

executive summary

The goal of this report is to provide recommendations that may improve three bus stop locations in the City of Greater Sudbury in an attempt to increase perceptions of safety at bus stops and encourage transit ridership. To achieve these objectives, this study addresses the following three main research questions:

- 1** *What environmental attributes contribute to transit riders' perception of safety at transit stops?*
- 2** *How can good bus stop design elements as well as Crime Prevention Through Environmental Design (CPTED) be utilized to contribute to one's feeling of safety at transit stops?*
- 3** *How can environmental attributes and CPTED guidelines be applied to improve safety at transit stops in the City of Sudbury?*

To answer these questions, a variety of methods were used, including: a literature review of best practices in bus stop design, the use of Crime Prevention Through Environmental Design (CPTED) principles, site observations and safety audits, and validation interviews to complete the analyses and recommendations.

In recent years, various surveys of transit riders in North America have ranked safety as one of the highest priorities at bus stops. The safety of bus stops could be having detrimental effects on ridership levels. In fact, without an adequate level of safety or perceived safety, riders may choose not to utilize public transportation all together. Research has shown that safety improvements to public transit can substantially increase transit ridership and potentially encourage an increase in active transportation.

Crime largely occurs in public spaces where windows of opportunity exist. Engaging in good bus stop design can remove some of these windows of opportunity our public is exposed to. Design elements that lead to an increase in perceptions of safety included: adequate bright lighting, clear sightlines, covers and shelters with multiple exits, bike infrastructure, real-time information and signage, amenities such as video surveillance, emergency phones, and garbage bins, and seating. Using CPTED's principles of natural surveillance, natural access control, and territorial reinforcement is also a valuable asset when examining safety as it pertains to public spaces. Natural surveillance results in a deterring affect to offenders, natural access control creates distinct boundaries that influence the public's movement, and territorial reinforcement leads to users developing a sense of proprietorship that is noticeable to potential offenders.

During all site visits, a safety audit checklist was conducted. During these site visits, a variety of elements were examined including compatible shelter placement, activities occurring around the site, lighting, overall design, and existing natural surveillance, in addition to other factors.

The safety audits identified several areas that require improvement. Overall, snow removal was identified as one of the largest barriers at all stops. With Site C experiencing the largest fluctuations in maintenance, and Site B seeing the most maintenance. All of the bus stop locations were absent of bus shelters, yet included a bus stop sign. Site B and C lacked basic amenities such as garbage cans. Site A saw the most traffic of all the stops examined along with the largest number of people loitering in the surrounding vicinity. Site C saw the least pedestrian and vehicle traffic.

In regard to adequate lighting, Site A had adequate lighting, as it was illuminated by various sources of lighting, including: street lights, an outdoor parking lot light, and dim lighting from signage of nearby businesses. However, nearby walkways and paths were not illuminated or were dimly lit and it was very difficult to see activities in these spaces. Site B had consistent lighting near the stop, yet the lighting only provided a warm dim glow. Surrounding parking lots were absent of sufficient lighting altogether. Site C had the poorest lighting conditions as the only lighting was provided by a nearby streetlight across the road and a light located on the back of a local grocery store. The residential neighbourhood behind the site was also absent of lighting.

Site A was discovered to have many parking lots, unlit pathways, alleys with sharp corners and buildings with cut-outs, all of which obstructed sightlines. Site B location includes pockets of large clear sightlines and pockets of fully obstructed views. This was due to the location of an unlit corner beside the bus stop and the presence of a large parking lot across the street. Site C sightlines focused primarily along Murray Street, but a large snowbank cut off sightlines to the nearby Food Basics parking lot and Notre Dame Boulevard.

Based on the overall findings and input from a Planner with the City of Greater Sudbury and an Officer with the Greater Sudbury Police Service, the following recommendations made were:

Immediate Recommendations

1. Improve lighting
2. Improve placement of bus stops
3. Alterations to routes
4. Maintenance of stops
5. Installation of bus shelters/ seating

Long Term Recommendations

1. Conduct safety audits
2. Public engagement
3. Information and signage upgrades
4. Climate change readiness
5. Community partnerships
6. Research
7. Amend shelter location tool