BRAMPTON
brampton.ca Flower City

Active Transportation Master Plan

Brampton Cycling Advisory Committee

Thursday, November 16, 2018

LET'S CONNECT
ACTIVE
TRANSPORTATION
MASTER PLAN

What's inside?

Chapter 1 **Introduction**
- Overview of the ATMP
- Study Process
- Document Structure

Chapter 2 **Context**
- Context
- Existing Program Achievements

Chapter 3 **Connecting the Network**
- Network Development
- Network Phasing

Chapter 4 **Designing for Safety & Comfort***
- Design of Pedestrian & Cycling Facilities

Chapter 5 **Providing Year-Round Mobility**
- Maintenance

Chapter 6 **Developing a Walking & Cycling Culture**
- Programs
- Policies

Chapter 7 **Implementation**
- Monitoring & Reporting
- Staffing / Resourcing
- Financial Summary

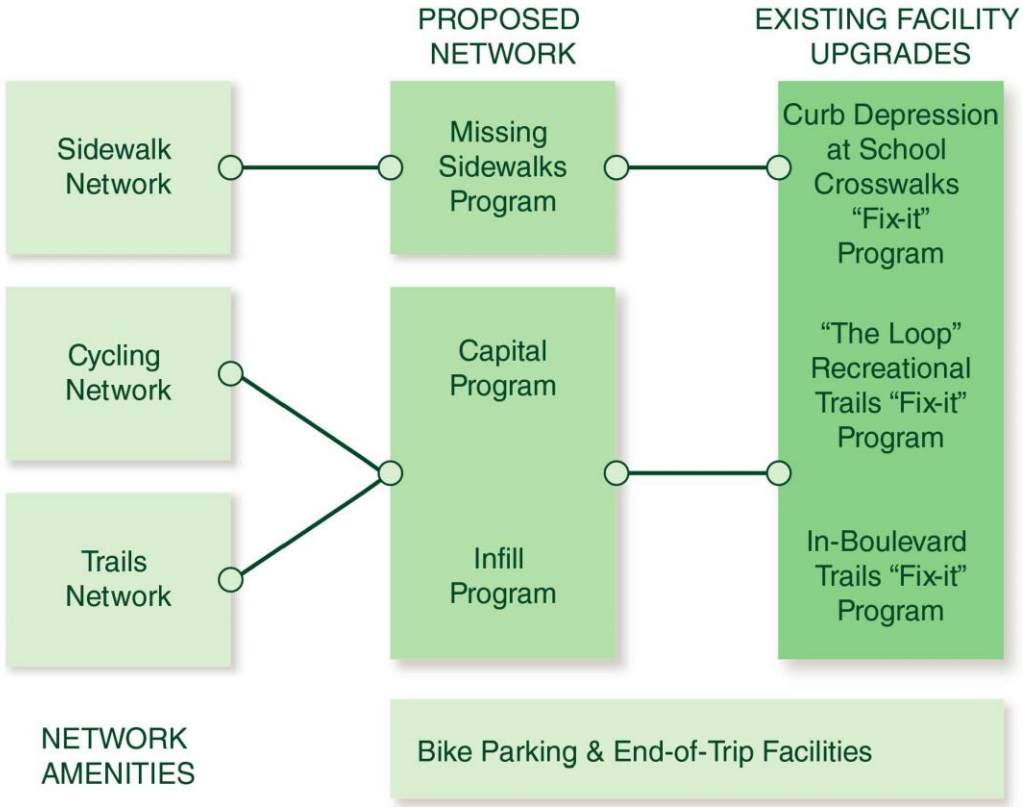
Vision

Through developing an integrated, attractive, and accessible system of sidewalks, cycling facilities and trails, Brampton will be a liveable city where all members of the community can safely and conveniently access places, goods and services and connect to transit using active modes of transportation.

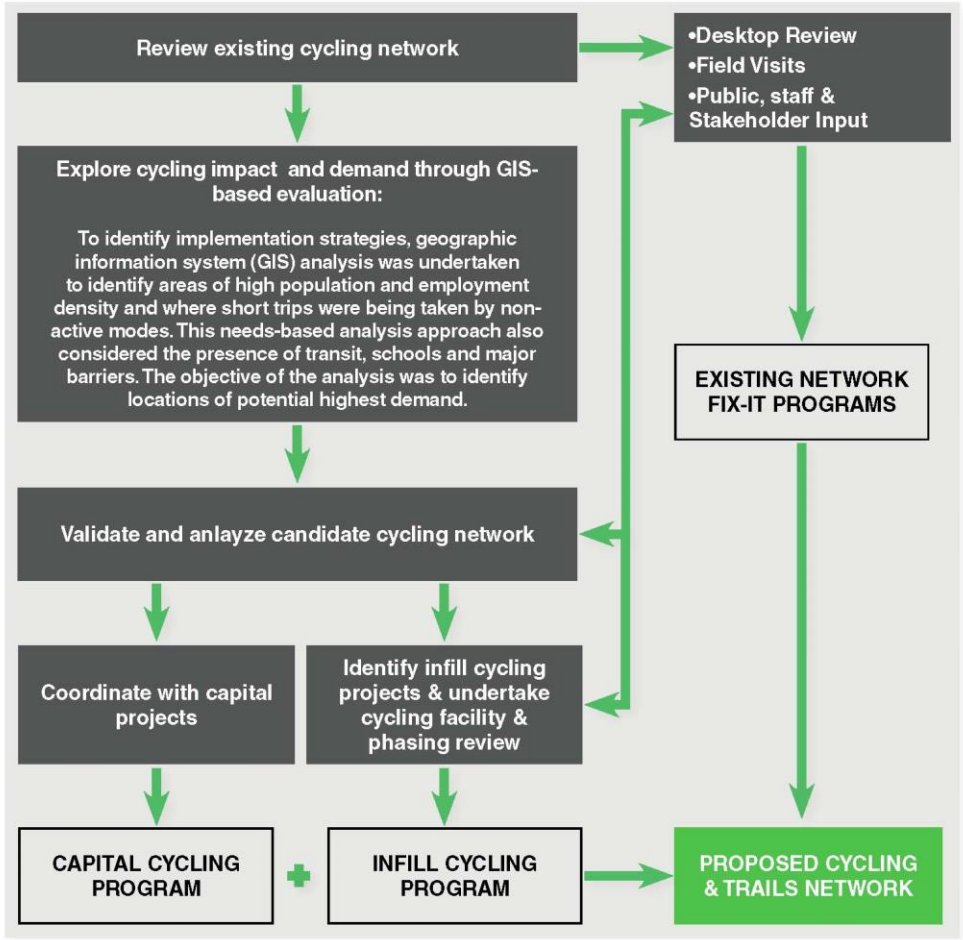
Themes

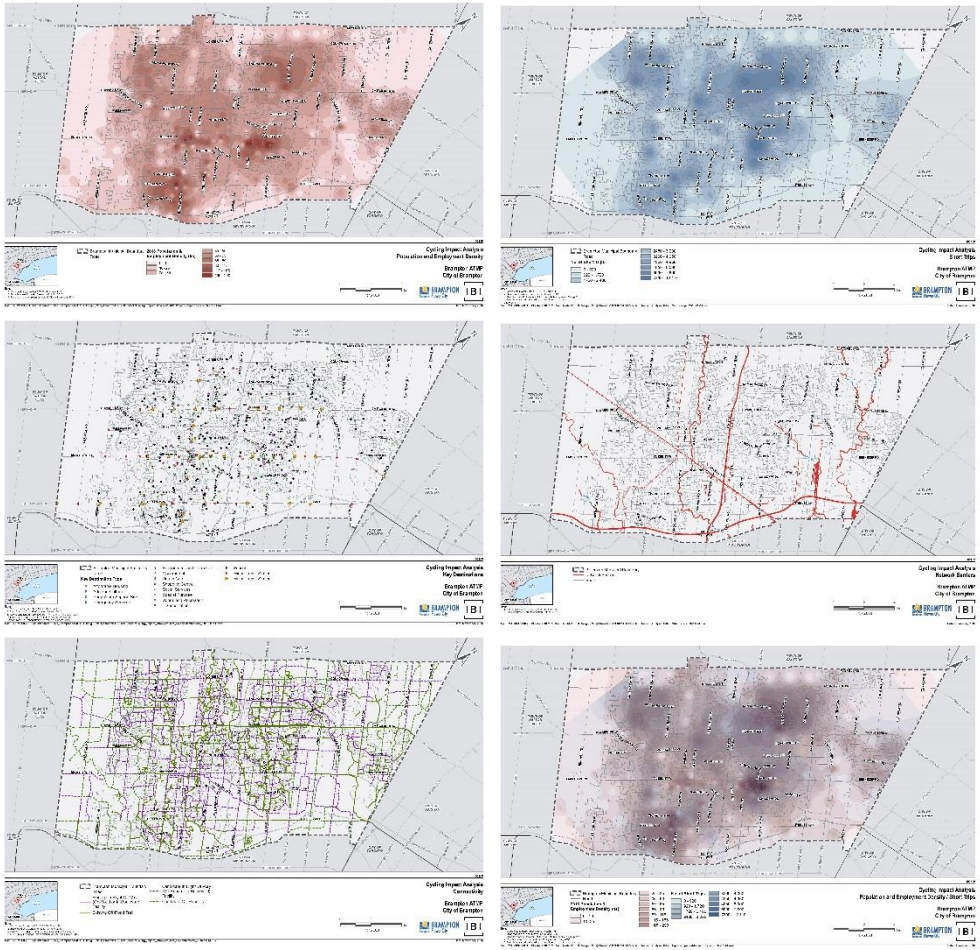
- Connecting the Network
- Design for Safety and Comport
- Providing Year-Round Mobility
- Developing a Walking & Cycling Culture
- Implementation

Connecting the Network



Network Development



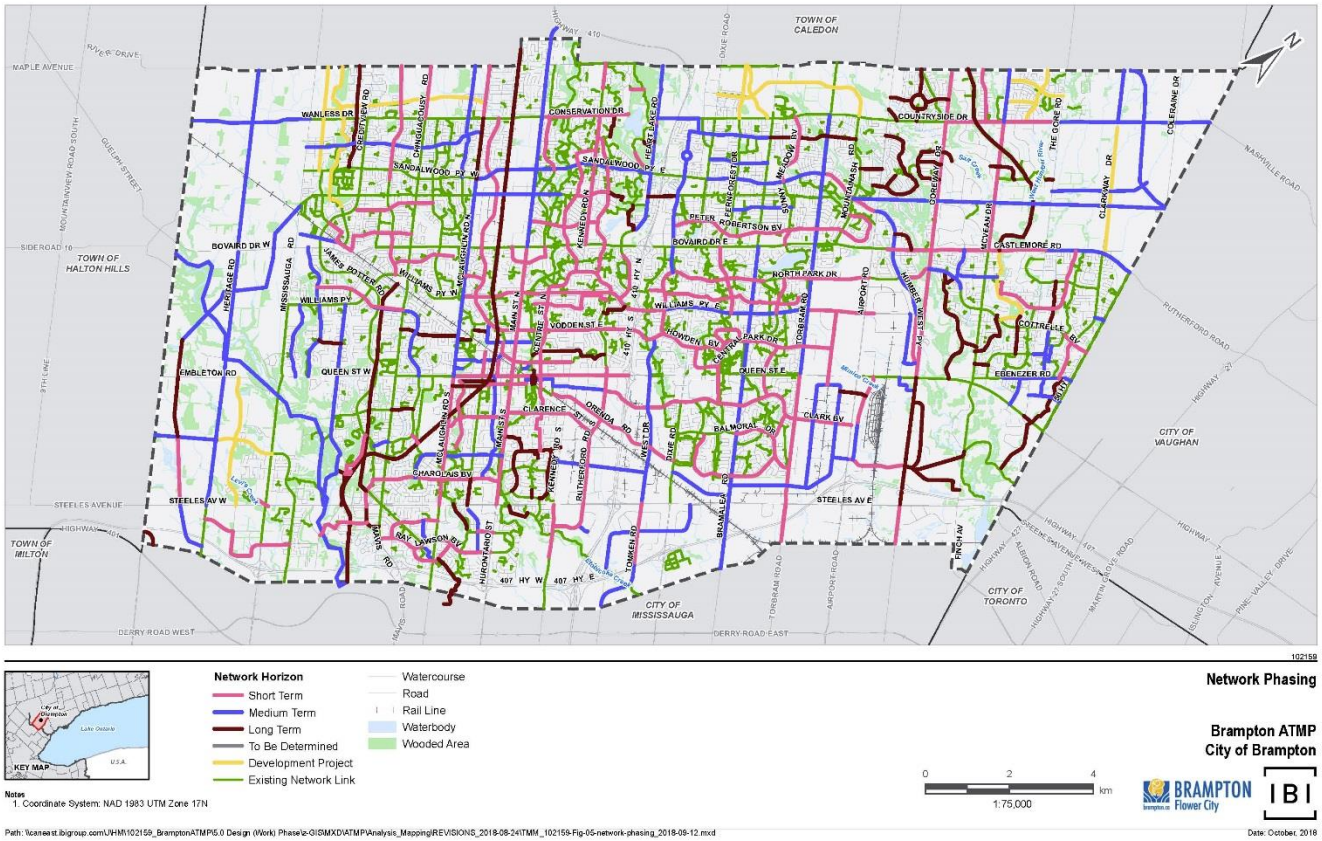


Network - Analysis

Analysis Scoring

LET'S CONNECT
ACTIVE TRANSPORTATION MASTER PLAN

Network Phasing



102159

Network Horizon
- Short Term
- Medium Term
- Long Term
- To Be Determined
- Development Project
- Existing Network Link

- Watercourse
- Road
- Rail Line
- Waterbody
- Wooded Area

Network Phasing

Brampton ATMP
City of Brampton

0 2 4 km
1:75,000

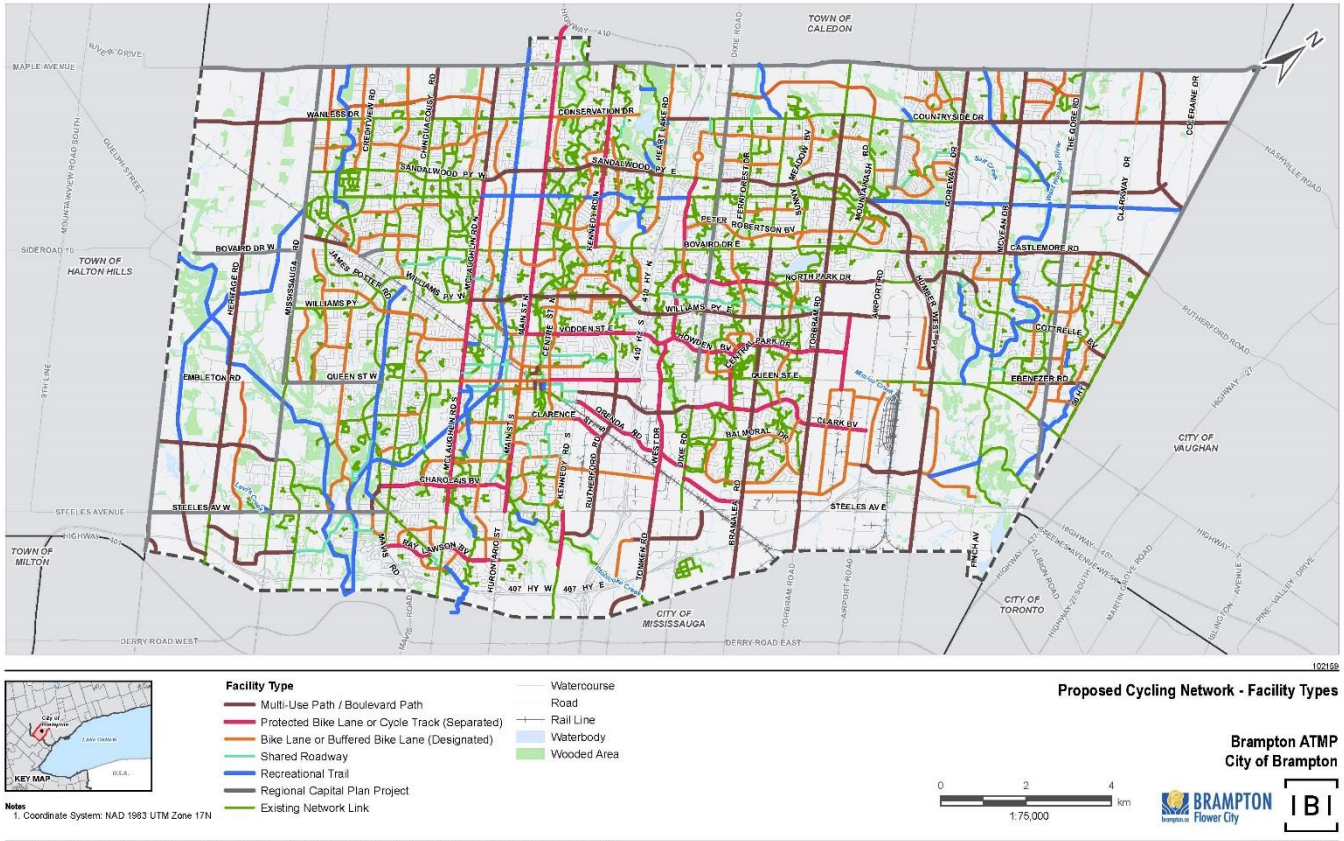
Notes
1. Coordinate System: NAD 1983 UTM Zone 17N

Path: \\caneast.ibigroup.com\UHM\102159_BramptonATMP\5.0 Design (Work) Phase\z-GIS\MXD\ATMP\Analysis_Mapping\REVISIONS_2018-08-24\TMM_102159-Fig-05-network-phasing_2018-09-12.mxd

Date: October, 2018

LET'S CONNECT
ACTIVE TRANSPORTATION MASTER PLAN

Future Network - Facility Types

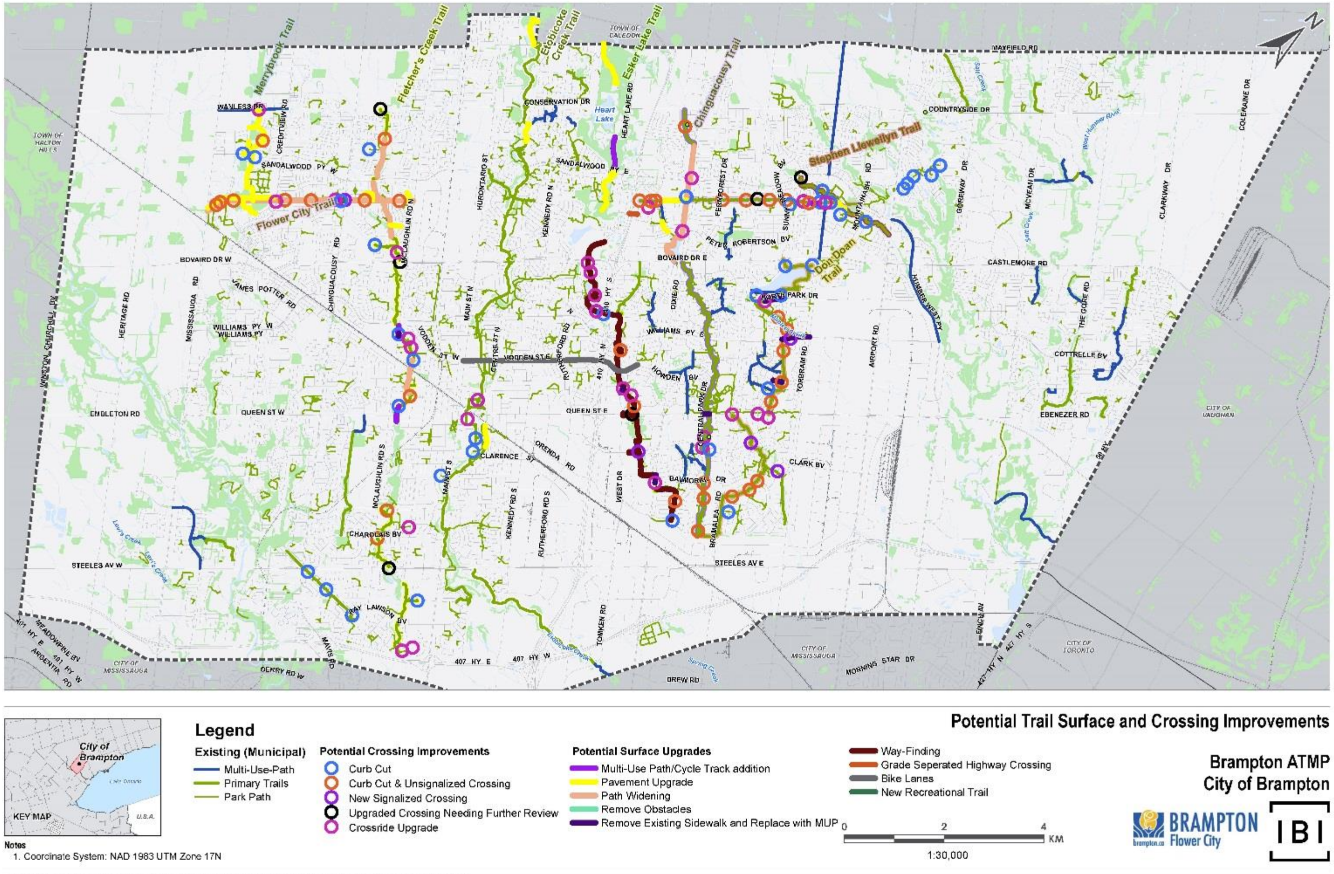


LET'S CONNECT
ACTIVE TRANSPORTATION MASTER PLAN

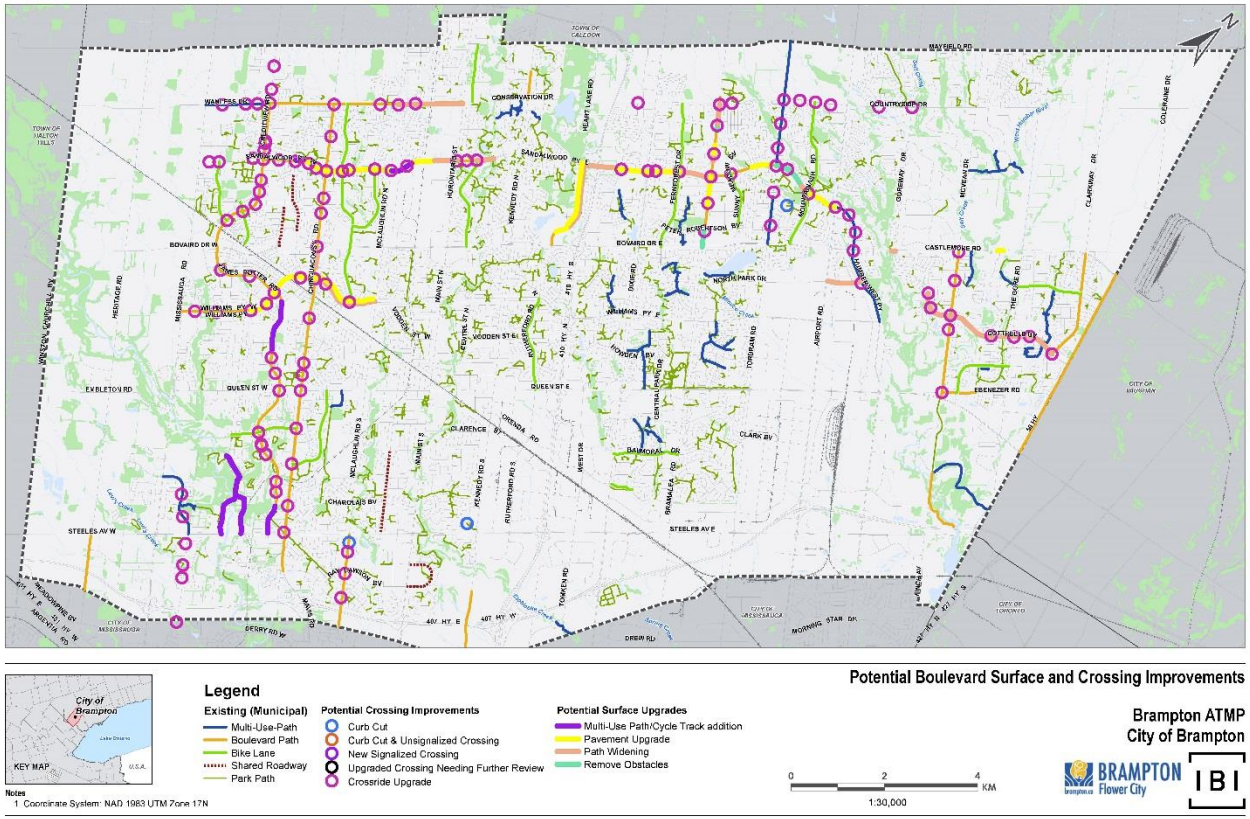
Fix-it Program

- Off-road Rec. Trails
- In-Boulevard Facilities
- School Crosswalks
- Brampton Loop
- Bicycle Parking

Off-road Rec. Trails

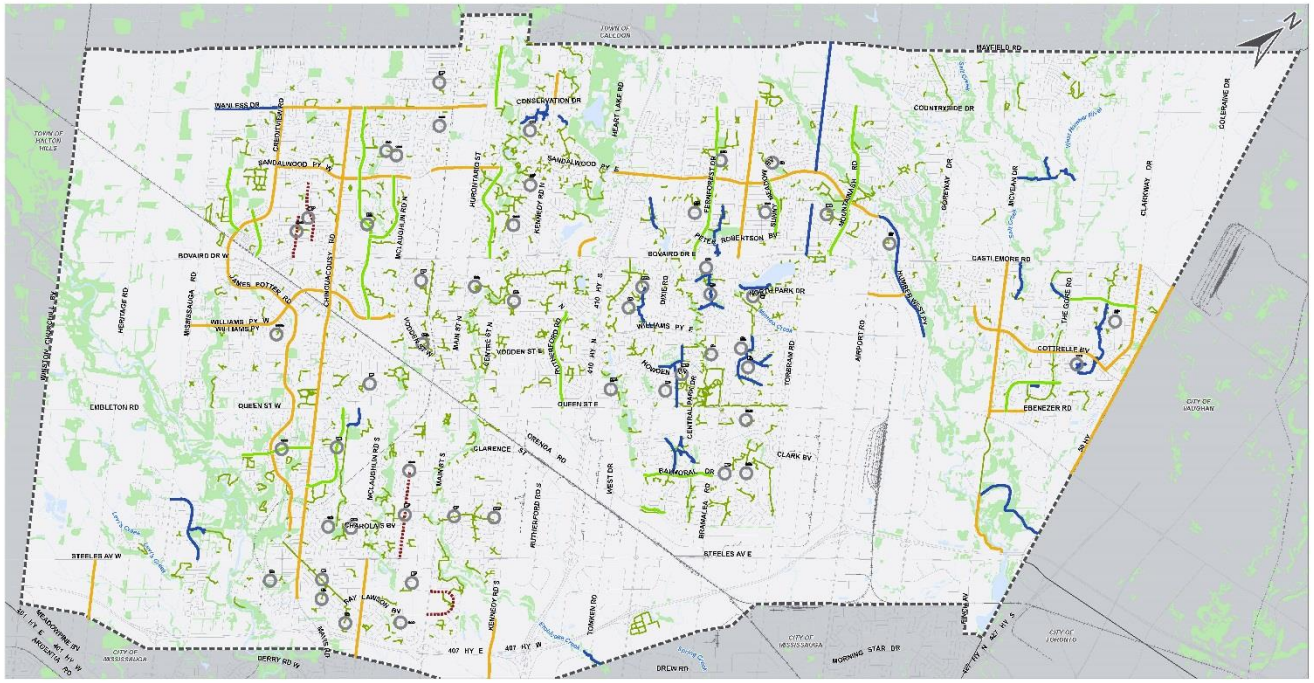


In-boulevard Facilities



LET'S CONNECT
ACTIVE TRANSPORTATION MASTER PLAN

School Crosswalks



Legend

Existing (Municipal)
- Multi-Use-Path
- Boulevard Path
- Bike Lane
- Shared Roadway
- Park Path

Potential Crossing Improvements
- School Crossing Curb Cut

Potential School Crossing Improvements

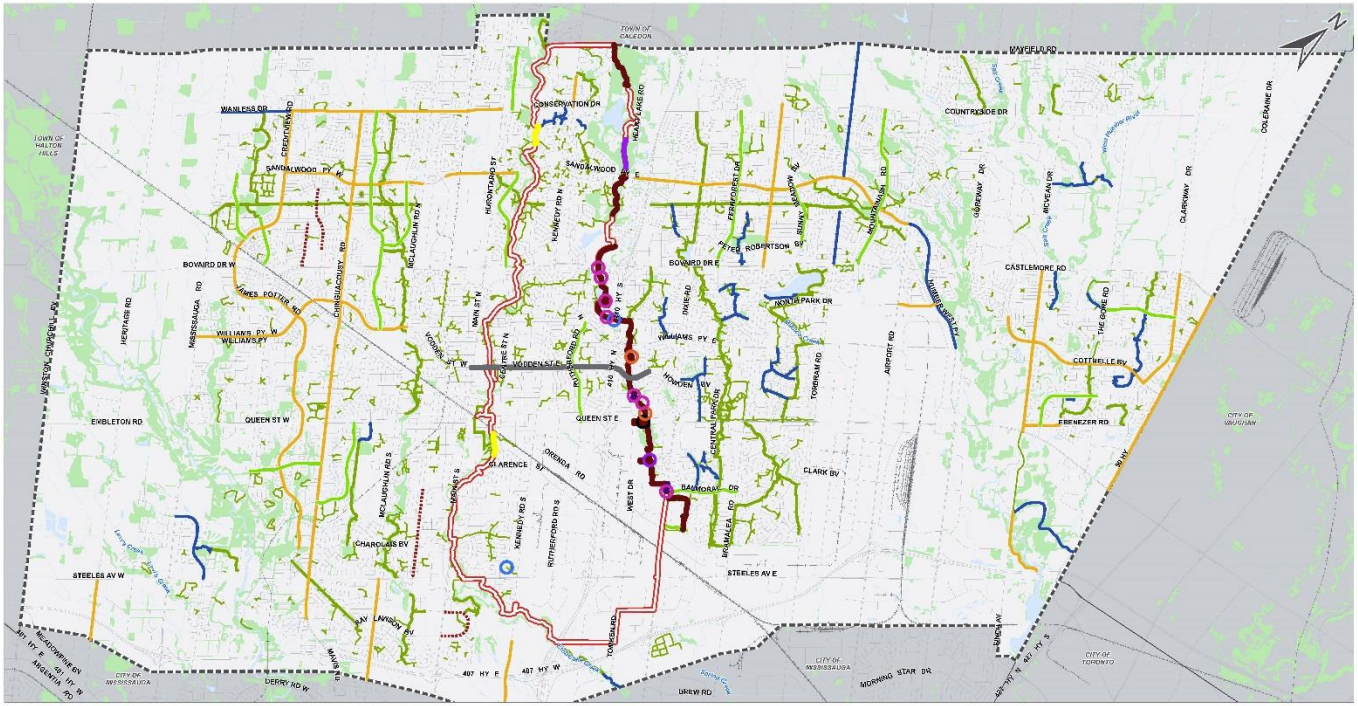
Brampton ATMP
City of Brampton

0 2 4 KM
1:30,000

Notes
1. Coordinate System: NAD 1983 UTM Zone 17N

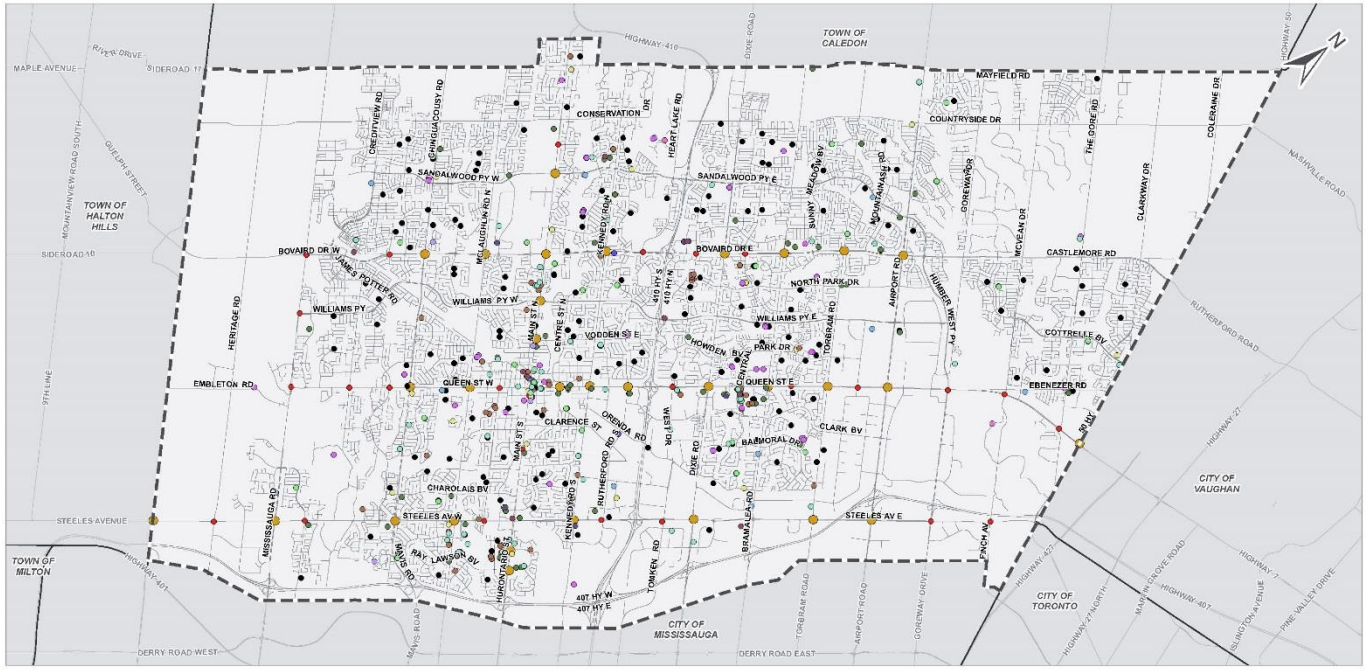
LET'S CONNECT
ACTIVE TRANSPORTATION MASTER PLAN

Brampton Loop



LET'S CONNECT
ACTIVE
TRANSPORTATION
MASTER PLAN

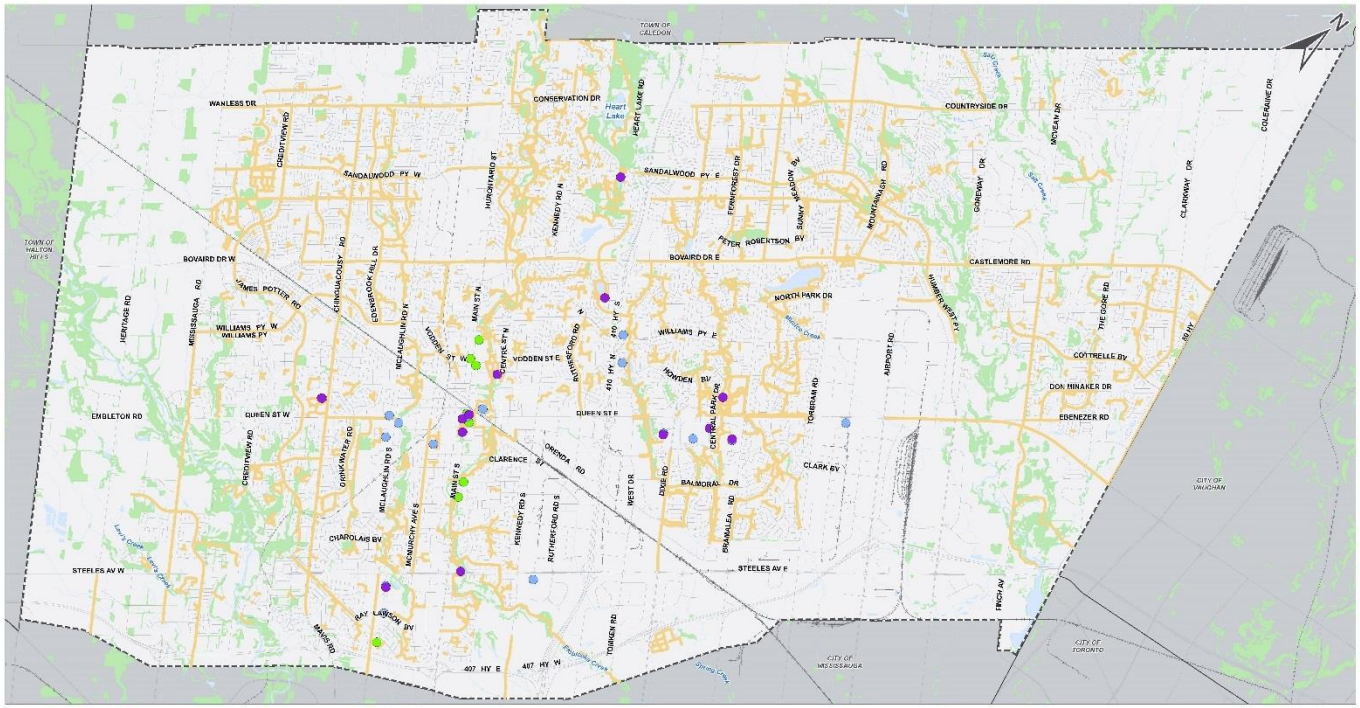
Bicycle Parking



LET'S CONNECT
ACTIVE TRANSPORTATION MASTER PLAN

BRAMPTON
brampton.ca Flower City

Bicycle Parking



Legend

- Install Bike Rack
- Install Bike Shelter
- Install Repair Stand
- Existing Network

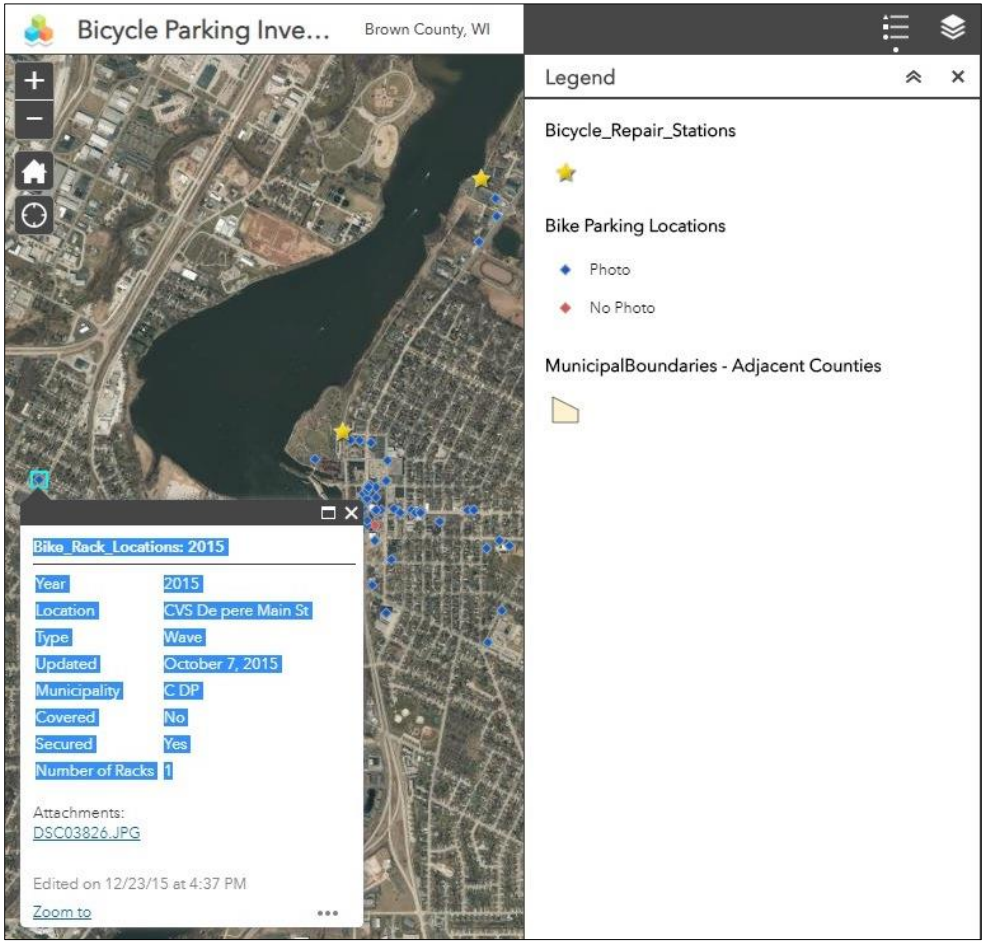
Potential Bike Facility Additions

Brampton ATMP
City of Brampton

0 2 4 KM
1:30,000

Notes
1. Coordinate System: NAD 1983 UTM Zone 17N

LET'S CONNECT
ACTIVE TRANSPORTATION MASTER PLAN



Bicycle Parking

LET'S CONNECT
ACTIVE
TRANSPORTATION
MASTER PLAN

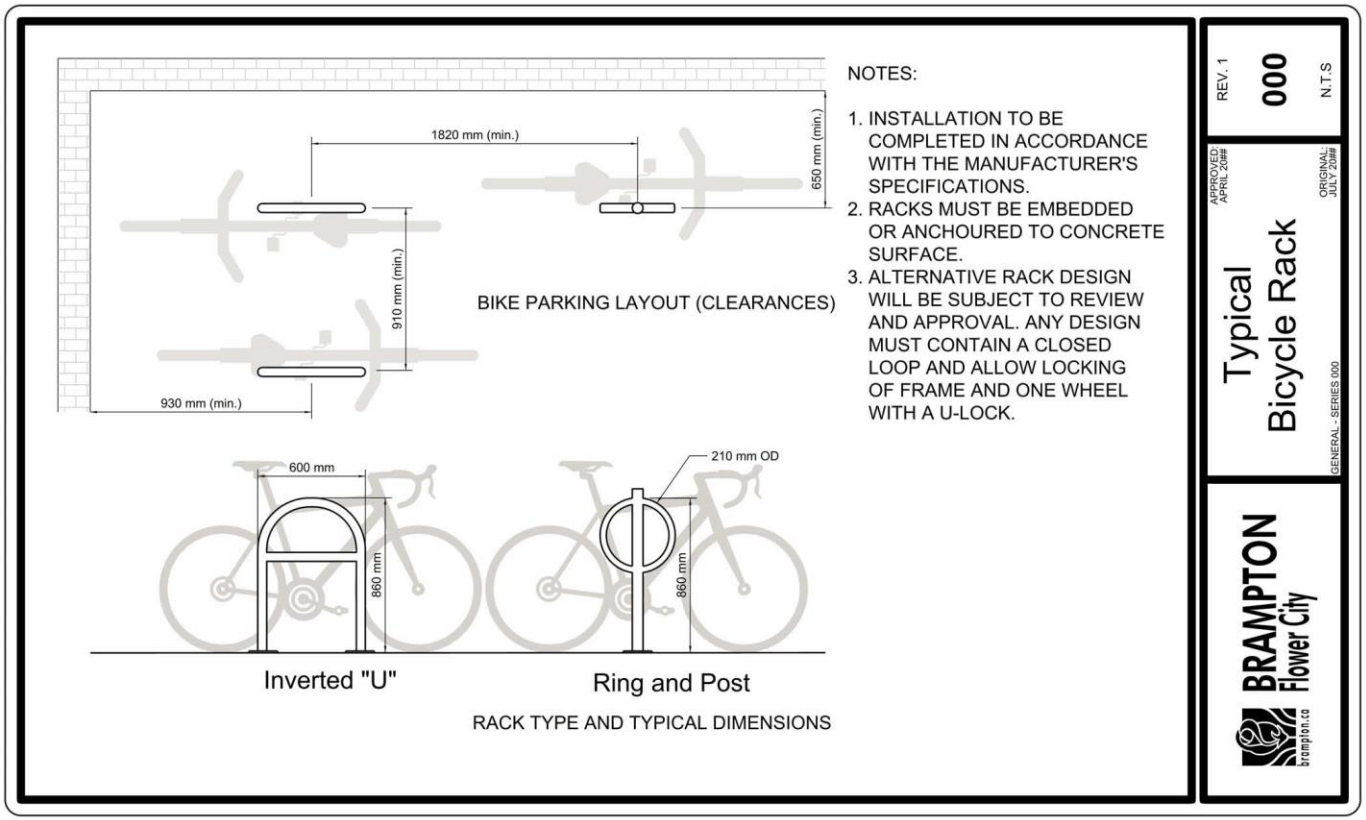
Bicycle Parking

Metric:	2.1.17 Bicycle Parking		
Metric Intent:	• To encourage active transportation and promote efficient use of developable land • To support on-street retail and pedestrian-oriented built environments by discouraging the location of parking in front of buildings, and minimize the adverse environmental impacts of parking facilities		
Applicable To:	☐ Block Plan	☐ Plan of Subdivision	☑ Site Plan
Terms:	N.A.		
	Point Allocation		
	Multi-Family buildings		
Mandatory Target:	Satisfy City's required standards		0 Points
Minimum Target:	• 0.6 bike parking spaces are provided per residential unit *and* • A minimum of 5% of the total bike parking is provided at grade		1 Point
Aspirational Target:	• 0.8 bike parking spaces are provided per residential unit and • A minimum of 10% of the total bike parking is provided at grade		1 Point
	Commercial, Retail or Institutional		
Mandatory Target:	Satisfy City's required standards		0 Points
Minimum Target:	0.13 bike parking spaces per 100 m^2 of gross floor area (GFA) is provided per permanent employees, and 0.15 bike parking spaces per 100 m^2 of GFA for visitors		1 Point
Aspirational Target:	Bike parking weather protection is provided and bike parking is within close proximity to the building entry		1 Point
	1 shower and change room is provided (for men and women) per 30 bike parking spaces		2 Points
	Demonstrating Compliance		
Where to Demonstrate Compliance:	Block Plan	N.A.	
	Plan of Subdivision	N.A.	
	Site Plan	• Site Plan Drawings • Floor Plans	
How to Demonstrate Compliance:	• Identify the building types that are included in the project (i.e. mixed-use, multi-family, commercial, retail, institutional) • On the Floor Plan drawings, quantify the total unit count in each of the multi-family buildings and the total GFA for each of the commercial, retail and institutional buildings or areas within a building (if applicable) • On the Site Plan drawing, quantify the total number bike parking spaces provided per building • Quantify the ratio of bike parking spaces per residential unit (for multi-family buildings) • Quantify bike parking spaces per 100 m^2 of GFA (for commercial, retail and institutional buildings) • Identify the location and number of bike parking spaces and identify any weather protection features for the bike parking • For commercial and institutional building, on the Floor Plan drawings identify the location of shower and change rooms, and quantify the total number of showers		
Other:	N.A.		

MUNICIPALITY	LEGISLATED BICYCLE PARKING REQUIREMENTS
Burlington	Bylaw applies to retail, industrial and educational facilities. Required quotas vary depending on GFA and number of students.
Hamilton	Bylaw requires where new units are being constructed, bicycle parking must amount to 5%.
Oakville	Bylaw requires 1 bicycle parking spot per dwelling unit, plus 0.25 per dwelling unit for visitors.
Toronto (See Note 1)	Bylaw for bicycle parking space requirements for dwelling units in an apartment building or a mixed-use building are: ➤ In Bicycle Zone 1, a minimum of 1.0 bicycle parking spaces for each dwelling unit, allocated as 0.9 "long-term" bicycle parking space per dwelling unit and 0.1 "short-term" bicycle parking space per dwelling unit; and ➤ In Bicycle Zone 2, a minimum of 0.75 bicycle parking spaces for each dwelling unit, allocated as 0.68 "long-term" bicycle parking space per dwelling unit and 0.07 "short-term" bicycle parking space per dwelling unit.
City of Vaughan	Bylaw requires that for various commercial and office buildings a minimum of 6 bicycle parking spaces be provided for all buildings, and that 0.1 bicycle parking spaces per unit be provided thereafter.
Vancouver	Bylaw legislates according to building classes, between 0.1 and 2.25 bicycle parking spaces may be required per unit.

Note 1 - The Amalgamated City of Toronto identifies two bicycle zones. Zone 1 refers to the pre-amalgamation City of Toronto, East York, York and a portion of south Etobicoke. Zone 2 refers to North York, Scarborough, and the middle and northern portions of Etobicoke.

Bicycle Parking



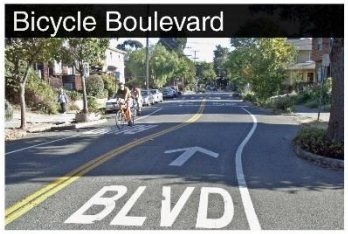
LET'S CONNECT
ACTIVE
TRANSPORTATION
MASTER PLAN

Designing for Safety & Comfort

SHARED FACILITIES

Signed Route

Bicycle Boulevard



Source: Payton Chung

DESIGNATED FACILITIES

Bike Lane

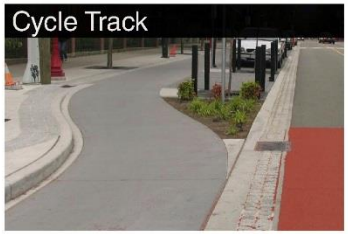
Buffered Bike Lane

Paved Shoulder

SEPARATED FACILITIES

Protected Bike Lane

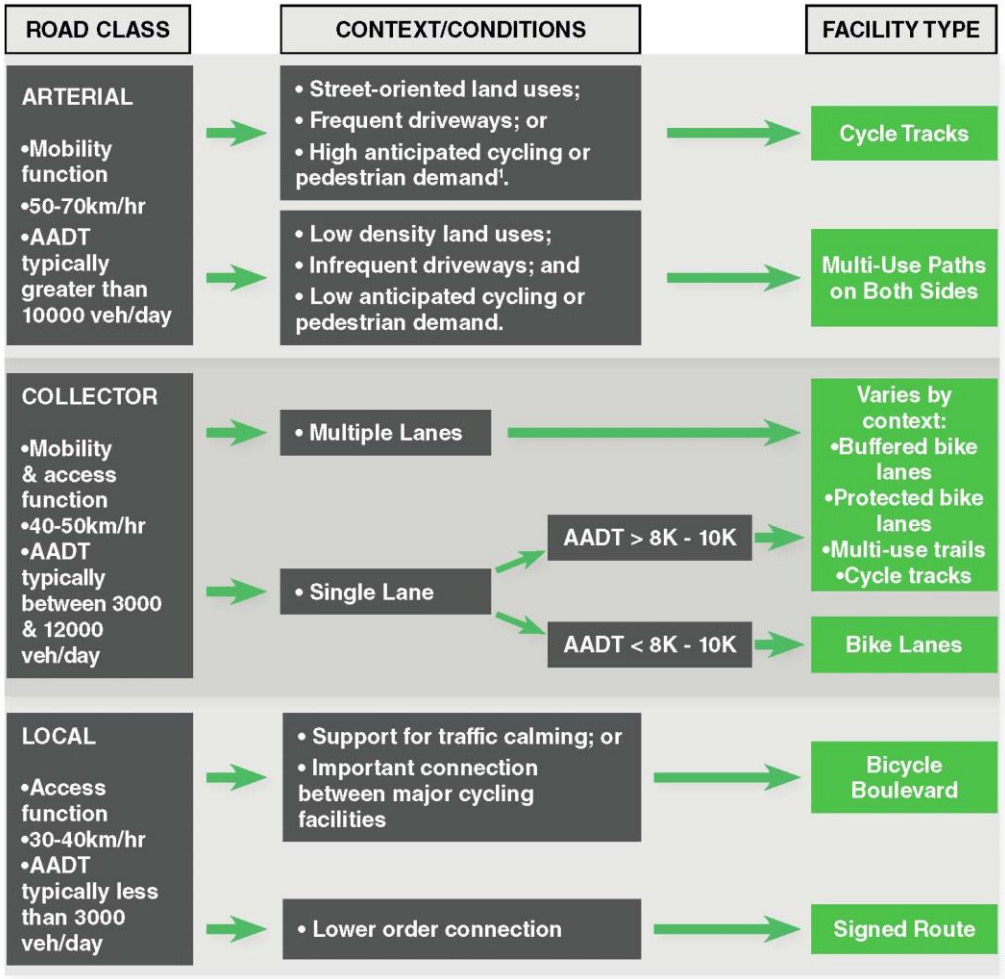
Cycle Track



Multi-use Path

LET'S CONNECT
ACTIVE TRANSPORTATION MASTER PLAN

Designing for Safety & Comfort



LET'S CONNECT
ACTIVE TRANSPORTATION MASTER PLAN

Designing for Safety & Comfort

Protected Intersections

Pedestrian Crossovers

Bicycle Signals

Driveway Conflict Zone Markings

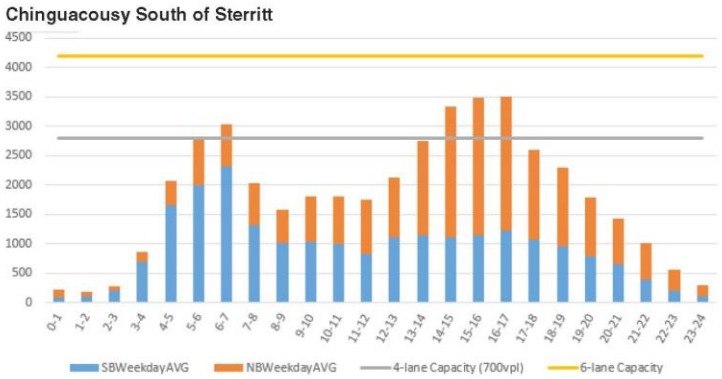
Crossrides

Decorative Crosswalks

LET'S CONNECT
ACTIVE TRANSPORTATION MASTER PLAN

BRAMPTON
brampton.ca Flower City

Designing for Safety & Comfort - Design Compendium



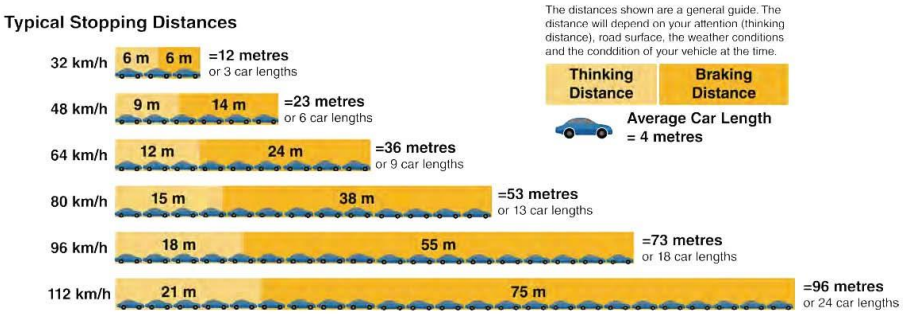
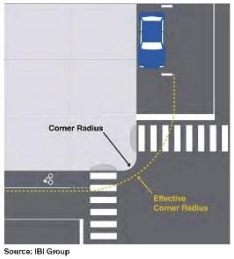
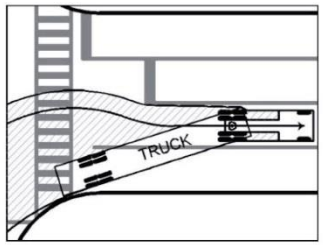


Exhibit 1.17: Effective curb radius



Source: IBI Group

Exhibit 1.16: Encroachment of truck & set-back stop bar to accommodate the movement



The NACTO Urban Street Design Guide suggests the following:

Lane width should be considered within the overall assemblage of the street. **Travel lane widths of 3.0 m generally provide adequate safety in urban settings while discouraging speeding.** Cities may choose to use **3.35 m lanes on designated truck and bus routes (one 3.35 m lane per direction)** or adjacent to lanes in the opposing direction.

LET'S CONNECT
ACTIVE TRANSPORTATION MASTER PLAN

Designing for Safety & Comfort - Design Compendium

Exhibit 3.10: Design criteria for unidirectional protected bike lanes

BICYCLISTS / PEAK HOUR (ONE-DIRECTION)	BIKE LANE / CYCLE TRACK WIDTH (m)	
	Recommended	Minimum*
<150**	1.8m	1.5m
150-750***	2.4m	2.0m

Exhibit 3.11: Design criteria for bidirectional protected bike lanes

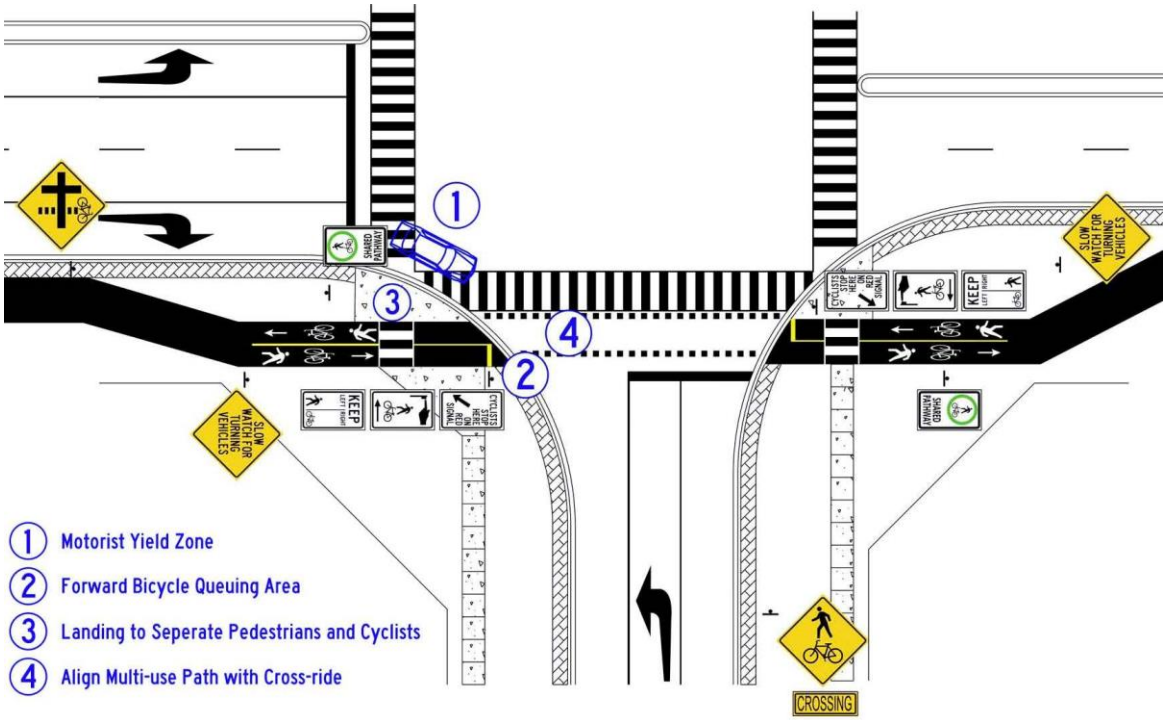
BICYCLISTS / PEAK HOUR (BOTH-DIRECTIONS)	BIKE LANE / CYCLE TRACK WIDTH (m)	
	Recommended	Minimum*
<150**	3.0m	2.4m
150-400***	3.4m	3.0m

MULTI-USE PATH WIDTH (m)	
Recommended	Minimum
4.0m	3.0m 2.4m over short, constrained sections such as bridge decks

ELEMENT	WIDTH (m)	
	Recommended	Minimum
Bike Lane	1.8-2.0m	1.5m 1.2m for constrained corridors
Buffer	0.8-1.2m	0.5m

LET'S CONNECT
ACTIVE TRANSPORTATION MASTER PLAN

Designing for Safety & Comfort - Design Compendium



LET'S CONNECT
ACTIVE TRANSPORTATION MASTER PLAN

Develop a Walking and Cycling Culture

LET'S CONNECT
ACTIVE
TRANSPORTATION
MASTER PLAN

Develop a Walking and Cycling Culture

Action #4-1

Active Mobility Charter

Redirect circulation in Brampton's centres and neighbourhoods into local networks that feed transit, with walking and cycling emphasized – through a clear declaration.

City Hall is fully organized to pursue active mobility. To be catalytic, the following will also be essential, in addition to the arrangements noted elsewhere for audits and designs of neighbourhoods as well as new business areas.

- 'Active Mobility Charter' Stewardship Committee: This volunteer advisory committee, composed of walking and cycling recreation and advocacy organizations and enthusiasts will work closely with City staff to bring the active mobility plans and infrastructure to Brampton.

Develop a Walking and Cycling Culture

Develop a Walking and Cycling Culture

LET'S CONNECT
ACTIVE
TRANSPORTATION
MASTER PLAN

BRAMPTON
brampton.ca Flower City

futureready
university

Develop a Walking and Cycling Culture

Action #2-2

Downtown Brampton

Realize the full potential of Brampton's historic Downtown as an advanced education, arts, and life sciences hub.

Sheridan | Get Creative

Ryerson University

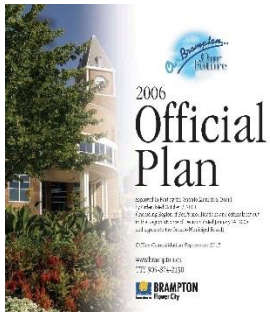
LET'S CONNECT
ACTIVE
TRANSPORTATION
MASTER PLAN

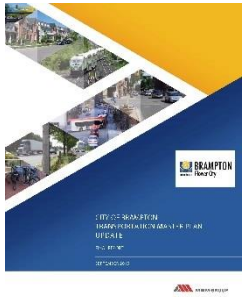
Develop a Walking and Cycling Culture

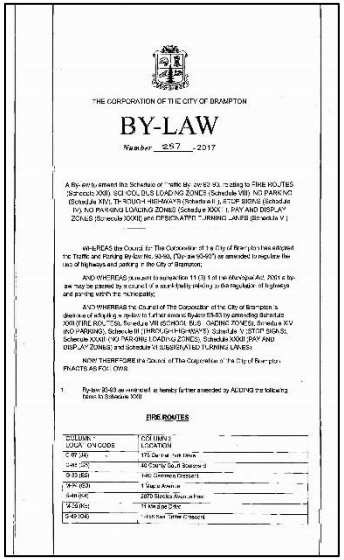
That the City develop a Complete Streets Strategy to guide design of streets for all ages, abilities and modes of travel.

That every street in Brampton be consider a pedestrian and cycling street, regardless of whether it forms part of the recommended AT network

That City staff, as a matter of course, seek initiatives that can improve, where feasible, conditions for walking and cycling as part of all future municipal road planning and design projects.







THE CORPORATION OF THE CITY OF BRAMPTON

BY-LAW

Number 257 - 2017

A By-law to amend the Schedule of Traffic By-law 93-93 relating to FIRE ROUTES (Schedule XXII), SCHOOL BUS LOADING ZONES (Schedule VIII), NO PARKING (Schedule XIV), THROUGH HIGHWAYS (Schedule II), STOP SIGNS (Schedule IV), NO PARKING LOADING ZONES (Schedule XXX), PAY AND DISPLAY ZONES (Schedule XXXII) and ESTABLISHED TURNING LANES (Schedule VI)

WHEREAS the Council for The Corporation of the City of Brampton has adopted the Traffic and Parking By-law No. 93-93, (By-law 93-93) as amended to regulate the use of highways and parking in the City of Brampton;

AND WHEREAS pursuant to subsection 11 (3) 1 of the *Municipal Act, 2001* a by-law may be passed by a council of a municipality relating to the regulation of highways and parking within the municipality;

AND WHEREAS the Council of The Corporation of the City of Brampton deems it desirable to further amend By-law 93-93 by amending Schedule XXII (FIRE ROUTES), Schedule VIII (SCHOOL BUS LOADING ZONES), Schedule XIV (NO PARKING), Schedule III (THROUGH HIGHWAYS), Schedule V (STOP SIGNS), Schedule XXXII (NO PARKING LOADING ZONES), Schedule XXXII (PAY AND DISPLAY ZONES) and Schedule VI (ESTABLISHED TURNING LANES);

NOW THEREFORE the Council of The Corporation of the City of Brampton ENACTS AS FOLLOWS:

1. By-law 93-93 as amended is hereby further amended by ADDING the following items to Schedule XXII:

FIRE ROUTES

COLUMN 1 LOCATION CODE	COLUMN 2 LOCATION
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

Develop a Walking and Cycling Culture

	Point Allocation	
	Multi-Family buildings	
Mandatory Target:	Satisfy City's required standards	0 Points
Minimum Target:	• 0.6 bike parking spaces are provided per residential unit *and* • A minimum of 5% of the total bike parking is provided at grade	1 Point
Aspirational Target:	• 0.9 bike parking spaces are provided per residential unit and • A minimum of 10% of the total bike parking is provided at grade	1 Point
	Commercial, Retail or Institutional	
Mandatory Target:	Satisfy City's required standards	0 Points
Minimum Target:	0.13 bike parking spaces per 100 m^2 of gross floor area (GFA) is provided per permanent employees, and 0.15 bike parking spaces per 100 m^2 of GFA for visitors	1 Point
Aspirational Target:	Bike parking weather protection is provided and bike parking is within close proximity to the building entry	1 Point
	1 shower and change room is provided (for men and women) per 30 bike parking spaces	2 Points

LET'S CONNECT
ACTIVE TRANSPORTATION MASTER PLAN

Providing Year Round Mobility – non Winter

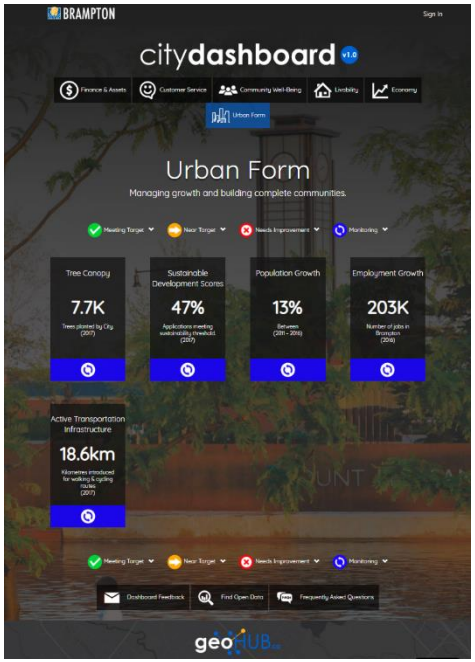
Activity	Regular Network (current practice)				Priority Network
Patrolling	Class of Highway		Patrolling Frequency		3 times every 7 days
	1		3 times every 7 days		
	2		2 times every 7 days		
	3		once every 7 days		
	4		once every 14 days		
	5		once every 30 days		
Pothole Repair	Class of Highway	Surface Area	Depth	Time	600 cm^2 x 8 cm depth within 4 days
	1	600 cm^2	8 cm	4 days	
	2	800 cm^2	8 cm	4 days	
	3	1000 cm^2	8 cm	7 days	
	4	1000 cm^2	8 cm	14 days	
	5	1000 cm^2	8 cm	30 days	
Surface Discontinuity Repair	Class of Highway		Height	Time	Height of 5 cm within 2 days
	1		5 cm	2 days	
	2		5 cm	2 days	
	3		5 cm	7 days	
	4		5 cm	21 days	
	5		5 cm	21 days	
Pavement Markings	Longitudinal Markings - 2 times a year				Same
	Transverse Markings - 2 times a year				
Sweeping	Once in early Spring; following incidents (spills, constrcution accidents) or as needed.				On-road - twice monthly: March to May and September to November. Once monthly during summer months. Boulevrad and off-road facilities - once monthly: March to November.

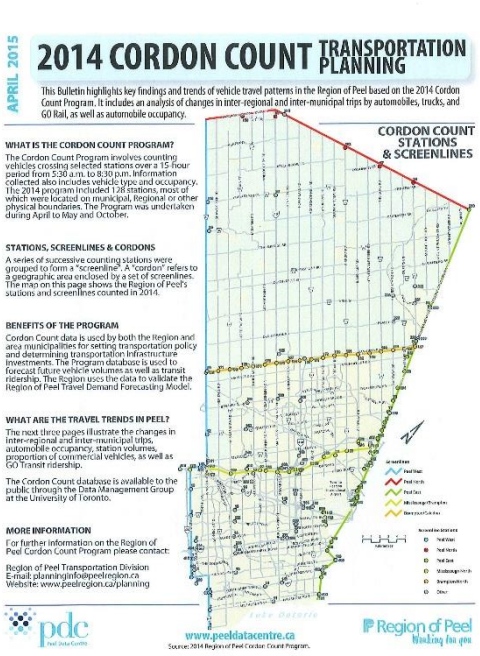
Providing Year Round Mobility - Winter

Activity	Regular Network (current practice)			Priority Network
Snow Clearing	Bike Lanes			Maintain to bare pavement condition - 4 hours One-way facilities: width of 1.0 m or width of bike lane, which ever is less Two-way facilities: 2.4 m
	Class of Highway	Depth	Time	
	1	2.5 cm	4 hours	
	2	5 cm	6 hours	
	3	8 cm	12 hours	
	4	8 cm	16 hours	
	5	10 cm	24 hours	
	Roadways			
	Class of Highway	Depth	Time	
	1	2.5 cm	8 hours	
	2	5 cm	12 hours	
	3	8 cm	24 hours	
	4	8 cm	24 hours	
	5	10 cm	24 hours	
Ice Treatment	Class of Highway	Time		Within 6 hours
	1	3 hours		
	2	4 hours		
	3	8 hours		
	4	12 hours		
	5	16 hours		

Implementation

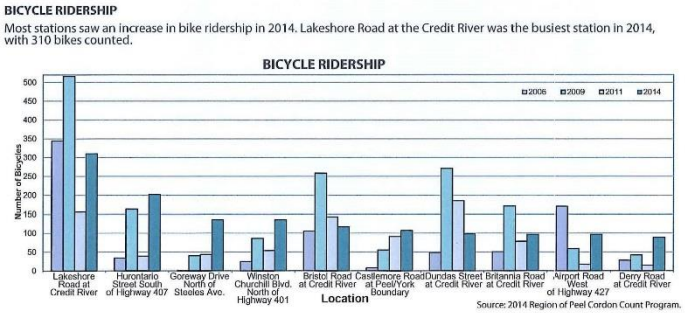
Objective of the ATMP (Section 1.3)	Measure	Evaluation Type
Invest efficiently in an expanding network	Number of walking and cycling projects delivered in coordination with the City's Capital program Number of infill projects that are delivered, using low cost tactics such as pavement markings and surface-mounted traffic separators.	Program output
Provide options to all residents, including enhancing accessibility	Number of projects delivered that enhance accessibility (e.g. curb cuts to make trail access points AODA compliant)	Program output
Maximize the value (usage) of existing infrastructure	Year over year walking and cycling counting data	Program outcome
Improve the safety of walking and cycling	Year over year walking and cycling collision data	Program outcome
Improve access to transit and provide viable active transportation options for the first / last mile	Percentage of rapid transit station with direct cycling connection Percentage of rapid transit stations with bicycle parking Percentage of transit stations with sidewalks	Program output

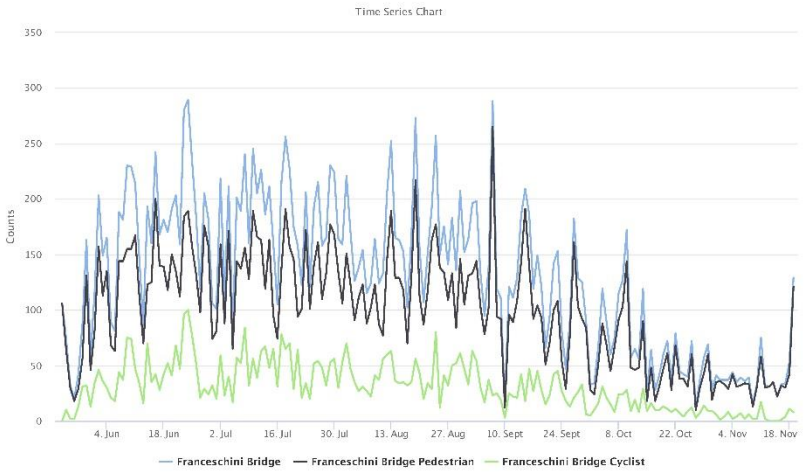




Implementation

STRAVA | METRO





LET'S CONNECT
ACTIVE TRANSPORTATION MASTER PLAN

Implementation

Infill Program		
Short Term		
Type	**Length**	**Cost Estimate**
Bike Lanes	74	$ 3,700,000
MUPs	35	$ 26,400,000
Buffered Bike Lanes or Cycle Tracks	25	$ 1,500,000
Total		**$ 31,600,000**
Medium Term		
Type	**Length**	**Cost Estimate**
Bike Lanes	55	$ 2,800,000
MUPs	14	$ 0,500,000
Buffered Bike Lanes or Cycle Tracks	22	$ 1,300,000
Total		**$ 14,600,000**

DRAFT TO BE FINALIZED

Long Term		
Type	**Length**	**Cost Estimate**
Bike Lanes	30	$ 1,500,000
MUPs	9	$ 6,300,000
Buffered Bike Lanes or Cycle Tracks	2	$ 100,000
Total		**$ 7,900,000**

DRAFT TO BE FINALIZED

Fix-it Program		
In-Boulevard		
Type	**Length**	**Cost Estimate**
Crossing Improvements	na	$ 60,000
Pavement Improvements	28	$ 4,100,000
School Crossing Curb Cuts	na	$ 125,000
Total	**28**	**$ 4,285,000**
In-Trail		
Type	**Length**	**Cost Estimate**
Crossing Improvements	na	$ 1,300,000
Pavement Improvements	18	$ 2,100,000
Total	**18**	**$ 3,400,000**

DRAFT TO BE FINALIZED