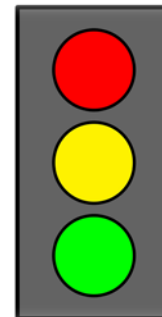


Road Safety Committee

Traffic Signal Detection

October 26, 2021



Traffic Signal Operation

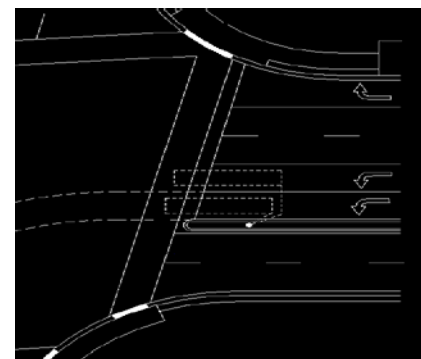
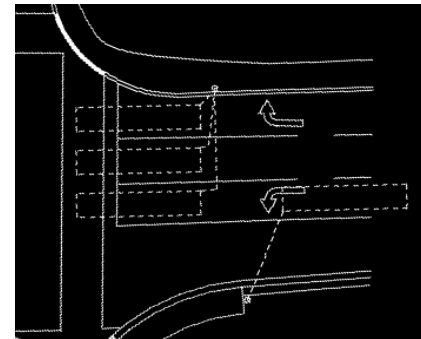
Majority of signalized intersections in Mississauga operate in a semi-actuated condition

- ☐ Vehicle detection required on the side street and/or advanced arrows
- ☐ Pedestrian pushbuttons required for side street pedestrian
- ☐ Where APS (Accessible Pedestrian System) is present, pedestrian pushbuttons are required for main street and side street pedestrians

Intrusive Vehicle Detection

Vehicle Induction Loops (In Ground Installation)

- ❑ Loops are used to detect the presence of vehicles, provides a call to the traffic signal controller and extends the green time;
- ❑ Loops are embedded into the pavement, are typically rectangular in shape, and are installed in each lane as required;
- ❑ Placement of loops (Typical Installation):
 1. Side street near stop bars at intersection approaches;
 2. Protected permissive left turn “setback” loops in turn lanes (typically installed three car lengths behind the stop bar);
 3. Protected left turn arrows at stop bar
- ❑ Loops are placed based on the geometrics of the intersection, City Standards and Specifications as well as in accordance with Ontario Traffic Manual (OTM) Book 12 – Traffic Signals
- ❑ When considering the geometrics and field conditions, staff layout the location of the placement of a loop to ensure that vehicles are not lost in any conditions (i.e. weather, construction, absence of markings, additional signage etc.)



Images of Intrusive Vehicle Detection



1) Side Street Presence Loops
(Mavis Rd. @ Matheson Blvd. W.)



2) Protected Permissive Left Turn Loops
(Mavis Rd. @ Boyer Blvd.)



3) Fully Protected Dual Left Turn Loops
(Mavis Rd. @ Rodeo Dr. / Plymouth Dr.)

NON-INTRUSIVE VEHICLE DETECTION

Overhead Detection

- ❑ Detectors are mounted above the ground typically on traffic signal poles and/or arms;
- ❑ Detection systems are used to detect the presence of vehicles, provides a call into the traffic signal controller and extends the green time;
- ❑ Detection systems are set up / programmed by setting up zones in each lane to detect vehicles



Typical Overhead Detection Zone Layout



Bicycle Detection

Traffic Signals staff work closely with the City Active Transportation group to ensure that detection is updated as required when new bike facilities are introduced

Bicycle Facilities – Main Street Operation

- Under semi-actuated operation the traffic signal will rest in a main street green until the traffic controller receives a call on the side street which will then serve the call in a period of time.
- As a result there is no need to update detection



Eglinton Ave. W. @ Confederation Pkwy. / McLaughlin Rd.
North Leg Crossride – no bike pushbutton / detection



Bristol Rd. W. @ River Grove Ave.
Eastbound Bike Lane on Bristol Rd. W. – no bike detection



Bicycle Facilities – Side Street Operation (Crossride)

Bicycle Signal Pushbutton / Detection

- Under semi-actuated operation a cyclist crossing the main street (side street crossing), is required to push the bike pushbutton to activate the bicycle signals (similar to pedestrian detection);
- A call in either the bike or pedestrian pushbutton on the side street will bring up a green bike indication and a pedestrian walk indication concurrently in a period of time

Bicycle
Pushbutton



Pedestrian
Pushbutton

Bicycle Facilities – Side Street Operation (Bike Lane)

Bike Lane Detection

- Under semi-actuated operation a cyclist in a bike lane on the side street requires detection;
- Typically an overhead detection system is used to detect the presence of vehicle(s), including bike(s), provides a call to the traffic signal controller and extends the green time



Overhead
Detection

Eastbound on Bristol Rd. W. – overhead detection

QUESTIONS?