







Engineering Measures

Speed Cushion	Mini-Roundabout	Chicane
<p>These are two or more raised areas placed laterally across a roadway with gaps between them to facilitate emergency vehicles. Their application is primarily on local and collector streets at mid-block locations.</p>  <p>Pros: Have been shown to be effective in reducing speeds and traffic volumes in residential areas. Cons: Emergency response, transit service. Negative effects on winter maintenance operations Cost Category: Low cost.</p>	<p>A traffic circle/mini-roundabout is an island located at the centre of an intersection, requiring vehicles to travel through the intersection in a counter-clockwise direction around the island.</p>  <p>Pros: Speed, traffic, conflict, traffic noise reduction, and has no effect on resident access and roadway operations. Cons: Could reduce on-street parking, may restrict trucks and longer Vehicles. Cost Category: Medium to high cost.</p>	<p>A chicane is a series of curb extensions on alternating sides of a roadway, which narrows the roadway and requires drivers to steer from one side of the roadway to the other to travel through the chicane</p>  <p>Pros: Speeds and traffic volumes reduction. Noise and air quality improvements. No effect on resident access and enforcement. Cons: Effects on-street parking and has some risk of head-on collision. Cost Category: Medium cost.</p>
On-Street Parking	Raised Median Island	Flexible Bollard
<p>On-street parking is the reduction of roadway width available for vehicle movement by allowing motor vehicles to park adjacent and parallel to the curb.</p>  <p>Pros: Creates a buffer between the road and sidewalk. Reduced noise due to lowered traffic volumes. Has minimal impact on access. Cons: Reduced visibility for cyclists, potential for driveway obstructions, and potential risk of rear-end and sideswipe collisions. Cost Category: Low to medium cost.</p>	<p>A raised median island is an elevated median constructed on the centreline of a two-way roadway to reduce the overall width of the adjacent travel lanes.</p>  <p>Pros: Speed and conflict reduction can act as a pedestrian refuge. There is minimal effect on maintenances operations. Cons: May restrict access, reduce on-street parking, and affect cyclists due to narrowed paths. Cost Category: Medium to high cost.</p>	<p>Flexible post mounted delineators are used to create the effect of a median, thus giving a sense of constriction for drivers.</p>  <p>Pros: Effective in reducing speeds and some potential for head-on conflict reduction. Cons: May require high maintenance if hit often by vehicles. Affects snow removal and conflict with large vehicles. Cost Category: Low cost.</p>

Dragon's Teeth	Curb Extension	Sidewalk Extension
<p>These are a series of triangle pavement markings along the edge of the travelled lanes. They may be painted with increasing size to give the impression of roadway narrowing. They provide a visual change of the roadway.</p>  <p>Pros: Easy to implement. Provides a buffer between road and sidewalk. Does not impact access or winter maintenance activities.</p> <p>Cons: Regular maintenance of the paint is required. Limited data on its effectiveness.</p> <p>Cost Category: Low cost.</p>	<p>A curb extension is a horizontal intrusion of the curb onto the roadway resulting in a narrow section of roadway. The curb is extended on one of both sides of the roadway to reduce its width.</p>  <p>Pros: Effective speed reduction and reduces conflicts with pedestrians due to reduced crossing distance.</p> <p>Cons: Incompatible with cycling and on-street parking. Affects winter maintenance operations.</p> <p>Cost Category: Medium to high cost.</p>	<p>A sidewalk extension is a sidewalk continued across a local street intersection at the level of the roadway. Textured/patterned elements that contrast the roadway can be incorporated into it.</p>  <p>Pros: Improves pedestrian visibility and may reduce conflicts with vehicles. Positive guidance for visually impaired pedestrians.</p> <p>Cons: Could provide a false sense of security. Requires ongoing maintenance. Limited data on its effectiveness in speed reduction.</p> <p>Cost Category: Low to medium cost.</p>

Education Measures

Programs and Initiatives	Speed Display Device	Vehicle Activated Signs
<p>The CAA School Safety Patrol program runs in partnership with police services, school boards, teachers, bus consortiums and student volunteers since 1929 to protect and educate elementary school children on safe road-crossing practices.</p>  <p>Pros: Increases active transportation awareness and safety.</p> <p>Cons: Requires community commitment.</p> <p>Cost Category: Low to medium cost.</p>	<p>A speed display device is an interactive sign that displays vehicle speeds as oncoming motorists approach. Vehicle speed is captured using radar and can trigger the display board to show when vehicle approach at predetermined unsafe speed.</p>  <p>Pros: Effective in alerting drivers and reducing vehicle speeds. Potential for reduction of speed-related collisions.</p> <p>Cons: The devices may be less effective without complementary enforcement.</p> <p>Cost Category: Low to medium cost.</p>	<p>Vehicle activated signs are electronic roadside warning signs equipped with radar speed detectors and an illuminated display. Their purpose is to alert drivers to reduce speed as they approach specific conditions or hazards ahead.</p>  <p>Pros: Effective in alerting drivers and reducing vehicle speeds. Potential for reduction of speed-related collisions.</p> <p>Cons: Excessive use may lead to reduced effectiveness.</p> <p>Cost Category: Low cost.</p>

Enforcement Measures




Police Enforcement	Red Light Cameras	Automated Speed Enforcement
<p>Police enforcement involves officers positioning themselves in known speeding hotspots, using speed measuring devices to detect speeders, and then pursuing the offenders.</p>	<p>A Red Light Camera (RLC) is a camera that captures an image of a vehicle which has entered an intersection despite the traffic signal indicating red.</p>	<p>Automated Speed Enforcement (ASE) uses a camera and a speed measuring device to detect vehicles travelling more than the posted speed limit and capture its image as proof for conviction.</p>
		
<p>Pros: Effective speed reduction measure. Requires sustained enforcement campaign. Cons: Limited police resources. Cost Category: High cost.</p>	<p>Pros: Decreased front-into-side collisions and overall injury crashes. Cons: Vehicles abruptly stop to avoid crossing red lights. Cost Category: High cost but does produce an off-setting revenue.</p>	<p>Pros: Long-term effectiveness in speed reductions. Cons: Motorists might seek alternative routes and move the issue to other areas. Vehicles accelerate after passing the camera. Cost Category: High cost but does produce an off-setting revenue.</p>

Image Sources: Haldimand County, R.J. Burnside and Associates Ltd, City of Toronto, Town of Oakville, ITE Canada, Town of Innisfil, City of Mississauga, Freepik.com, CAA.com