Accessible Bus Stops

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About CNIB

The **Canadian National Institute for the Blind or CNIB Foundation** is a non-profit organization driven to change what it is to be blind today. CNIB delivers innovative programs and powerful advocacy that empower people impacted by blindness to live their dreams and tear down barriers to inclusion. CNIB's work as a blind foundation is powered by a network of volunteers, donors and partners from across Canada.

What is sight loss?

- Fact: Most people who identify as living with sight loss have some residual/useable sight
  - Less than 10% are completely blind
- “Legal blindness” in most jurisdictions means somewhere in the range of less than 10% of “normal vision”

Sight loss in Canada

- Canadian Population is 40.5 million and over 5.5 million have vision threatening eye conditions.
- The prevalence of vision loss is expected to increase by nearly 30% in the next decade.
- Chronic diseases along with an ageing population, increases the likelihood of vision loss.
- Over a quarter of the population is over 60 years and one in eight Canadians will have diabetes by 2025.

The four leading causes of sight loss in Canada (2017) are:

1. Cataracts: 3,541,000 people
2. Age-related macular degeneration: 1,574,000 people
3. Glaucoma: 294,000 people
4. Diabetic retinopathy: 749,800 people

Note:

Updated numbers from the recent Statistics Canada report will hopefully be available later this spring.

Sight loss in Nova Scotia

- Canadian Population is 40.5 million and over 5.5 million have vision threatening eye conditions.
- The prevalence of vision loss is expected to increase by nearly 30% in the next decade.
- Chronic diseases along with an ageing population, increases the likelihood of vision loss.
- Over a quarter of the population is over 60 years and one in eight Canadians will have diabetes by 2025.

Based on the Statistics Canada 2017 report on Disability, 49,900 Nova Scotians are living with serious sight loss.

Sight Loss and Transit Accessibility

- Public Transit is the preferred mode of transport for many people who are blind or low vision,

In 2022, CNIB received funding through the Government of Canada to try to understand the barriers facing Canadians living with sight loss when navigating island/floating bus stops.

Island Platform Bus Stops

How do the various design features of island platform transit stops affect the safety and security of transit passengers living with sight loss?

Focus of Study

- Specific to “island platform bus stops”
- Specific to impacts on people living with sight loss

Study Design and Method

- A review of academic literature and existing design guidance
- Established an advisory committee consisting of 8 Canadian municipalities and a representative from Vision Ireland; including HRM
- Developed a structured research methodology to solicit research participants perceptions of safety/comfort at island platform bus stops
- Recruited 26 participants from five Canadian cities living with sight loss who are regular users of public transit

- Mainly tested through coordinated multiple field testing across Canada
- Engagement was mainly through accessibility committees' meetings
- Parallel Translink Study

Results findings were compiled into a series of guidelines targeted at transportation design

Project Scope

1. Literature Review
2. Research Methodology
3. Field Testing
4. Testing Results
5. Recommendations and Guidelines

Literature Review

What empirical studies have been completed on island platform transit stops?

London, UK (2018)

- Published Project Report PPR853: Accompanied visits of people with disabilities to Bus Stop Bypasses
- Published Project Report PPR854: Analysis of Pedestrian and Cyclist Behaviour via Video
- Published Project Report PPR855: Surveys of Pedestrians and Cyclists

Nanjing, China (2019, 2022)

- Analysis of the Characteristics and Number of Bicycle–Passenger Conflicts at Bus Stops for Improving Safety (Published in MDPI Sustainability journal, 2019)
- Observational study on multi-type conflicts between passengers and cyclists at the bus stop – A case study in Nanjing (Published in Travel Behaviour and Society journal, 2022)

Literature Review – Key Questions

1. What types of challenges are being experienced by people with vision loss?
2. What design guidance is currently available?
3. What consistencies, discrepancies, and gaps exist in the current design guidance?
4. What empirical studies have been completed on island platform transit stops?
5. What is currently known about the behaviour of cyclists and pedestrians at island platform transit stops, and the factors that influence this?

Island Platform Bus Stop

The "island platform transit stop" design provides a separated cycling facility that routes cyclists between a bus stop and the pedestrian sidewalk
- inclusion in the Transportation Association of Canada (TAC) Geometric Design Guide
- implementation has begun at numerous municipalities nationwide

The Island Bus Stop

- For cyclists, this design offers enhanced safety by removing interactions with transit vehicles.

Two Island Platform Bus Stop designs are pictured on the right.

Island Platform Bus Stop Evolution

As a result of pedestrian complaints and a Human Rights Tribunal decision, in British Columbia, Canada, some cities have implemented measures such as flashing audible lights at cross walks, tactile strips at the start and end of cross walks, and yield to pedestrian signage.

- Not all stops have these accessibility features, nor do they have signage in multiple formats
- Audits have not been conducted to understand other accessibility barriers

There is a need for consistent and uniform standards that can be incorporated into the planning and design processes of such infrastructure!

What types of challenges are being experienced by people with vision loss?

Based on BC Human Rights Tribunal and academic research from London, UK:

- Detecting cyclists approaching (ambient noise, quiet bikes)
- Confirming whether an approaching cyclist has stopped or intends to yield
- Orienting themselves to the stop layout
- Navigating to and from the raised platform (especially when working with a guide dog)

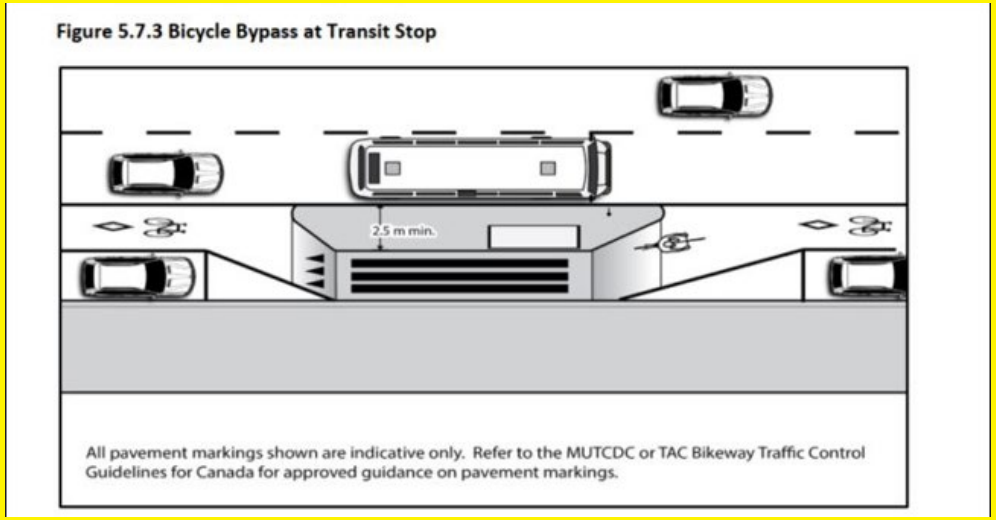
Challenges by People With Vision loss?

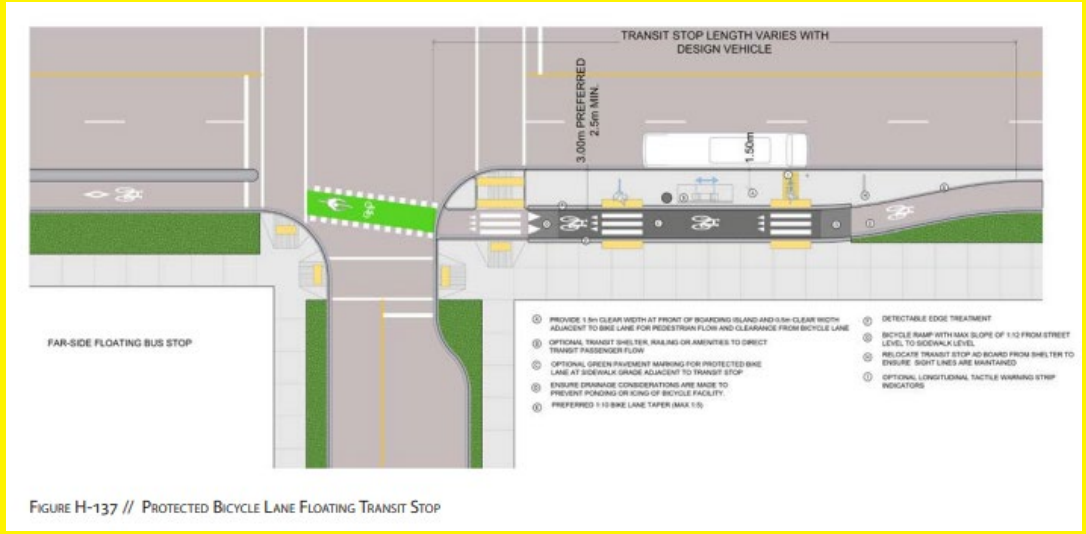
People who are blind or partially sighted were the **most impacted group** by the design and had difficulties with understanding the layout, not being able to instruct their guide dog, and having trouble detecting oncoming cyclists.

“it is clear from comments that many disabled people have a poor perception of cyclist behaviour which would limit their feelings of safety (and by extension may reduce their propensity to travel). Separate work might be undertaken to improve this”. – London, UK study

What design guidance is currently available?

- Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (2017), Section 5.7.4 Bikeway Facilities at Transit Stops
- Ontario Traffic Manual (OTM) Book 18 (2021): Cycling Facilities, Section 7.1.1 Island Boarding Transit Stop
- British Columbia Active Transportation Design Guide (2019): Section H.1 Multi-Modal Integration
- Alameda and Contra Costa (AC) Transit Multimodal Corridor Guidelines (2018)





What consistencies, discrepancies, and gaps exist in the current design guidance?

- Naming convention for “island platform bus stop”: e.g., Bicycle bypass at transit stop (TAC), Island boarding transit stop (OTM), Floating transit stop (BC),
- The number and placement of pedestrian crossings, and the design of signage instructing cyclists to yield to pedestrians at these crossings
- Guidance on measures to reduce bicycle travel speeds at the yield area
- Design measures to improve orientation and wayfinding for people with sight loss

What is currently known about the behaviour of cyclists and pedestrians at island platform transit stops, and the factors that influence this?

- When interactions between pedestrians and cyclists occur, cyclists yield about 50% of the time
- When conflicts occur, “pedestrian inattentiveness” is a common cited factor
- Number of conflicts increases with bicycle volume, bus passenger volume, and frequency of bus service
- Sightline obstructions have significant influence on conflicts, and clear, channelized crossings can improve conflicts

Key Conclusions

- Existing design guidance is inconsistent on key details for people with sight loss
- Established behaviour of pedestrians using eye contact and negotiating right-of-way with cyclists
- Rigid, compliance-based approach to pedestrian-bicycle crossings will likely not be effective
- Functionality is improved with marked crosswalks, tactile wayfinding, channelization of crossings, and removal of sightline obstructions
- Stops with high volumes of cyclists, passengers, and/or buses stopping should be treated with special concern

CNIB FOUNDATION

Thank You!

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Site Selection

Screening criteria:

1. Sites that fall within the municipalities represented on the Advisory Committee
2. Sites identified as problematic by members of the CNIB
3. Sites in or near communities with both a WSP and CNIB office
4. Bus stops that receive moderate or high levels of bike, foot, and bus traffic
5. Ensuring the selected sites cover a broad geographic area representing a range of climates and jurisdictions
6. Sites cover a wide range of design elements and levels of protection at the crossing.

London, Ontario, Canada

Winnipeg, Manitoba, Canada

Montreal, Quebec, Canada

Vancouver, British Columbia, Canada

Calgary, Alberta, Canada