TRAFFIC CALMING ON ARTERIALS: WHY IT MATTERS AND HOW TO DO IT

CARSP Webinar, Feb 24, 2026

MOBYCON

MOBYCON

Matt Pinder

- Dutch-inspired Canadian engineer
- 10 years' experience in all-ages-abilities street design
- Trained 1,000+ professionals on multimodal transportation planning + design
- Highly skilled at photographing curbs while walking/cycling

ABOUT MOBYCON

Our mission: To make the world less dependent on the car

Everyone, young or old, has the right to a safe and enjoyable mobility experience, to participate in society without being (too) reliant on others, and live in a world where everyone can move sustainably. By combining networks for good walking, cycling, public transport and even the car, we focus on giving people the freedom to choose.

OVERVIEW

1. Low speeds support great places
2. Build good roads and streets
3. Driving slower is faster
4. Wide nodes, narrow roads
5. Street-level arterial speed management techniques
6. Transitions

Elgin Street, Ottawa

LOW SPEEDS SUPPORT GREAT PLACES

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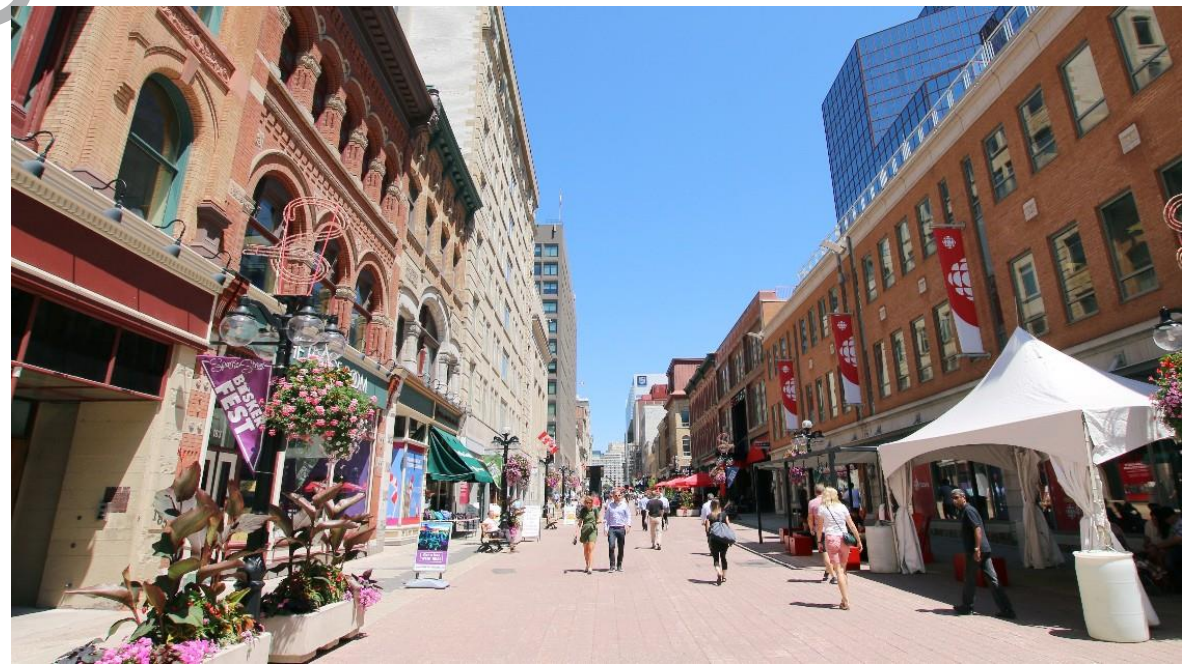
MOVEMENT

- “Movement enables people to connect with one another and pursue leisure and recreational activities. It is also about efficiently delivering goods and services to drive economic growth.”
- Enables places by improving their connectivity
- **Can diminish places when designed poorly**

PLACE

- “The spaces where we get together, relax, celebrate and contemplate, as well as work, participate in civic life, learn and exchange.”

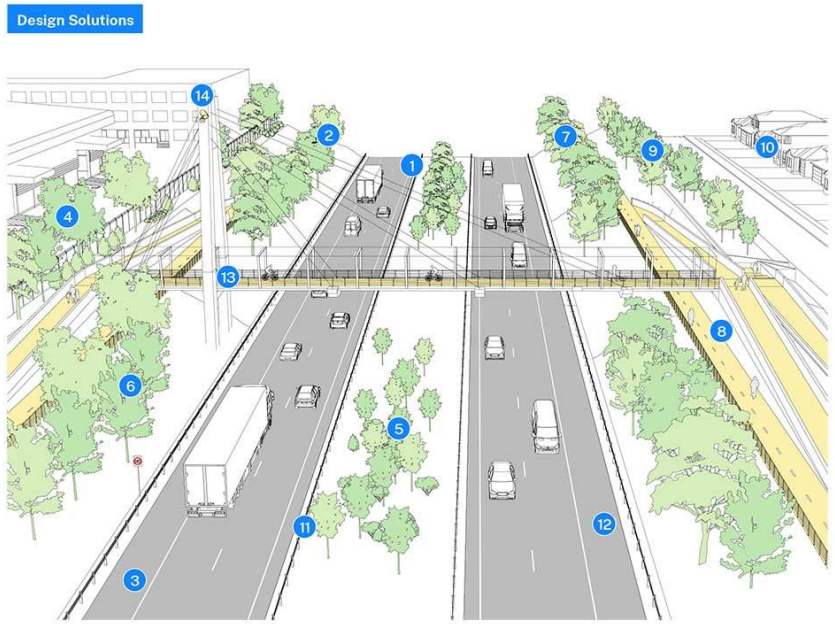


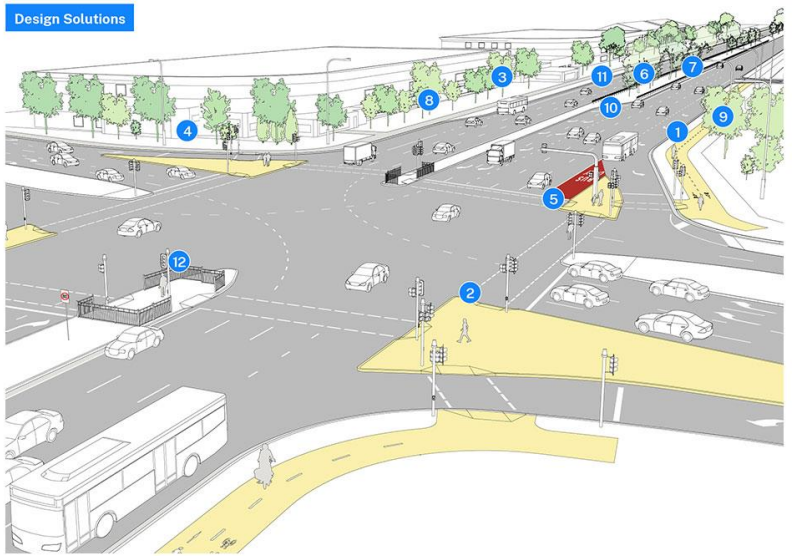
FOUR STREET ENVIRONMENTS

- **Local Streets:** Majority of streets in a community.
- **Civic Spaces:** Places with a significant meaning, activity function or built environment.
- **Main Roads:** Central to the movement of people and goods.
- **Main Streets:** Have significant movement and place functions; balancing is a common challenge.

MAIN ROADS

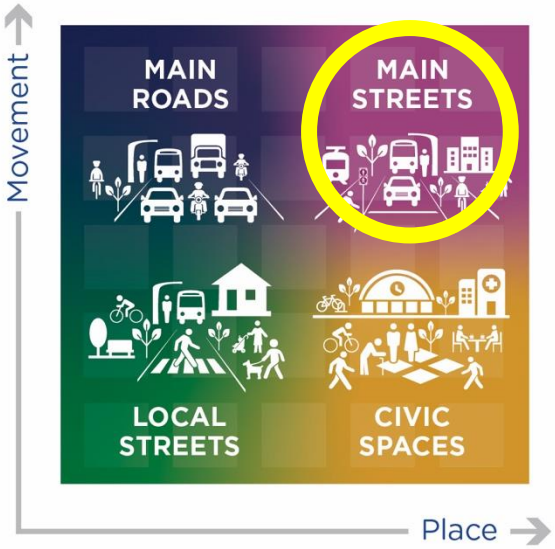
- Prioritize strategic movement functions
- Important to limit negative impacts on communities through planning, design and operation

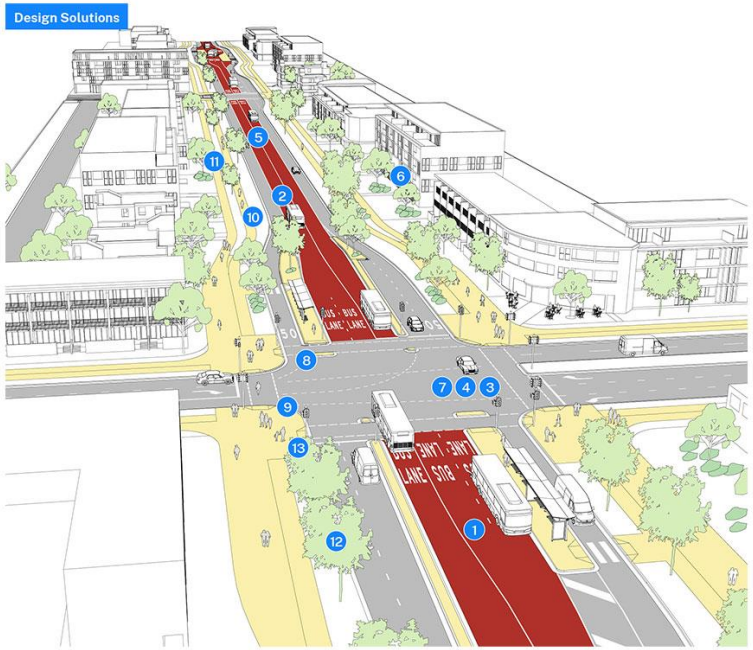




MAIN STREETS

- Significant movement and place; balance is a challenge
- Improve place qualities
- Access for walking and cycling
- **Safe, low-speed environment**
- Efficient movement of people and freight





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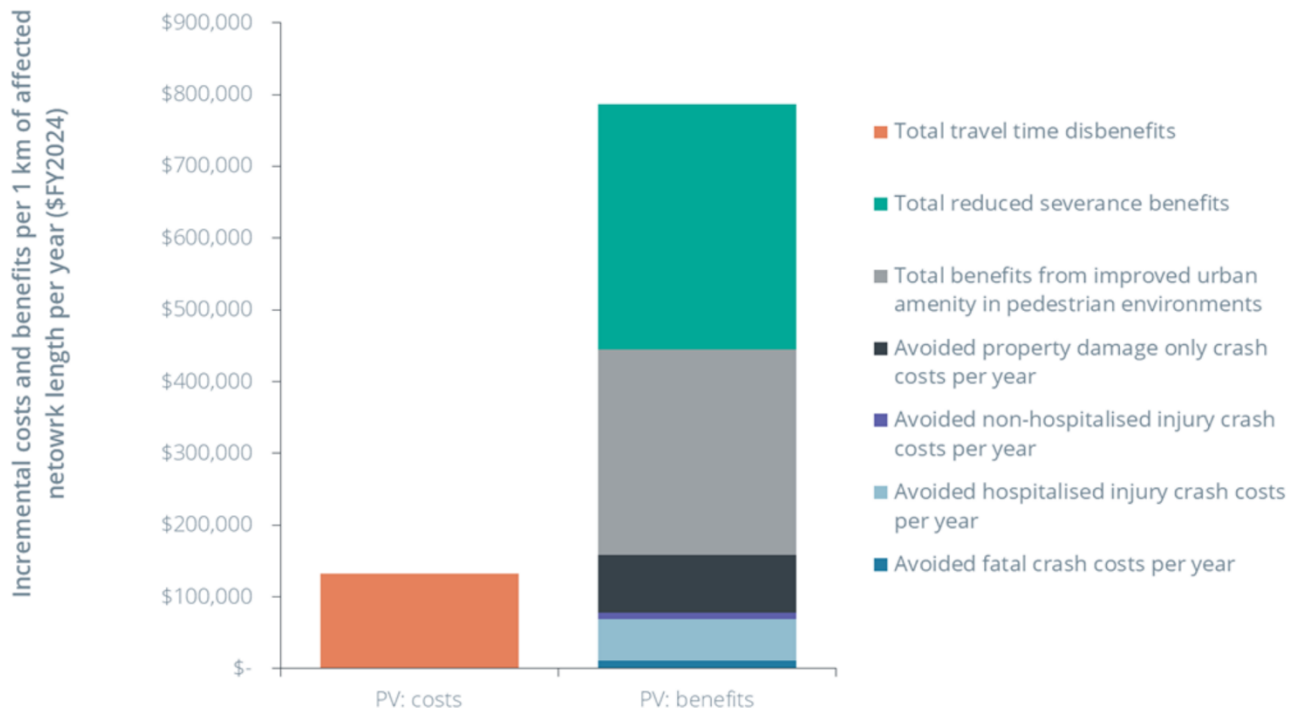
AUSTROADS ECONOMIC STUDY (2025)

On all road links that are critical for pedestrians, **the benefits of speed limit reductions outweigh the costs.**

Benefits:

- Reduced severance (easier to cross the street)
- Improved amenity (people enjoy walking more)
- Reduced crashes, injuries, deaths

Figure 6.1: CBA results for the activity/destination high street scenario involving a speed limit reduction of 50 to 30 km/h



Prepared by Frontier Economics. *Austroads*

DUTCH SUSTAINABLE SAFETY ROAD CLASSIFICATIONS

ACCESS	DISTRIBUTOR	THROUGH
		
The BEST places	OK places	Stay away!

BUILD GOOD ROADS AND STREETS

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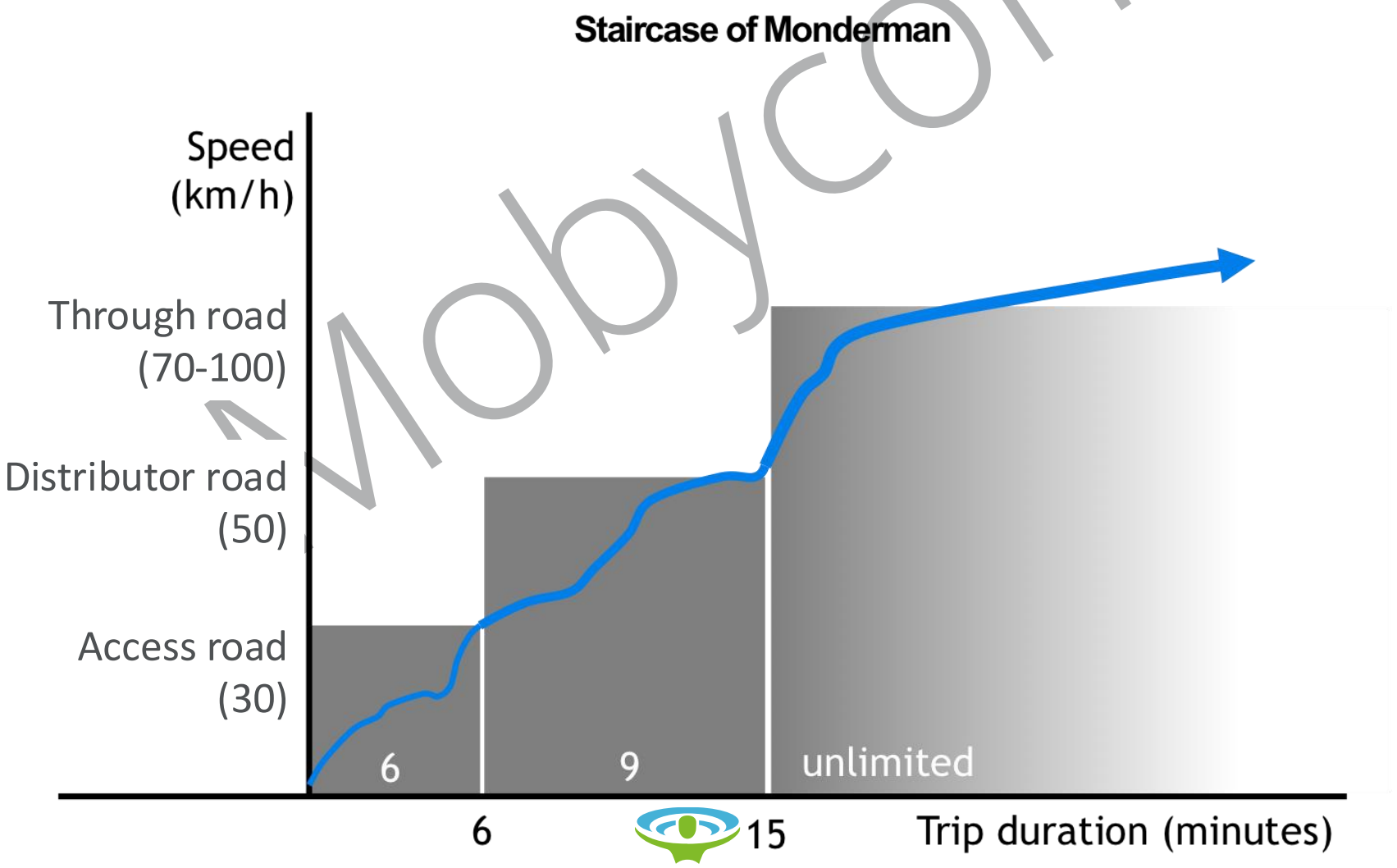
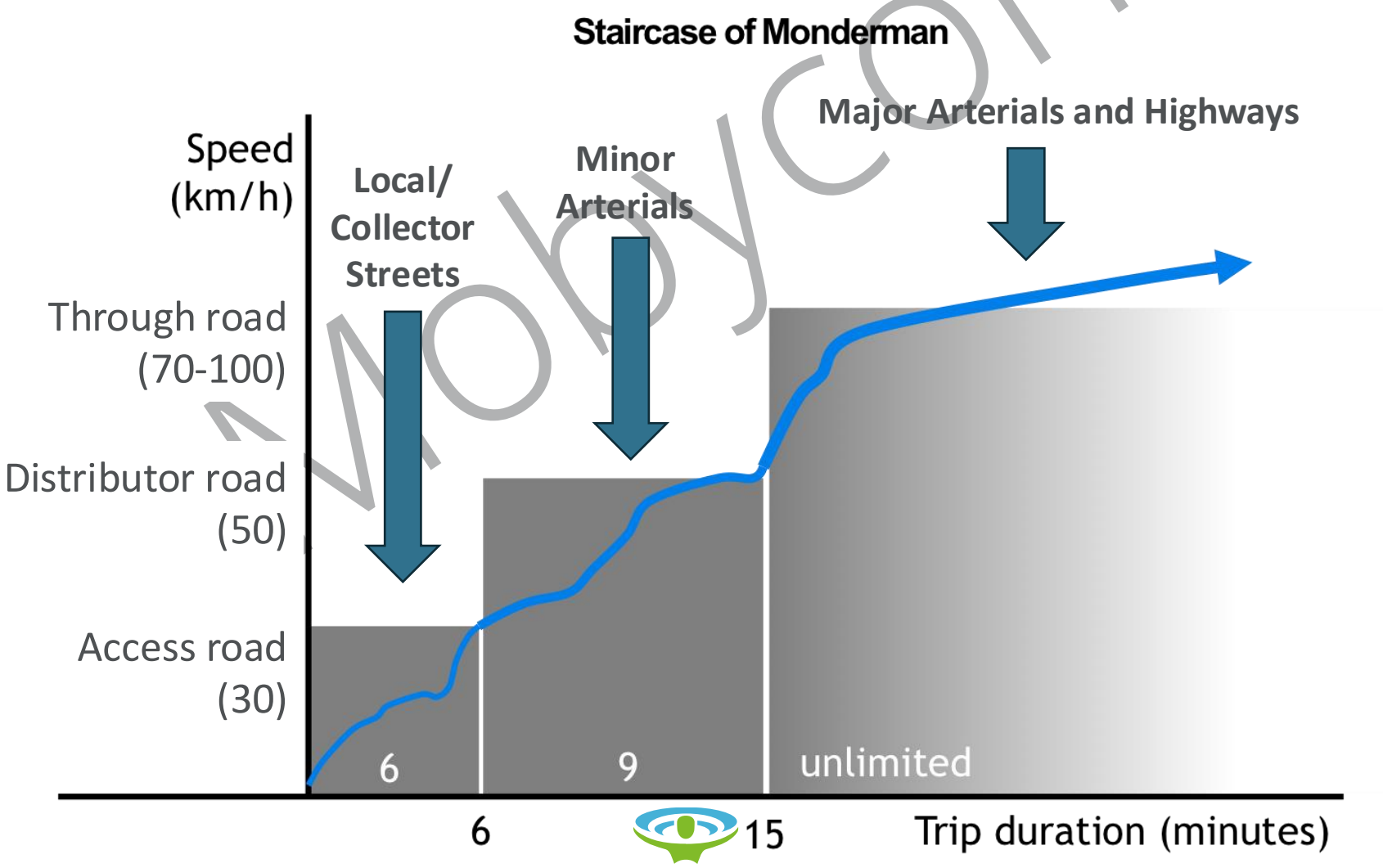
TRAFFIC PSYCHOLOGY



TRAFFIC PSYCHOLOGY



SUSTAINABLE SAFETY ROAD CLASSIFICATIONS

ACCESS	DISTRIBUTOR	THROUGH
		
6 mins (up to 3 km)	9 mins (up to 7.5 km)	Unlimited

GOOD ROADS

- Prioritize strategic movement functions
- Consider grade-separations
- Limited or no driveways and accesses
- Important to limit negative impacts on communities through planning, design and operation
- **“A safe place for speed”**

Trans Canada Highway, Thunder Bay (Google)

SAFE “ROAD” DESIGN

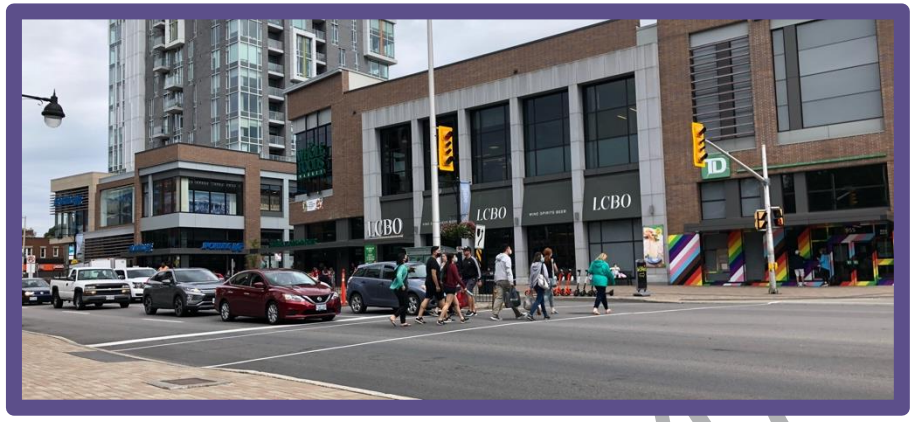
CGCE Group for Engineering Consultancy via LinkedIn

GOOD STREETS

- Prioritize access to destinations
- Low speeds and narrow street to make it easy to cross
- On-street parking
- Visual complexity to encourage slower travel
- **A critical place to manage speeds**

Elgin Street, Ottawa

SAFE “STREET” SPEEDS



Bank St, Ottawa (Mobycon)

Main St, Ottawa (Mobycon)

GDCI Designing for Safe Speeds

CROSSING DEMAND	Fully Shared	Shared by Cyclists and Motorists	Fully Separated
High	10	20 / 30	30
Medium	10	30	40
Low	10	30	40 / 50

LEVEL OF SEPARATION

What should my target speed be? Match the Level of Separation and the Crossing Demand of a street to identify the maximum speed for it.

NEITHER STREET NOR ROAD

- Designed like a road (straight, wide, flat)
- Street-oriented land use (shopping, housing, services, etc.)
- High speeds and conflict potential.

Best solution: avoid these with better land use and transportation planning

Red River Road, Thunder Bay (Google)

Source: Strong Towns

COMPLEXITY VS. SIMPLICITY

A good *street*

A good *road*

DRIVING SLOWER IS FASTER

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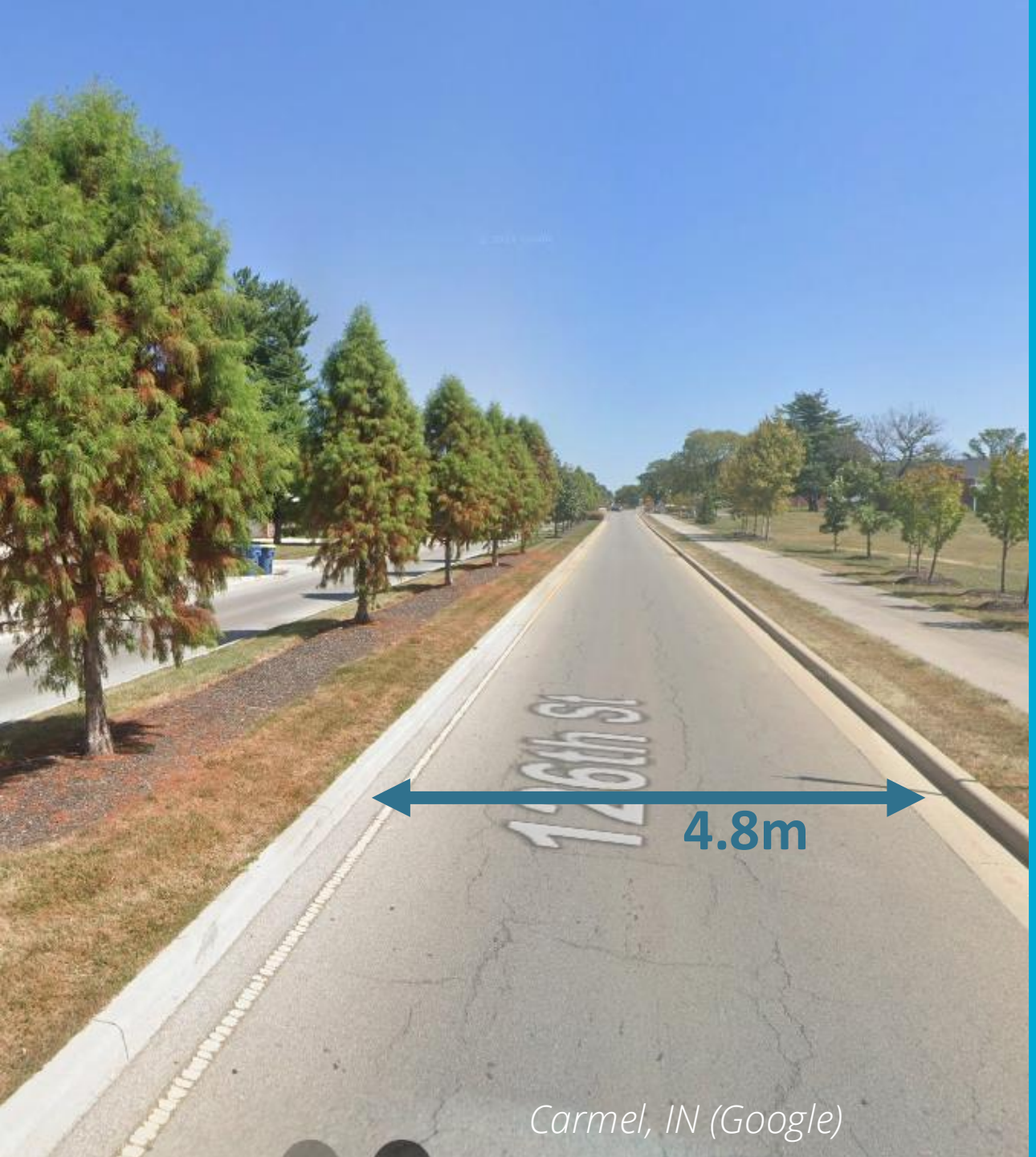
DUTCH BOULEVARDS

- Priority street @ 30-50 km/h
- No overtaking
- Wide median strip
- Slow speed at intersections
- Separated bicycle facilities

FUNCTIONAL ELEMENTS

- Design speed 40-50 km/h
- Narrow, single drive lanes
- Planted median
- Traffic calming at intersections
- Priority street
- No traffic signals(!)

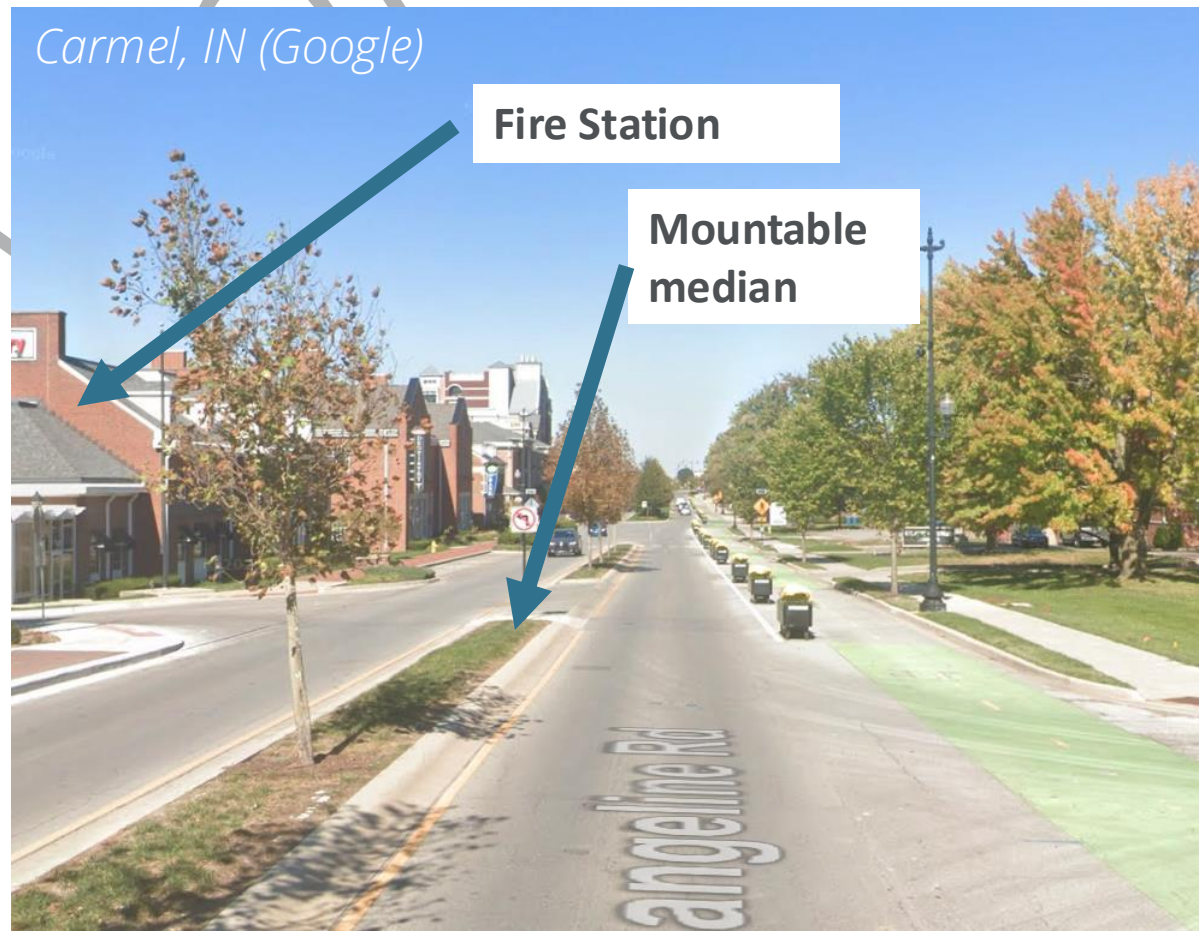


Carmel, IN (Google)

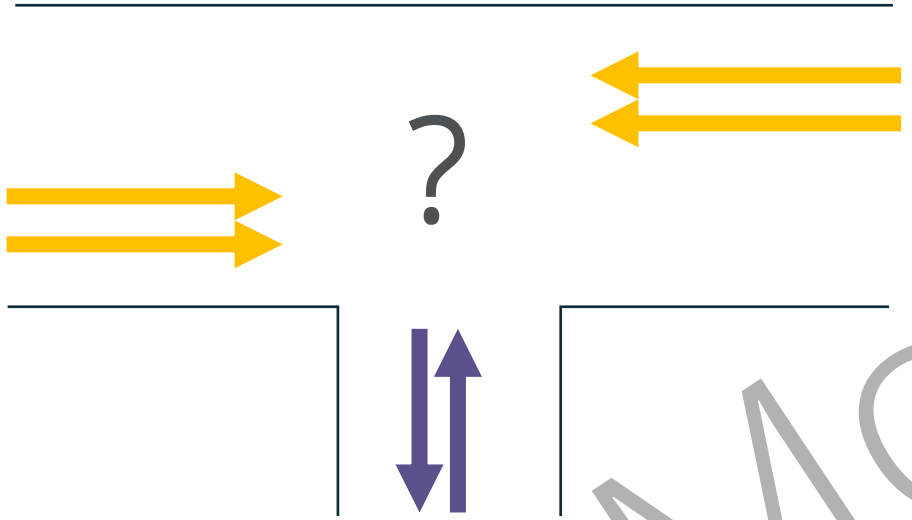
NORTH AMERICAN ADAPTATION

- Arterials and busy collectors in (sub) urban environments
- Easy for 15,000 vpd, possible for up to 25,000
- Various design interpretations
- Wide enough for emergency vehicles to pass pulled over cars

BEFORE AND AFTER

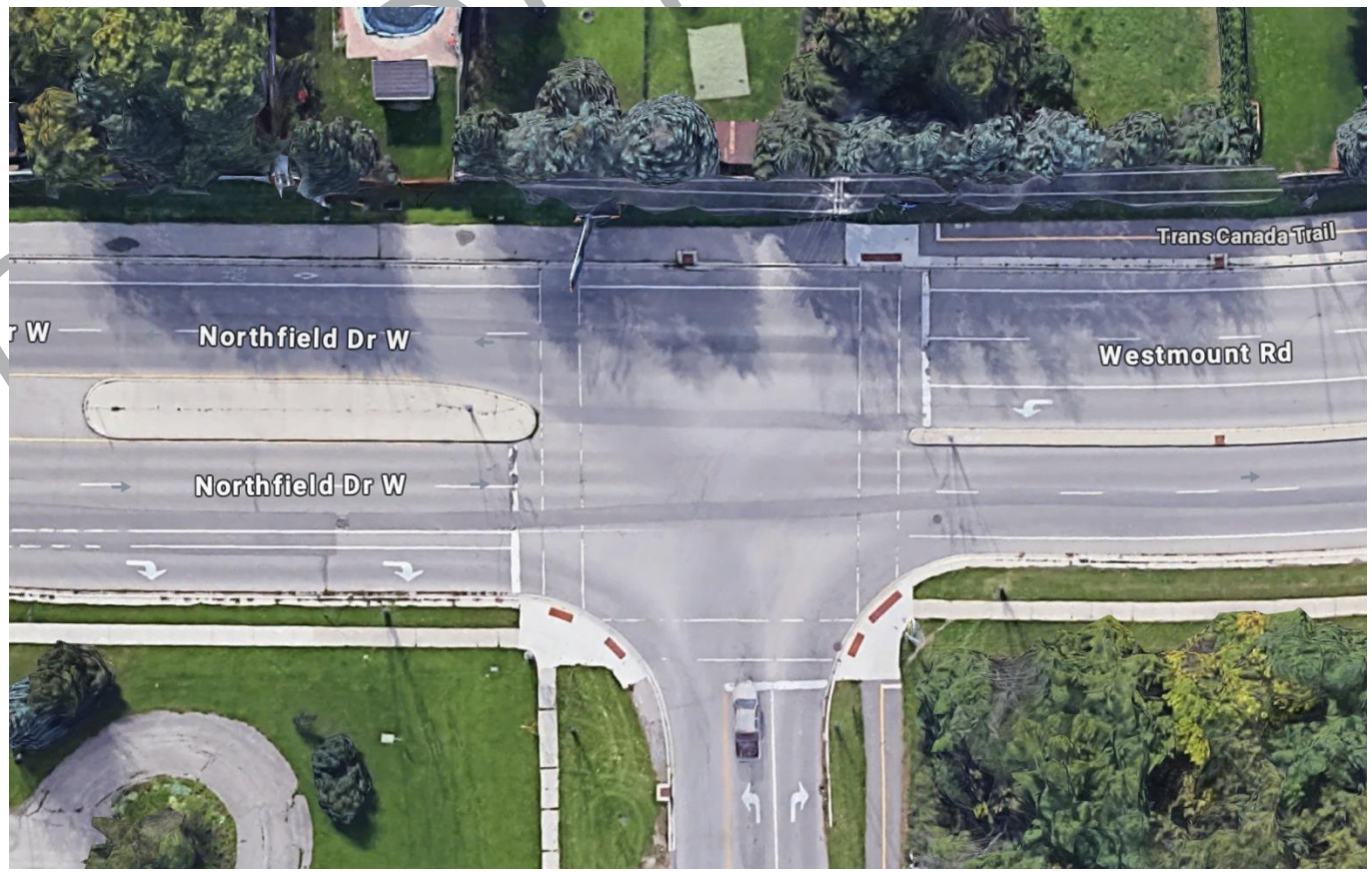


FOUR-LANE ARTERIAL INTERSECTION DESIGN



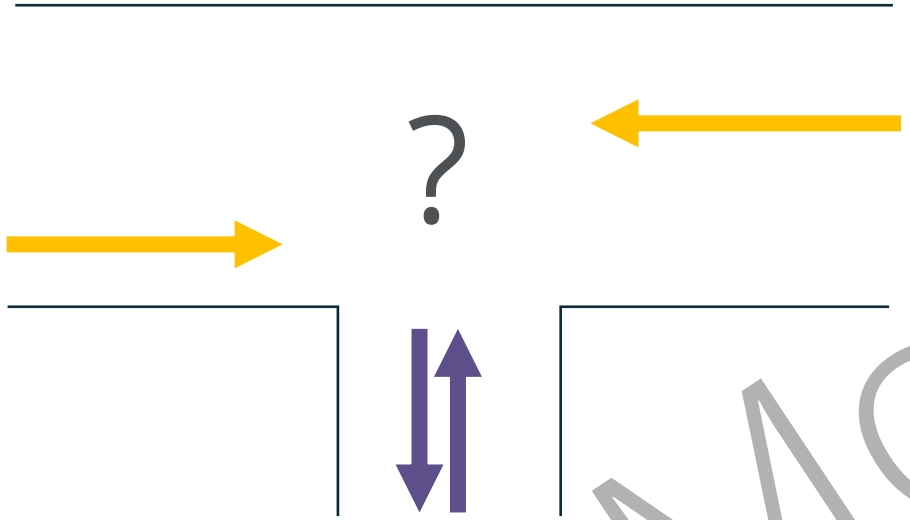
Choices:

- Traffic signal
- Stop control side street
- Multi-lane roundabout



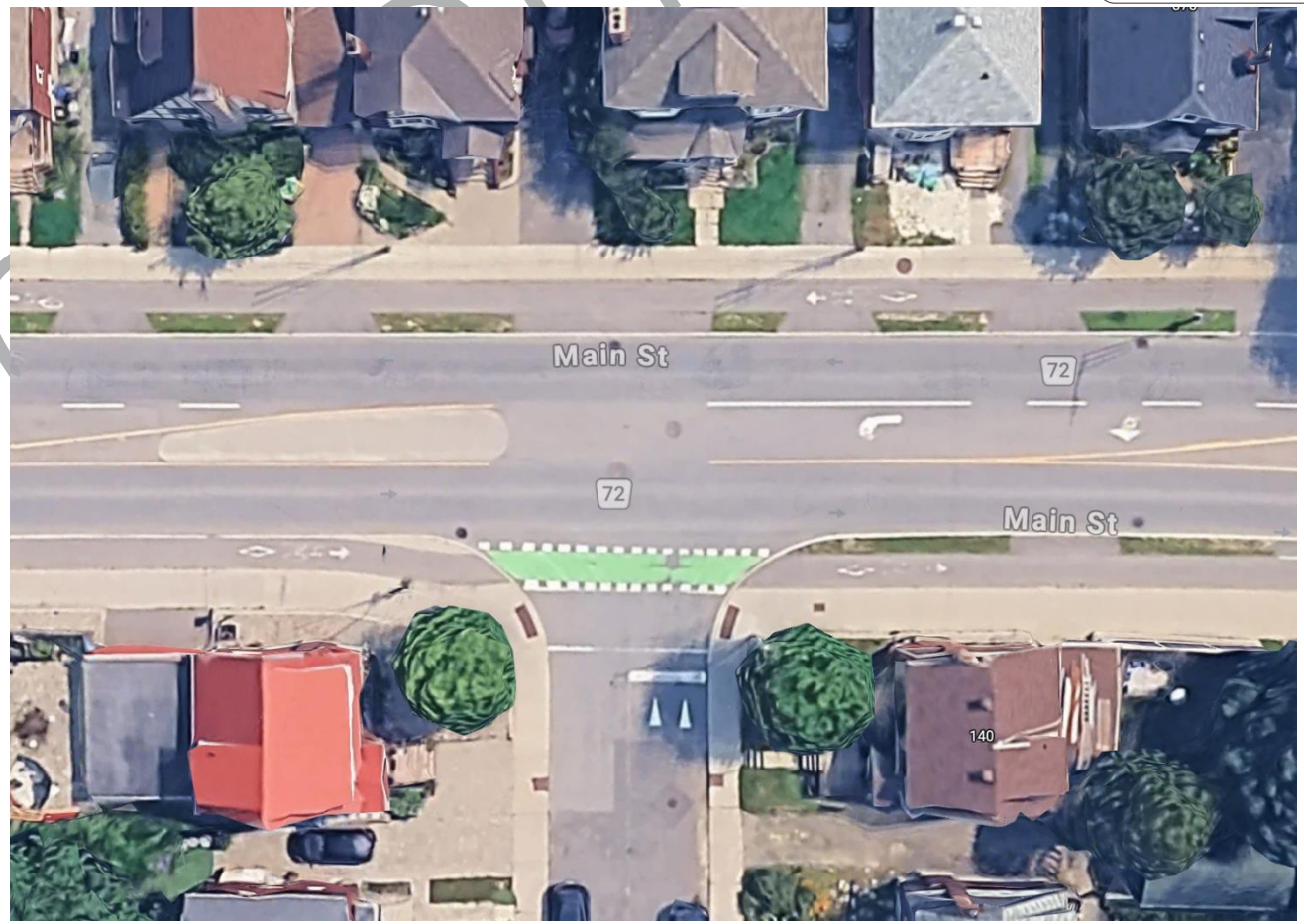
Waterloo, ON (Google)

TWO-LANE ARTERIAL INTERSECTION DESIGN



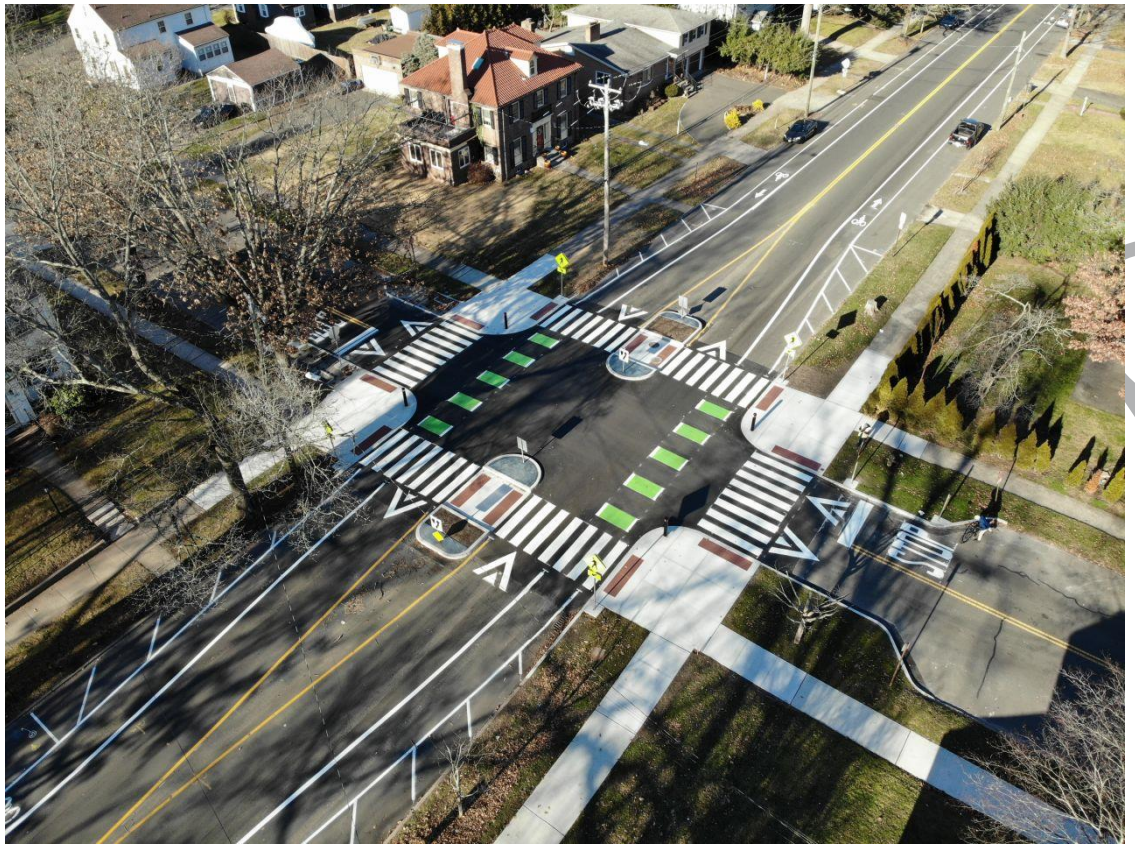
Choices:

- Traffic signal
- Stop control side street
- Single-lane roundabout
- PXO



Main Street, Ottawa (Google)

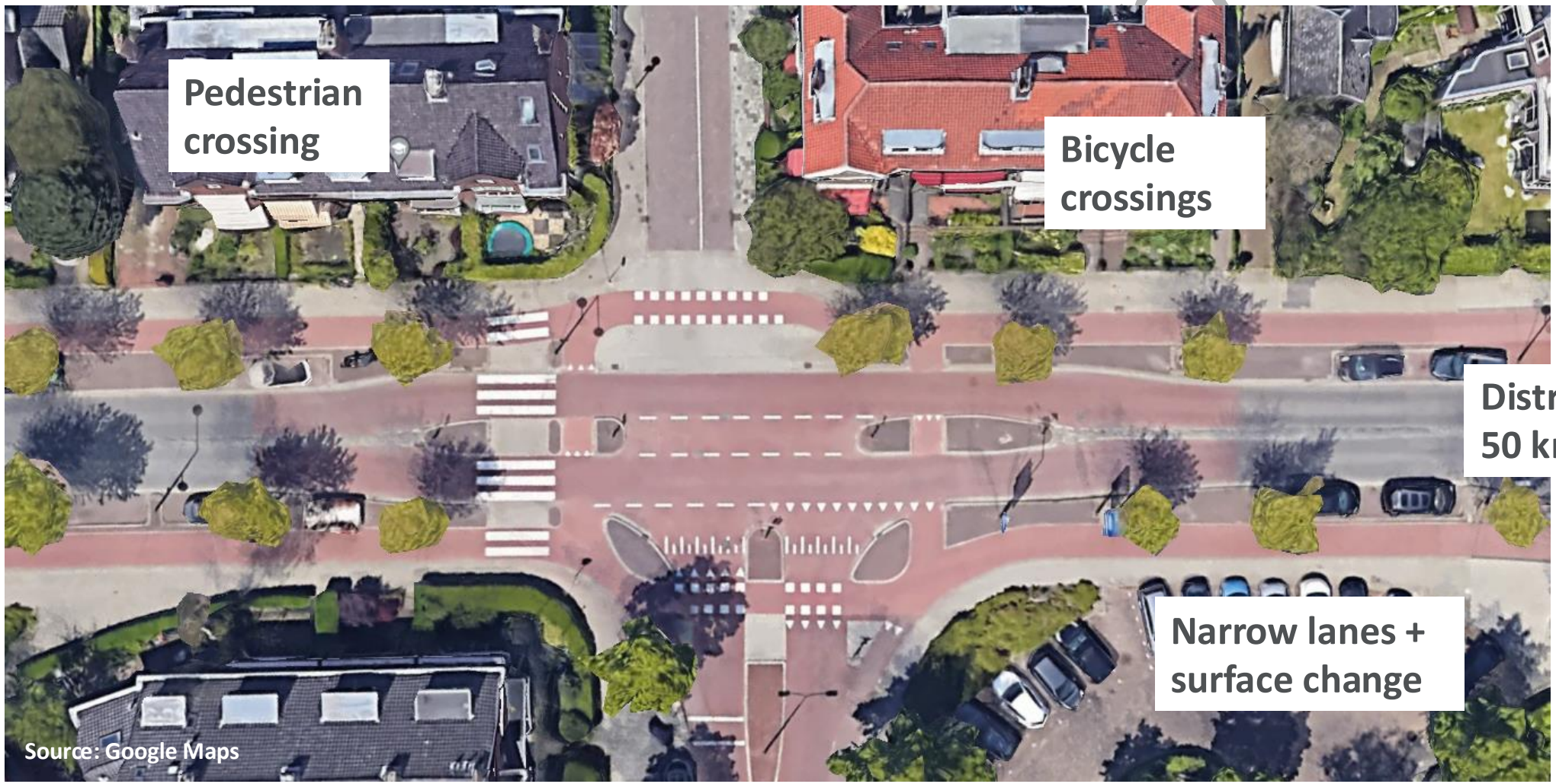
NORTH AMERICAN EXAMPLE



New Haven, CT (Adam Weber via LinkedIn)

Injury crashes down 82%!

TWO-WAY STOP-CONTROLLED INTERSECTION



CROSSABILITY: 2-LANE VS. 4-LANE

- Much easier to for a pedestrian to cross a two-lane road than a four-lane one
- Multi-lane = higher speeds = worse overall safety
- Crossing infrastructure for a multi-lane road is more expensive (and less options)

Crossing type	Two-lane road	Four-lane road
Uncontrolled crossing	✅	❌
Pedestrian crosswalk / PXO	✅	❌
Roundabout	✅ (single-lane)	⚠️ (multi-lane)
Signal	✅	✅
Grade-separated crossing	✅	✅

Multi-Lane Avenue in Vaughan (Mobycon)

WIDE NODES, NARROW ROADS

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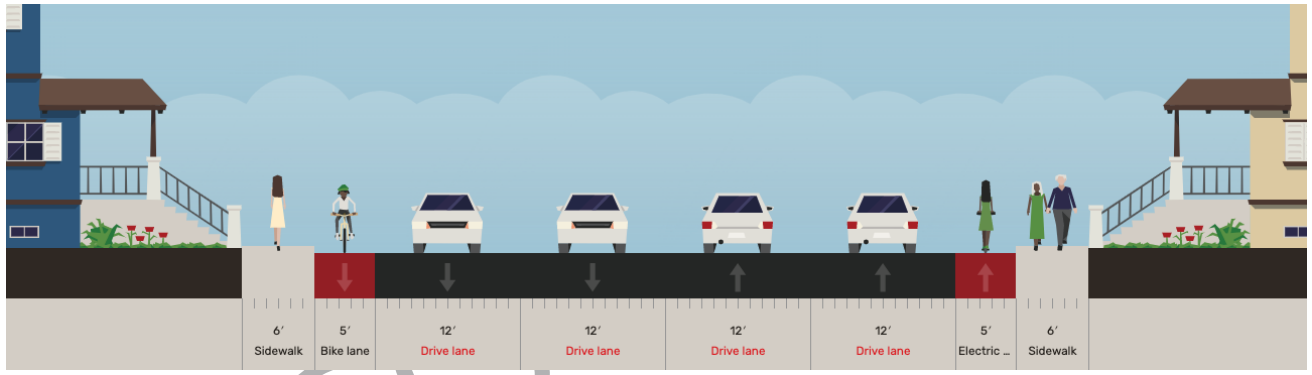
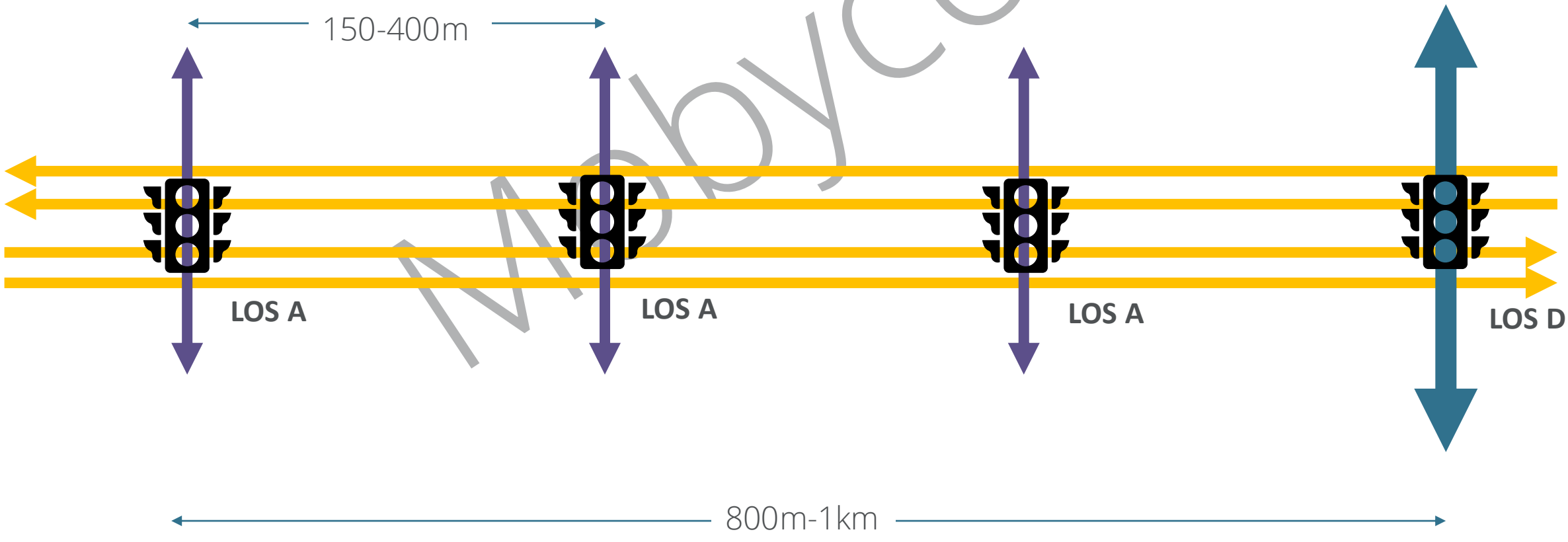
FOUR-LANE ARTERIAL DESIGN





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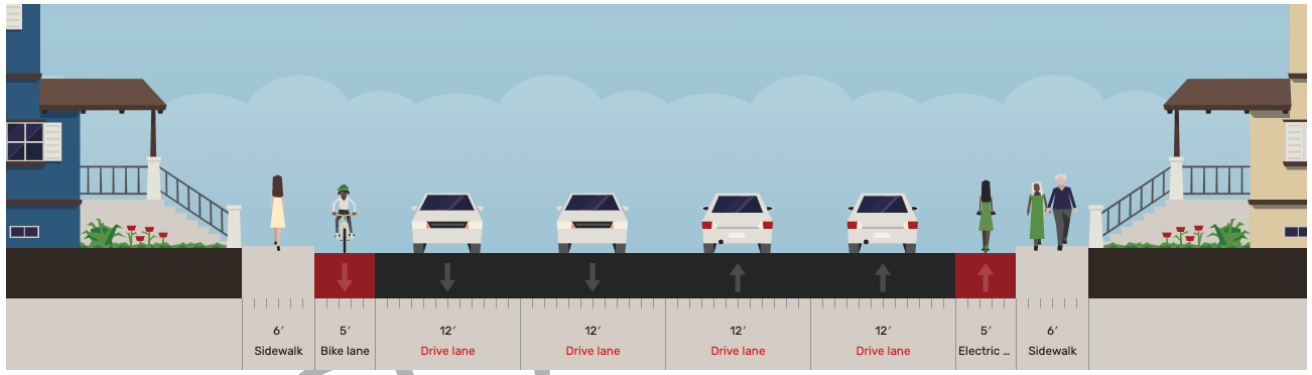
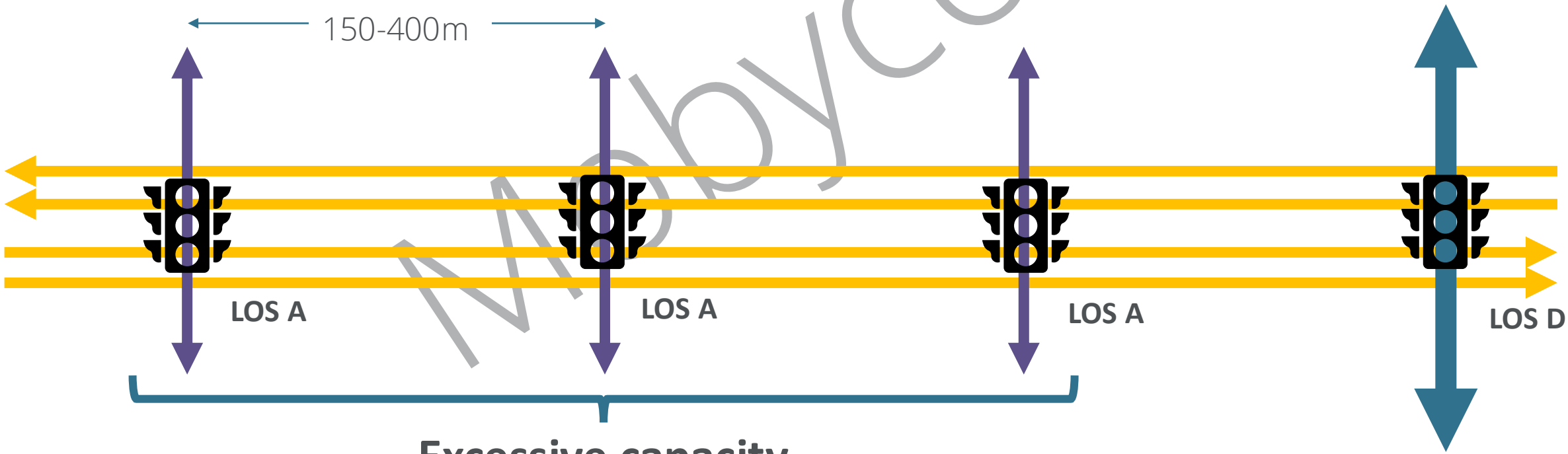
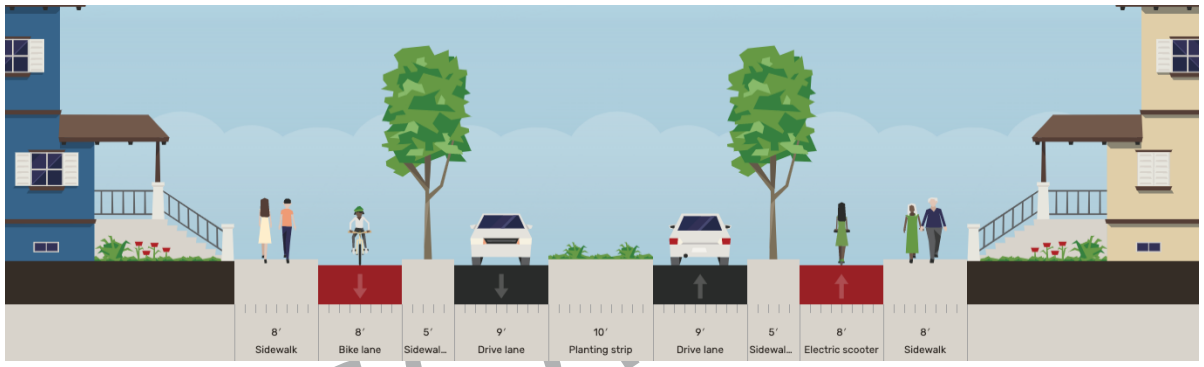




Excessive capacity
High opportunity to speed

Sufficient capacity

TWO-LANE ARTERIAL DESIGN



150-400m

LOS D

LOS D

LOS D

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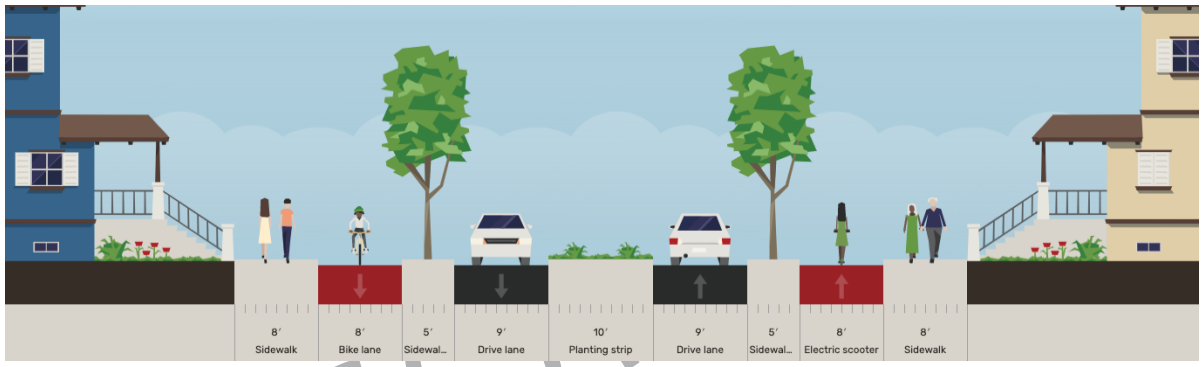
Demand matches capacity
Single-lane travel enforces speed limit

Sufficient capacity

FOUR-LANE ARTERIAL DESIGN



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LOS D

Other non-signalized intersection options possible

Sufficient capacity

DUTCH EXAMPLE

Source: Google

Big wide intersection where capacity is needed

Single lane roads where possible

CANADIAN EXAMPLE

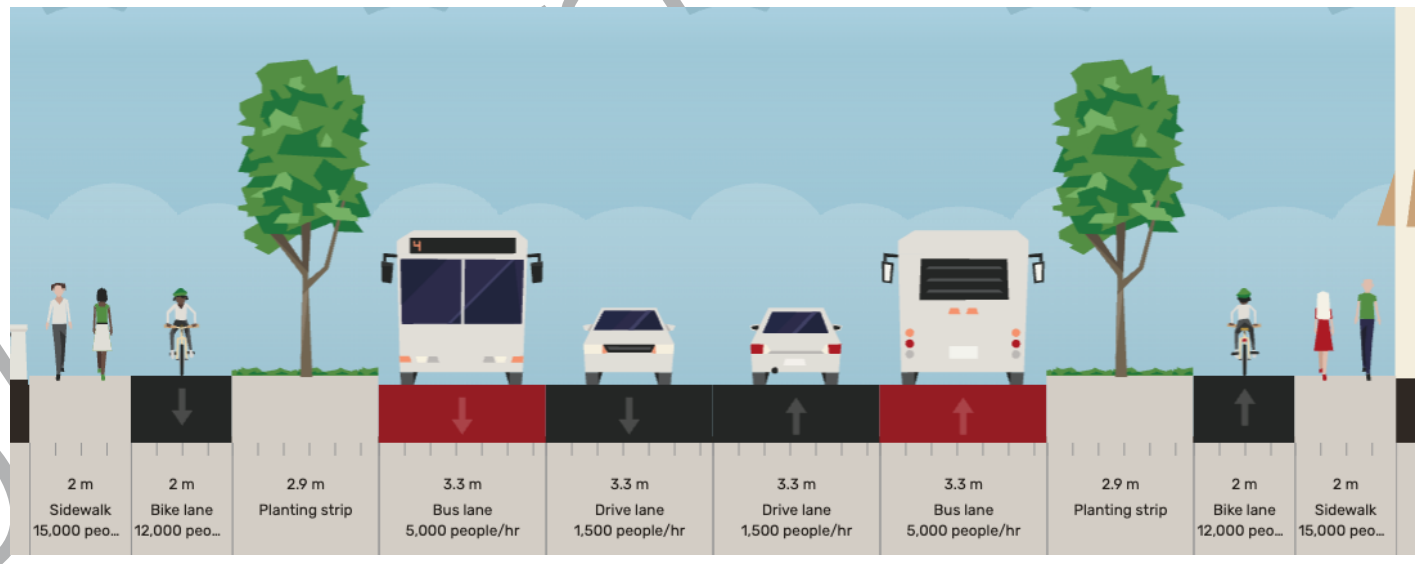
Insufficient capacity - Only widen here!

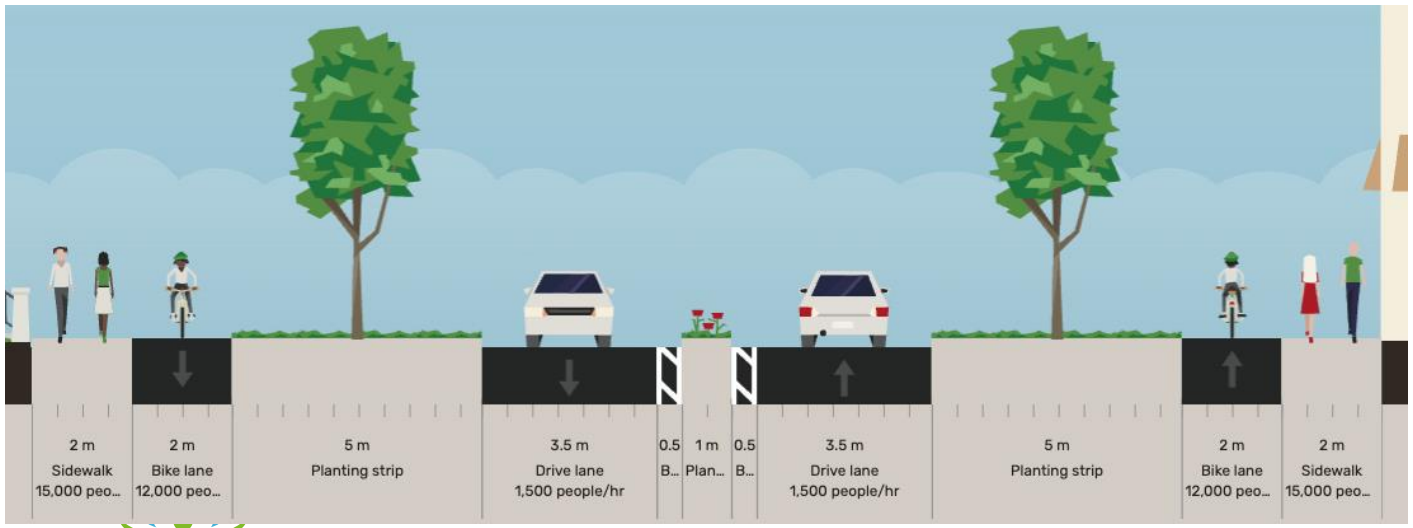
Sufficient capacity

FLEXIBILITY

Which cross section…

- Requires fewer traffic signals to manage cross-traffic?
- Is more crossable for pedestrians?
- Offers more design flexibility?
- Will have less speeding problems?





STREET-LEVEL ARTERIAL SPEED MANAGEMENT TECHNIQUES

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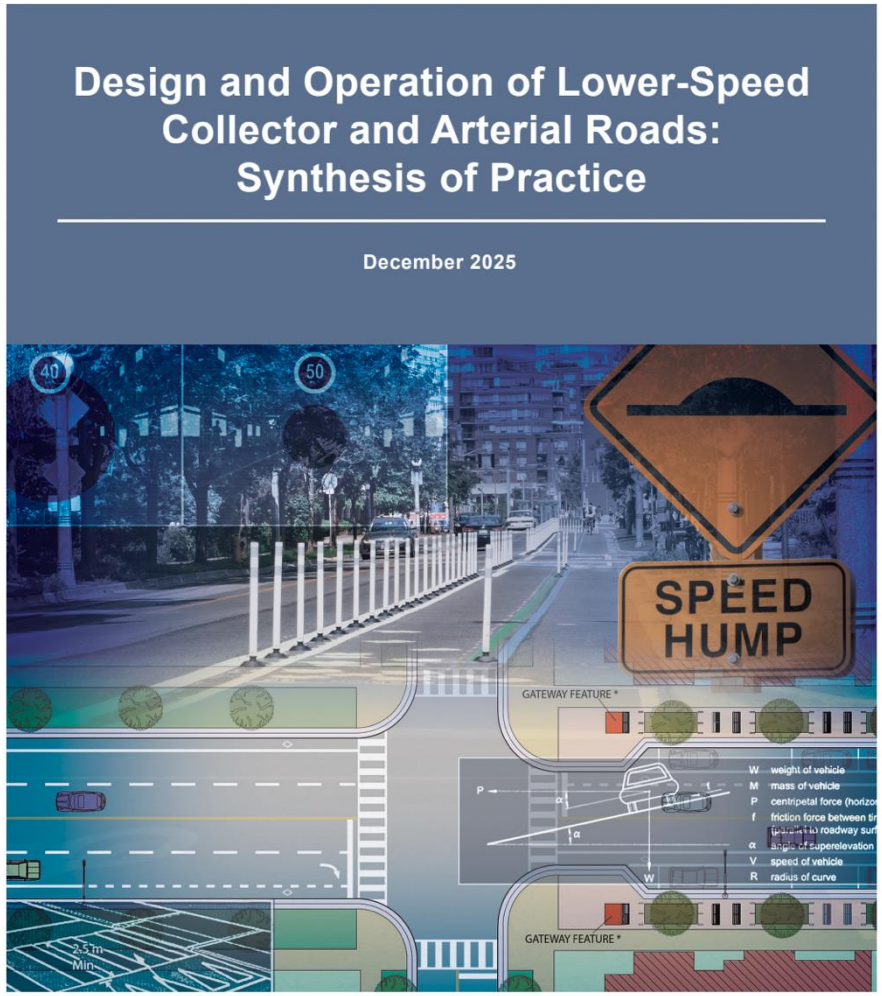
RESOURCES



DESIGN PRINCIPLES

- Enclose
- Engage
- Deflect
- Restrain

Design Speed	Measures Spacing
≤ 20 km/h	25–50 m
30 km/h	50–80 m
40 km/h	80–120 m
50 km/h	120–150 m

Source: GDCI

ROAD DIETS / RIGHTSIZING STREETS

- "Road diet" = converting a four-lane road to two through lanes and left turn lane
- Have been implemented on roads carrying up to 28,000 vehicles per day
- Before vs after:
  - Significant drop in collisions, injuries and deaths (31% to 100%)
  - Minor drop in travel speeds (6.7% to 7.9% change)
  - **No difference** in emergency response rates (but half of emergency responders think they do)

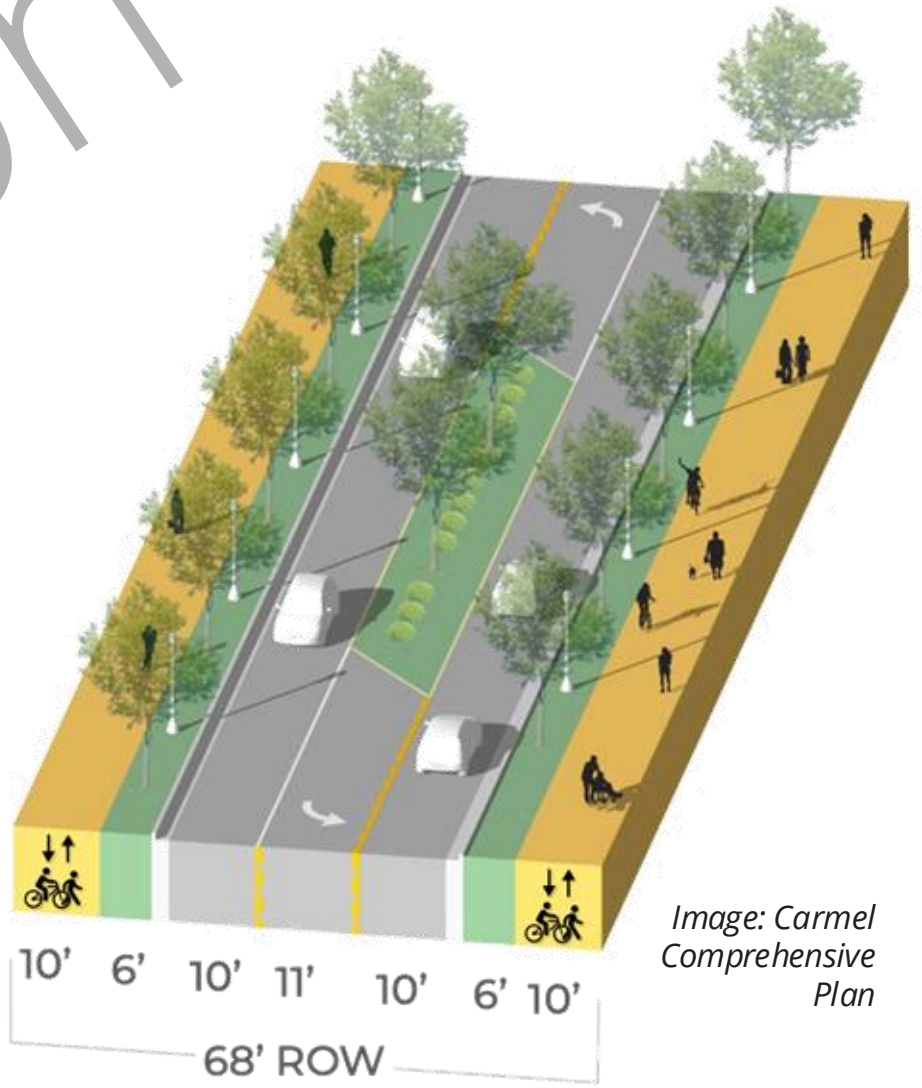
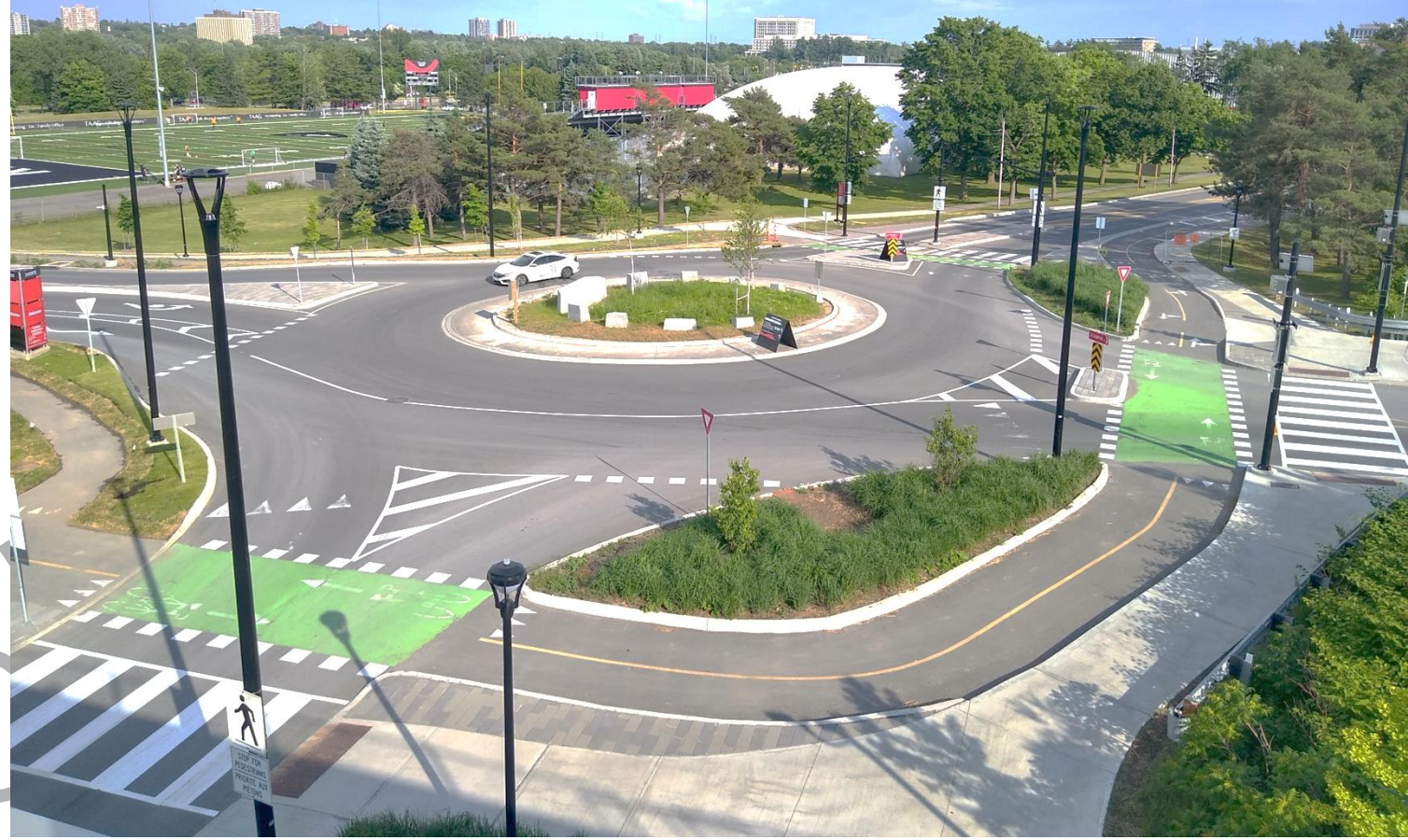


Image: Carmel Comprehensive Plan

Take the High (Volume) Road: Analyzing the Safety and Speed Effects of High-Traffic-Volume Road Diets (2023)
Impact of 4-to-3 lane conversions on emergency response (2024)

ROUNDABOUTS

- Force speeds of 30 km/h (single-lane) or 40 km/h (multi-lane)
- Support smooth, continuous flow
- Access management tool
- Gateway feature
- Different design philosophies!



Carleton University, Ottawa (Mobycon)

Milton (Google)

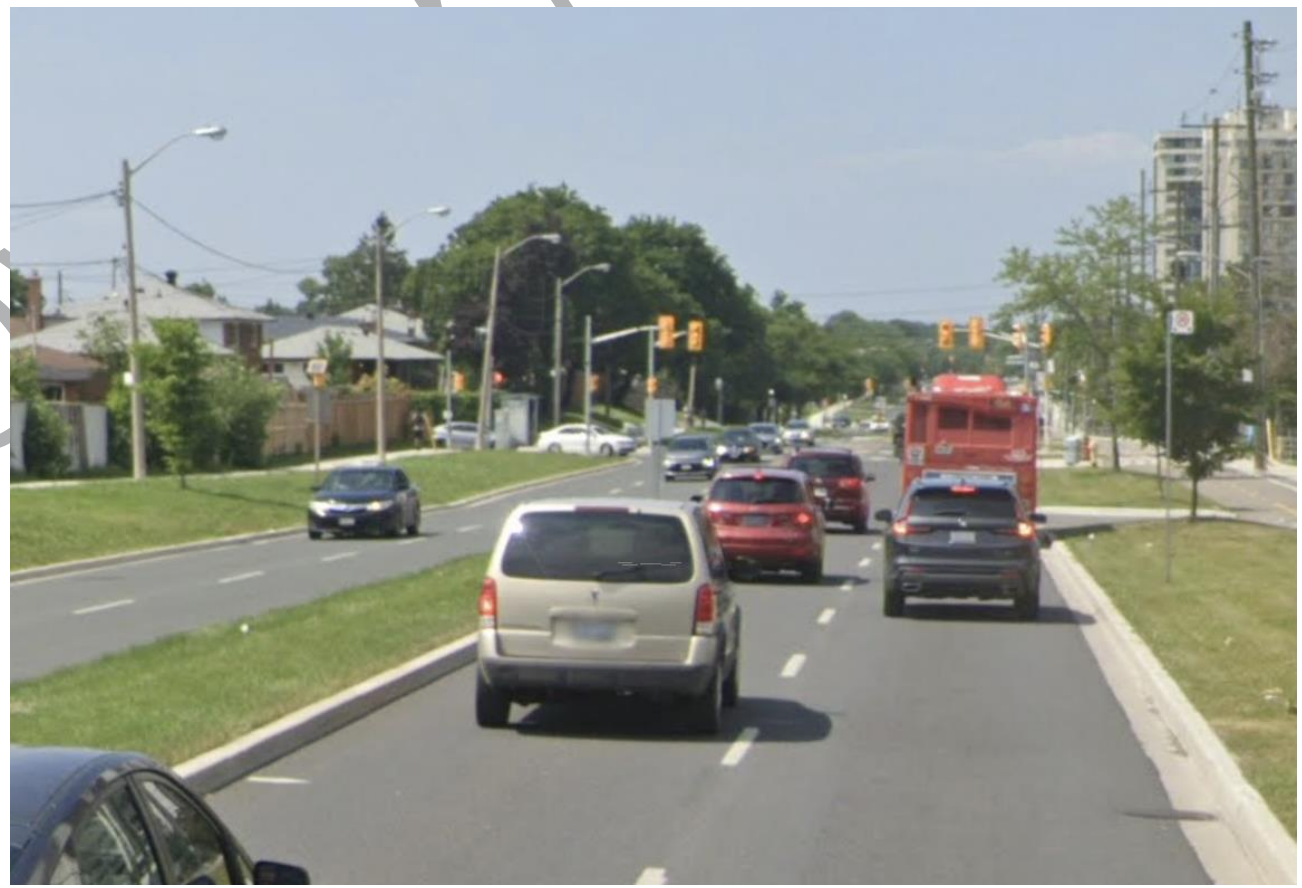
Edmonton

NARROWER LANES

For an urban roadways up to 60 km/h:

- TAC design domain: 3.0 – 3.7 m
- Toronto targets: 3.3m curb*, 3.0m inside

**For 60 km/h Toronto uses 3.5m curb lanes*

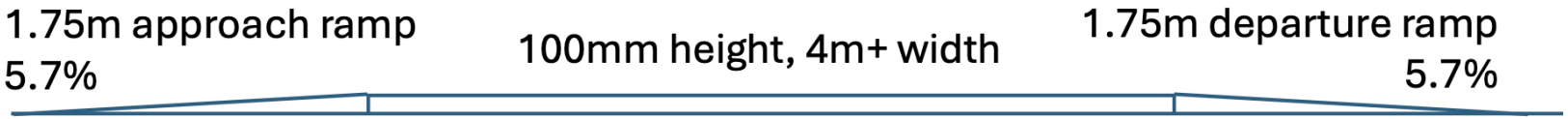


Kipling Avenue, Toronto (Google)

RAISED CROSSINGS / SPEED TABLES

- Edmonton's tried and tested solution for 40 km/h
- TAC guidance wasn't achieving 40 km/h
- Accepted by transit services
- Now 100+ City-wide

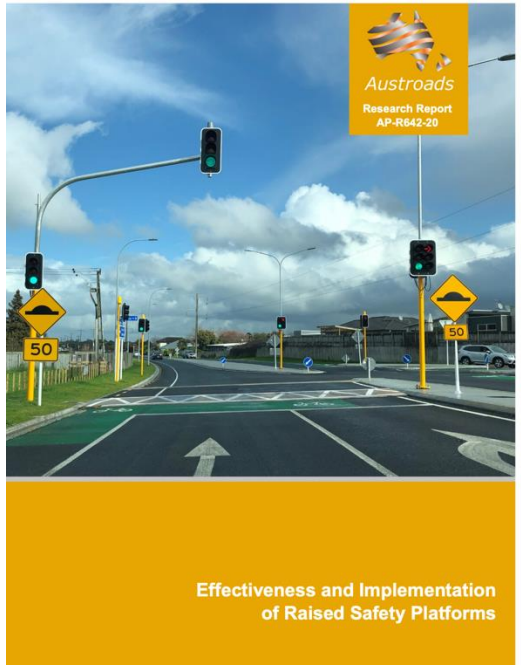
EDMONTON (for 40 km/h target speed)



Source: TAC Traffic Calming – What's New? What Works?

RAISED SAFETY PLATFORMS

- Intersections are where most conflicts occur and where people are most vulnerable
- We still need corridors where cars can travel 50 to 70 km/h
- Solution: reduce speeds at intersections with well-designed raised features
- **RSPs** reduce speeds by 20 km/h at conflict points



Source: Austroads

Figure 5.2: Raised safety platforms on Dalton Road, Thomastown, Melbourne

LANE SHIFTS / LATERAL DEFLECTION

- TAC: provides guidance as low as 50 km/h (8:1 to 30:1) for left turn tapers
- Toronto uses tapers as low as 5:1

Chicanes and Lane Shifts | **Two-way Chicane**

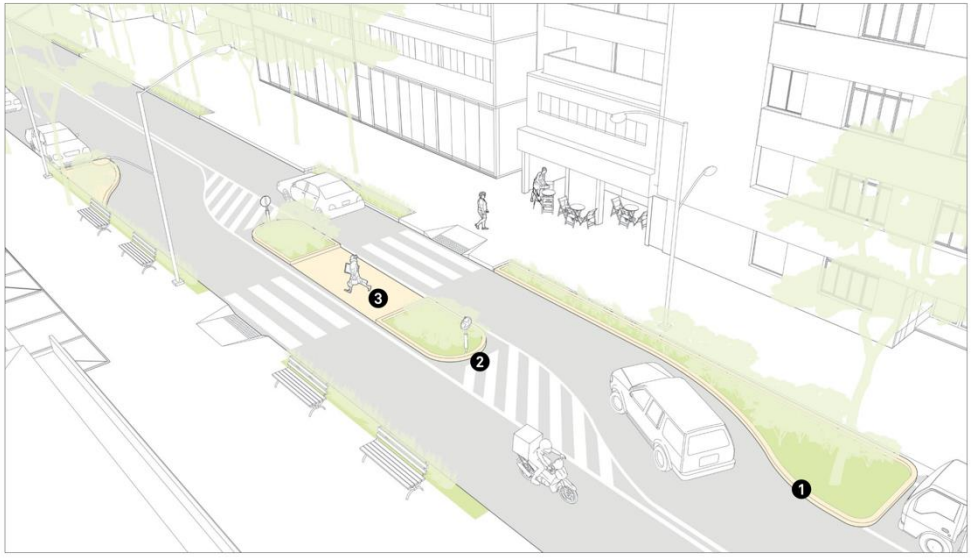


Figure 5.20: A shorter and more abrupt turn lane taper used on Danforth Avenue (40 km/h posted limit) in Toronto

(Source: Google)

Source: TAC

TRANSITIONS

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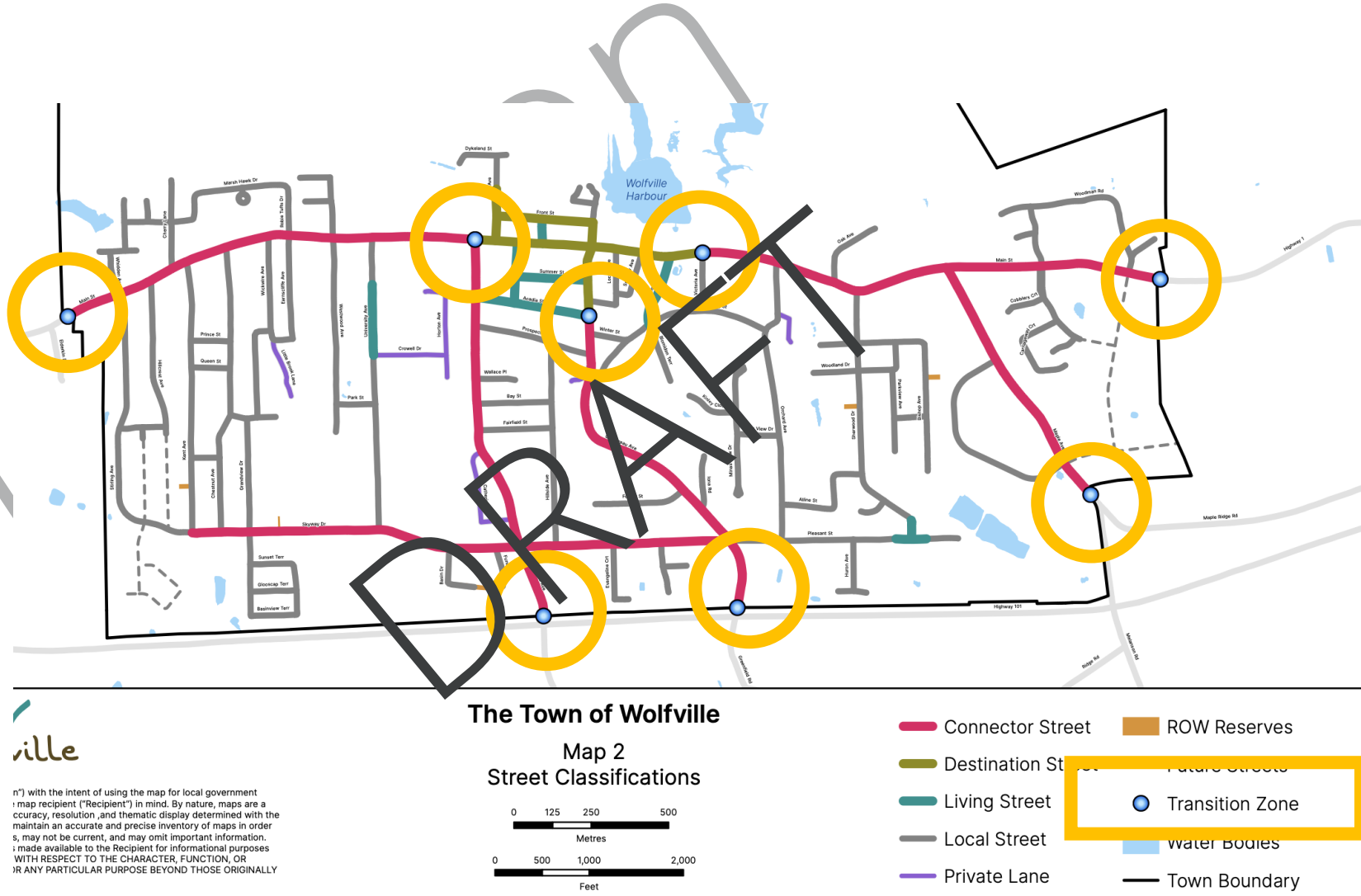
TRANSITIONS

An important moment in safety and placemaking!

Signal a change in context from:

- Rural to urban (entering a town)
- Urban to downtown
- Entering a school zone



TOOLS

Force a 10-20 km/h change in travel speed for heightened awareness:

- Roundabouts
- Raised safety platforms
- Single yellow centreline (or no centreline)
- Chicanes

Town of Richmond, Ottawa

Merrickville, ON

CONCLUSIONS

WRAPPING UP

- First look at the network. Design good roads for places where speed is desired.
- Where livability and multimodal activity are desired, design good streets with low speeds to support good places.
- In places where low speed matters, aim for one lane per direction (slower is faster). Widen only at big intersections if necessary.
- Enclose, engage, deflect, restrain.
- Focus on conflict points and transitions.

Figure 6.10: Saint Denis Street treatments (left to right): Pedestrian refuge island, island bus stop, bump outs

(Source: Google)

Source: TAC

THANK YOU!

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Don’t forget:

Scan to access the post-webinar survey. Share your feedback for a chance to win a $25 Tim Hortons gift card.”