

# Vaughan Complete Streets Guide



## Public Meeting 02

DTAH, Traffic Calmer, HDR, LURA  
Thursday October 12, 2023



# Land Acknowledgment

We respectfully acknowledge that the City of Vaughan is situated in the Territory and Treaty 13 lands of the Mississaugas of the Credit First Nation. We also recognize the traditional territory of the Huron-Wendat and the Haudenosaunee. The City of Vaughan is currently home to many First Nations, Métis and Inuit people today. As representatives of the people of the City of Vaughan, we are grateful to have the opportunity to work and live in this territory.



# Agenda

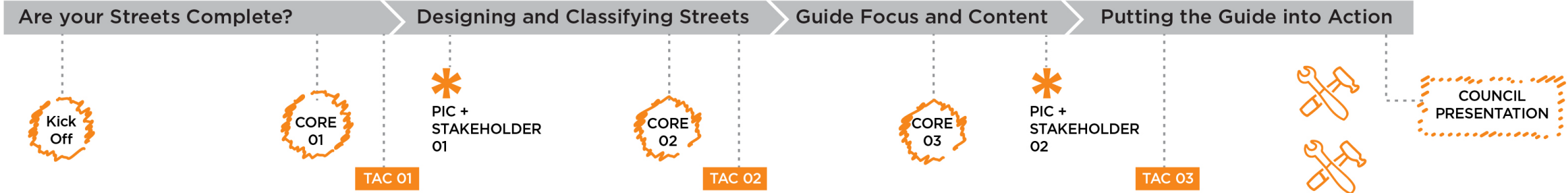
Opening Remarks	LURA	5 mins
Agenda + Housekeeping	City/LURA	5 mins
Presentation + Q&A	DTAH/LURA	45 mins
Next Steps	DTAH	5 mins



# **Project Overview**



# Process



# **Complete Streets Guide**

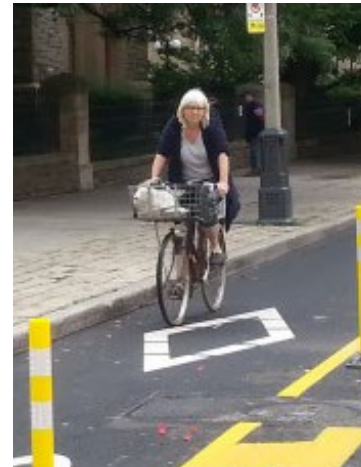
# What are Complete Streets?

**A Complete Street is designed for all ages, abilities, and modes of travel.**

Safe and comfortable access for pedestrians, bicycles, transit users and people with disabilities is not an afterthought, but an integral planning feature.

Ensures that transportation planners and engineers consistently design and operate the entire street network for all road users, not only motorists.

*[www.completestreetsforcanada.ca](http://www.completestreetsforcanada.ca)*





## Why make Streets Complete?

**95%**

of pedestrian related collisions in Vaughan resulted in someone losing their life or being seriously injured while using streets in the City.

**74%**

of all collisions in Vaughan happen at intersections or are intersection-related.

**Complete Streets (CS) = Safer Streets for all**

# Additional Benefits of CS

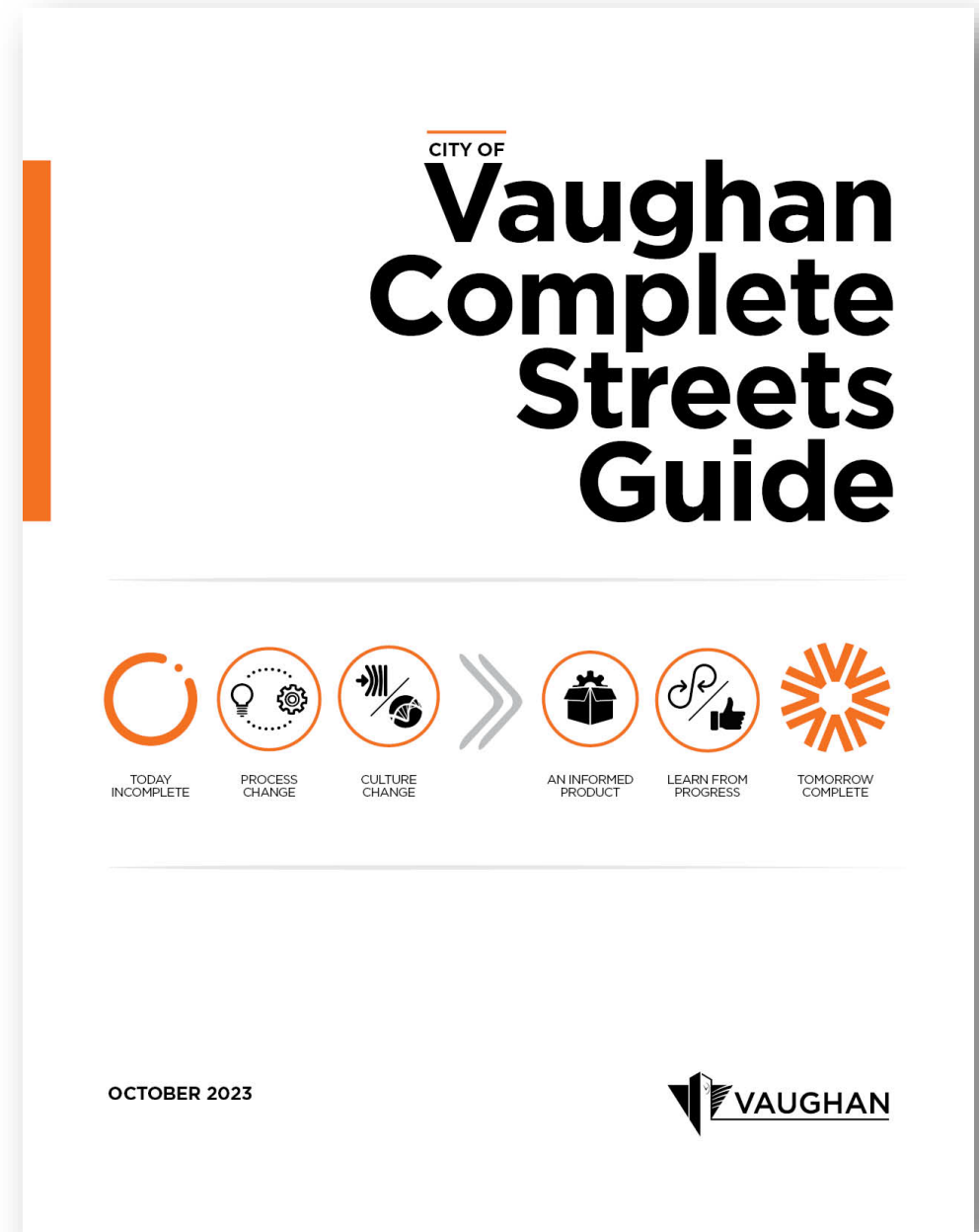
- Stronger place making
- Social benefits
- Environmental benefits
- Expanded mobility options
- Reduced infrastructure costs
- A more attractive and livable public realm



# What is the Vaughan Complete Streets Guide (VCSG)?

- City's reference for street design policies, process, techniques and implementation.
- Defines project delivery process to inform decisions and trade-offs in achieving Complete Streets.
- Illustrates potential applications of the CS approach.
- Provides guidance for street elements with designing for vulnerable users the highest priority.
- Guides the implementation of all street projects.

**Providing a safer user experience on Vaughan's streets is the Guide's prime directive.**

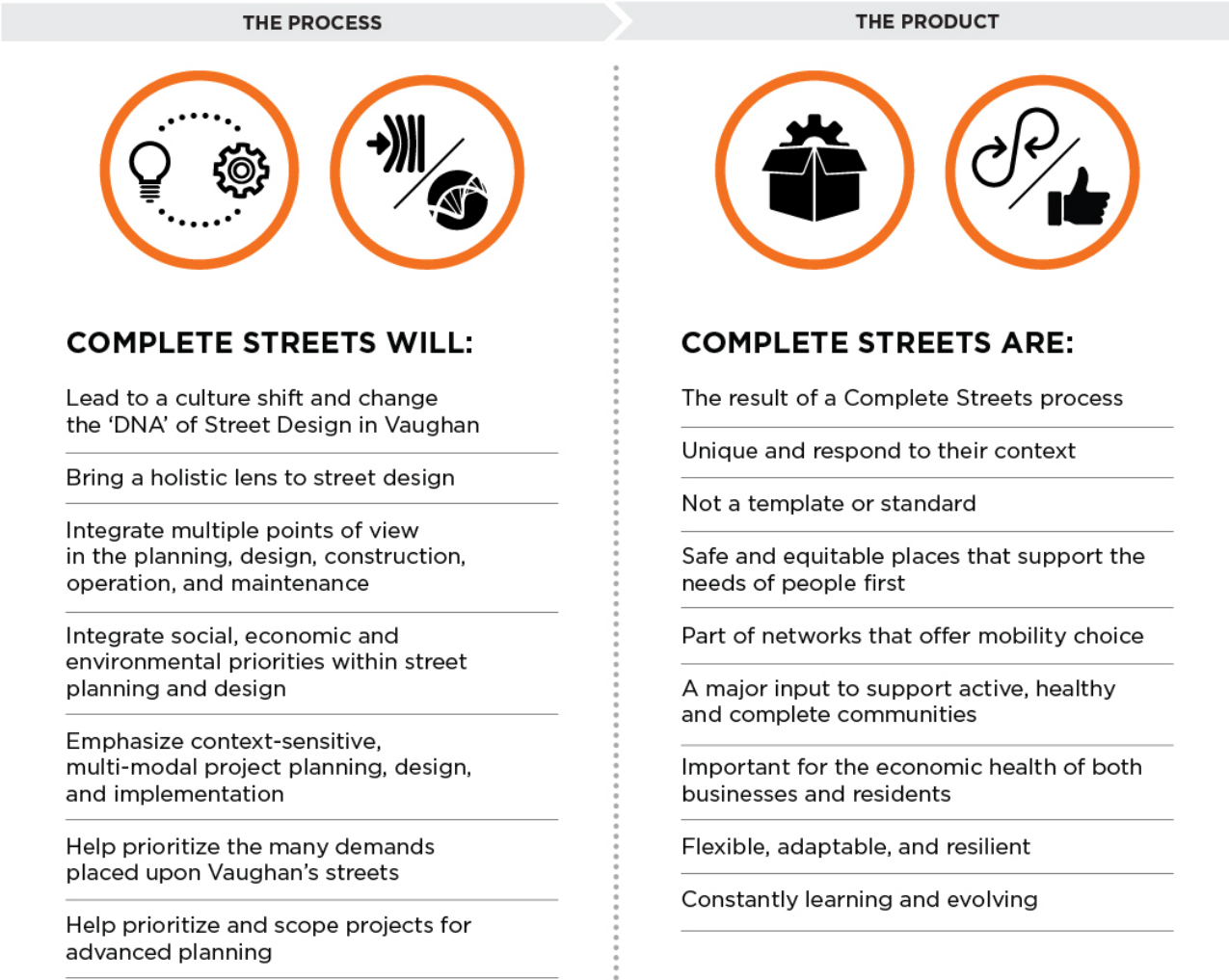




# VCSG Content

VCSG includes five chapters and appendices to help guide the planning, design and delivery of Complete Streets in Vaughan from two perspectives:

- **Process:** what Complete Streets will accomplish
- **Product:** what Complete Streets are as the outcome of following a CS process



# **Guide Overview**



c: Sincerely Media, Unsplash

## CHAPTER 1 INTRODUCTION

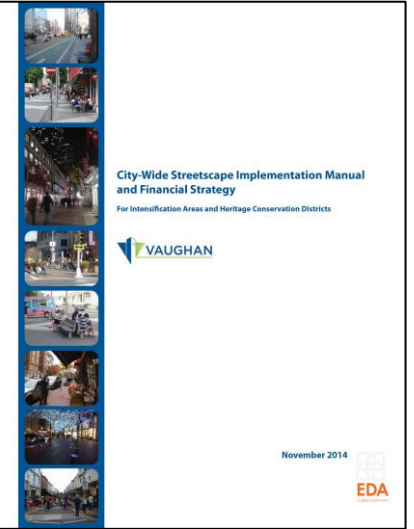
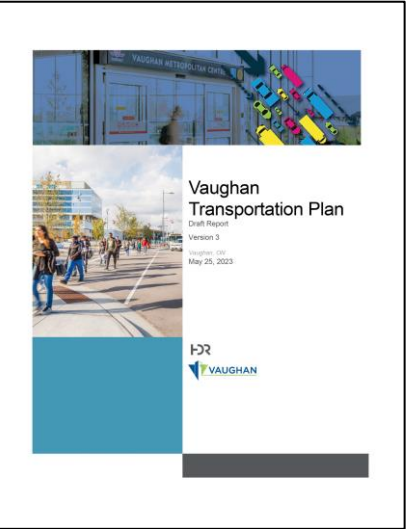
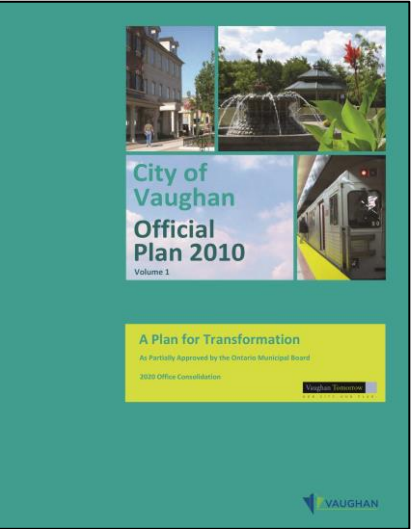
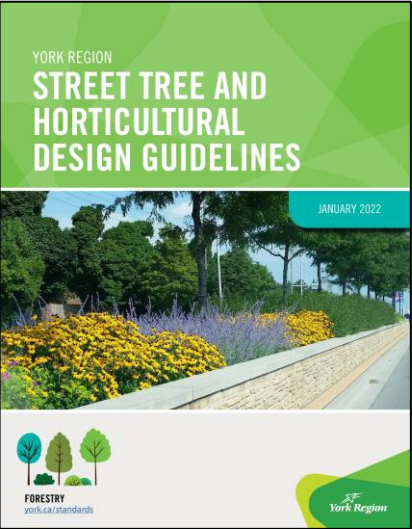
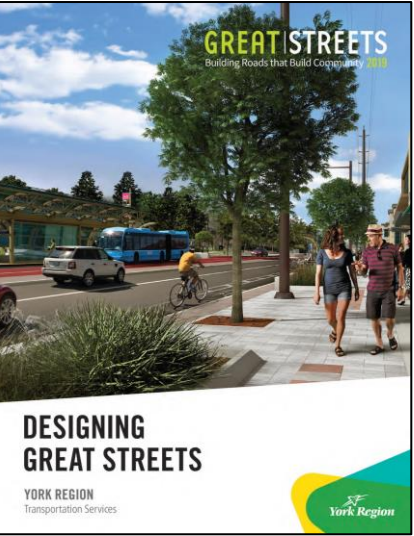
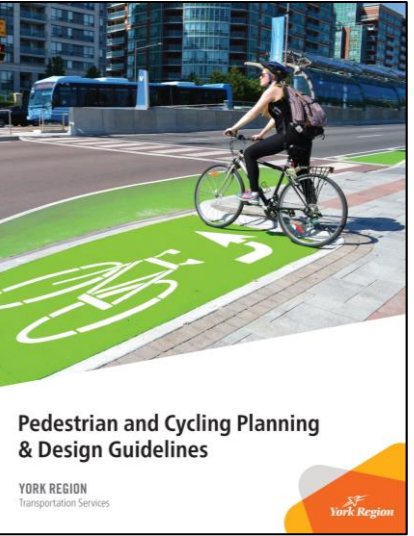
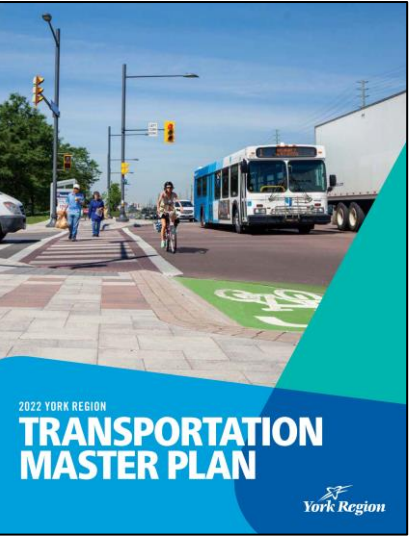
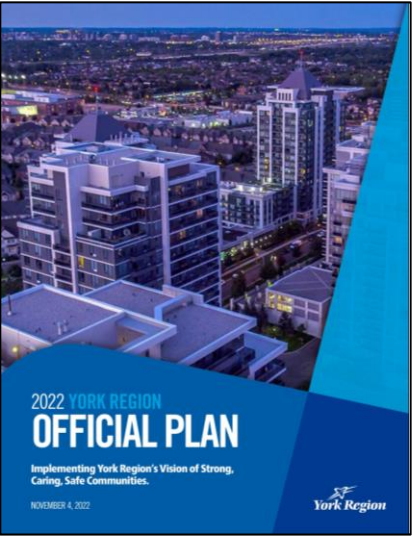
# 1

The Vaughan Complete Streets Guide (the Guide) is the City's reference on street design policies, process, and techniques.

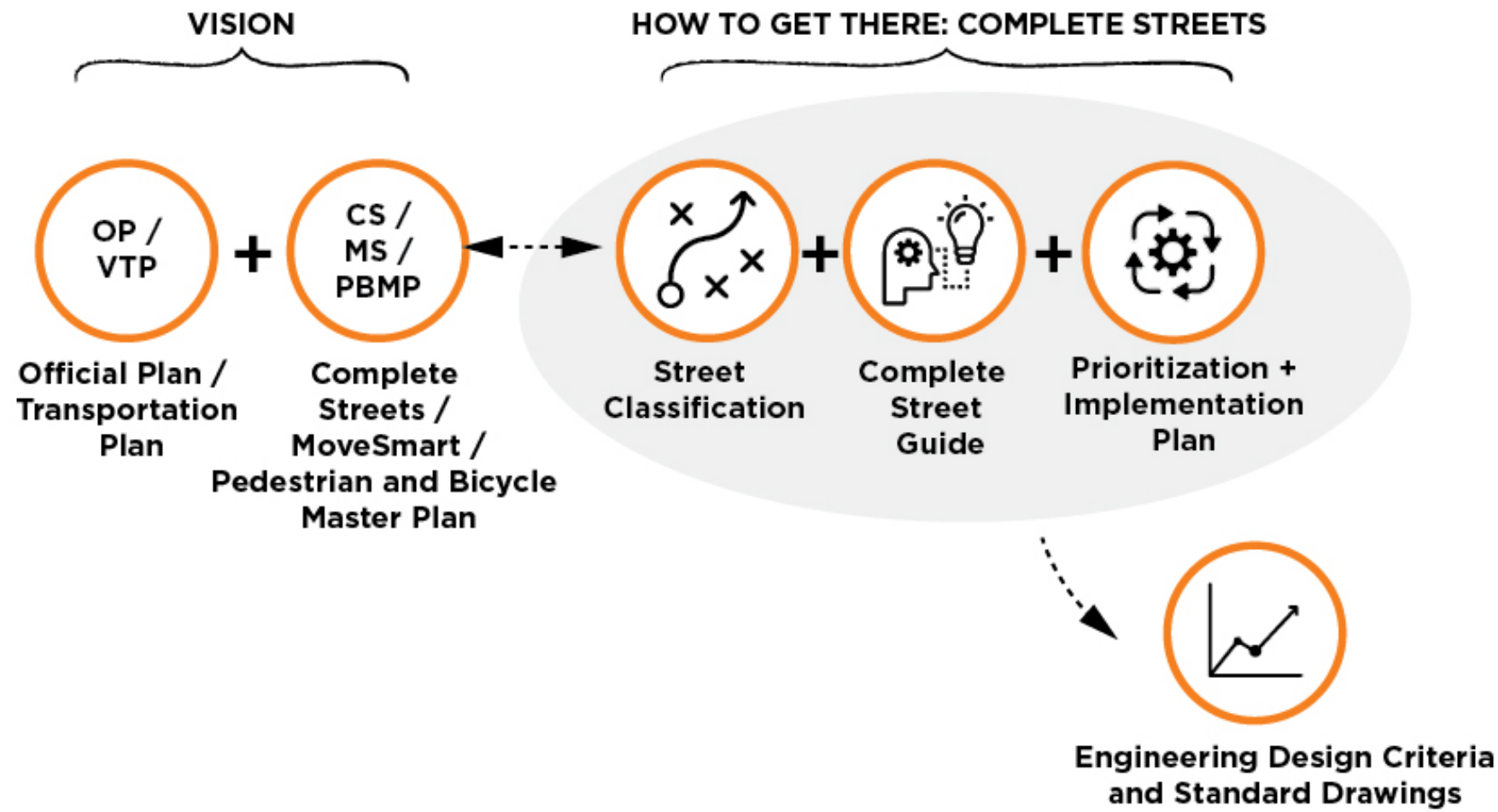
- 1.1 Purpose
- 1.2 Approach To The Guide
- 1.3 Policy Direction
- 1.4 Guiding Principles
- 1.5 Application Of The Guide
- 1.6 Guidance For Practitioners
- 1.7 Guide Structure



# Policy Context



# Approach to the Guide



# Guiding Principles



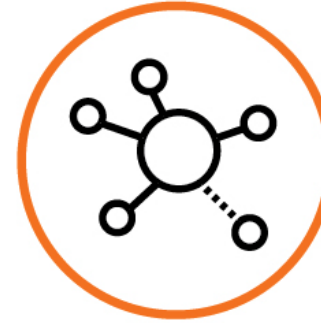
**SAFE STREETS FOR  
ALL USERS**



**STREETS FOR A  
HEALTHY COMMUNITY**



**STREETS THAT  
SUPPORT EXISTING  
AND FUTURE CONTEXT**



**STREETS THAT REDUCE  
TRANSPORTATION  
NETWORK GAPS**



**SUSTAINABLE +  
RESILIENT STREETS**



**STREET AS  
PLACES**



**ADAPTABLE + FUTURE  
READY STREETS**



**STREETS THAT  
SUPPORT A VIBRANT  
ECONOMY**





## CHAPTER 2 PROCESS

# 2

Chapter 2 defines the street design process and how to make decisions to achieve Complete Streets in Vaughan.

### 2.1 Roles and Responsibilities

### 2.2 Project Delivery Process

### 2.3 Review and Compliance

### 2.4 Coordination and Engagement

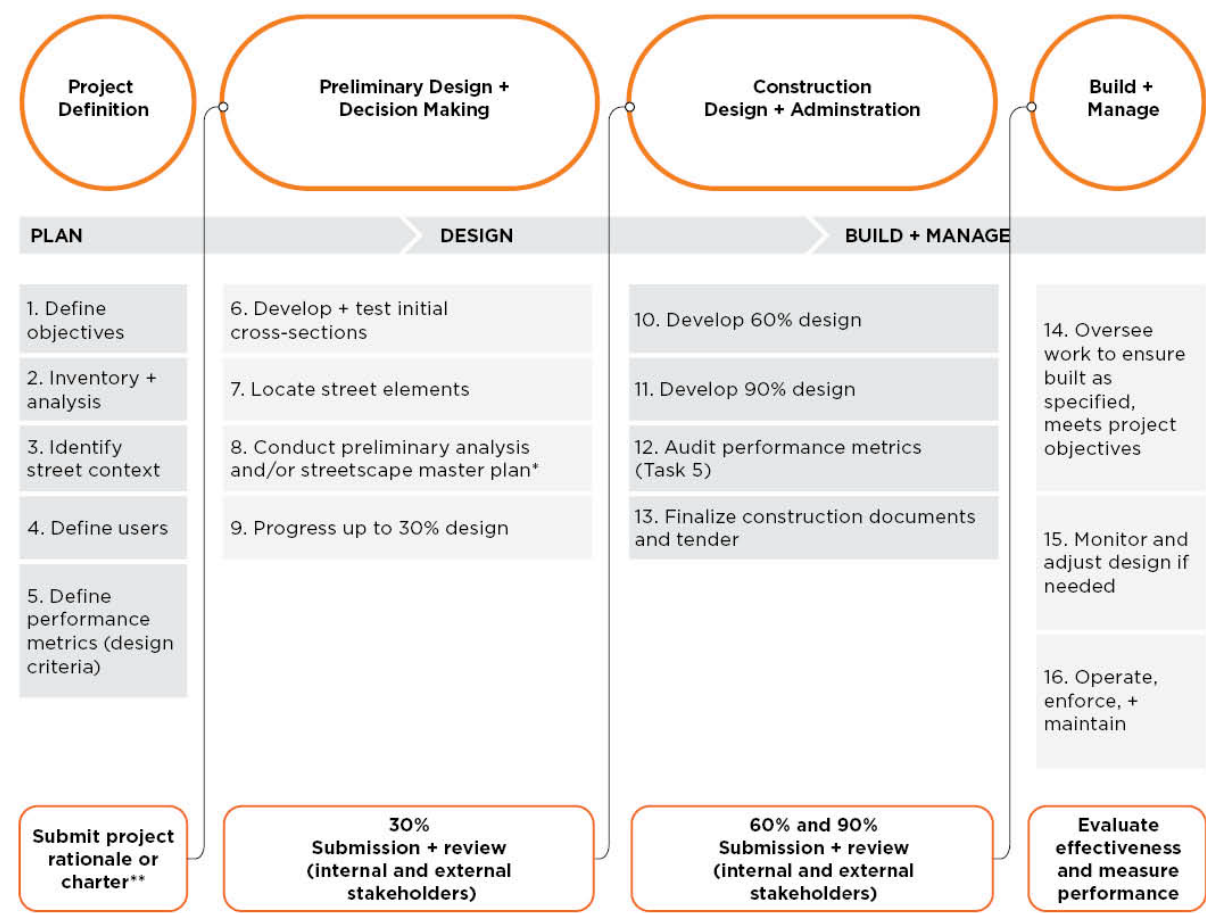
### 2.5 Street Context

### 2.6 Framework for Decision-making

### 2.7 Making Decisions and Assessing Trade-offs

### 2.8 Exceptions

# Project Delivery Process



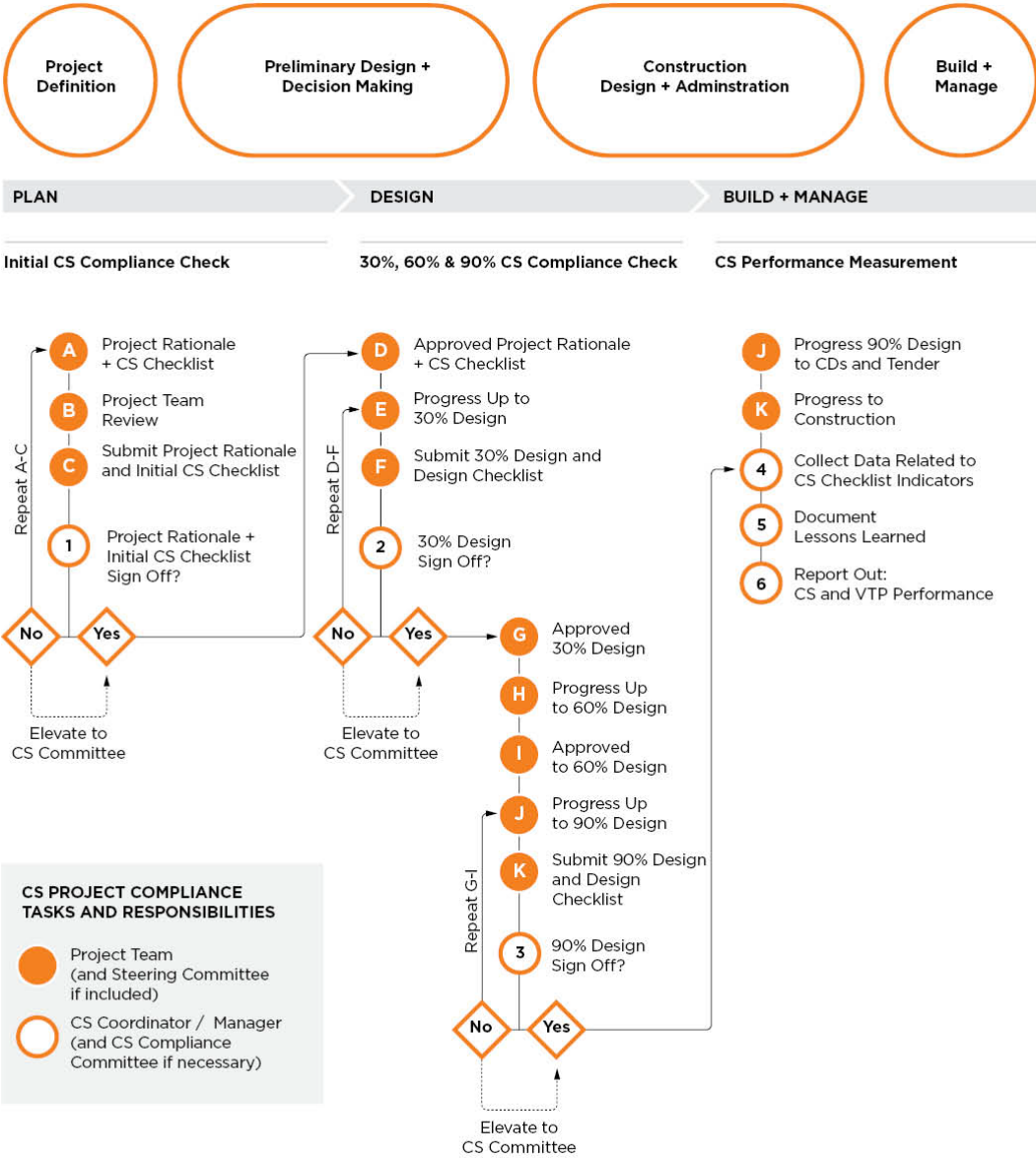
Notes:  
\*City to confirm when streetscape masterplans are applicable.  
\*\*City to confirm if and when project charters are used.

**PROJECT DELIVERY PROCESS**

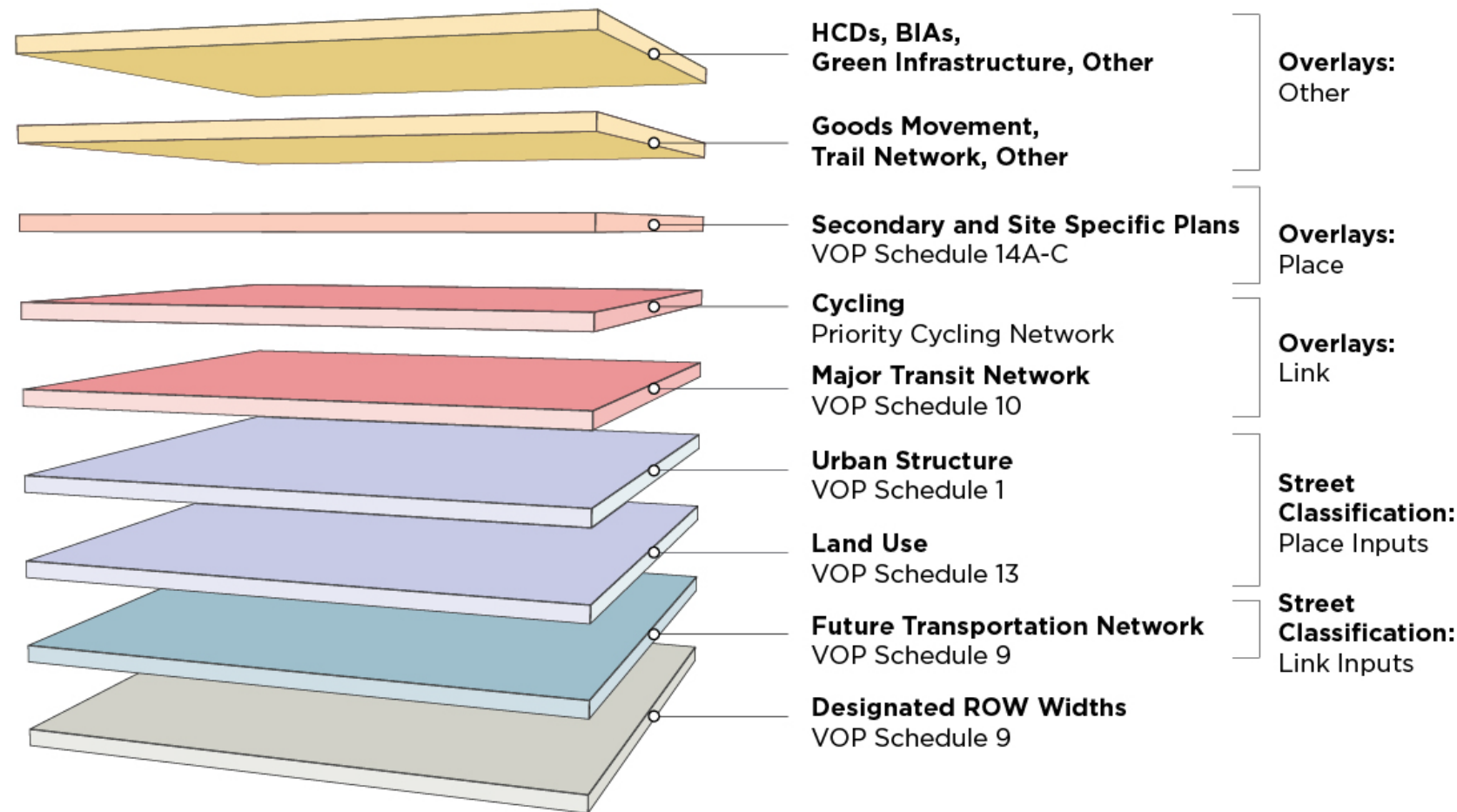
 Project Stages

 Reviews

# Oversight and Compliance

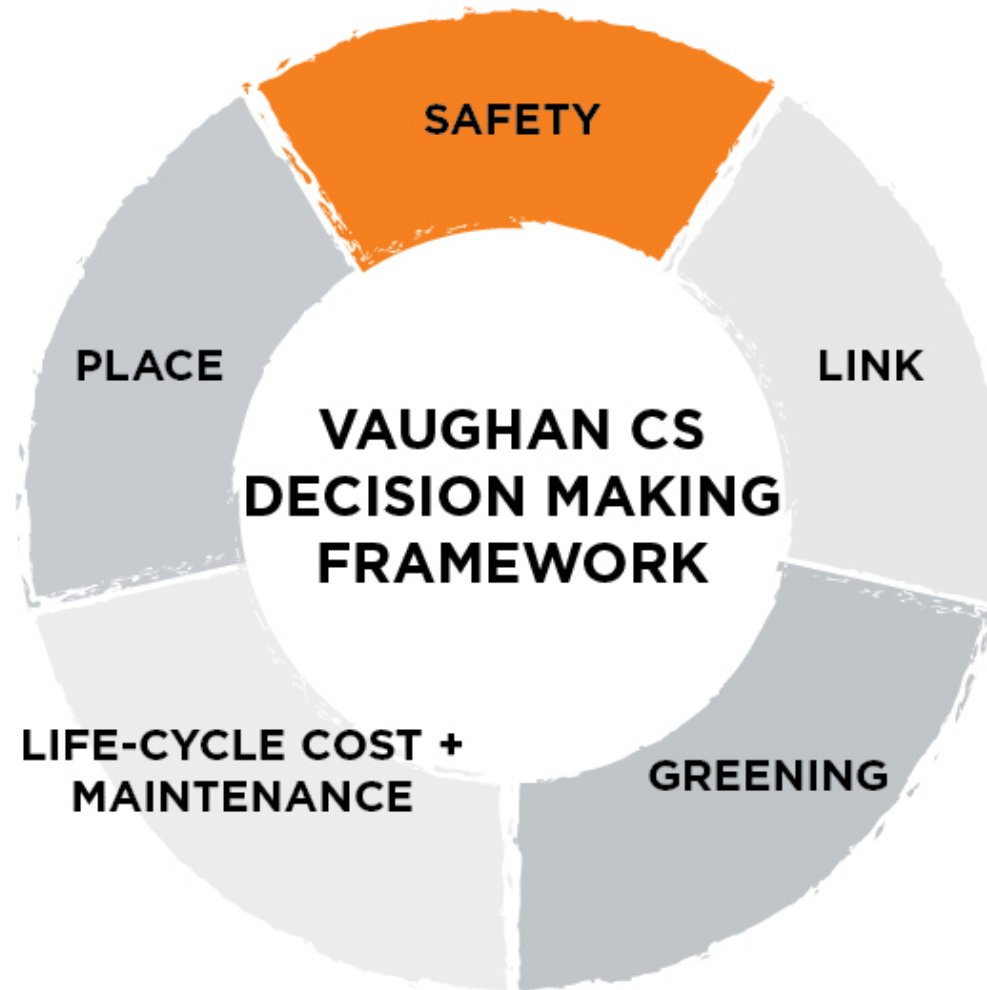


# Street Context: Link, Place and Overlays





## Decision-making Framework: Key Directives



# Making Decisions and Assessing Trade-offs

- **The Guide provides examples of common trade-offs in Vaughan.**
- **Guidance to help inform trade-off discussions**
- **Safety for vulnerable users is the primary lens through which all decisions are made.**

Faster transit (e.g., higher order transit) vs. reduction of general-purpose lanes with limited occupancy	Bicycle lanes vs. wider sidewalks
Vehicle delay vs. longer crossing time	Rural clear zones vs. urban lateral offsets
Vehicle delay vs. active transportation needs	Transit shelter vs. bike facilities
High speed roadways vs. context sensitive urban streets	Lead vs. lag turns, and impacts on pedestrian/bike movements
Centre median vs. driveway access	Curbside bus queue jump lane vs. shorter crossing distance for pedestrians
Right turn on red vs. bike lanes through intersection	Parklets and other temporary curbside animation vs. on-street parking to help reduce traffic speeds
Left turn lane vs. bike lane through intersection	Emergency vehicle access vs. speed reduction
Streetscape corridor vs. cycling infrastructure or on-street parking	Use of on-street parking as a buffer for cyclists vs. curbside vehicle travel lane
Street trees vs. below-grade utilities	Street trees vs. bike facilities



c: Bas Papierzak, Unsplash

## CHAPTER 3 DEMONSTRATIONS

# 3

Chapter 3 illustrates applications of the Complete Streets approach to different intersection types. Each intersection contains an analysis, ideas for a retrofit and reconstruction. It is hoped that the concepts will inform thinking and can be applied throughout Vaughan.

**3.1** What is a Demonstration?

**3.2** Community: Local to Local

**3.3** Intensification: Arterial to Local

**3.4** Intensification: Collector to Collector

**3.5** Employment: Arterial to Collector

**3.6** Natural: Trail to Arterial

# Demonstration: Collector - Collector

## Existing

### 3.4

#### INTENSIFICATION: COLLECTOR TO COLLECTOR

The intersection of two collector streets is common. As the level of traffic increases in Vaughan, collectors begin to resemble arterials. Usually, a collector is the primary route out of a neighbourhood, and it is used by all ages, abilities, and modes.

##### EXISTING TYPICAL CONDITIONS

**Lane width.** One street has a typical 4-lane cross section, while the other has a four lanes plus a left turn lane. Both seem oversized for collectors.

**Corner radii.** The corners were probably designed to allow large but infrequent trucks to turn into the curb lane.

**Bicycle facilities.** None.

**Traffic calming.** None.

**Crosswalks.** The crosswalks are just two striped lines, which may be faded from age and winter weather. The stop line is too near the crosswalk.

**Accessibility.** The crosswalks meet at the apex of the sidewalk, so there is only one pedestrian ramp with DWS.

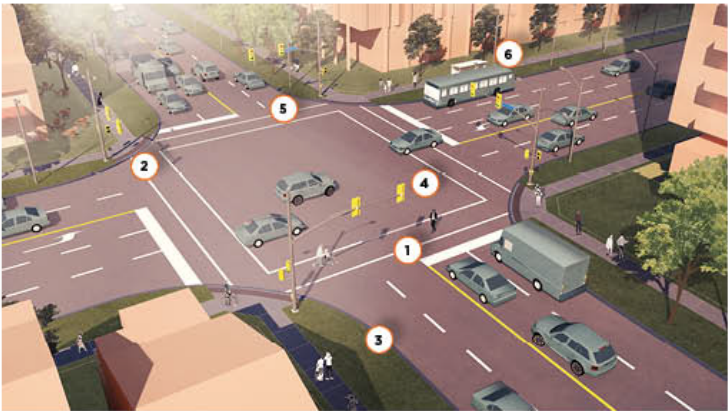
**Intersection control.** There is a typical traffic signal with a leading turn signal and Right-Turn-On-Red (RTOR).

**Sidewalks.** The sidewalks are minimal.

**Transit.** The bus stop is near-side.

##### EXISTING CONDITIONS

- 1 4+ lanes
- 2 Large corner radii
- 3 No bike lanes
- 4 Simple crosswalks
- 5 Typical signal
- 6 Near-side bus stop





# Demonstration: Collector - Collector

## Retrofit

### RETROFIT

**Lane width.** The 4-lane street is converted to three lanes with bike lanes. Convert the 5-lane street to four lanes with bike lanes. The left lane may become a left turn lane as warranted. The lane widths are reduced so that buffer can be added adjacent to the bike lane.

**Corner radii.** With the addition of the bike lanes, turns are farther from the corner. A striped section is added with bollards to keep drivers from cutting the turn and out of the bike box.

**Bicycle facilities.** Protected bike lanes are added as part of the road diet. Turning pockets are placed at the corners to allow cyclists to wait as they complete a 2-stage turn. The bike lanes are dashed through the intersection.

**Crosswalks.** The crosswalks are relocated to allow for the bicycle lanes. They are striped with "ladders". The stop lines are set back.

**Intersection control.** RTOR is removed. The leading left turn signal is replaced with leading pedestrian and bicycle indicators, which is consistent with legally required yielding by turning drivers. There may be a lagging left turns.

**Transit.** TA shelter is added to the bus stop. A queue-jump may be added.



#### KEY CHANGES: RETROFIT

- 1 Road diet
- 2 Slower turns
- 3 Protected bike lanes
- 4 High visibility crosswalks
- 5 No RTOR + Leading pedestrian Interval (LPI) and Leading Bike Interval (LBI)

# Demonstration: Collector - Collector Reconstruction

## RECONSTRUCTION

**Corner radii.** Landscaped curb extensions are installed. This further codifies the changes of the retrofit.

**Bicycle facilities.** The bicycle lanes are converted to cycle tracks. The bike boxes are converted to a protected intersection.

**Crosswalks.** With the curb extensions and cycle tracks, the crosswalks are shortened. There are mini-crosswalks at the cycle tracks.

**Accessibility.** Pedestrian ramps and DWS are added at each crosswalk (not at the apex of the corner).

**Intersection control.** None.

**Sidewalks.** The sidewalks are widened.

**Transit.** The bus stop is moved to the far side.



### KEY CHANGES: RECONSTRUCTION

- 1 Landscaped curb extensions
- 2 Cycle tracks
- 3 Far-side bus stop





c: Engin Akyurt, Unsplash

## CHAPTER 4 ELEMENTS

# 4

Chapter 4 provides guidance for the typical elements that make up a Complete Street. The elements are organized to focus on the most vulnerable users first to support the guiding principles stated in [Chapter 1](#) and “outside-in” approach in [Chapter 2](#).

- [4.1 Overview](#)
- [4.2 Pedestrian Realm and Placemaking](#)
- [4.3 Cycling Infrastructure](#)
- [4.4 Travelway](#)
- [4.5 Infrastructure](#)
- [4.6 Intersections](#)



# Pedestrian Realm and Placemaking

## Placemaking Opportunities





# Cycling Infrastructure

## Existing Cycling Facilities

**Table 4.3** Cycle Facility Types in Vaughan

Location	Type	Description
In Boulevard	Cycle Track Facility	Designated space for cyclists, with adequate buffer from pedestrians and physically separated from motorists.
	Multi-use Pathways	Designated space shared between cyclists and pedestrians, and physically separated from motorists.
On Road	Buffered or Conventional	Designated space for cyclists, physically separated from pedestrians but no physical separation from motorists (pavement markings only).
Off-Road	Multi-use Recreation Trail	Shared space for pedestrians and cyclists, within parks and open spaces.





# Travelway

## Traffic Calming

**Table 4.7 Traffic Calming Measures as per Street Class**

Traffic Calming Measures		Applicability
Horizontal Deflection	Curb radius reduction Curb extensions Traffic islands Raised Medians	Major Collector Community Minor Collector Community Local Community Local Intensification
Vertical Deflection	Speed Cushions Speed Tables Raised Crossings	Local Community Local Intensification
Roadway Narrowing	Curb extensions Lane narrowing On-street parking Raised median islands Road diet	All Street Classes
Surface Treatment	Sidewalk extensions Textured crosswalk Textured pavement	Minor Collector Intensification Minor Collector Community Local Intensification Local Community
Design Elements	Sidewalk extension Textured crosswalk Textured pavement	Local Community Local Intensification





# Infrastructure

## Street Trees, GI and Utilities



Soil Cells, Bloor Street  
c: Deeproot



# Intersections

## Pedestrians and Mid-block Crossing



Pedestrian refuge island



Cyclists at mid-block crossing



# Intersections

## Cycling and Transit



Protected intersection.



Transit stop at intersection.



## CHAPTER 5 IMPLEMENTATION

# 5

Chapter 5 provides guidance on efforts required for the delivery of Complete Streets in Vaughan.

### 5.1 Key Strategies for Implementation

### 5.2 Actions

### 5.3 Performance Metrics

# Key Strategies for Implementation

- Understand the **scale** of street networks.
- Leverage **investments** and **funding sources**.
- Prioritize **safety** of the vulnerable user.
- Begin with **quick wins**.
- Promote testing with **pilot projects**.
- Collect **robust** and **complete** early on.

# Actions- List

## Policy

1. Updates to OP Policy
2. Formalization Street Classification (VTP)
3. Create an Online Street Classification System
4. Updates to Other Plans & Guidelines

## Process

5. Use the Guide as a Reference in all Projects
6. CS Coordinator
7. Oversight and Compliance Committee
8. CS Training
9. Community Outreach/ Awareness
10. Coordination and Collaboration
11. CS Maintenance and Operations Review
12. Additional Studies

## Prioritize

13. Apply CS to Projects Underway
14. Create inventory of Street Retrofit projects
15. Opportunities for Pilots/ Tactical Urbanism



# Performance Metrics

- Set CS themes/ goals to measure performance
  - **Goal 1:** Safety for all users
  - **Goal 2:** Enhanced health and environment
  - **Goal 3:** Sustainable and active transportation
  - **Goal 4:** Social equity and inclusivity
- Collate ‘before’ and ‘after’ data to measure success
- Quantify duration and/or operations
- Reviewed by CS Coordinator

Table 5.1 Performance Metrics						
CS Goals	Metrics					
	Short Term Assessed by Project Manager per project		Long Term Assessed by CS Coordinator every 5 years		Operations Assessed by CS Coordinator every year	
	About the Metric	How its measured	About the Metric	How its measured	About the Metric	How its measured
GOAL 1: SAFETY FOR ALL USERS						
Speed	Percentage of drivers that comply with speed limits.	Before and after on-site surveys documenting the number of drivers at speeds over the posted limit.				
	Increase in traffic calming.	Measured from plan. Add total number by km and/or by total intersections.				
	Decrease in lane widths.	Measured from plan. Calculate difference between existing and proposed lane width. Multiply by number of lanes in crossection.				



## APPENDIX A DESIGN CHECKLIST

A

Use Design Checklists to evaluate and assess completeness of a project.

# Design Checklist

- Supplement the Project Delivery Process to allow for design modifications at specific milestones.
- Reviewed by Project Manager / CS Coordinator

Table A.1 Design Checklist						
	Techniques	Notes	30%	60%	90%	Comments
1.0 Cross-sections						
1.1	Lane widths as per Guide Table 4.6.	<ul style="list-style-type: none"><li>• Measure lane widths to curb.</li><li>• Avoid shoulders and edge lines.</li><li>• Avoid excess pavement.</li></ul>				
1.2	Number of lanes as per Guide Section 4.4.1.	<ul style="list-style-type: none"><li>• Avoid dedicated turn lanes except where there is a dedicated turn signal.</li><li>• Avoid slip lanes.</li><li>• Always err on the side of fewer lanes.</li></ul>				

- **Techniques and Notes:** List of techniques and Guide references organized in 6 categories that follow the design process.
- Use the **30%**, **60%** or **90%** box to provide a 'Y' or 'N' answer. An 'N' indicates a need to further evaluate the project for Complete Street techniques.
- **Comments:** Identify or append (at the end of the checklist), any supporting information or documentation. List changes observed between 30% to 90%. E.g., budget, 3rd party information, etc.



## APPENDIX B CROSS-SECTIONS

# B

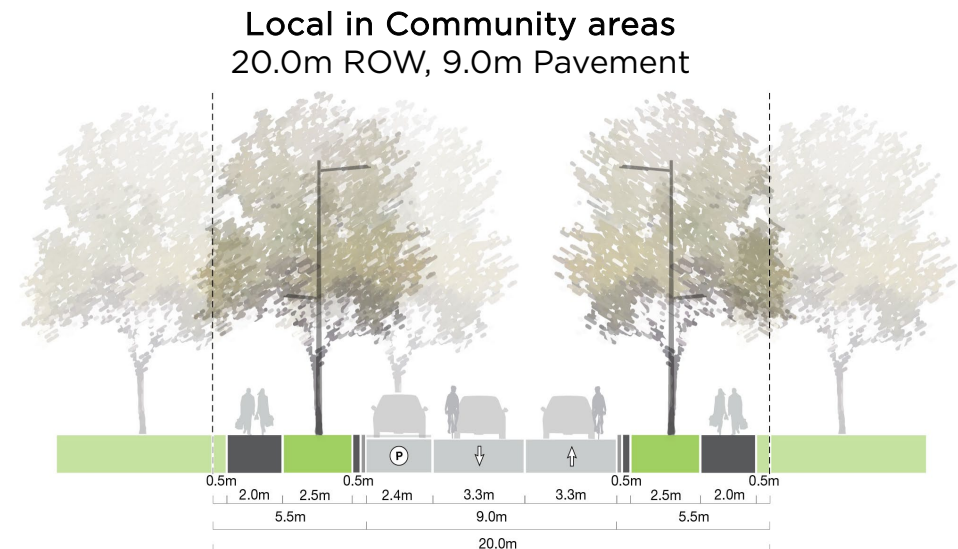
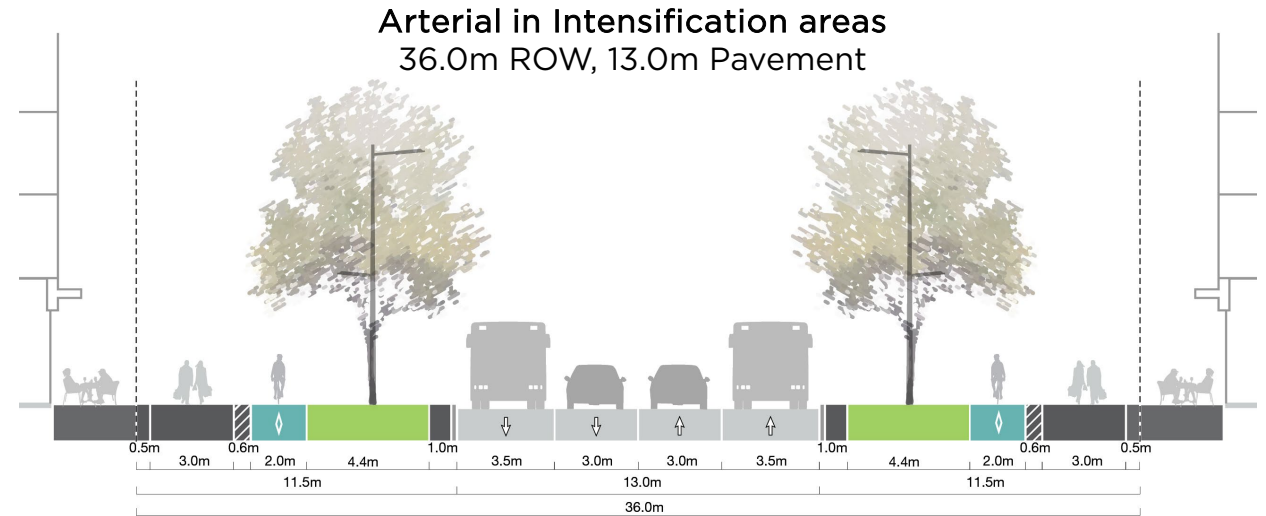
Complete Streets cross-sections developed based on the street rights-of-way and functional class proposed in the Vaughan Transportation Plan.

These cross-sections are aspirational and included for illustrative purposes only. They show the best possible arrangement of CS elements within the rights-of-way. These sections can be a starting point, however, every project to undergo a CS process for a solution.



# Cross-Sections

- Provides typical cross-sections for different streets.
- They are ideal cross-sections, a 'starting point' and not the result.
- Based off the street typologies from the Vaughan Transportation Plan (VTP).



**What's Not Included?**

## The Guide Is Not....

- A **'solution'** for every street project.
- **Engineering standards** for different elements within street cross-sections.
- **Area / corridor specific** guidance for streets.
- Guidance for implementation of Operations and Maintenance of streets.



## Questions for Clarification





## Next Steps

- **Draft Guide:**
  - Analyze and summarize what we heard today.
  - Receive all PIC comments by Nov 2 (three weeks with the material).
  - Consider PIC input / revise accordingly.
- **Prepare the Final Guide.**

