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As the City of Toronto continues to grow, it becomes increasingly important to make public transit an attractive travel choice for more people. Buses, streetcars and light rail vehicles consume far less roadway space per passenger trip than a car, and can help relieve congestion, improve air quality and reduce greenhouse gas emissions. The Toronto Transit Commission (TTC) has over 7,400 km of on-street streetcar and bus routes carrying over 1.67 million people per weekday. Transit on streets has the potential to move great numbers of people quickly to their destinations, making efficient use of very limited roadway space. This chapter outlines ways to support transit operations to make transit more convenient, faster and more reliable. The combination of various street elements outlined on following pages and signal strategies covered in Chapter 9 on Intersections aim to improve the quality of surface transit on our streets.

6.0 STREET DESIGN FOR TRANSIT

Toronto Complete Streets Guidelines

Street Design for Transit Transit Design Principles

TRANSIT DESIGN PRINCIPLES





For illustrative purposes.



1. Enhance transit users'

experience. Enhance the reliability, frequency and speed for transit by prioritizing space for transit and by implementing signal priority. Consider ways to improve convenience and comfort for users through amenities such as transit shelters, bus stop landing pads, streetcar platforms, street furniture, lighting, greening, public art and real-time travel and route information.

2. Make connections safe, convenient, and seamless. Facilitate ease of transfers among different transit routes, walking, cycling and other modes of transportation, such as sidewalks and crossings to transit stops, bicycle parking and Bike Share Toronto, and wayfinding information.

3. Visible, safe and convenient transit stops. Stops should be located at signalized intersections, or at controlled crossings (e.g. PXOs), as it allows for safe access to stops or when making route transfers. Locate stops near pedestrian generators.

4. Universally accessible transit stops and facilities. Design for all users, with universal accessibility, comfort and mobility of passengers in mind, such as accessible transit shelters that accomodate the pedestrian clearway, curb ramps for new LRT stops, tactile walking surface indicators on platforms and at stops delineating raised cycling facilities, and accessible pedestrian signals.

5. Curbside design to support transit efficiency. Where appropriate, queue-jump lanes provide opportunities for buses to move to the front of the queue, avoiding significant delays. At stops with adjacent on-street parking, transit platform bulb-outs can help people board or alight faster, and they make it easier for transit vehicles to pull back into traffic. Remove or relocate on-street parking away from a transit stop and supplement it with traffic signs to ensure the space is clear for transit vehicles all the time.

6. Traffic signal control strategies. Traffic signal progression or coordination aims to provide a wave of "green lights" on corridors with on-street transit. Transit signal priority is another method to enhance transit performance and keep transit on schedule. Time-based turn restrictions can help prevent significant delays to transit and other drivers on busy routes.

7. Transit streets are safe for walking and cycling. Create safe streets for people to walk and cycle and safe crossings – as they are most often the customers who use transit.

8. Transit streets are linear public spaces. Creating streets as places will enhance the attractiveness of transit and its ability to support the city's social, economic and environmental vitality. Repurpose underutilized space for parklets, plazas and cafés.

9. Design for growth. As Toronto continues to grow and develop, streets can be designed to retain current riders and attract new riders through the coordinated planning of transit expansion and new development.

Street Design for Transit Key Transit Street Elements

6.2

KEY TRANSIT STREET ELEMENTS

Transit lanes, transit stop and intersection treatments are the three types of transit facilities that should be considered for complete street improvements. They may be considered on their own, but should be combined, while considering their benefits and impacts on all road users in the street design process. (For transit design considerations at intersections, such as Queue Jump Lanes, see Chapter 9 on Intersections.)



Surface transit may be in dedicated lanes (as above), or as part of the shared roadway (as below).



DEDICATED OR EXCLUSIVE TRANSIT LANES

They are marked for transit only using pavement markings, signs, and sometimes physical design.

Dedicated transit lanes are typically used to move the highest volume of passengers and to support the highest frequency of transit vehicles. Even when physically separated, these lanes may accommodate emergency vehicles and maintenance vehicles, with some exceptions.

RESERVED LANES OR SHARED TRANSIT LANES

Reserved lanes allow any combination of transit vehicles, taxis, high-occupancy vehicles (HOVs) and bicycles. Reserved lanes can allow for greater transit frequency and reliability on routes with high ridership and congestion. Shared-use lanes, where transit moves together with mixed traffic, are useful alternatives in many places where right-of-way space is limited. Transit service can be improved on shareduse lanes through geometric design, signal timing, time of day restrictions, as well as parking and turn restrictions. In all cases, lane widths need to be sufficient to serve transit vehicles and passengers.

Street Design for Transit Key Transit Street Elements



TRANSIT STOPS

The location and design of transit stops has direct implications for the comfort and convenience of transit passengers and other users. The selection of stop locations is generally guided by the safety and comfort of transit users, and minimizing transit delay. Key considerations for locating stops include spacing between stops, and stop location relative to intersections and land uses, including intensifying areas. The spacing between stops should be between 300m and 400m in most locations to balance access to transit with travel time for passengers, though this may vary based on context. Stops should generally be at intersections. Stops should be clear of clutter and unobstructed for boarding and alighting.

Signalized intersections are ideal locations to allow for safe pedestrian crossings, and the likelihood of route-transfers. Mid-block bus stops are recommended only near significant pedestrian generators, and where intersections are far away.

KEY CONSIDERATIONS FOR TRANSIT STOP DESIGN

- **Safety:** visibility, lighting, geometry, reducing conflicts.
- Accessibility: tactile walking surface indications, sign poles, curb cuts; full compliance with City Accessibility Guidelines and the Accessibility for Ontarians with Disabilities Act (AODA).
- **Comfort:** protection from weather, coordinated street furniture for waiting passengers, facilitating transfers with transit information.
- **Placemaking:** transit stops are gateways to streets and

neighbourhoods; they should be legible and provide users with wayfinding information.

• Integration with transit vehicle design: the number, type and size of vehicles that will use the stop may affect the size of a stop and landing pads, where transit doors open.

TRANSIT PLATFORM BULB-OUTS

These are curb extensions that align the surface transit stop with the parking lane. This lets buses stop and board transit riders without having to leave and re-enter the travel lane. Transit platform bulb-outs help buses and streetcars move faster and more reliably by eliminating or reducing the amount of time lost with traffic interactions. They also ensure that the pedestrian clearway remains unobstructed by transit shelters and passengers waiting to board.

6.3

CONTEXT-SENSITIVE TRANSIT DESIGN

A street's land use and network context will inform the type of transit accommodation and priority, whether deciding on travel lanes, stop design or intersection treatments. In addition, location-specific information will help address issues such as transit user safety, comfort, visibility, boarding/disembarking, transfers among routes and modes, and coordination of transit with land developments.





GENERAL CONTEXT-SENSITIVE CONSIDERATIONS

- Official Plan rapid transit and surface transit priority routes (OP Maps 4 and 5)
- Existing and anticipated transit priority routes, ridership volumes and vehicle frequency
- Existing and anticipated transit ridership volumes on the route and nearby routes under consideration
- Location of current and proposed stops, including boarding and alighting volumes
- Other network priorities along the same route and location (e.g. cycling, goods movement)
- Existing and potential cycling and pedestrian volumes
- Transfers between transit routes and different modes (such as walking and cycling to take transit or passenger drop-off/pick-up)

- Total existing and planned street right-of-way widths (OP Map3)
- Direction of travel: one-way or twoway
- Number of through and turning vehicle lanes, and their usage throughout the day
- Speed and volume of motor vehicles, and traffic congestion management
- Collision data and safety issues
- Presence of on-street parking, driveways and other curbside uses
- Existing utility infrastructure
- Presence of trees and other greening functions
- New buildings and developments
- Demographics of existing and potential transit customers (e.g. school, college, university, seniors or tourists)

Street Design for Transit Context Sensitive Transit Design



• Access to destinations, especially special event venues, and transit rider-generating locations of all kinds Very high-frequency and very highvolume services warrant unique considerations. For example, some high-volume stops will require accommodating many waiting passengers as well as people boarding and disembarking through wider sidewalks, or longer platforms and bus bays to accommodate more than one bus at a time. Where several thousand passengers per hour per direction is expected, unique and more extensive transit priority measures may be required, such as corridor-wide turn prohibitions, extended stopping prohibitions, or exclusive transit lanes. The implementation of dedicated transit lanes requires significant investment and planning, and is determined through comprehensive feasibility studies.

MORE INFORMATION

- "Accessibility for Ontarians with Disabilities Act, 2005, S.O. 2005, c. <u>11</u>." e-Laws (Government of Ontario). Accessed October 24, 2016.
- City of Toronto. <u>Accessibility Design</u> <u>Guidelines</u>. 2004.
- City of Toronto. Criteria for Evaluating Request for Queue-Jump Lanes. Updates underway (in use internally).
- City of Toronto. Revised Transit Stop Guidelines. In development, anticipated 2017.
- Metrolinx. <u>Mobility Hub Guidelines</u>. 2011.
- Ministry of Transportation of Ontario. <u>Transit-Supportive Guidelines</u>. 2012.
- National Association of City Transportation Officials. <u>Transit Street</u> <u>Design Guide</u>. 2016.



Articulated buses are used on some of Toronto's busiest bus routes to accommodate high demand.



Yonge-Eglinton is one of Metrolinx's designated Mobility Hubs, where seamless mobility and placemaking are key goals.