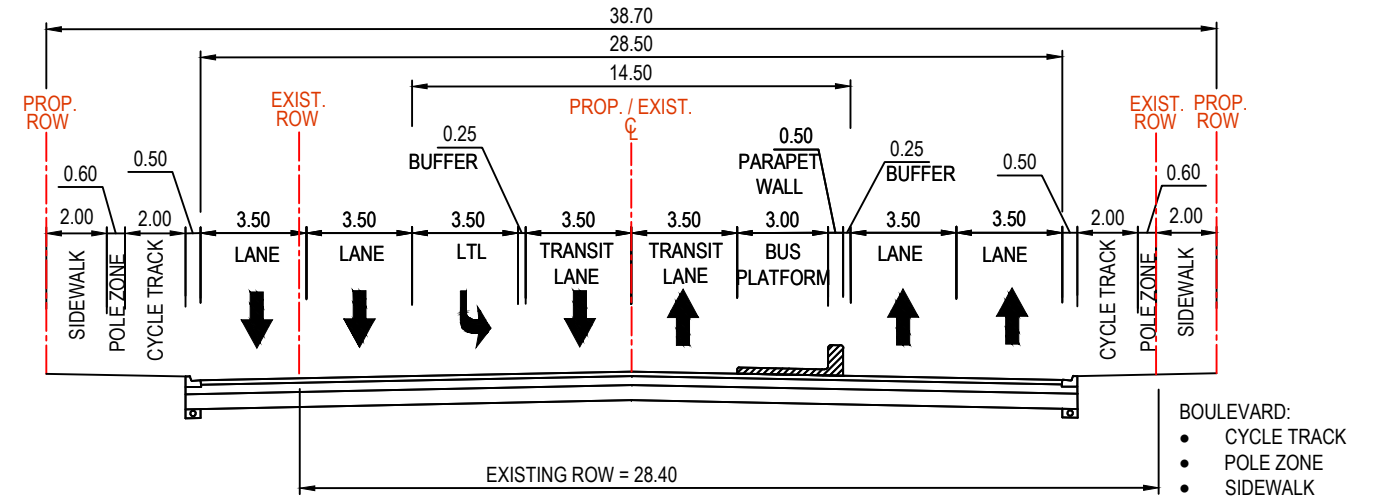
TYPICAL SECTION A-A  
DUNDAS STREET AT HURONTARIO STREET



TYPICAL SECTION B-B  
DUNDAS STREET AT HERITAGE BUILDING



TYPICAL SECTION C-C  
DUNDAS STREET AT CONFEDERATION PARKWAY



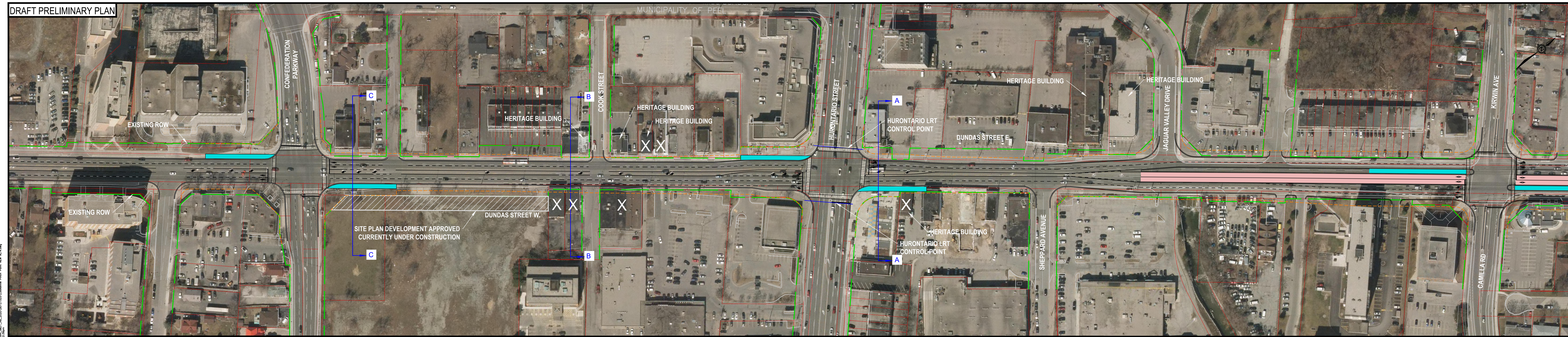
DUNDAS BRT - SEGMENT B  
ALTERNATIVE PINCH POINT DESIGN  
TYPICAL SECTIONS

COOKSVILLE CORRIDOR  
ALTERNATIVE 3: FULL MEDIAN BRT  
WIDENED ABOUT CENTRELINE  
WITH RESTRICTED LEFT TURNS  
FROM DUNDAS ST. TO HURONTARIO ST.

N.T.S.

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DRAFT PRELIMINARY PLAN



**LEGEND**

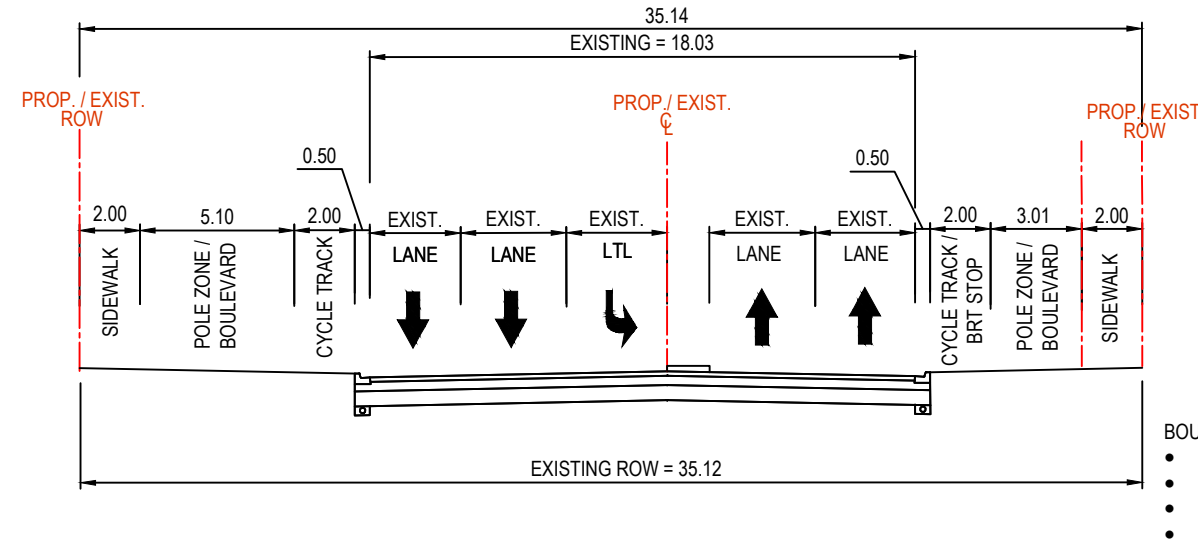
- PROPOSED BRT LANE
- PROPOSED BRT STATION
- EXISTING ROW
- CONCEPT CORRIDOR REQUIREMENT

DUNDAS BRT  
SEGMENT B  
ALTERNATIVE PINCH POINT DESIGN

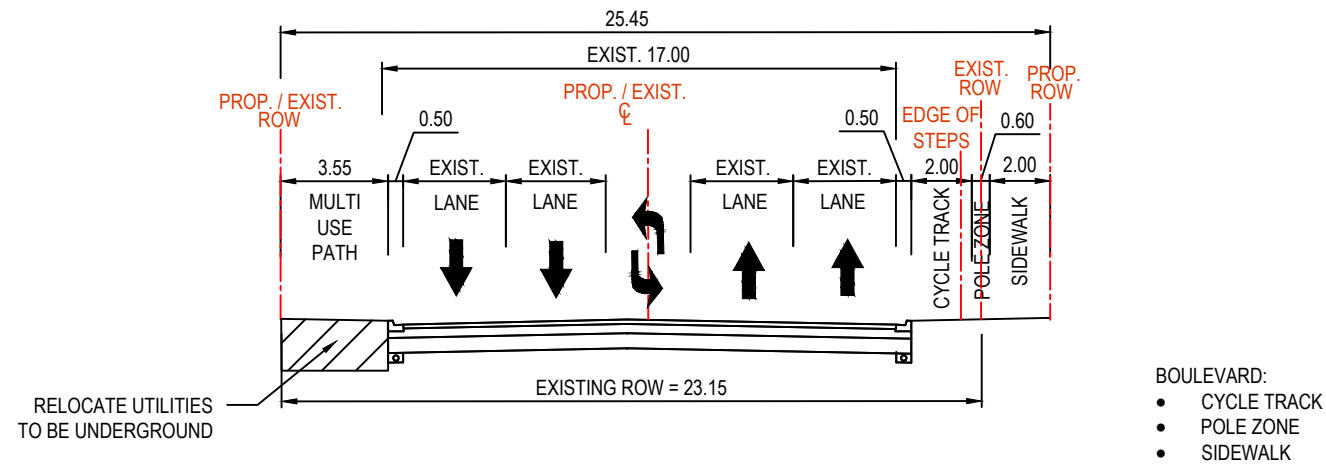
COOKVILLE CORRIDOR  
ALTERNATIVE 4: CURBSIDE MIXED  
USE GPL AND BRT LANES

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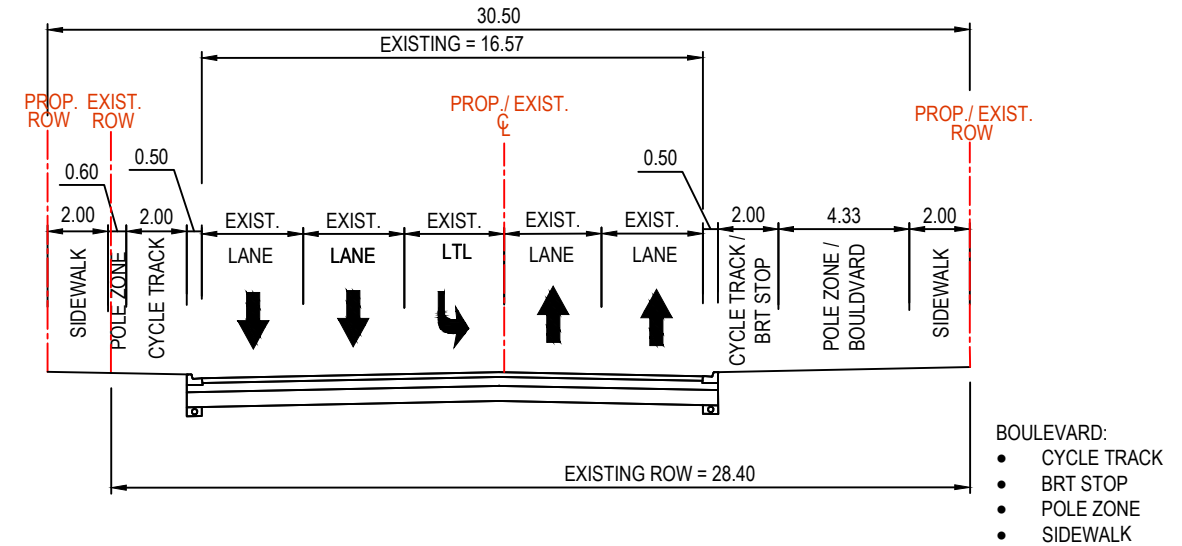
TYPICAL SECTION A-A  
DUNDAS STREET AT HURONTARIO STREET



TYPICAL SECTION B-B  
DUNDAS STREET AT HERITAGE BUILDING



TYPICAL SECTION C-C  
DUNDAS STREET AT CONFEDERATION PARKWAY

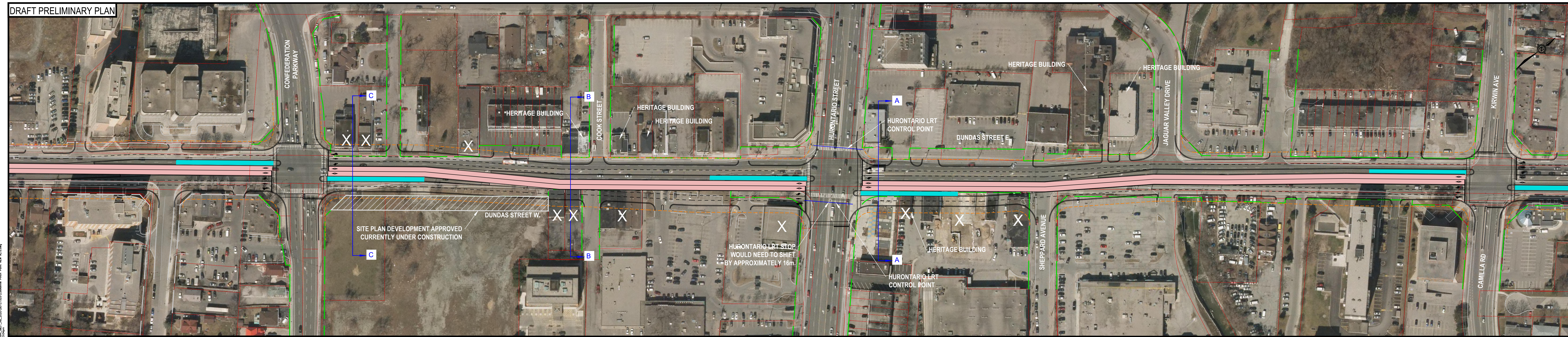


DUNDAS BRT - SEGMENT B  
ALTERNATIVE PINCH POINT DESIGN  
TYPICAL SECTIONS

COOKSVILLE CORRIDOR  
ALTERNATIVE 4: CURBSIDE MIXED  
USE GPL AND BRT LANES

N.T.S.

DRAFT PRELIMINARY PLAN



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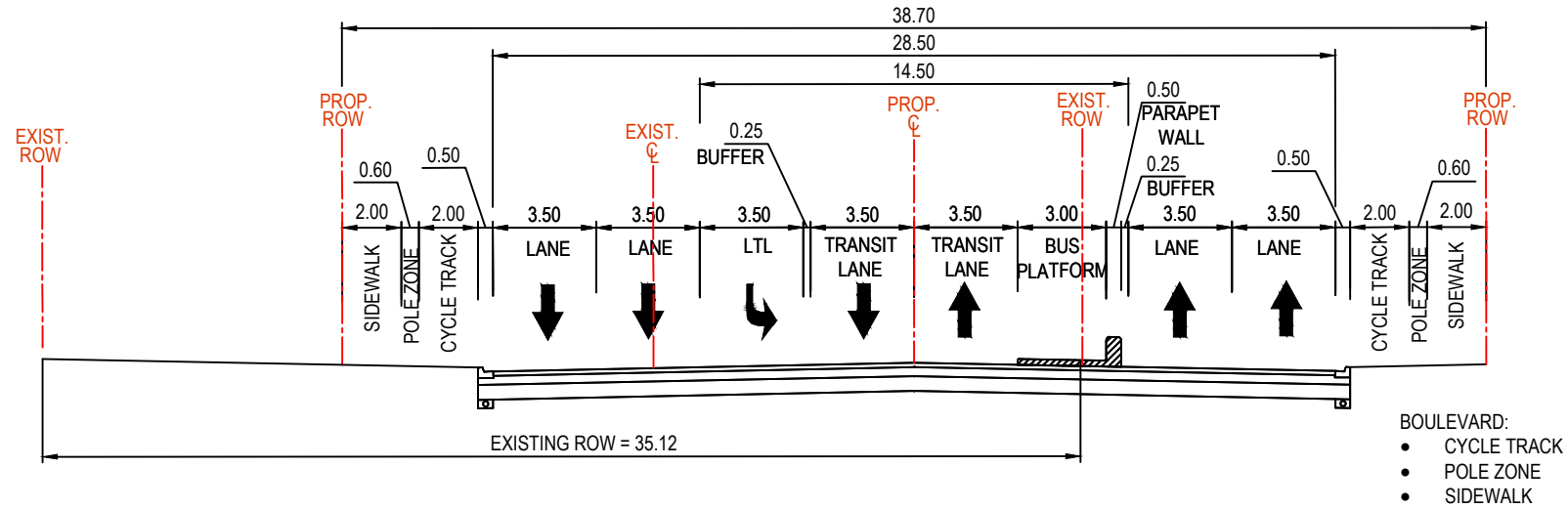
**LEGEND**

- PROPOSED BRT LANE —
- PROPOSED BRT STATION —
- EXISTING ROW —
- CONCEPT CORRIDOR REQUIREMENT —

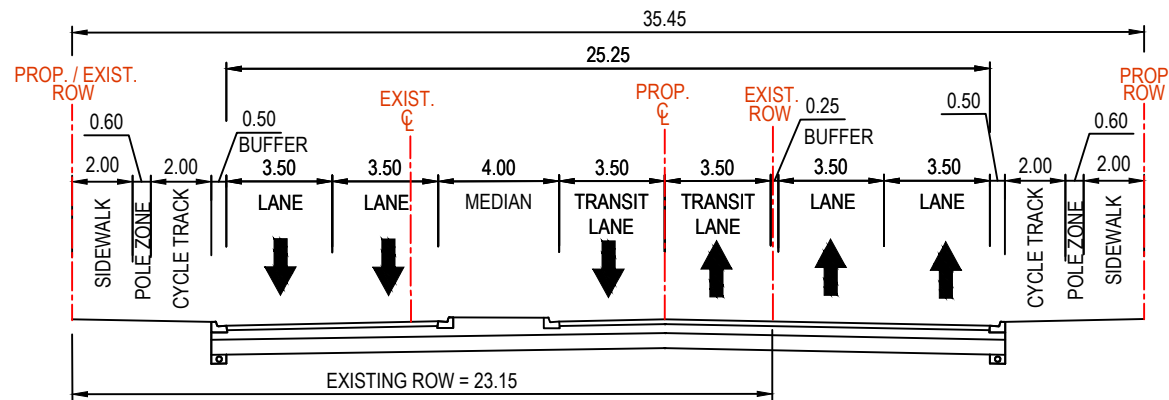
DUNDAS BRT  
SEGMENT B  
ALTERNATIVE PINCH POINT DESIGN

COOKVILLE CORRIDOR  
ALTERNATIVE 5: FULL MEDIAN BRT  
SHIFTED SOUTH

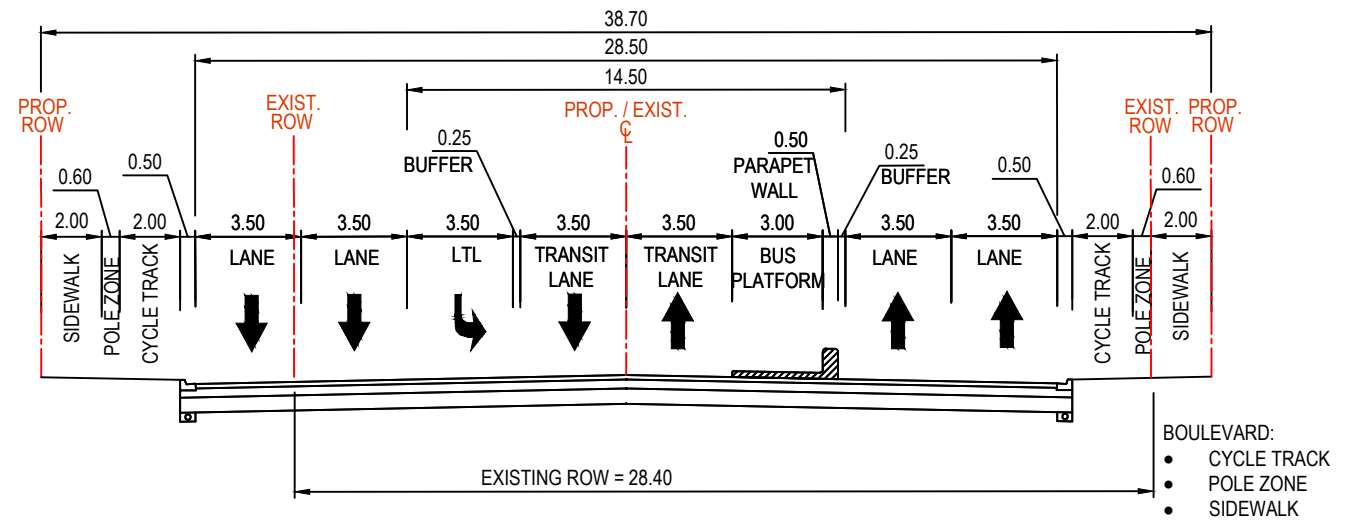
TYPICAL SECTION A-A  
DUNDAS STREET AT HURONTARIO STREET



TYPICAL SECTION B-B  
DUNDAS STREET AT HERITAGE BUILDING



TYPICAL SECTION C-C  
DUNDAS STREET AT CONFEDERATION PARKWAY

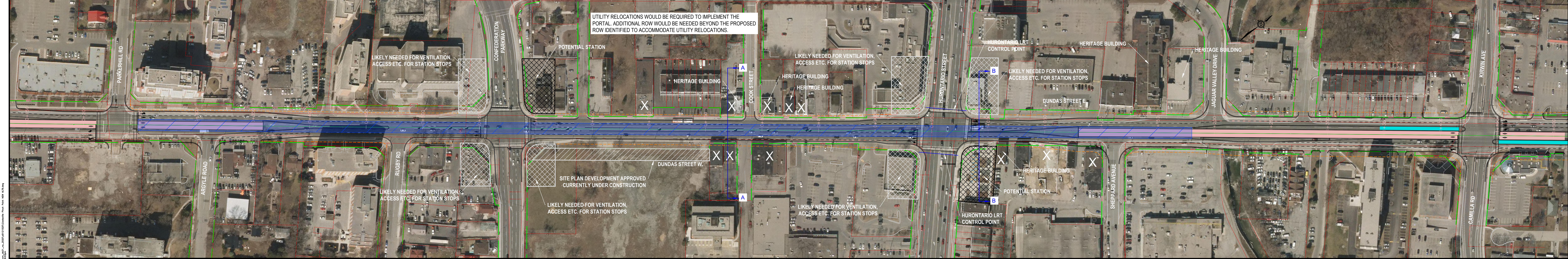


DUNDAS BRT - SEGMENT B  
ALTERNATIVE PINCH POINT DESIGN  
TYPICAL SECTIONS

COOKSVILLE CORRIDOR  
ALTERNATIVE 5: FULL MEDIAN BRT  
SHIFTED SOUTH

N.T.S.





UTILITY RELOCATIONS WOULD BE REQUIRED TO IMPLEMENT THE PORTAL. ADDITIONAL ROW WOULD BE NEEDED BEYOND THE PROPOSED ROW IDENTIFIED TO ACCOMMODATE UTILITY RELOCATIONS.

LIKELY NEEDED FOR VENTILATION, ACCESS ETC. FOR STATION STOPS

POTENTIAL STATION

HERITAGE BUILDING

LIKELY NEEDED FOR VENTILATION, ACCESS ETC. FOR STATION STOPS

HERITAGE BUILDING

HERITAGE BUILDING

HURONTARIO LRT CONTROL POINT

HERITAGE BUILDING

HERITAGE BUILDING

LIKELY NEEDED FOR VENTILATION, ACCESS ETC. FOR STATION STOPS

DUNDAS STREET E

LIKELY NEEDED FOR VENTILATION, ACCESS ETC. FOR STATION STOPS

SITE PLAN DEVELOPMENT APPROVED CURRENTLY UNDER CONSTRUCTION

DUNDAS STREET W.

LIKELY NEEDED FOR VENTILATION, ACCESS ETC. FOR STATION STOPS

POTENTIAL STATION

HERITAGE BUILDING

HURONTARIO LRT CONTROL POINT

**LEGEND**

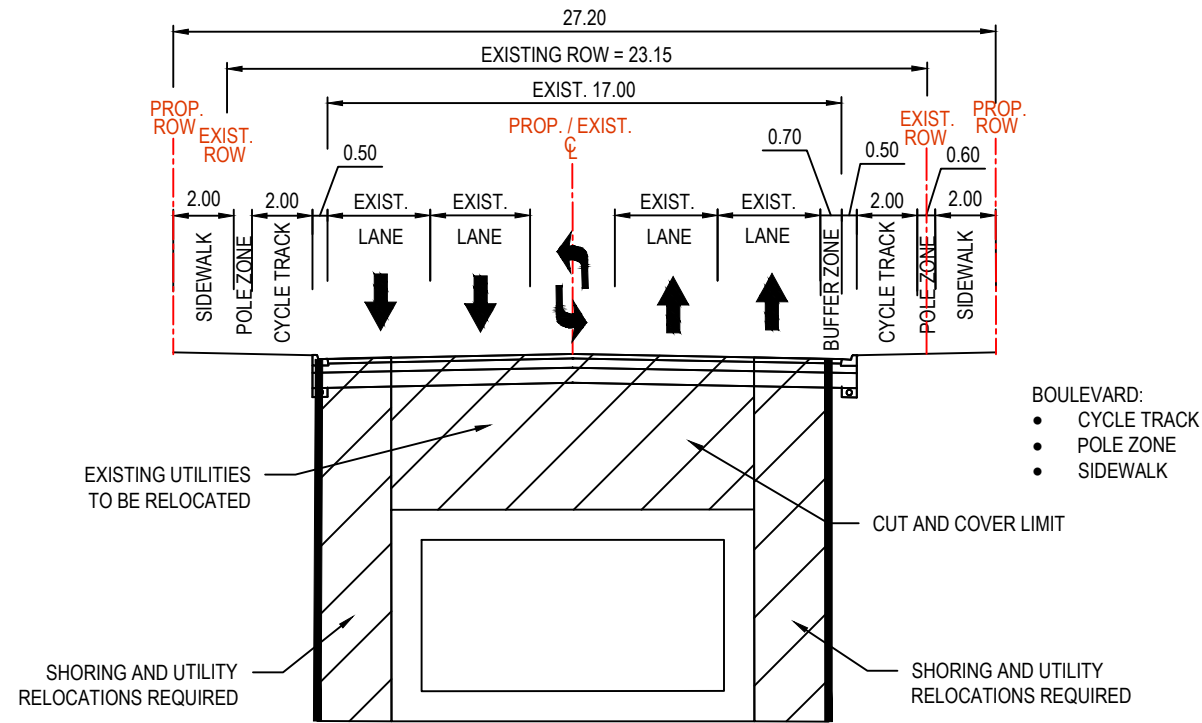
- PROPOSED BRT LANE
- PROPOSED BRT STATION
- EXISTING ROW
- CONCEPT CORRIDOR REQUIREMENT

DUNDAS BRT SEGMENT B  
ALTERNATIVE PINCH POINT DESIGN

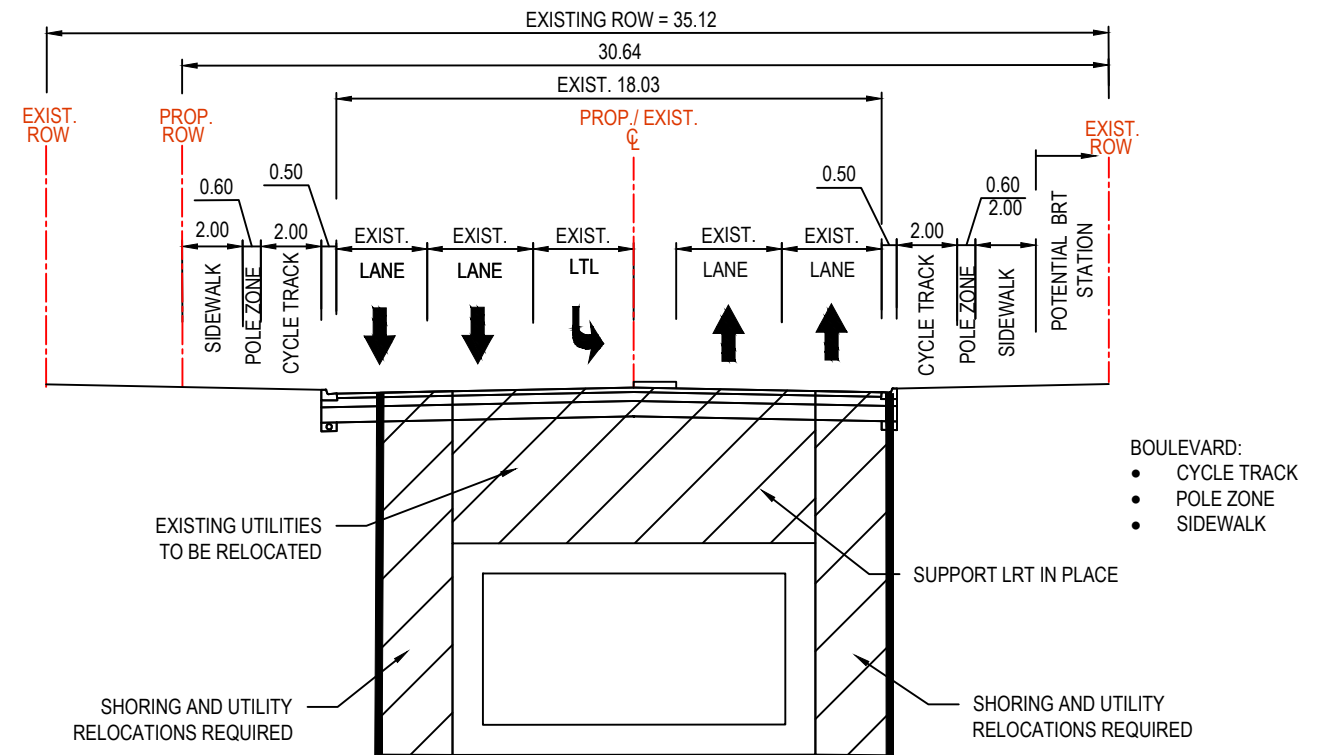
COOKVILLE GO STATION  
ALTERNATIVE 6: BRT TUNNEL AND EXISTING GPL LANES

MISSISSAUGA MUNICIPALITY OF PEEL  
 PROJECT: COOKVILLE GO STATION  
 DRAWING: ALTERNATIVE 6: BRT TUNNEL AND EXISTING GPL LANES  
 DATE: 2023-07-11  
 DRAWN BY: [Name]  
 CHECKED BY: [Name]  
 APPROVED BY: [Name]

TYPICAL SECTION A-A  
DUNDAS STREET AT HERITAGE BUILDING



TYPICAL SECTION B-B  
DUNDAS STREET AT HURONTARIO INTERSECTION



DUNDAS BRT - SEGMENT B  
ALTERNATIVE PINCH POINT DESIGN  
TYPICAL SECTIONS

COOKSVILLE CORRIDOR  
ALTERNATIVE 6: BRT TUNNEL  
AND EXISTING GPL LANES

N.T.S.