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Background Report:  
**Complete-Livable-Better (CLB) Streets**



CITY OF HAMILTON  
**TRANSPORTATION MASTER PLAN**  
REVIEW AND UPDATE

City of Hamilton

**COMPLETE-LIVABLE-BETTER STREETS  
POLICY AND FRAMEWORK**



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Section 1.0

# INTRODUCTION

# 1.1

## What is a Complete Street? What is a Complete-Livable-Better Street?

Complete Streets are an approach to street design that balances the needs of all uses and users regardless of age, ability or mode of transportation.

Complete Streets is an approach to right-of-way design (inclusive of streets) that balances the needs of all users regardless of age, ability or mode of transportation in an equitable manner. It represents a shift from traditional street design approaches with their primary focus on moving vehicular traffic.

The shift to Complete Streets recognizes some of the negative impacts of traditional street design approaches, including:

- Public health impacts due to an over reliance on private automobiles and reduced opportunities for walking and cycling;
- Environmental impacts associated with urban storm water pollution and heavy use of private automobiles rather than alternative modes of transit;
- Costs of building and maintaining overly wide and auto-oriented streets;
- Economic disadvantages due to a less holistic approach to developing complete communities resulting in few opportunities for alternative modes of transportation and goods movement, and trip avoidance; and
- Safety concerns related to a poor public realm and lack of space allocated for pedestrians, cyclists and people with disabilities.

Recognizing these challenges, Complete Streets policies and guidelines have been adopted by jurisdictions across Canada and the United States in recent years, including York Region (2013), Ottawa (2013), Edmonton (2013), Ajax (2013), North Carolina Department of Transportation (2012), Calgary (2011) and Waterloo (2010 - updated 2013). A Complete Streets Policy for the City of Toronto is currently under development.

While recognizing the shift in land use planning to encourage denser urban forms, advantages of Complete Streets include:

- A more efficient transportation network through a focus on maximizing the movement of people and goods rather than private vehicles;
- Appropriately allocating space for all users of the street including pedestrians, cyclists, motorists, people with disabilities and public transit users as well as goods delivery, service vehicles and emergency vehicles;
- Improved network resilience including a provision of choice and flexibility associated with multiple ways to get to destinations;
- Boulevard space for enhanced public realm features such as benches, transit shelters, waste receptacles, directional signage, public art, vehicle and bicycle parking, sidewalk vending stalls, cafes and lighting;
- Boulevard space for additional street trees,

landscaping and environmentally sustainable infrastructure, which contribute to increasing pedestrian comfort and storm water management; and

- Improved public health through the provision of convenient connected, comfortable and safe opportunities for active transportation for people of all ages, abilities, socioeconomic status and/or income.

Hamilton's version of Complete Streets is to adopt a Complete -Livable-Better (CLB) Streets approach that recognizes that no one-size-fits-all solution is

appropriate for right-of-way (inclusive of streets) design as different streets can have different priorities. CLB Streets recognizes that the primary function of a road may range from Goods Movement to a local road to a higher order rapid transit corridor; however, within all of these contexts a sensitive approach to balancing the needs of multiple users can be taken.

CLB Streets calls for a range of design solutions depending on location, context and future role of the street. A toolkit of options can be applied in various ways to best meet the needs of all users, while considering constraints and trade-offs that are inherently a part of the street design process.

# 1.2

## Overview and Purpose

Hamilton is familiar with the concept of Complete-Livable-Better Streets.

The City's interest and investment in developing streets that are safe, accessible, accommodating of multiple modes and provide an attractive public realm are consistent with a North American trend by progressive municipalities and will benefit from ingraining this approach into policy. This concept is consistent with the ultimate goals of the Hamilton Transportation Master Plan (TMP) and key objective to "provide a comprehensive and attainable transportation blueprint for Hamilton as a whole that balances all modes of transportation to become a healthier city."

The ultimate goals of the TMP are to:

- Reduce dependence on single occupant vehicles;
- Promote accessibility;
- Improve options for walking, cycling and transit; and
- Maintain and improve the efficiency of goods movement.

Examples of existing different types of CLB Streets in Hamilton include:

- Stone Church Road;
- York Boulevard;
- Wilson Street in Ancaster; and
- Trinity Church Road.

Building off of the consultation conducted as part of the TMP review, this CLB Streets Policy document provides the City of Hamilton's CLB Streets Policy along with a supporting toolkit of roadway, boulevard and intersection streetscape elements to guide street design. This document:

- Introduces the CLB Streets concept;
- Identifies a family of CLB Street Typologies;
- Provides comprehensive CLB Streets policies;
- Provides a toolkit of streetscape elements for each typology; and
- Includes an example decision making framework.

The intent is that this document will inform decision making for every future street investment, regardless of the scale of improvement. Incorporating CLB Streets policies, design standards and applications into the decision-making process for infrastructure investment decisions will support not only the goals of the TMP but also the City's Strategic Plan, which was updated in 2016.

# 1.3

## Complete-Livable-Better Streets as part of the Transportation Master Plan

The City of Hamilton's street design approaches and processes are evolving.

Similar to other jurisdictions, the City of Hamilton's street design approach and processes have been evolving to recognize the need to accommodate all users and provide flexible options for mobility. The City's Official Plans and supporting policy documents call for streets that are more supportive of walking, cycling and transit. Secondary plans incorporate CLB direction through policy and area specific urban design guidelines. Indeed, several recent initiatives have emphasized transit, pedestrian and cycling infrastructure.

The TMP is one of the key documents that guides and directs the development and evolution of Hamilton's transportation network. It considers the needs of all users to develop a long-term plan. It also considers planned land uses and built form intensities throughout the City

to ensure that the transportation network supports and facilitates the City's strategic vision.

While not included as part of this report, a CLB Streets Design Manual should be developed to provide additional guidance to implement the TMP. The CLB Streets Design Manual will provide detailed guidance to be applied during the design phases and implementation phase to shape the actual 'look and feel' of Hamilton's network of CLB Streets. Guidelines should be developed that apply both to new streets and streets that are being reconstructed or retrofitted roads.



## Section 2

# THE HAMILTON CONTEXT ENABLING COMPLETE - LIVABLE-BETTER STREETS

# 2.1

## Policy Framework

Existing policies at the provincial and municipal level provide direction for the development of the Complete-Livable-Better Streets policies. This section of the report identifies the provincial and municipal policy documents and discusses how they influence CLB Streets policy.

### Provincial Policy Statement (2014)

The Provincial Policy Statement (PPS) provides overall direction for planning and development in the Province of Ontario. All municipal decisions on planning matters must be consistent with the PPS. The PPS calls for the efficient use and management of land and infrastructure and the protection of the environment and natural resources. Section 1.67 of the PPS provides support for a Complete Streets approach to road design, including an emphasis on transportation systems that:

- Are safe, energy efficient, facilitate the movement of people and goods and are appropriate to address projected needs;
- Are multi-modal - with connectivity within and among transportation systems and modes;
- Reduce the length and number of vehicle trips taken, and support current and future use of transit and active transportation; and
- Consider transportation and land use together.

### Growth Plan for the Greater Golden Horseshoe (2017)

The Growth Plan for the Greater Golden Horseshoe is a long-term plan that works together with the Greenbelt Plan, the Oak Ridges Moraine Conservation Plan and the Niagara Escarpment Plan to manage growth, build complete communities, curb sprawl and protect the natural environment. It establishes population and employment targets for municipalities and also identifies Urban Growth Centres and urban growth boundaries within the Greater Golden Horseshoe (GGH). In conjunction with the Greenbelt Plan (2017), it limits urban expansion, encouraging intensification in areas

that are already built-up and where there is existing infrastructure. This intensification will result in more efficient use of land and resources and increased viability of transit and alternative modes of transportation.

One of the Growth Plan's key objectives is to reduce traffic gridlock by improving access to a greater range of transportation options. It directs that the transportation system will:

- Provide connectivity among transportation modes for moving people and for moving goods;
- Offer a balance of transportation choices that reduces reliance upon automobiles and promotes transit, cycling and walking;
- Be sustainable, by encouraging the most financially and environmentally appropriate mode for trip-making;
- Offer multi-modal access to jobs, housing, schools, cultural and recreational opportunities, and goods and services;
- Accommodate agricultural vehicles and equipment, as appropriate; and
- Provide for the safety of system users.

In addition, in the development, optimization and/or expansion of transportation corridors, municipalities are directed to support opportunities for multi-modal use, particularly prioritizing transit and goods movement over single occupant vehicles. The Growth Plan further directs that public transit will be the first priority for transportation infrastructure planning and improvements and that pedestrian and bicycle networks will be integrated into transportation planning. Each of these objectives can be furthered through a Complete Streets approach.

## The Big Move (2008)

The Big Move is the regional transportation plan for the Greater Toronto and Hamilton Area and is currently under review. Implemented through Metrolinx, this is a comprehensive plan for the future of transportation in the region. Of particular importance to Hamilton, it identifies a number of rapid transit corridors - the BLAST network - that need to be considered when planning for Complete Streets. Funding for the B-Line (from McMaster University to Eastgate Square) was recently announced. The Big Move also emphasizes the need for development of a multi-modal and connected transportation network throughout the Region.

## City of Hamilton's 2016-2025 Strategic Plan (2016)

The City of Hamilton's 2016-2025 Strategic Plan outlines the vision, mission, values, and strategic priorities for the City of Hamilton. Improving the City's transportation system to support multi-modal mobility is one of the major strategic objectives identified in the plan. It calls for the development of Urban Design Guidelines, an integrated and multi-modal public transportation program, and a number of other initiatives to bolster the transportation network in the City of Hamilton.

## Rapid Ready: Expanding Mobility Choices in Hamilton (2013)

Building on the vision laid out in the Strategic Plan, Rapid Ready: Expanding Mobility Choices in Hamilton is a five year multi-modal transportation plan. The Plan includes a strategy to prepare Hamilton for rapid transportation and an outline for funding requirements. The report also supports the Council's vision for Hamilton that aims to improve the City's Transportation Network, support multi-modal travel, and encourage inter-regional connections. Notably, the report supports a strategy that relies on active transportation before road expansion.

## Rural (April 2014) and Urban (April 2015) Hamilton Official Plans

Hamilton's Official Plans are the key documents that guide and shape development by identifying where and under what circumstances development will take place. They are used to ensure that future development appropriately balances social, economic and environmental interests of the community. The City has two Official Plans. The Rural Hamilton Official Plan applies to rural areas of the city and the Urban Hamilton Official Plan applies to the urban areas.

Chapter C, Section 4.0 of both Official Plans addresses

the Integrated Transportation Network. It recognizes the links between the transportation network and land use planning, as well as the links between transportation and quality of life and economic development. Key objectives for the urban transportation network are that it will:

- Offer a greater range of transportation mode choice; and
- Better balance the competing needs of the street network, including cars, transit, active transportation, goods movement and parking.

Section 4.0 of the Urban Official Plan also states that "a balanced integrated transportation network shall contribute to vibrant streets where pedestrians and cyclists feel comfortable and can co-exist with traffic on the street, improving health and quality of life."

The rural areas of Hamilton have a unique set of transportation needs, which are addressed in the Rural Official Plan. Given the land uses and densities in rural areas, transportation objectives focus primarily on the needs of the agricultural industry, but it also calls for facilitation of an increase in active transportation, increased safety for users, and minimization of energy use and environmental impacts of the transportation system.

Hamilton's secondary plans also play a role in implementing CLB streets through policy direction and area specific urban design guidelines.

## Transportation Master Plan (2016 Update)

The TMP provides a vision for the transportation network for the City, providing specific recommendations for all modes, as well as an implementation strategy and targets for modal shifts.

This City-Wide policy includes CLB Streets policy and serves as an implementation tool for the Urban Hamilton Official Plan; the document provides legal justification for implementing projects that provide the City with an integrated transportation system.

## Growth Related Integrated Development Strategy (2006)

Hamilton's Growth Related Integrated Development Strategy (GRIDS) is a planning process undertaken to identify a broad land use structure, associated infrastructure, economic development strategy and financial implications for growth concepts to serve Hamilton for the next 30 years. The recommended growth option that emerged through the GRIDS process is intensification around a network of Nodes and Corridors.

The key directions from GRIDS that are related to the design of CLB Streets are to:

- Design neighbourhoods to improve access to community life; and
- Expand transportation options that encourage travel by foot, bike and transit and enhance efficient interregional transportation connections.

### Shifting Gears: Hamilton's Cycling Master Plan (2009)

Shifting Gears 2009 is the Cycling Master Plan for the City of Hamilton. It is primarily focused on developing new on-road facilities and connecting wherever possible to existing or planned off-road facilities, as identified in the Hamilton Recreational Trails Master Plan (2007). The focus is on commuter, utilitarian and recreational cycling, recognizing that recreational cycling is often the first step toward commuting or utilitarian use.

### Recreational Trails Master Plan (2016)

The goal of the City of Hamilton's Recreational Trails Master Plan is to guide the development of a connected, comprehensive, accessible and sustainable multiuse trails network throughout the City of Hamilton and to surrounding communities to improve health and wellness for pedestrians, cyclists and trail users. This plan was originally developed in 2007 and updated in 2016.

### Pedestrian Mobility Plan (2013)

The City's Pedestrian Mobility Plan is used to create "safe and interesting pedestrian environments throughout the City." Its main objectives include:

- Increased inclusive mobility;
- Well designed and managed spaces and places for people;
- Improved integration of networks;
- Reduced road danger; and
- A culture of walking.

The Pedestrian Mobility Plan was developed in response to the City's adoption of the International Charter for Walking and is indicative of the City's priority to make the pedestrian mode of travel a key component of the TMP.

### Active and Sustainable School Transportation Charter

Signed in 2015 by the City of Hamilton and the two local school boards, this charter serves to inform a long-term commitment to providing support, resources, and training towards active and sustainable school transportation. The charter commits to the following five (5) principles: 1) Street design for comfort, convenience and safety for all users, 2) Supportive land use and site planning,

3) Personal and community safety, 4) Partnership, collaboration, and shared responsibility, 5) A culture of active and sustainable school transportation.

### Truck Route Master Plan Study (2010)

The Truck Route Master Plan regulates all vehicles weighing over 4500kg and determines how trucks will be traveling throughout Hamilton. As a result of the Plan, roads that are part of the truck route system can expect higher volumes of large vehicles. These routes and the types of vehicles that must be accommodated should be considered through a CLB Street approach to street design.

### Various Urban Design Guidelines

The City has developed Urban Design Guidelines that range from site specific (e.g. site plan) to city wide (e.g. official plan).

In addition to the above noted documents the City has also developed several other reports that have impacted preparation of the policies found in this document. These include:

- Public Art Master Plan;
- Cultural Master Plan; and
- Neighbourhood Action Plans (e.g. Jamesville, Beasley, Crown Point, Davis Creek, GALA, Keith, McQuesten, Rolston, South Sherman and Stinson).

Notwithstanding the existing high-level policies, Hamilton is committed to the Hamilton Strategic Road Safety Program (HSRSP) and Vision Zero. The Mission and Vision of the Program is to make roadways throughout the City of Hamilton the safest throughout North America and to address safety for ALL road users, including vulnerable road users such as seniors and children and to reinvest Red Light Camera (RLC) revenue into safety initiatives in the Community.

Vision Zero is a global movement transforming the way we use, interact and travel on our roads. It has a simple and clear goal: ZERO fatalities or serious injuries on roadways. Vision Zero aims for safer streets through improved education, enforcement, engineering, evaluation and engagement. Currently, Hamilton is exploring Vision Zero and asking the community for their opinions about road safety in Hamilton.

These policy documents provide guidance for the development of a network of CLB Streets. The policies in this document are consistent with the high level direction provided by the City of Hamilton in each of the above mentioned documents.

# 2.2

## Technical Documents

Technical documents provide direction and support on specific street design standards.

### Urban Street Design Guide and Urban Bikeway Design Guide (NACTO, 2013)

These companion design guides respond to a growing need for urban streets to act as multi-modal, sustainable, and functional public spaces. They outline key principles for designing streets that are catalysts for urban change. The Urban Street Design Guide details a variety of street typologies, design elements, and design controls, including guidance for urban intersections. The Urban Bikeway Design Guide provides guidance on the design of bike lanes, bicycle boulevards, cycle tracks, intersections, signals, markings and signs.

### Ontario Traffic Manual

The Ontario Traffic Manual (OTM) provides guidance for road design and construction to ensure uniformity in traffic control devices and systems across Ontario. It is intended to promote predictability and safety in road operations across Ontario that are consistent with the Highway Traffic Act and represent best practices. It consists of a number of books that provide detailed guidance on a range of traffic control devices and applications, including Traffic Signals, Signs, Pedestrian Crossing Facilities and Bicycle Facilities.

### Ontario Provincial Standards Specifications and Drawings (2013)

The Ontario Provincial Standards Specifications and Drawings (OPSS and OPSD) provide specifications for a range of elements and materials used in road construction.

### Geometric Design Guide for Canadian Roads (TAC)

The Transportation Association of Canada (TAC) is a national association that promotes safe, secure, efficient, effective and environmentally and financially sustainable transportation services in support of Canada's social and economic goals. TAC's primary focus is on roadways and their strategic linkages and inter-relationships with other components of the transportation system. In urban areas, it focuses on the movement of people, goods and services and the relationship of roadways with land use patterns.

The TAC Geometric Design Guide for Canadian Roads provides information to assist designers with the decision making process for selecting the appropriate combination of features, dimensions and materials for a given design.

### Manual of Uniform Traffic Control Devices for Canada (1998)

This Manual specifies standards for the design, installation and use of traffic signs, road markings and signals. Its intent is to ensure that all traffic control devices conform to a uniform national standard.

### Geometric Design Standards for Ontario Highways (Ministry of Transportation)

This Manual provides a common approach to road design for road authorities in the Province of Ontario. It provides guidance on the classification of roadways, analysis of existing facilities and proposed designs for their ability to carry traffic, and the design of horizontal and vertical alignments, cross-sections and intersections.

### CSA Standard C22.3 No.-1-06 Overhead Systems

This standard applies to electric supply and communication lines, as well as fenced supply stations. It provides direction on clearance, separation and spacing of overhead line components, and their relationship to each other, buildings and the ground. The clearances, separations, and spacings specified in the standard are the basic values required for public safety and are not intended to address the limits of approach to electrical installations as specified in occupational health and safety regulations.

### Ontario Regional Common Ground Alliance – Best Practices (Version 7.0, 2012 )

The Ontario Regional Common Ground Alliance (ORCGA) is an organization that promotes efficient and effective damage prevention for Ontario's vital underground infrastructure. The ORCGA has developed these Best Practices through a collaborative approach. This document is intended to develop new, and improve existing, practices with regard to the planning, design and construction of utility corridors.

### Ontario Provincial Standards for Roads and Municipal Services (Volume 3)

The Municipal Engineers Association is an association of public sector Professional Engineers. The Association develops, maintains, and distributes best practice technical documentation and expertise for use by both private and public sector municipal engineering practitioners. The Ontario Provincial Standards for Roads and Municipal Services provides best practice standards for roads, barriers, drainage, sanitary sewers, watermains, and structures.

### Guide for the Planning, Design, and Operation of Pedestrian Facilities (2004)

The American Association of State Highway and Transportation Officials is an association representing all five modes of transportation: air, highways, public transportation, rail, and water. The Association's Guide for the Planning, Design, and Operation of Pedestrian Facilities provide standards for pedestrian facilities including sidewalk dimensions and buffer zones.

### Design and Safety of Pedestrian Facilities: A recommended practice of the institute of transportation engineers (1998)

The Institute of Transportation Engineers (ITE) is an association of transportation professionals. The ITE facilitates the application of technology and scientific principles for any mode of ground transportation. The design guidelines provide specifications for installing sidewalks.

### Context Sensitive Solutions in Designing Major Urban Throughfares for Walkable Communities (2006)

These ITE design guidelines provide specifications for road typologies including speed limits and travel lane widths.

### Technical Handbook of Bikeway Design (2nd Edition)

This technical handbook, designed by Velo Quebec, provides specifications for installing bike facilities on a variety of roadways.

### Design Guidelines for Bikeways (1999)

Established by the Region of Hamilton-Wentworth, the Design Guidelines for Bikeways define the technical specifications for bicycle lanes for all of Hamilton.

### Road Classification and Right-of-Way Width Project (2009)

This City of Hamilton study is a detailed review of future Right-of-Way width requirements and policies for municipal roads to take road widenings for existing, and new roads where required, to accommodate:

- All users and abilities including private automobiles, public transit, commercial vehicles, pedestrians, bicyclists and the safe and efficient movement of people and goods;
- Municipal services such as storm water conveyance and treatment, municipal water, sewers, utilities, street illumination, etc;
- Public realm improvements such as wider boulevards

to accommodate street furniture, planters/ landscaping, benches, etc; and

- Use for on street parking.

This report was primarily helpful as an input for grouping municipal roads by typology and identifying design priorities for each typology.

### Engineering Guidelines for Servicing Land Under Development Applications (2006)

These City of Hamilton guidelines provides direction to assist developers, land owners, municipal engineers, planners, architects and others involved in the land development process to evaluate the criteria for any engineering submission required in support of a development proposal. The document primarily pertains to new roads to service land under development applications.

### Urban Braille (Established 1996, updated in 2005 and 2010)

This document outlines dimensions for developing accessible pedestrian clearways for users with visual impairments.

### Barrier-free Design Guidelines (2006)

This City of Hamilton document outlines the specifications for accessible pedestrian routes and traffic island dimensions.

### Rapid Transit Feasibility Study (2008)

This City of Hamilton document identifies general opportunities and constraints with respect to providing rapid transit in Hamilton, and to investigate major considerations in rapid transit planning. The analysis included land use, existing transit service, rights of way, timing, signal priority, dedicated lanes and a summary of Class Environmental Assessment requirements, as well as an analysis of the feasibility and requirements for implementation of rapid transit on each route identified in the Hamilton TMP with a focus on the A and B lines.

As new guidelines are approved this document should be updated to incorporate them.

### AODA Standards

The Accessibility for Ontarians with Disabilities Act (AODA) aims to identify, remove, and prevent barriers for people with disabilities. The AODA applies to all levels of government, nonprofits, and private sector businesses in Ontario. The AODA is made up of five parts, or Standards: Customer Service Standard, Information and Communication Standard, Employment Standard,

Transportation Standard and Design of Public Spaces Standard. Anything considered as part of CLB streets must integrate AODA.

### Other Supporting Technical Documents

Including but not limited to: Improving Health by Design in the Greater Toronto and Hamilton Area (Medical Officers of Health in the GTHA, 2014), Shaping Hamilton with Complete Streets (McMaster Institute of Transportation and Logistics, 2015), International Charter for Walking, Hamilton Streets By-Law, Coordinated Street Furniture Guidelines (2015), TDM Framework and Communications Plan, TDM Guidelines for Development (2015), Transit-Oriented Development Guidelines (2010), City-Wide Corridor Planning Principles and Design Guidelines (2012).

## Section 3

# THE OPPORTUNITY IN HAMILTON

# 3.1

## Transportation Trends

A Complete-Livable-Better Streets approach to street design will help Hamilton achieve the four ultimate goals of the TMP.

As identified in section 1.2, Hamilton's Official Plan, Strategic Plan, Transportation Master Plan, Cycling Master Plan and Pedestrian Mobility Plan clearly articulate goals to reduce dependence on single occupant vehicles and increase active transportation while improving public health. These policies also direct the City to improve the public realm to encourage walking and cycling, enhance safety for all users and ensure a more integrated and connected transportation network.

The City has recognized that existing travel patterns pose challenges in the context of a growing City that will need to accommodate more than 129,000 people and 67,000 jobs by 2031 (GRIDS 2006). Demographics are also changing. This has been, and will continue to be a driver of change. Millennials are choosing to drive less or not obtaining driver's licences. At the same time, our population is aging. A significant majority of all daily trips are made by car (Figures 1 and 2), putting strain on the existing transportation network, and resulting in challenges with congestion.

**Hamilton is expected to grow by an additional 129,000 people and 67,000 jobs by 2031. The transportation system must be ready to accommodate these additional trips.<sup>1</sup>**

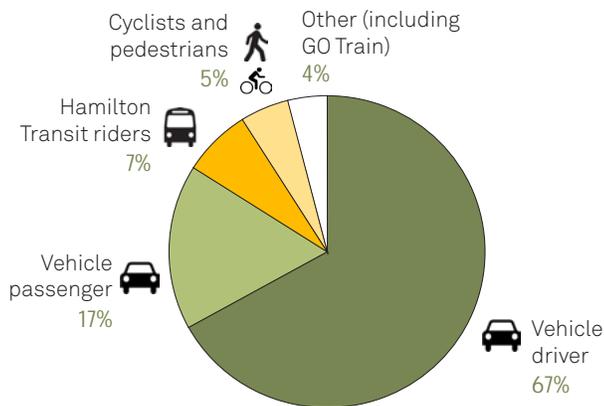


Figure 1: Proportion of All Daily Trips

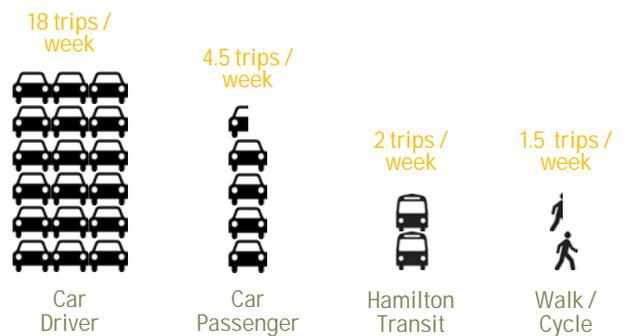


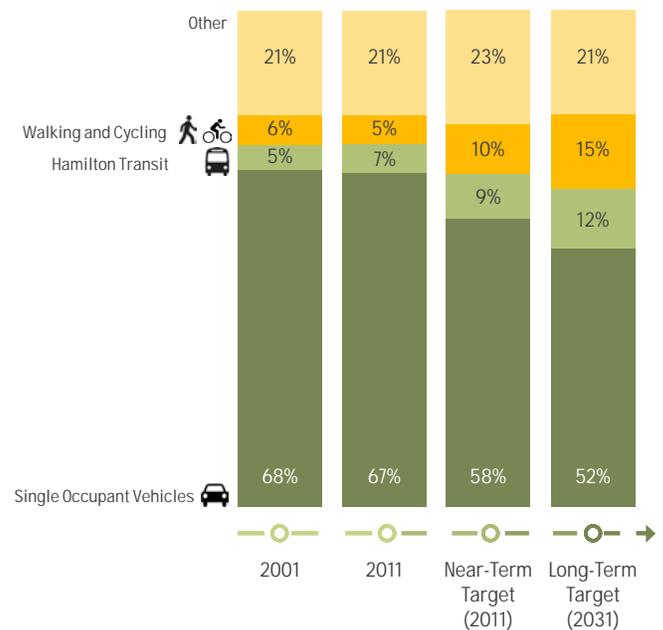
Figure 2: Automobile trips are the most common way that households travel during the work week (for all daily trips, Monday to Friday).

**The majority of daily trips made by Hamiltonians are in single occupant vehicles. To reduce congestion on our roads, other transportation options must be available and convenient.**

The City has set a range of goals that will be monitored over time to understand how travel patterns are shifting. For example, the City has set targets for reduced vehicle trips, increased transit trips and increased walking and cycling trips (see Figure 3).

Achieving such objectives involves efforts on a number of different fronts, including understanding the important connection between transportation planning and land use planning in establishing and maintaining a healthy public realm. Developing a compact built form and a series of complete communities is critical. The City is working on achieving growth management targets that call for intensification in already built up areas, and through updated zoning ensuring required daily service can be met without having to rely on private automobiles. The Pedestrian Mobility Plan also calls for development of an attractive and comfortable pedestrian realm that is welcoming to pedestrians and cyclists. Another critical aspect is providing the necessary infrastructure to support a multi-modal transportation network. To achieve a reduction in vehicle trips and an increase in pedestrian, cycling and transit trips, the transportation network must accommodate, facilitate and even encourage this shift.

Figure 3: Share of daily trips made by different modes of travel



\* Statistics from 2007 Hamilton Transportation Master Plan and 2011 Transportation Tomorrow Survey; City of Hamilton

Complete streets is a common approach to establishing a transportation network that facilitates active modes of movement. The Urban Hamilton Official Plan includes a functional road classification comprised of major arterial roads, minor arterial roads, collector roads and local roads. For each of these classifications the Official Plan identifies the road's primary function and maximum right-of-way width (See Schedule C of the Urban Hamilton Official Plan). The Rural Official Plan identifies three existing functional road classifications: arterial; collector; and local roads.

Hamilton has made efforts to move towards streets that accommodate all modes of movement. Providing CLB Streets policies and developing a design manual will help rationalize and guide decisions so that these improvements will contribute to an overall network that is safe and recognizable for all users.



**Cannon Street Cycle Track (2014)**

- On Cannon Street west of Victoria Avenue North, there were an average of 486 cycling trips per day observed between January and October 2016. Average daily trips were lowest in January (173 trips per day) and highest in August (700 trips per day).



**McNab Transit Terminal (2011)**

- Terminal has recently been upgraded to include real-time information



**York Boulevard Two-Way Conversion - Complete Street (2010)**

- Project included bicycle lanes, improved pedestrian space and streetscaping



**Red Hill Valley Parkway Pedestrian-Cyclist Bridge (2011)**

- Increased active transportation linkages throughout the City
- Annually accommodates 50,000+ cycling and pedestrian trips

# 3.2

## Complete-Livable-Better Streets Initiatives

The City of Hamilton has unique conditions to be considered in a Complete-Livable-Better Streets Policy.

Unique conditions to Hamilton that should be considered in the development of a CLB Street Policy include:

### One-Way Streets in the Lower City

Several of Hamilton's most important roads are one-way streets. This presents an opportunity to accommodate a CLB Streets approach through evaluating utilization of travel lanes to promote slower vehicular movement while still accommodating vehicular flow. This evaluation should consider opportunities to improve transit infrastructure, provision of wide pedestrian space on both sides, and/or cycling infrastructure to provide active movement on these streets.

The example below, from Montreal, demonstrates a Complete Streets design for a one-way street. Though this streets has a narrow right-of-way, it includes a high quality public realm with two-way cycling infrastructure and heavily used pedestrian space.



De Maisonneuve cycling path, Montreal, QC (Credit: All Thing Environmental: <https://enviropaul.wordpress.com/tag/one-way-streets-maisonneuve-ste-catherine-dunsmuir-broadway-commercial-drive-bike-path-walkabilitys/>)

### Natural Heritage and Unique Topography

A CLB Streets approach can be applied in many forms, depending on typology (see Chapter 4) and context. Hamilton is known for its beautiful natural heritage, including the Escarpment, waterfront and Coote's Paradise, that provides highly valued recreational and environmental amenities for residents and visitors.

CLB Streets are context sensitive with design that celebrates and promotes natural heritage assets. Additional attention to pedestrian and cycling infrastructure can facilitate access to natural features for recreation and enhance connections for all modes of movement.

Although the City's natural features are a major asset that should be recognized and celebrated they can also pose challenges for active modes of movement. In particular, significant grade changes along the Escarpment pose challenges for walking and cycling connections between the Upper and Lower City. CLB Streets design approaches must recognize how topography influences active movement and pay particular attention to these spaces to facilitate safe and comfortable movement.

### Wide Diversity of Urban and Rural Contexts

Hamilton has one of the most diverse urban and rural contexts in Ontario due in part to the amalgamation of six distinct and unique municipalities. As a result, a wide range of CLB Streets options that clearly recognizes context is critical. Design approaches to Main Street in Dundas will naturally be different than approaches to street design in Carlisle or downtown Hamilton.

As a result, CLB Streets policy must offer flexibility and a recognition of context, while also providing a straightforward and rational decision making process. Planners, designers and engineers require clear guidance to create a network that is recognizable throughout the City, so that users know what to expect and how to



Transportation Master Plan Public Consultation, Hamilton, ON

apply typologies. At the same time, designers must have flexibility to use professional judgment and knowledge of local context to provide appropriate, comfortable and safe design solutions.

### Public Engagement and Reaction

The Transportation Master Plan review and update has included extensive public consultation across the City of Hamilton. Other agencies, including the Social Planning and Research Council (SPRC), Sherman Hub, and the Hamilton Sustainability Professionals Network (SPN) have also conducted engagement around complete streets. A clear desire from participants is that streets should provide more comfortable and connected opportunities for active transportation and public transit.

This desire for alternative modes of movement provides an impetus for application of CLB Streets throughout the city.

In addition to these characteristics unique to Hamilton, the City has completed a number of initiatives that support CLB Streets.

These initiatives include a number of the policy and key technical documents mentioned in Chapter 2 of this

report, in particular, adoption of Section C.4.0 of Volume 1 of the Urban Hamilton Official Plan (2015); Shifting Gears: Hamilton's Cycling Master Plan (2009); Pedestrian Mobility Plan (2012); Urban Braille System; Barrier-free Design Guidelines (2006); and the Rapid Transit Feasibility Study (2008) are important steps towards developing a network of CLB Streets that are context sensitive and that take a balanced approach to all users' needs. As well, recent projects such as the Cannon Cycle Track, SoBi Hamilton, and the one to two-way conversion of York Boulevard demonstrate the City's commitment to CLB Streets.

As evidenced by the scope and magnitude of these initiatives, the framework is in place for the formal adoption of CLB Streets policies.

# 3.3

## Complete-Livable-Better Streets Principles

The following guiding principles will form the strategic basis for Complete-Livable-Better Streets decision-making.

The design of Complete-Livable-Better Streets in Hamilton should be:

**Balanced:** Hamilton's streets will balance users' needs based on the vision for the street including planned ROW width, land use, densities and functional classification. Street design will prioritize the movement of people and goods. Streets will be designed to promote economic well-being of both businesses and residents. The City recognizes that some streets will be "more complete" than others, depending on the emphasis on walking, cycling, transit and goods movement.

**Context Sensitive:** Hamilton's streets will be designed to be context sensitive. Not only infrastructure within the ROW but also adjacent land uses, primary function, natural features, local and regional destinations and built form, which vary along the street's length will be used to determine the final design of the street. Design excellence will be pursued throughout all corridor components from building face to building face.

**Public:** The City recognizes that its streets provide an important public space opportunity. Planning and design decision will balance the desire to create an inviting, inclusive, healthy public realm that is people oriented while meeting the functional transportation needs of the street.

**Place-Making:** Hamilton's streets are part of a place-making network that recognizes the unique characteristics of their respective neighbourhoods. They provide civic spaces that encourage social interaction and offer opportunities for public art, wayfinding and street furniture.

**City-Building:** In its simplest form, Complete-Livable-Better Streets contribute to connecting a network of complete communities that offer opportunities for people of all ages, abilities and incomes to live, work and play within their own neighbourhood. Multiple modes, beyond the private automobile, will provide options for accessing various services and amenities.

**Safe and Accessible:** Hamilton's streets will be planned and designed to accommodate people of all ages, abilities and incomes will be examined against the principles of Crime Prevention Through Environmental Design.

**Green:** Hamilton's streets form as much as 20 to 30 percent of land within the city. They will be used as an opportunity to showcase sustainable design. Opportunities including low-impact green technologies and methods such as pervious pavements, bioswales, rain gardens to manage stormwater and provide shade, and contemporary planting techniques, will be encouraged as well as providing opportunities for alternative forms of transportation that are environmentally friendly.

**Realistic:** The ability to realize a network of Complete-Livable-Better Streets will be based on a clear and accountable decision making process and a realistic, specific, measurable, achievable and cost effective implementation plan.

**Cost Effective:** The City of Hamilton recognizes that its streets play a key role in economic growth and provide a physical framework for successful urban development. Streets will be designed with an understanding and appreciation of costs associated with a street's lifecycle including design, operation and maintenance. Materials and the device type will be chosen appropriately to promote long term benefits and fiscal responsibility (e.g. lifecycle costs).

Section 4

# DEFINING A STREET'S CHARACTER

# 4.1

## A New Approach to Street Characterization

Complete-Livable-Better Street Typologies are a new approach to street characterization that complete a street's functional classification.

Hamilton's streets are identified in Section C.4.0 of Volume 1 of the Urban and Rural Official Plans via their functional classification. This classification includes Major Arterial Roads, Minor Arterial Roads, Collector Roads and Local Roads along with Parkways and Provincial Highways in the urban area. In the rural area this classification includes Arterial Roads, Collector Roads and Local Roads along with Provincial Highways. The Official Plans identify the primary function and maximum right-of-way widths for each of the functional classifications.

The eight CLB Streets Typologies described in this section of the report do not supplant the City's functional road classification; however, it does provide additional design guidance, in line with Section 4 of the Official Plan.

The typology system is intended to better meet the context sensitive nature of Hamilton's road network, while also promoting the development of complete communities by responding to and supporting adjacent land uses, natural heritage, built form and civic spaces.

Hamilton is composed of a wide range of urban, hamlet and rural contexts. The following seven street typologies respond to these contexts and are based on a review of the City's transportation corridors (see corridor analysis sheets), existing policies and best practices to characterize the variety of conditions found in Hamilton. These typologies include:

1. Urban Avenues;
2. Transitioning Avenues;
3. Main Streets;
4. Connectors;

5. Neighbourhood Streets;
6. Rural Roads; and
7. Rural Villages.

Section 4 provides a brief description of each street typology and their key design opportunities and challenges.

Traditional road design focuses on the transportation characteristics of the street. CLB Streets retain this function but are based on an understanding that roads play both a transportation and placemaking function. The objective behind establishing a set of typologies is to allow streets to be organized into groups that share similar operational characteristics as well as surrounding context, land uses and placemaking functions. Typologies are descriptive in nature and include design direction for both road and boulevard elements to ensure they are mutually supportive. Flexibility is built into each typology to ensure it can respond to the variety of conditions found within the municipal road network.

Appendix B includes demonstration cross sections and plans for each typology. These sections are intended to be used in conjunction with the example Decision Making Process.

# 4.2

## Typologies

### Urban Avenues



Urban Avenues are located in the most dense, mixed-use urban centres, such as downtown Hamilton. The right of ways for Urban Avenues varies between 36 to 46 metres. Development along Urban Avenues is street-oriented and streets are very busy. These streets carry high volumes of all modes of movement, including transit, cyclists, pedestrians, private automobiles and goods movement vehicles.

Street Design generally accommodates transit and provides safe and dedicated facilities for pedestrians and cyclists. In order to promote safety on such busy streets, the design of these streets can include narrow lane widths and a reduction in the number of lanes to devote more space for on-street parking, tree growth, transit and active transportation (e.g. dedicated transit lanes, more comfortable transit stops, wider sidewalks).

Compared to the Main Street typology there is less emphasis on streetscaping within the boulevard, however this is still an important component of the typology. Active transportation is an important component of Urban Avenues as these streets connect neighbourhoods within communities and often form part of the City's cycling network.

## **Elements:**

- Wide sidewalks and high quality pedestrian amenities;
- Pedestrian crossings at signalized intersections or unsignalized intersections in accordance with OTM Book 15;
- Transit amenities with transit in mixed traffic, dedicated transit lanes or transit priority lanes;
- Dedicated cycling facilities and amenities (e.g., bicycle lanes or cycle tracks, bicycle parking);
- Dedicated on-street parking;
- May accommodate goods movement but may be limited to certain times of day or locations;
- Landscaping includes street trees, shrubs/perennial beds and decorative planters;
- Sensitivity to goods movement; and
- Place-making and active, healthy public realm.

## Transitioning Avenues



Transitioning Avenues are major streets that cross the city east-west or north-south with standard right-of-way widths of 36 and 46 metres. They are generally located in commercial or residential areas that are transitioning to a more urbanized and mixed-use context. These streets are expected to undergo a transition from a built form context such as large format retail to medium or high density mixed-use development or from low-density residential to medium or high density residential. As this occurs it is expected that new development will be more street-oriented.

Transitioning Avenues will continue to be designed to accommodate transit and active transportation and higher vehicle capacity. As such, transit vehicles, cyclists and pedestrians should have a greater proportion of dedicated space within the planned right-of-way. Transitioning Avenues are also major goods movement corridors. They may additionally include a centre median and dedicated turning lanes.

- An example of a Transitioning Avenue includes Upper James Street between Malton Drive and South Bend Road.

## Elements:

- Wide sidewalks and high quality pedestrian amenities;
- Pedestrian crossings at signalized intersections or unsignalized intersections in accordance with OTM Book 15;
- Transit amenities with transit in mixed traffic, dedicated transit lanes or transit priority lanes;
- Dedicated cycling facilities and amenities (e.g., bicycle lanes, cycle tracks or multi-use paths and bicycle parking);
- Permit off-peak parking;
- Goods movement supportive; and
- Landscaping includes street trees, shrub / perennial beds, raised planters, buffer planting and could include a landscaped median;
- Sensitivity to goods movement; and
- Place-making and active, healthy public realm.

## Main Streets



These roads historically have narrow rights-of-ways of approximately 26 metres and are found in urban areas and hamlets, often with a mix of at-grade retail and residential uses. Main streets exist in each of the former municipalities that make up Hamilton. They are often traditional shopping streets that are very pedestrian-oriented, with mixed-uses and smaller-scale buildings. They may contain heritage buildings and have a heritage character. Development along Main Streets is street-oriented and often surrounded by stable residential neighbourhoods.

Pedestrians should be prioritized with slower traffic, wide sidewalks and enhanced pedestrian amenities and onstreet parking. The quality of the boulevard is very important to the Main Street typology. The Main Street typology has an urban cross-section with an emphasis on streetscaping. Street amenities can include wide sidewalks, pedestrian oriented lighting, street trees, transit amenities and opportunities for public art. The street is to be transit supportive with transit oriented land uses.

## Elements:

- Wide sidewalks and high quality pedestrian amenities, including pedestrian-scale lighting, benches, etc.;
- Passive traffic calming including narrow vehicle travel lanes, on-street parking, mid-block crossings, bump-outs and signals;
- Transit priority lanes or transit in mixed-traffic;
- Limited goods movement;
- Pedestrian crossings at signalized intersections or unsignalized intersections in accordance with OTM Book 15;
- Dedicated cycling facilities and amenities (e.g., bike lanes, bicycle parking);
- Dedicated on-street parking;
- Landscaping including streets trees, shrub/perennial beds, decorative planters;
- Sensitivity to goods movement; and
- Place-making and active, healthy public realm.

## Connectors



Connectors are primarily found in residential areas and link residential neighbourhoods to each other and to other areas of the City. Development along the street is fairly stable but may be transitioning from low to medium density residential. Buildings are generally set back from the street fronting onto a wide boulevard.

Connectors accommodate a higher vehicle capacity than local streets. Given that they pass through residential areas, these streets should support active transportation with wide sidewalks and multi-use paths or dedicated cycling facilities. These wide and busy streets should also include ample soft landscaping and mature trees to buffer adjacent uses.

In urban areas Connectors have typical right-of-way widths between 26 to 30 metres. The maximum right-of-way width within rural areas is 36 metres.

## **Elements:**

- Sidewalks on both sides, or possibly a multi-use trail, landscaping and pedestrian amenities;
- Transit amenities with transit in mixed traffic, dedicated transit lane or transit priority lanes;
- Dedicated cycling facilities (multi-use trails or cycle tracks);
- No on-street parking;
- Pedestrian crossings at signalized intersections or unsignalized intersections in accordance with OTM Book 15;
- Landscaping can include street trees (double row if possible), shrub/perennial beds, buffer planting, green boulevard and planted medians; and
- Place-making and active, healthy public realm.

## Neighbourhood Streets



Neighbourhood Streets provide direct access to residential areas. They have lower volumes of traffic and are most often used by people residing within the neighbourhood. As Neighbourhood Streets are surrounded by residential uses, traffic calming, minimizing through-traffic and minimizing goods movements are important considerations.

Neighbourhood Streets should accommodate comfortable and safe pedestrian and cyclist movement, as well as development of a mature street canopy.

Within urban areas Neighbourhood Streets have a typical right-of-way width of 20 metres and within rural areas the maximum basic right-of-way width for a Neighbourhood Street is 36 metres.

## **Elements:**

- Traffic calming including narrow lanes, on-street parking, signage, bump-outs;
- Limited transit and goods movement;
- Pedestrian crossings at signalized intersections or unsignalized intersections in accordance with OTM Book 15;
- Sidewalks are to be provided on both sides of the road and should include pedestrian scaled lighting;
- Roadway is shared by cyclists and vehicles;
- Landscaping includes street trees (double row if possible), with wide boulevards to promote mature tree growth; and
- Place-making and active, healthy public realm.

## Rural Roads



Rural Roads are located outside Hamilton's urban core, primarily in agricultural and natural areas, or in industrial areas within the urban boundary. Their primary function is to move private and goods movement vehicles. However, they should include recreational cycling facilities (for example, a paved shoulder or multi-use path) and may accommodate transit. The edges of rural roads should also include drainage swells.

Within the Rural Official Plan, Rural Roads are classified as either Arterial or Collector Roads. Rural Arterial Roads have maximum basic right-of-way widths of 36 metres, but in certain circumstance a right-of-way width up to 46 metres may be required. Rural Collector Roads have a maximum basic right-of-way width of 36 metres.

## Elements:

- Rural cross-section;
- Paved shoulder for cycling;
- Sidewalk where Rural Roads pass through a Hamlet or Village;
- Street trees are to be provided only where Rural Roads pass through a Hamlet or Village;
- Wide vehicular travel lane widths;
- Access control is not necessary;
- Pedestrian crossings at signalized intersections or unsignalized intersections in accordance with OTM Book 15;
- No-on street parking is to be provided outside of Hamlet or Village areas;
- Any transit services are to be provided in mixed-traffic;
- Primary goods movement corridor;
- Landscaping can include buffer planting, naturalized drainage swales and street planting;
- Sensitivity to goods movement; and
- Place-making and active, healthy public realm.

## Rural Settlement Areas



Rural Settlement Areas are small communities found throughout the rural areas of Hamilton. They are portions of Rural Roads that pass through villages and provide services serving local residents as well as through-traffic. Rural Settlement Areas are often centred around an intersection or a section of highway, and may include residential frontages or a small number of commercial or other uses that serve the community.

In contrast with the rest of a Rural Road, Rural Settlement Areas should slow traffic through small settlements. These roads will be designed to support the local community and calm traffic as they transition into a village setting. As they are associated with clusters of low density residential or commercial development, boulevards should include sidewalks, street trees, cycling facilities, on-street parking, and other amenities to support local residential and retail activity.

## **Elements:**

- Sidewalks and pedestrian amenities, including pedestrian-scale lighting, benches, etc;
- May include dedicated on-street parking;
- Limited goods movement;
- Pedestrian crossings at signalized intersections or roundabouts;
- Landscaping including street trees, shrubs / perennial beds; and
- Place-making and active, healthy public realm.

Section 5

# POLICIES

# 5.1

## Strategic Policies and Supporting Actions

The following Complete-Livable-Better supporting policies form part of the 2007 Policy Review and Proposed Revisions/ Updates.

### **Policy:**

Streets shall be designed with consideration for the context of surrounding land uses and all users regardless of age, ability or income, in an equitable manner, including pedestrians, cyclists, transit passengers and transit vehicles, emergency responders, trucks and private automobiles.

### **Supporting Actions:**

Develop a CLB Street design manual for each typology, incorporating existing applicable guidelines, including:

- Urban Avenues;
- Transitioning Avenues;
- Main Streets;
- Connectors;
- Neighbourhood Streets;
- Rural Roads;
- Rural Settlement Areas

Immediately include CLB streets as routine accommodation to all road projects

Standards for the placement and location of utilities must be observed, but the design of these spaces should proactively consider coordination, impact on the public realm and long-term service life.

Integrate stormwater management Low Impact Development (LID) opportunities as part of CLB Street designs where feasible.

- Develop an education program around Complete Street Design.
- Follow CLB Street principles for all transportation projects managed by the municipality, including planning development, construction or maintenance. This includes safety and accommodation of all transportation system users.
- Apply CLB streets principles to facilitate the development of Complete Communities.
- Coordinate with Asset Management and Development Planning business process to formalize a decision making process for all road projects.
- Establish a decision-making process for determining the threshold between “reasonable costs” and “excessively disproportionate costs” for the implementation of CLB Streets compared to alternative solutions on a project-by-project basis (e.g., cost benefit analysis).
- Create project budgets based on designs as opposed to designs based on available budget to provide higher quality infrastructure.
- Integrate Accessibility for Ontarians with Disability Act (AODA) standards into the development of the CLB Streets design manual.
- Develop short-and long-term CLB Streets design alternatives for individual projects (e.g., new streets, retrofits, etc.).
- Streets should be planned and designed for both the existing and future planned right-of-way.
- Opportunities to acquire additional right-of-way should be investigated where necessary.

**Policy:**

Provide a justification document in circumstances where a project does not incorporate CLB Streets Principles.

**Supporting Actions:**

- Identify circumstances where application of CLB Streets are not suitable such as:

- Use of the transportation facility by pedestrians, bicyclists, or other users is prohibited by law (e.g. controlled access roadways such as the LINC, RHVP);
- The costs of providing accommodation are excessively disproportionate to the need or probable use; or
- The existing and planned population, employment densities, traffic volumes, or level of transit service around a particular street is so low that future expected users of the street will not include pedestrians, public transportation, freight vehicles, or bicyclists.
- For private projects, the owner shall document any exceptions to the application of CLB Streets and seek approval from the City.

### **Policy:**

Prioritize nodes and corridors identified in the Urban and Rural Official Plans and other major destinations that would benefit from the implementation of CLB Streets.

### **Supporting Actions:**

- Revise Nodes and Corridors and Urban Design policies in the UHOP to include CLB streets principles for all new development and redevelopment.
- Create a priority system and related mapping to assist in identifying projects for CLB Streets implementation. For example:
  - Along high density and mixed-use areas and other areas where there is a propensity to attract pedestrians, cyclists and transit users;
  - Areas that serve designated cycling or transit routes;
  - Special precincts such as Community Improvement Areas, Business Improvement Associations or Waterfronts; and
  - Areas that have excess vehicle capacity for current and anticipated traffic and/or are experiencing safety concerns for street users.
  - Identify and prioritize streets that are located within nodes as identified in the OP (e.g. downtown urban growth centres, sub regional service, community), mobility hubs, colleges and universities, employment areas, major activity centres, heritage conservation districts, waterfronts and community improvement areas.

- Coordinate streets with the Cycling Master Plan, the Pedestrian Mobility Plan and the Recreational Trails Master Plan.

**Policy:**

Establish multi-modal performance guidelines with measurable outcomes that take a broad look at how the system is serving all users.

**Supporting Actions:**

- Develop a multi-modal-level-of-service (LOS) policy and associated guidelines for the City.
- Monitor the effectiveness of measures and adapt guidelines accordingly on an ongoing basis.

**Policy:**

Monitor and report back on performance of CLB streets projects post construction.

**Supporting Actions:**

- Develop a clear baseline understanding of a project site prior to development (using data, surveys, etc.) for comparison and monitoring purposes once the improvement is complete.
- Develop a set of Performance Indicators using site specific criteria that reflect the vision and goals of the project. These elements may include:
  - Mode split changes (at a street segment level);
  - User demographics;
  - Safety (vehicle, pedestrian, cycling related collisions);
  - Local business improvements (i.e. number of patrons, retail sales);
  - Transit ridership;
  - Travel time (for vehicles, pedestrians, cyclists, transit users);

- Adjacent property values and investments;
- Air quality, GHG emissions; and
- Qualitative data, such as perceptions of safety on the road should also be collected, if possible.
- Findings should be reported back to the community, local business owners and stakeholders and annually to Council in conjunction with the annual Sustainable Mobility report showing progress made in implementing this policy.

**Policy:**

Integrate CLB Streets into the Asset Management program to facilitate implementation.

**Supporting Actions:**

- Develop a strategic program to implement CLB streets;
- Through continuous improvement, re-evaluate existing practices and allocate resources to create a Public Realm Section within Public Works that will be responsible to coordinate and implement CLB Streets using a collaborative approach to roadway planning, design and construction that includes various sections but not limited to Traffic, Roads, Economic Development, Asset Management, Design and Construction, etc.
- Create an inclusive culture of CLB streets by encouraging staff professional development and training on non-motorized transportation issues through attending conferences, classes, seminars, and workshops.
- Facilitate project coordination among city departments and agencies with an interest in the activities that occur within the public right-of-way to make better use of fiscal resources (e.g. consider the life-cycle cost of each project as part of the evaluation).

# 5.2

## Supporting Policies and Supporting Actions

The following Complete-Livable-Better supporting policies form part of the 2007 Policy Review and Proposed Revisions/Updates but are not directly referenced from the CLB policy section.

### **Road Classification (Updated from 2007 TMP Road Classification Policy Paper)**

#### **Policy:**

Consider variations to the core classification system when undertaking planning studies and provide new descriptions of these variations to account for unique or special roadway characteristics.

#### **Supporting Actions:**

- Overlay the CLB Streets typologies onto the road classification system to better understand opportunities / options for road construction.
- Research existing guidelines and design manuals to identify the rationale and implications of changing “typical or industry practice” road characteristics as part of the core classification system.
- Consider other roadway elements (e.g. transit, cycling, heritage roads, truck routes, etc.) in conjunction with standard road classification on a case by case basis.
- Ensure that special roadway designations are taken into consideration when applying design standards or maintenance practices while ensuring the safety of all road users (e.g., consider the life-cycle cost of each project as part of the evaluation).
- Develop new road cross-sections based on CLB Streets guidelines and typologies for new streets, reconstructions and retrofits.

### **Urban Design (Updated from 2007 TMP Urban Design Policy Paper)**

#### **Policy:**

Create a continuous grid like road network that complements the efficient movement of pedestrians, cyclists and transit vehicles throughout a community.

#### **Supporting Actions:**

- All new developments should follow a grid-like pattern with efficient spacing between arterials and collectors.
- Continue to provide connectivity and access for pedestrians and cyclists in areas where vehicle movements are restricted (e.g. road closures).

- Encourage creation of mid-block connections for transit and active transportation modes in existing and new development to minimize discontinuities in the grid system.
- Build new development so that it takes advantage of existing infrastructure to minimize the need for new infrastructure.

**Policy:**

Streets are to be designed to facilitate the mobility of all modes of travel. The design should be consistent with the CLB Streets approach that provides for equitable and safe streets for all ages, abilities and income.

**Supporting Actions:**

- Provide amenities to support established and future pedestrian, cyclist and transit networks (e.g. apply Pedestrian Mobility Plan and Cycling Master Plan tools and guidelines).
- Ensure contextual harmony of new buildings with existing structures and streetscape.
- Where surface parking is being provided, locate it behind buildings on major streets and transit corridors.
- Provide opportunities to integrate public art into the streetscape in order to provide an attractive pedestrian environment.
- Foster street activity by supporting a stimulating pedestrian experience.
- Protect for views and vistas where appropriate.
- Balance the provision of minimum levels of sunshine with the adequate provision of street trees for shade.
- Minimize light reduction from buildings.
- Provide adequate levels for lighting for pedestrians.
- Include local and regional transit authorities in the development of urban design guidelines.
- Provide and protect appropriate right-of-way to support walking, cycling and transit.
- Include spaces within the right-of-way for the inclusion of transit, cycling and pedestrian amenities.
- Provide clear signage for both vehicular and pedestrian navigation (e.g. wayfinding system).

# 5.3

## Draft Operational Policies

The following draft policies deal with operational issues and are included for consideration by the City.

*The following policies shall apply to the design, planning, maintenance and operations for a list of projects that includes: new construction, rehabilitation, retrofit, major maintenance and operations work (consider including this in the matrix).*

### Desired Outcomes:

- The appropriate CLB Streets typology shall be selected based on the policy context, transportation function and physical context of the road.
- Accommodation for all users will be met, except under one or more of the following conditions:
  - An affected street prohibits, by law, use by specified users, in which case a greater effort shall be made to accommodate those specified users elsewhere, including on streets that cross or otherwise intersect with the affected street; or
  - The costs of providing accommodation are excessively disproportionate to the need or probable use; or
  - The existing and planned population, employment densities, traffic volumes, or level of transit service around a particular street, as documented by City Planning, is so low that future expected users of the street will not include pedestrians, public transportation, freight vehicles, or bicyclists.

### Supporting Actions:

- Documentation of the reasoning for the exemption shall be publicly available and exceptions for City projects shall be granted by (accountable person or committee). For private projects, the owner shall document the exception and approval shall be granted by (accountable person or committee).

### Desired Outcomes:

- Hamilton's streets will provide a framework for exemplary design. Design excellence will be pursued throughout all corridor components from building face to building face. Along design-priority streets, such as Urban Avenues and Main Streets, the City's investment in street design will inform and inspire the quality of the public realm and buildings abutting the street.
- Hamilton's streets will be recognized as providing an important public space opportunity. Planning and design decisions will balance the desire to create an inviting, livable and inclusive public realm that is people-oriented with the functional elements and demands of mobility. They will also provide an opportunity for place-making through the careful design of public elements such as bus stops, gathering spaces of meeting spots, seating and public art. The investment in Hamilton's streets as public spaces is an important aspect of creating healthy and

sustainable communities.

- Streets should be planned and designed for both the existing and future planned right-of-way. Opportunities to acquire additional right-of-way should be investigated where necessary.
- Very few streets retain the characteristics of one CLB Street typology throughout its length. Transitions between typologies occur when:
  - One road typology changes into another; or
  - The desired operating speed changes along a street.
- Transition areas shall be designed to accommodate changes in speed, context, cross-section and road typology, such as a change from a Main Street to an Urban Avenue.
- Transitions from one speed zone to another should be introduced in a manner that gives motorists adequate time to prepare for, and react to, changes in the street design.

**Supporting Actions:**

- Designers shall introduce transition design changes that will safely lower the speed of motorists who are changing from one context to another by sending a clear message to the driver that a change is approaching.

# Appendix A: Typology Toolkit

A

# A

## Appendix A Typology Toolkit

### Typologies

1. Urban Avenues
2. Transitioning Avenues
3. Main Streets
4. Connectors
5. Neighbourhood Streets
6. Rural Roads
7. Rural Villages

	Urban Avenues	Transitioning Avenues	Main Streets	Connectors
<b>Road Typology</b>				
<b>Example</b>		<i>Upper James Street between Malton Drive and South Bend Road.</i>		
<b>Primary Transportation Function</b>	Transit priority, active transportation priority, vehicular movement	Transit priority, active transportation priority, vehicular movement	Active transportation supportive, transit supportive, vehicular movement	Goods movement priority, transit priority, active transportation supportive, vehicular movement
<b>ROW Width Range</b> (to be developed with cross sections)	36-46m	36-46m	26m	26-30m
<b>People Moving Capacity</b>	High People Moving Capacity (private and commercial motorized vehicles, transit vehicles in dedicated facility) Significant Active Transportation Activity accommodated (utilitarian and local)	Medium to High People Moving Capacity (private and commercial motorized vehicles, transit). Significant Active Transportation Activity accommodated (utilitarian and local). High people moving capacity with RT.	Low to Medium People Moving Capacity (private and commercial motorized vehicles, transit vehicles in mixed traffic). Some Active Transportation Activity accommodated (local).	Medium People Moving Capacity (private and commercial motorized vehicles, transit) Some Active Transportation Activity accommodated (utilitarian and local).
<b>Flow Characteristics</b>	Interrupted flow by passive traffic calming (narrow lanes, on-street parking, mid-block crossings) and signals.	Uninterrupted flow except at signals and roundabouts.	Interrupted flow by passive traffic calming (narrow lanes, on-street parking, mid-block crossings) and signals.	Uninterrupted flow except at signals, roundabouts and controlled cross walks.
<b>Operating Speed (km/h)</b>	40 - 50	40 - 60	40 - 50	60 - 70
<b>Maximum Number of Lanes</b>	6 lanes	6 lanes	4 lanes	4 lanes
<b>Median</b>	No	Access Control, Turn Lane Protection, Pedestrian Refuge, Special Character, Bioswale	No	Access Control, Turn Lane Protection, Pedestrian Refuge, Bioswale
<b>Local Street Connectivity</b>	Highly porous	Highly porous	Highly Porous	Moderately Porous
<b>Access Management</b>	Highest degree of private access control desirable. Rear lot servicing preferred.	High degree of private access control desirable.	Highest degree of private access control desirable. Rear lot servicing provision necessary.	Moderate degree of private access control desirable.
<b>Transit</b>	Can accommodate dedicated transit facility, transit priority lanes and mixed traffic transit.	Can accommodate dedicated transit facility, transit priority lanes and mixed traffic transit.	Can accommodate transit priority lanes and mixed traffic transit.	Can accommodate dedicated transit facility, transit priority lanes and mixed traffic transit.
<b>Goods Movement Corridor</b>	Limited goods movement corridor. Ideally restricted to off-peak and/or weekends.	Supports goods movement.	Limited goods movement corridor. Ideally restricted to off-peak and/or weekends.	Primary goods movement corridor.
<b>Cycling Provisions</b>	Bike Lane (Class 2) or Cycle Track	Cycle Track	Bike lane (Class 2) on road if feasible	Bike Lane (Class 2) or Multi-use path (Class 1)
<b>Pedestrian Provisions</b>	Pedestrian infrastructure to occur on both sides of the street. Design of features to provide access to transit stops and adjacent street related development and provide facilities appropriate for high volumes of pedestrians.	Pedestrian infrastructure to occur on both sides of the street. Design of features to provide access to transit stops, ensure linkages to surrounding communities and provide facilities appropriate for mid-level volumes of pedestrians.	Pedestrian infrastructure to occur on both sides of the street. Design of features to provide access to transit stops and adjacent street related development and provide facilities appropriate for high volumes of pedestrians.	Pedestrian infrastructure to occur on both sides of the street. Design of features to provide access to transit stops and adjacent neighbourhoods and provide facilities appropriate for low volumes of pedestrians.

OPERATIONAL ATTRIBUTES

Neighbourhood Streets	Rural Roads	Rural Villages
		
Vehicular movement, active transportation supportive	Vehicular movement, goods movement, active transportation supportive, agricultural movement	Vehicular movement, active transportation supportive
20m	Typically 36m - up to 46 m in certain circumstances	36m
Low People Moving Capacity (private and commercial motorized vehicles, transit vehicles in mixed traffic). Some Active Transportation Activity accommodated (utilitarian).	High People Moving Capacity (private and commercial motorized vehicles, transit vehicles in mixed traffic) Some Active Transportation Activity accommodated (utilitarian).	Low People Moving Capacity (private and commercial motorized vehicles, transit vehicles in mixed traffic). Some Active Transportation Activity accommodated (utilitarian).
Uninterrupted flow except at signals, stop signs, roundabouts and controlled cross walks.	Uninterrupted flow except at signals, stop signs, roundabouts and controlled cross walks.	Uninterrupted flow except at signals, stop signs, roundabouts and controlled cross walks.
30 - 50	70 - 80	40 - 50
2 lanes	4 lanes	4 lanes
Turn Lane Protection	Turn Lane Protection	Turn Lane Protection
Very	Low porosity	Within village highly porous
Moderate degree of private access control desirable.	Access control not necessary.	Moderate degree of private access control desirable.
Can accommodate light mixed traffic transit.	Can accommodate mixed traffic transit.	Can accommodate mixed traffic transit.
Does not support goods movement.	Primary goods movement corridor.	Supports goods movement.
Bike lane (Class 2) of Signed Route (Class 3)	Paved shoulder	Bike lane (Class 2) of Signed Route (Class 3)
Pedestrian infrastructure on at least one side of the street.	Pedestrian infrastructure on one side of the street and is optional. Design of features to provide access to connecting trails and adjacent neighbourhoods and provide facilities appropriate for low volumes of pedestrians.	Pedestrian infrastructure optional to support local commercial activity.

	Urban Avenues	Transitioning Avenues	Main Streets	Connectors	
<b>Road Typology</b>					
<b>Example</b>		<i>Upper James Street between Malton Drive and South Bend Road.</i>			
<b>Primary Transportation Function</b>	Transit priority, active transportation priority, vehicular movement	Transit priority, active transportation priority, vehicular movement	Active transportation supportive, transit supportive, vehicular movement	Goods movement priority, transit priority, active transportation supportive, vehicular movement	
<b>OPERATIONAL ATTRIBUTES</b>	<b>Crosswalks</b>	Pedestrian crossings formalized only as controlled crosswalks. Dedicated cycle crossing facilities on routes with bike lane.	Pedestrian crossings formalized only as controlled crosswalks. Dedicated cycle crossing facilities on routes with cycle track.	Pedestrian crossings formalized only as controlled crosswalks. Dedicated cycle crossing facilities on routes with cycle track/multi-use trail.	
	<b>On-Street Parking</b>	Dedicated	Off-peak	Dedicated	No
	<b>Minimum Intersection Spacing (m)</b>	Signalized intersection spacing should ensure appropriate access to adjacent land uses and reinforce a walkable environment. Preferable spacing is 150m to 250m, however, spacing should be confirmed by local study. Spacing of unsignalized intersections to be determined through analysis of local operating conditions.	300 - 400m	Signalized intersection spacing should ensure appropriate access to adjacent land uses and reinforce a walkable environment. Preferable spacing is 150 m to 250m, however, spacing should be confirmed by local study. Spacing of unsignalized intersections to be determined through analysis of local operating conditions.	Signalized intersection spacing to reflect transportation priority of the street by ensuring optimal traffic flows. Preferable spacing is 250m to 350m, however, spacing should be confirmed by local study. Spacing of unsignalized intersections to be determined through analysis of local operating conditions.
	<b>Utilities</b>	Underground & JUT preferred. Spacing must still be reserved for Bell Pedestals and Hydro/Rogers above ground boxes. Utility tunnels under sidewalk as a means to address space constraints.	Underground & JUT preferred, however Hydro, Rogers if above ground will need to have adequate set-back and clear-zone.	Underground & JUT preferred. Spacing must still be reserved for Bell Pedestals and Hydro/Rogers above ground boxes. Utility tunnels under sidewalk as a means to address space constraints.	Utility corridor provided for above ground Hydro and below grade Rogers, Bell, Enbridge, storm, sanitary, to be placed at standard ROW offset locations.
	<b>Stormwater Management Approach</b>	Limited space for SWM facilities. Adequate end of pipe treatments should be met.	Landscaped medians could consider bio-swales etc. Spacing should be provided for end of pipe swales and sediment control measures. Option to consider local SWM Ponds as outfall locations.	Limited space for SWM facilities, Adequate end of pipe treatments should be met. Integrate LID measures with streetscape elements.	If using landscaped medians, consider bio-swales etc. However if using a continuous left median, spacing should be provided for end of pipe swales and sediment control measures. Option to consider local SWM ponds as outfall locations.
	<b>HOV/ Transit Priority</b>	Preferred	Optional	N/A	Optional

Neighbourhood Streets	Rural Roads	Rural Villages
		
Vehicular movement, active transportation supportive	Vehicular movement, goods movement, active transportation supportive, agricultural movement	Vehicular movement, active transportation supportive
Pedestrian crossings formalized only as controlled crosswalks.	Pedestrian crossings at signalized intersections.	Pedestrian crossings formalized only as controlled crosswalks.
Dedicated	No	Dedicated
existing ranges	existing ranges	existing ranges
Utility corridor provided for above ground Hydro and below grade Rogers, Bell, Enbridge, storm, sanitary, to be placed at standard ROW offset locations.	Utility corridor provided for above ground Hydro and below grade Rogers, Bell, Enbridge, storm, sanitary, to be placed at standard ROW offset locations.	Utility corridor provided for above ground Hydro and below grade Rogers, Bell, Enbridge, storm, sanitary, to be placed at standard ROW offset locations.
Traditional SWM facilities, adequate end-of-pipe treatments should be met, integrate LID measures where possible	Rural ditching and effective sediment control measures i.e. rock check dams etc. to be used	Traditional SWM facilities, adequate end-of-pipe treatments should be met, integrate LID measures where possible
N/A	Optional	N/A

	Urban Avenues	Transitioning Avenues	Main Streets	Connectors
<b>Road Typology</b>				
<b>Example</b>		<i>Upper James Street between Malton Drive and South Bend Road.</i>		
<b>Primary Transportation Function</b>	Transit priority, active transportation priority, vehicular movement	Transit priority, active transportation priority, vehicular movement	Active transportation supportive, transit supportive, vehicular movement	Goods movement priority, transit priority, active transportation supportive, vehicular movement
<b>Land Use Designations</b>	Residential, Commercial, Mixed-Use, Institutional, Open Space	Commercial, Mixed-Use, Residential, Institutional, Industrial	Mixed-Use, Residential, Commercial, Institutional, Open Space, Historic Districts	Mixed-Use, Residential Commercial, Industrial
<b>Land Use Context</b>	Transitioning from medium density to high density, mixed-use city centre.	Typically existing medium and large format retail transitioning to medium density street-oriented development.	Existing heritage building fabric not transitioning but with infill development and limited intensification.	Predominantly suburban residential not transitioning.
<b>Planned Building Scale &amp; Orientation</b>	Mixture of street-oriented built form of varied size. Increase in density and height in downtown Hamilton.	Mixture of street-oriented built form of varied size. Increase of density and height adjacent to transit nodes and when approaching growth centres.	Mixture of small scale street-oriented built form.	Mixture of small to medium scale built form set back from street or back-lotted.
<b>Boulevard Treatment</b>	The boulevard should have an urban cross section including wide sidewalks, street trees, landscaping, land-use transition zone, transit amenities and public art.	Boulevard treatment should reflect the street's active transportation priority but also have an urban cross section including a cycle track, sidewalks, street trees and appropriate pedestrian and transit amenities.	The boulevard should have an urban cross section including wide sidewalks, street trees, land-use transition zone, transit amenities and public art.	Boulevard treatment should reflect the street's primary function of moving vehicles. The boulevard should have a semi-urban cross section including sidewalks or multi-use trail, street trees, buffer planting, landscaping, pedestrian and transit amenities.
<b>Soft Landscape Elements</b>	Street trees, shrub/perennial beds, decorative planters	Street trees, shrub/perennial beds, raised planters, buffer planting, bio-swales in the median	Street trees, shrub/perennial beds, decorative planters	Street trees (double row where space permits), shrub/perennial beds, buffer planting, green boulevards, bio-swales in the median
<b>Minimum Boulevard Width (excluding RT options)</b>	6.10m	8.7m	5.0m (7.0m + preferred)	TBD

URBAN DESIGN ATTRIBUTES

Neighbourhood Streets	Rural Roads	Rural Villages
		
Vehicular movement, active transportation supportive	Vehicular movement, goods movement, active transportation supportive, agricultural movement	Vehicular movement, active transportation supportive
Commercial, Residential, Open Space	Agriculture, Institutional, Industrial, Open Space, Commercial, Residential	Commercial, Residential, Open Space
Clusters of low density residential and/or commercial plots, typically at a junction.	Predominantly agriculture with clusters of low density residential, industrial clusters, institutional and commercial uses.	Clusters of low density residential and/or commercial plots, typically at a junction.
Typically mid-to-low rise residential with potential for local retail.	Typical agricultural rural fabric. Variety of built form sizes, oriented to but set back from the street.	Variety of built form sizes, oriented to but set back from the street in rural areas, mixture of small scale street-oriented built form in villages and hamlets.
Sidewalks to support pedestrian activity. Street trees and decorative lighting as upgrades.	Paved shoulder to support cycling. Multi-use trail separated from street when supported by a cycling master plan.	Sidewalks to support retail activity. Street trees and decorative lighting as upgrades.
Street trees, green boulevard	Buffer planting, naturalized drainage swales, street trees where there are no existing trees adjacent to the roadway	Street trees, green boulevard
TBD	n/a	TBD

	Urban Avenues	Transitioning Avenues	Main Streets	Connectors	
<b>Road Typology</b>					
<b>Example</b>		<i>Upper James Street between Malton Drive and South Bend Road.</i>			
<b>Primary Transportation Function</b>	Transit priority, active transportation priority, vehicular movement	Transit priority, active transportation priority, vehicular movement	Active transportation supportive, transit supportive, vehicular movement	Goods movement priority, transit priority, active transportation supportive, vehicular movement	
ELEMENTS					
ROAD ELEMENTS	Inside Travel Lane	3.2m	3.2m	3.3m	3.2m
	Outside Travel Lane	3.5m	3.5m	3.50m	3.5m
	Dedicated On-Street Parking	2.2m	---	2.2m	---
	Continuous Centre-Turn Lane	---	---	---	3.2m
	Painted Centre Median	---	no	---	---
	Median	---	4.0m	---	4.0m
	Shoulder	---	---	---	---
	Rapid Transit (excl. platforms)	7.0m (tbc by Transportation Engineering)	7.0m (tbc by Transportation Engineering)	---	7.0m (tbc by Transportation Engineering)
	On-Street Bike Lane	1.8m	1.8m	1.5m (plus 0.5m buffer)	---
BOULEVARD ELEMENTS	Cycle Track (requires edge zone/buffer)	2.0m	2.0m	---	---
	Edge Zone	1.0m	1.0m	0.5 - 1.0m	0.5-1.0m
	Planting & Furnishing Zone	2.0m min.	2.6m min.	1.5m min.	2.4m min.
	Pedestrian Clearway	2.0m min.	2.5m min.	2.0m min.	2.0m min.
	Frontage & Marketing Zone	1.0m -3.0m, depending on setback	1.0m -3.0m, depending on setback	1.0m -3.0m, depending on setback	---
	Multi-Use Trail	---	---	---	3.5m
	Drainage Swale	---	---	---	---

Neighbourhood Streets	Rural Roads	Rural Villages
		
Vehicular movement, active transportation supportive	Vehicular movement, goods movement, active transportation supportive, agricultural movement	Vehicular movement, active transportation supportive
3.0m	3.5m	3.5m
N/A	3.75m	3.5m
2.2m	---	2.4m
---	---	---
---	2.0m	---
---	---	---
---	2.5m	---
---	---	---
1.8m	---	1.8m
---	---	---
1.0m	---	1.0m
2.6m min.	---	4.0m min.
1.8m min.	---	2.0m min.
---	---	---
---	---	---
---	4.75m	---

# toolbox: boulevard elements

road typology right-of-way element width	urban avenues 36-46 m		transitioning avenues 36-46 m		main streets 26 m		connectors 26-30 m	
	Optimum	Range	Optimum	Range	Optimum	Range	Optimum	Range
Pedestrian Clearway	3.5	2.0-4.0	4.0	2.5-4.0	3.0	2.0+	2.0	1.8-3.0
Planting and Furnishing Zone	2.5	2.0-4.0	3.0	2.5-7.0	3.0	1.5-4.0	3.0	2.4-7.0
Edge Zone	1.0	-	1.0	-	1.0	0.5-1.0	1.0	0.5-1.0
Frontage and Marketing Zone	3.0	1.0-3.0	3.0	1.0-3.0	3.0	1.0-3.0	-	-
Multi-Use Path	-	-	-	-	-	-	3.5	3.5-4.5
Cycle Track (Requires Buffer)	1.5	1.5-3.0	1.5	1.5-3.0	-	-	-	-
Cycle Track Buffer	0.9	0.5-1.5	0.90	0.5-1.5	-	-	-	-
Drainage Swale	-	-	-	-	-	-	-	-
Transit Facilities	Within Planting and Furnishing Zone		Within Planting and Furnishing Zone		-	-	Within Planting and Furnishing Zone	
Site Furnishings	Within Planting and Furnishing Zone							
Pedestrian Lighting	Within Planting and Furnishing Zone							

Minimum Requirement  
 Preferred  
 Optional

# toolbox: boulevard elements

road typology right-of-way element width	neighbourhood streets 20 m		rural roads 36-46 m		rural villages 30 m	
	Optimum	Range	Optimum	Range	Optimum	Range
Pedestrian Clearway	2.0	1.8 +	-	-	2.2	2.0 +
Planting and Furnishing Zone	2.6	2.6-4.0	-	-	4.0	4.0+
Edge Zone	1.0	-	-	-	1.0	-
Frontage and Marketing Zone	-	-	-	-	-	-
Multi-Use Path	-	-	-	-	-	-
Cycle Track (Requires Buffer)	-	-	-	-	-	-
Cycle Track Buffer	-	-	-	-	-	-
Drainage Swale	-	-	4.75	4.75	-	-
Transit Facilities	Within Planting and Furnishing Zone					
Site Furnishings	Within Planting and Furnishing Zone				Within Planting and Furnishing Zone	
Pedestrian Lighting	Within Planting and Furnishing Zone				Within Planting and Furnishing Zone	

Minimum Requirement  
 Preferred  
 Optional

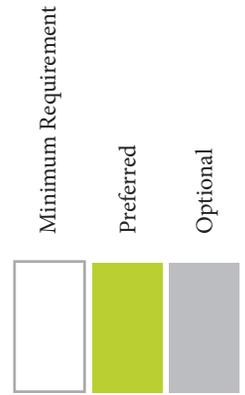
# toolbox: roadway elements

road typology	urban avenues		transitioning avenues		main streets		connectors	
	36-46 m	36-46 m	36-46 m	26 m	26-30 m	right-of-way element width	Optimum	Range
Inside Travel Lane	3.2	3.2	3.2	3.2	3.2	3.2	3.2	-
Outside Travel Lane	3.5	3.5	3.5	3.5	3.5	3.5	3.5	-
Continuous Centre Turn Lane	-	-	-	-	-	3.2	3.0-3.3	-
Painted Centre Median	-	-	-	-	-	-	-	-
Landscaped Median	-	3.7	3.0-5.0	-	5.0	-	4.0-6.0	-
Shoulder and Rounding	-	-	-	-	-	-	-	-
Dedicated On-Street Parking	2.2	2.2-2.6	-	2.2	-	-	-	-
Conventional On-Street Bike Lane	1.8	1.5-2.0	1.8	1.8	1.8	-	-	-
Buffered On-Street Bike Lane	2.0	2.0-2.5	2.0	2.0	2.0-2.5	-	-	-
Right Turning Lane	-	-	-	-	-	3.0	3.0-3.3	-
Rapid Transit Priority Lane	7.0	-	7.0	-	-	7.0	-	-

Minimum Requirement  
 Preferred  
 Optional

# toolbox: roadway elements

road typology right-of-way element width	neighbourhood streets 20 m		rural roads 36-46 m		rural villages 36 m	
	Optimum	Range	Optimum	Range	Optimum	Range
Inside Travel Lane	3.0	-	3.5	-	3.5	-
Outside Travel Lane	-	-	3.75	-	3.5	-
Continuous Centre Turn Lane	-	-	-	-	-	-
Painted Centre Median	-	-	2.0	-	-	-
Landscaped Median	-	-	-	-	-	-
Shoulder and Rounding	-	-	2.5	-	-	-
Dedicated On-Street Parking	2.2	2.2-2.6	-	-	2.4	2.4-2.6
Conventional On-Street Bike Lane	1.8	1.5-2.0	-	-	1.8	1.5-2.0
Buffered On-Street Bike Lane	-	-	-	-	-	-
Right Turning Lane	-	-	-	-	-	-
Rapid Transit Priority Lane	-	-	-	-	-	-



# Appendix B: Demonstration Plans



**B**

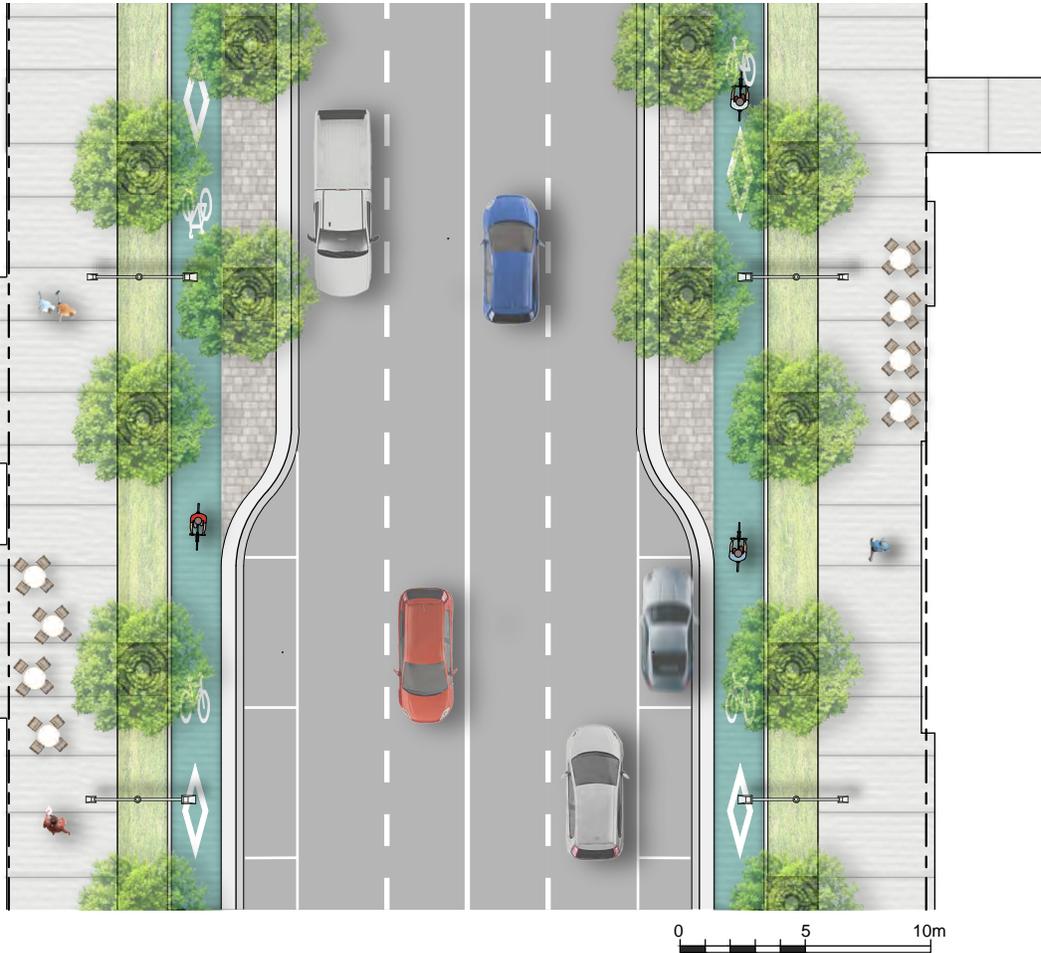
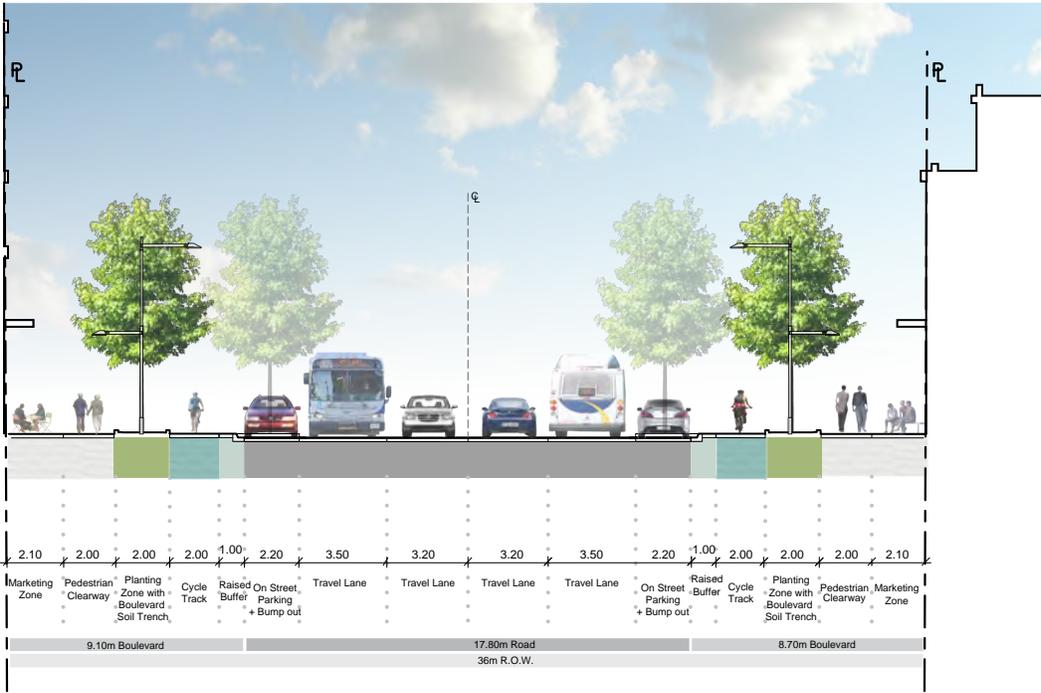
# B

## Appendix B Demonstration Plans

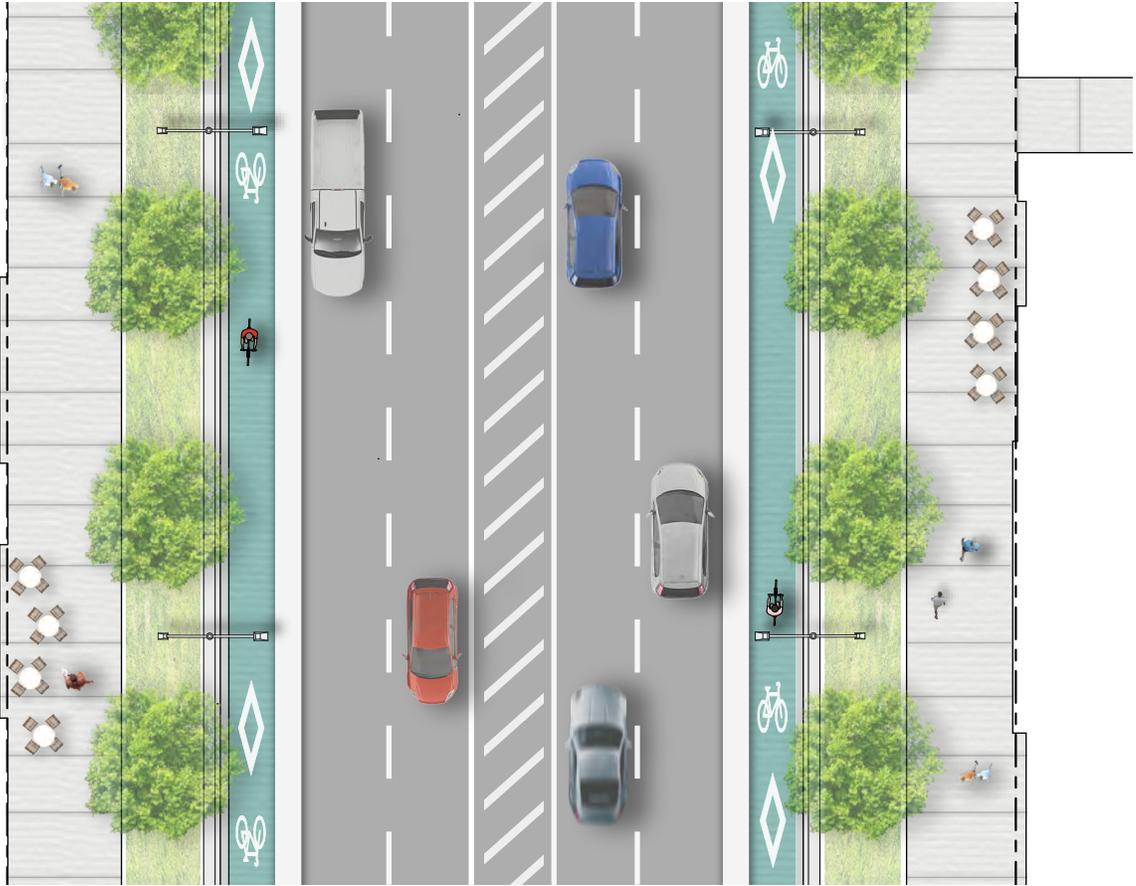
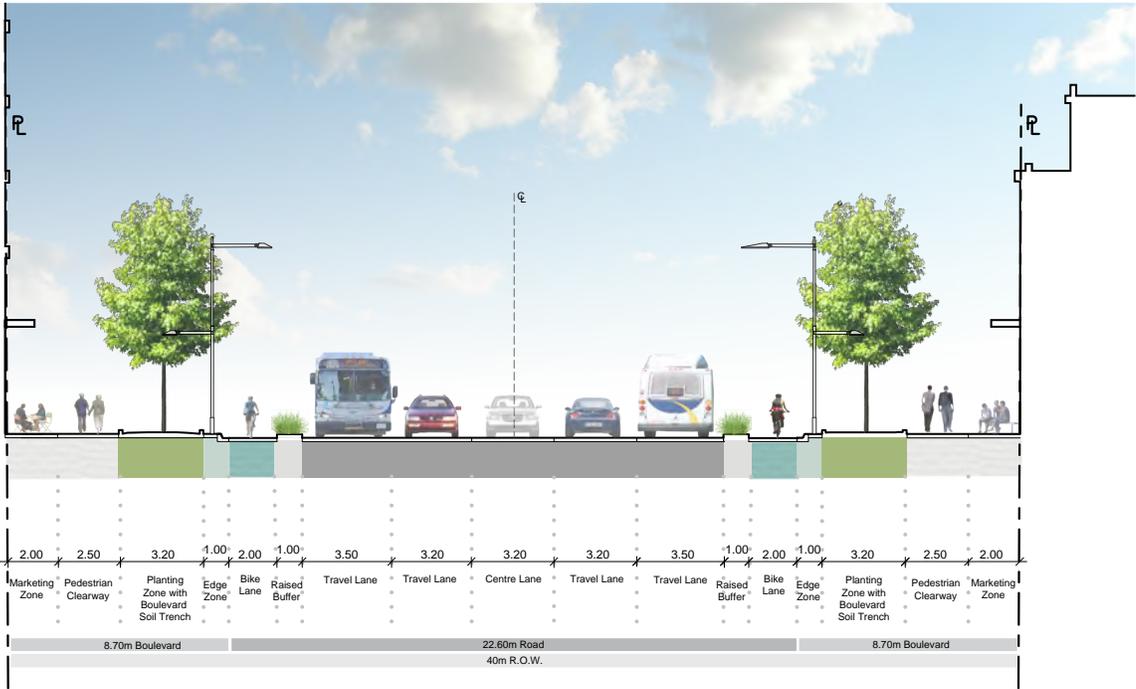
### Typologies

1. Urban Avenues
2. Transitioning Avenues
3. Main Streets
4. Connectors
5. Neighbourhood Streets
6. Rural Roads
7. Rural Villages

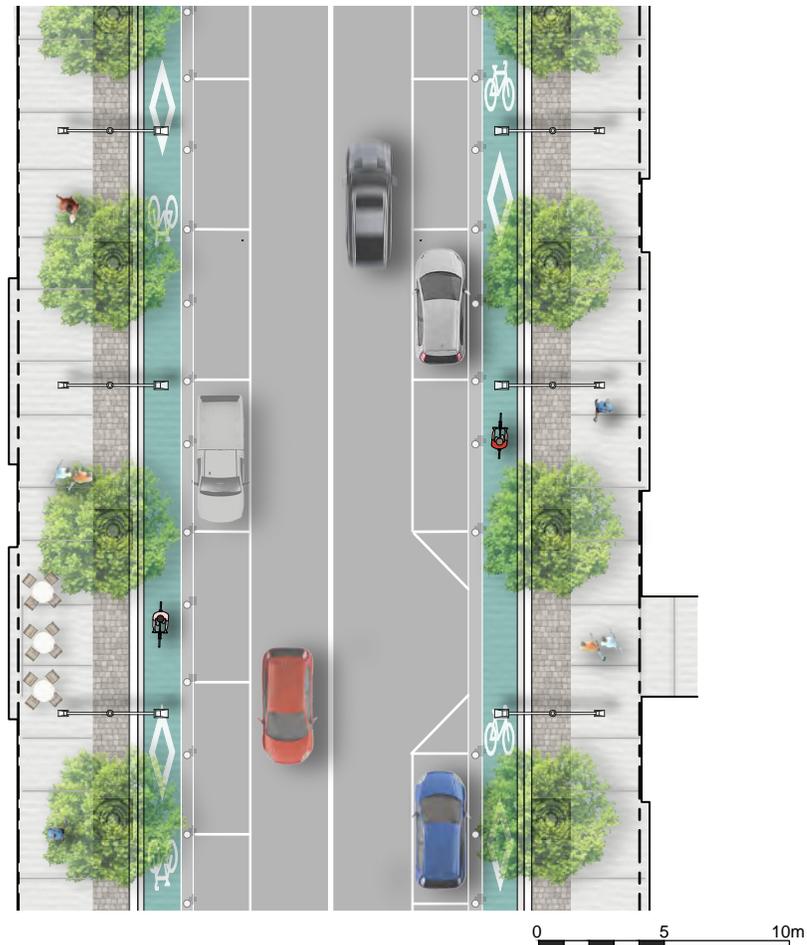
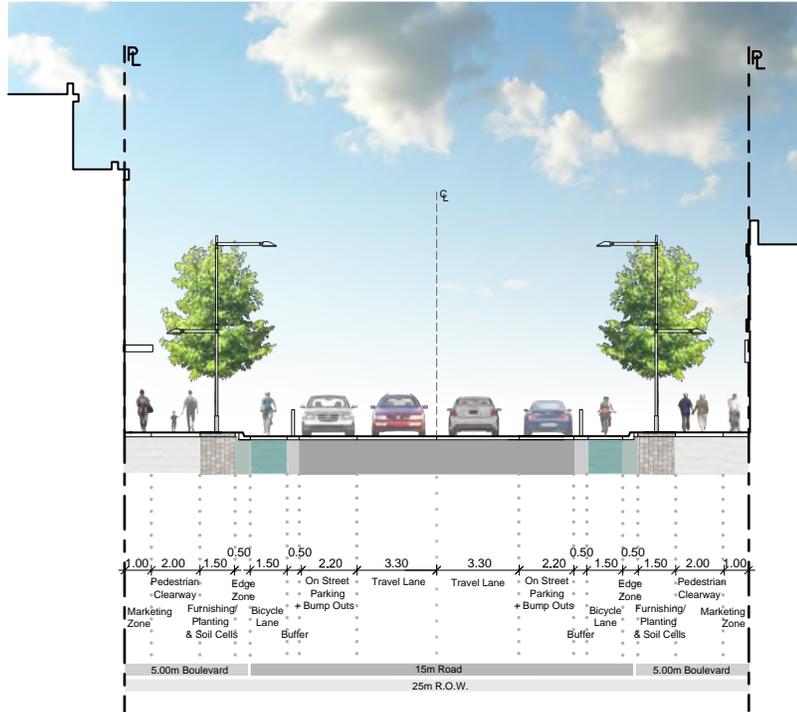
# URBAN AVENUES (36m R.O.W.)



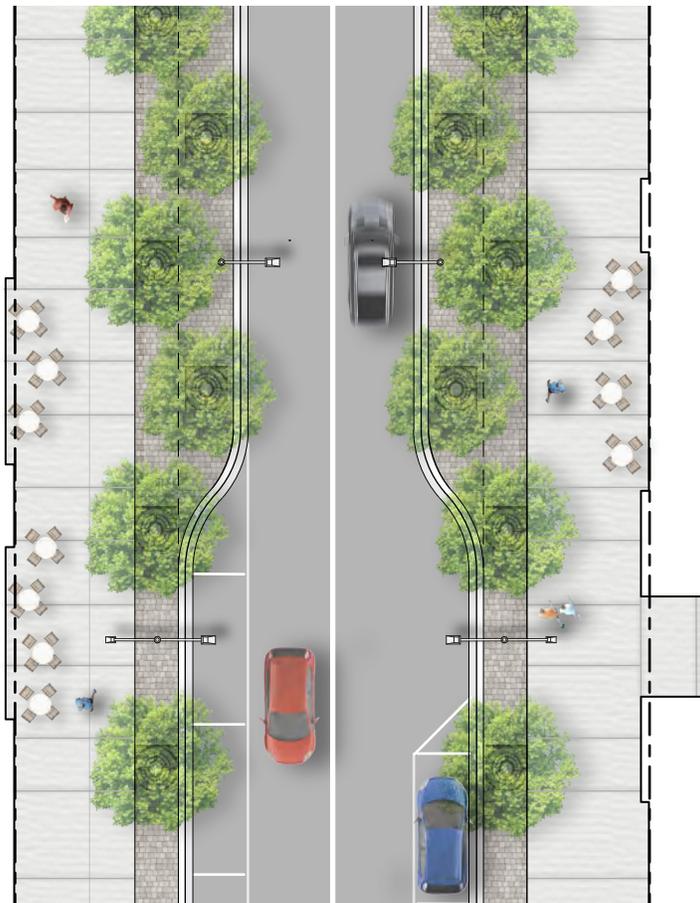
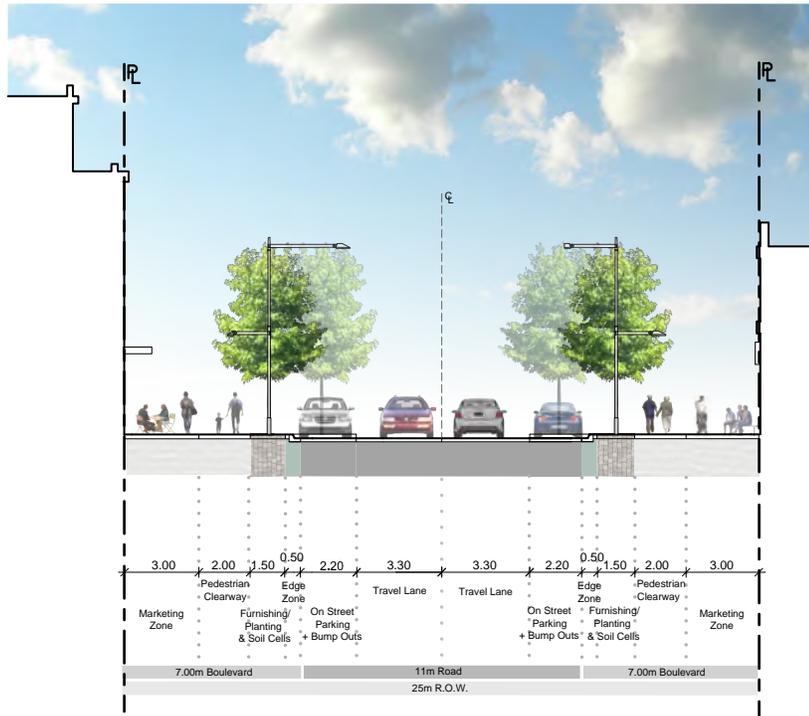
# TRANSITIONING AVENUES (40m R.O.W.)



# MAIN STREET (25m R.O.W.) Option 1

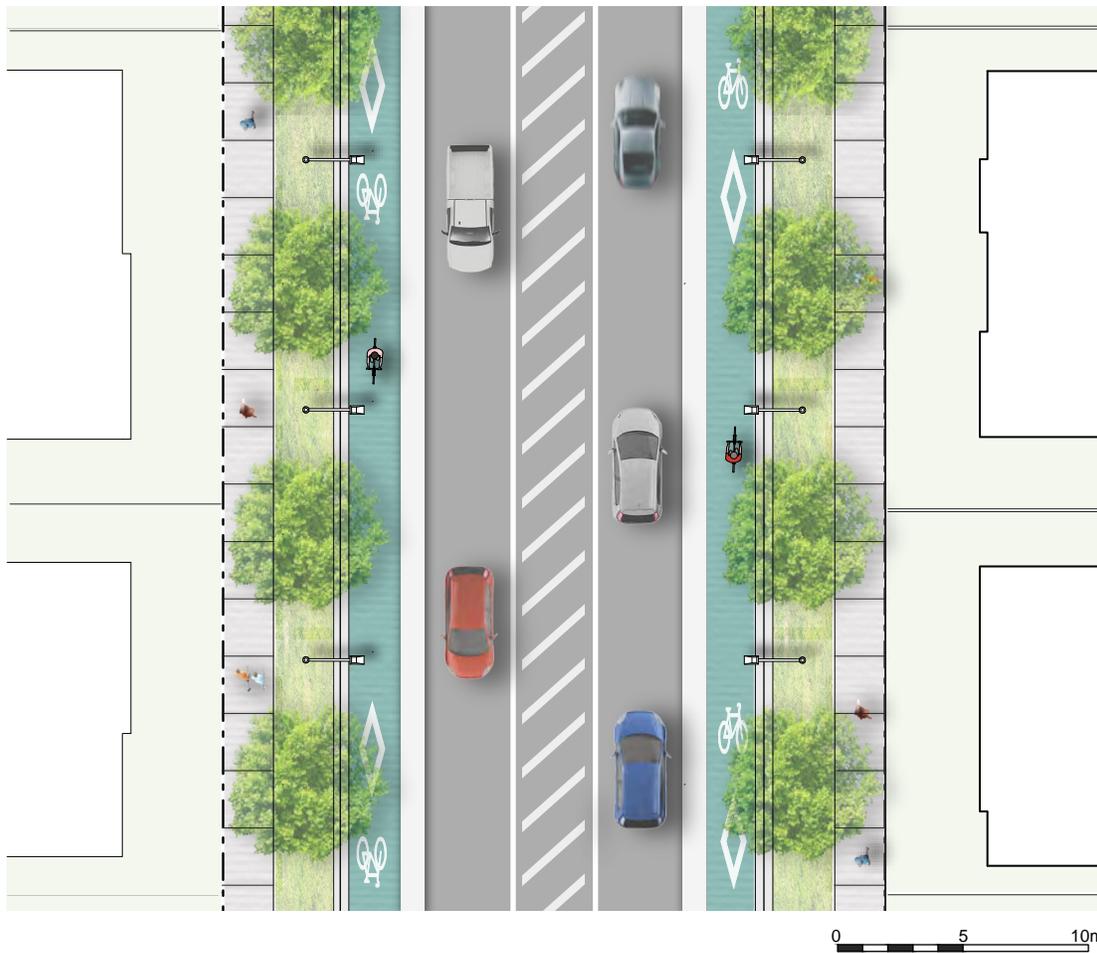
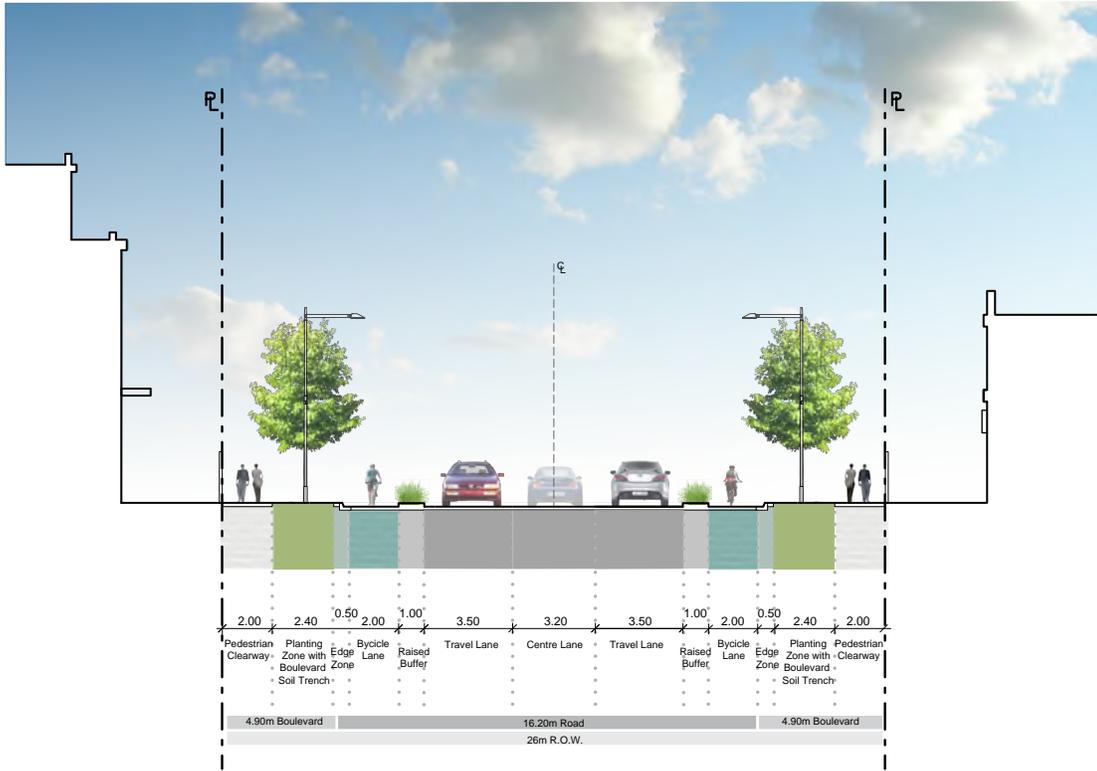


# MAIN STREET (25m R.O.W.) Option 2

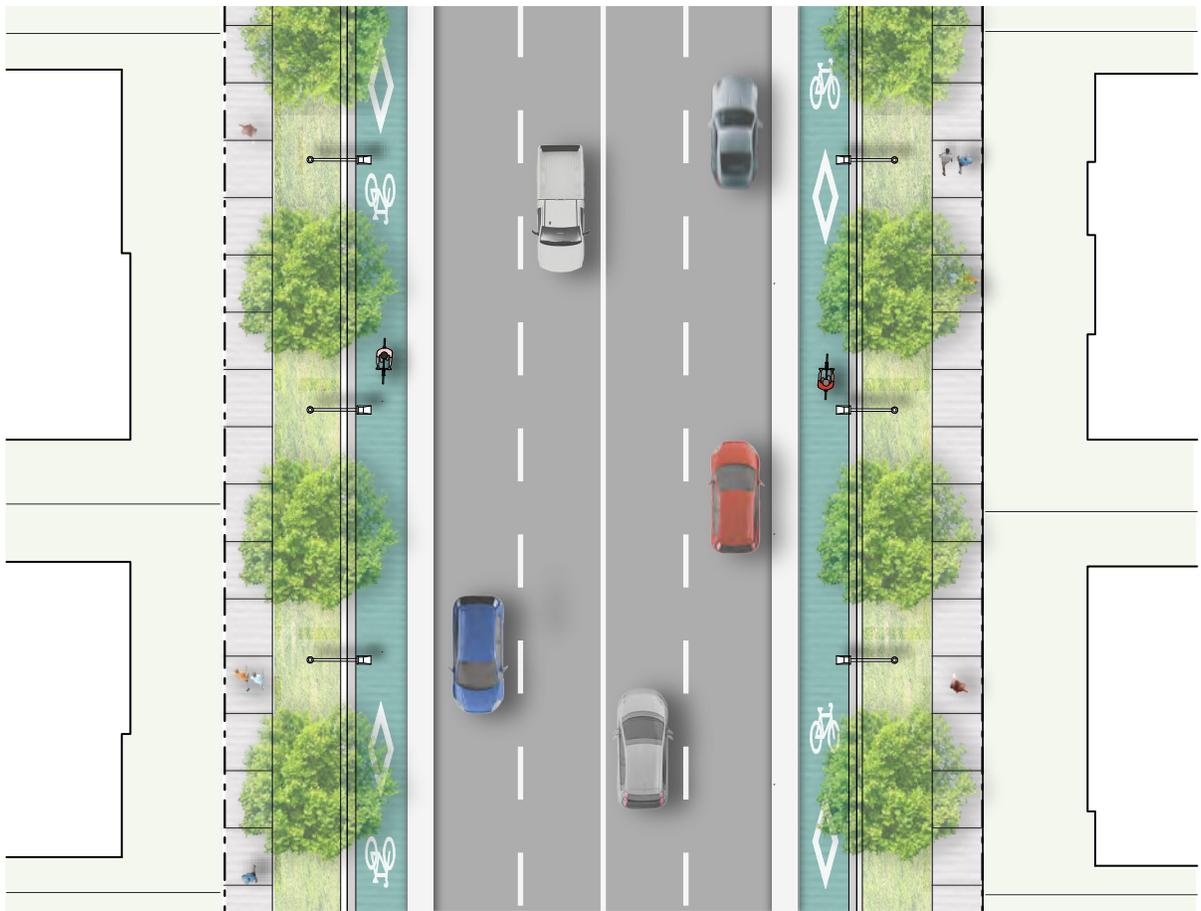
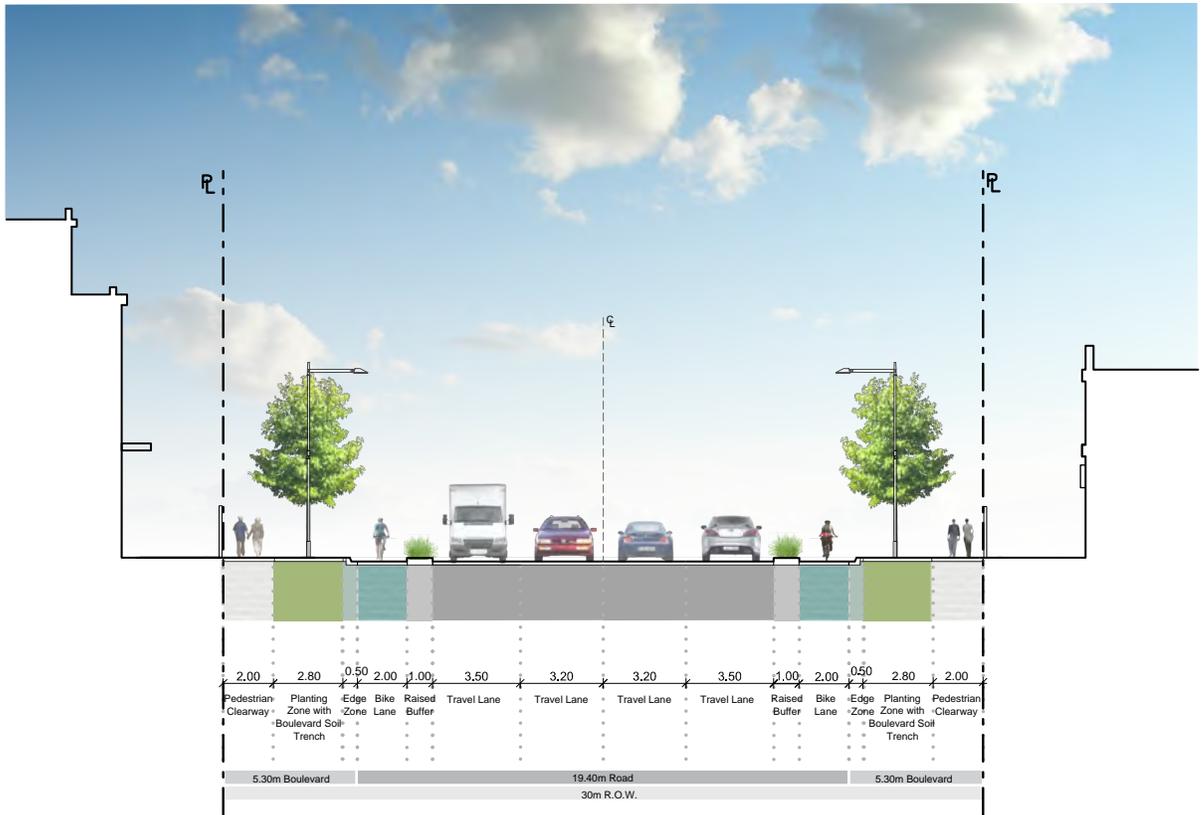


0 5 10m

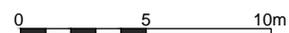
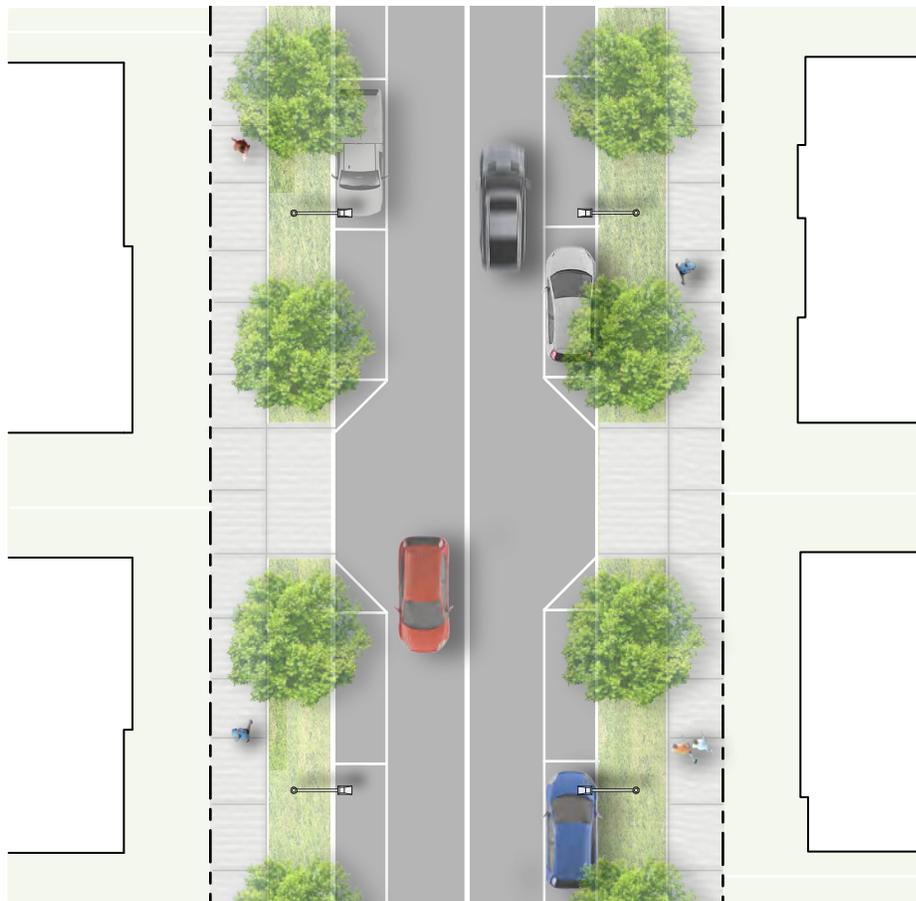
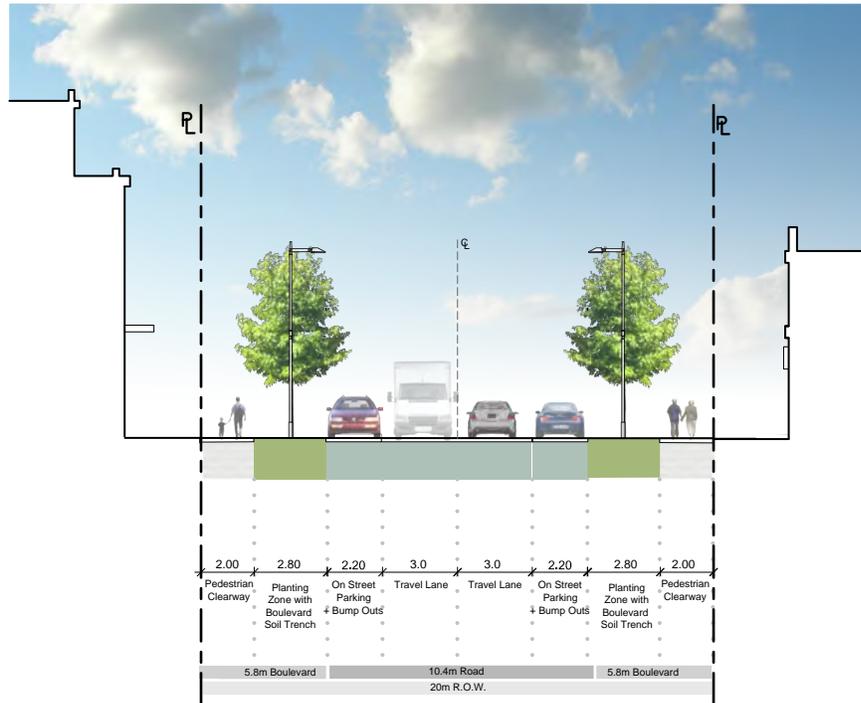
# CONNECTOR (26m R.O.W.)



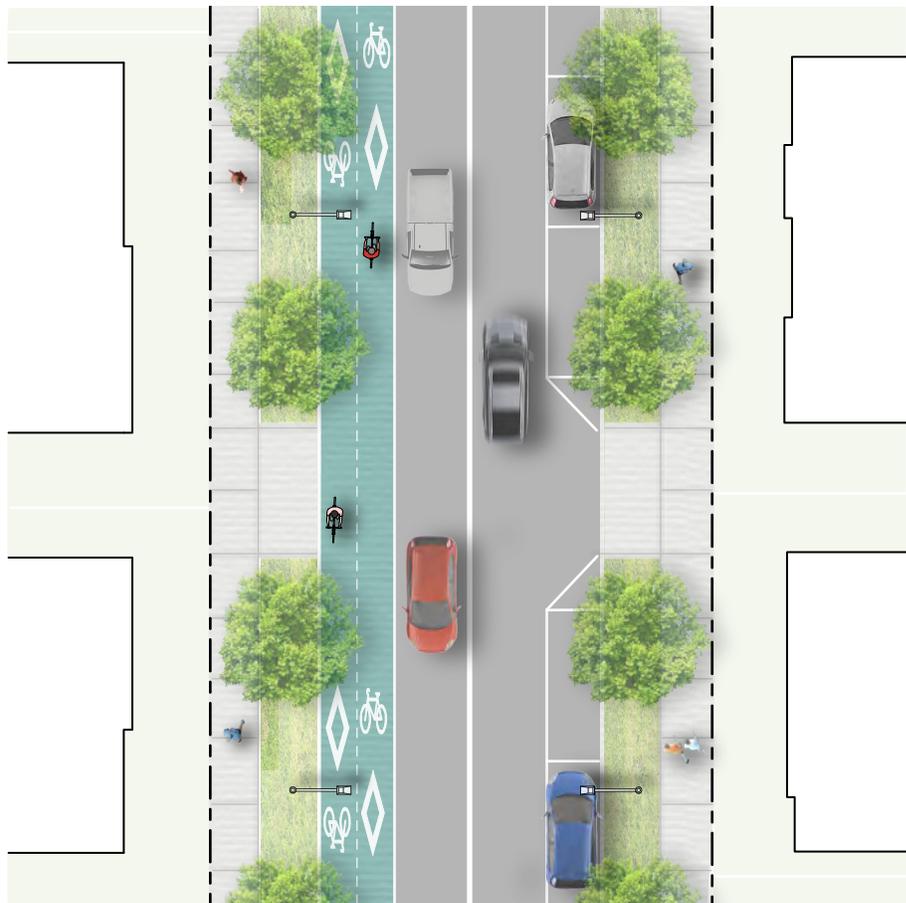
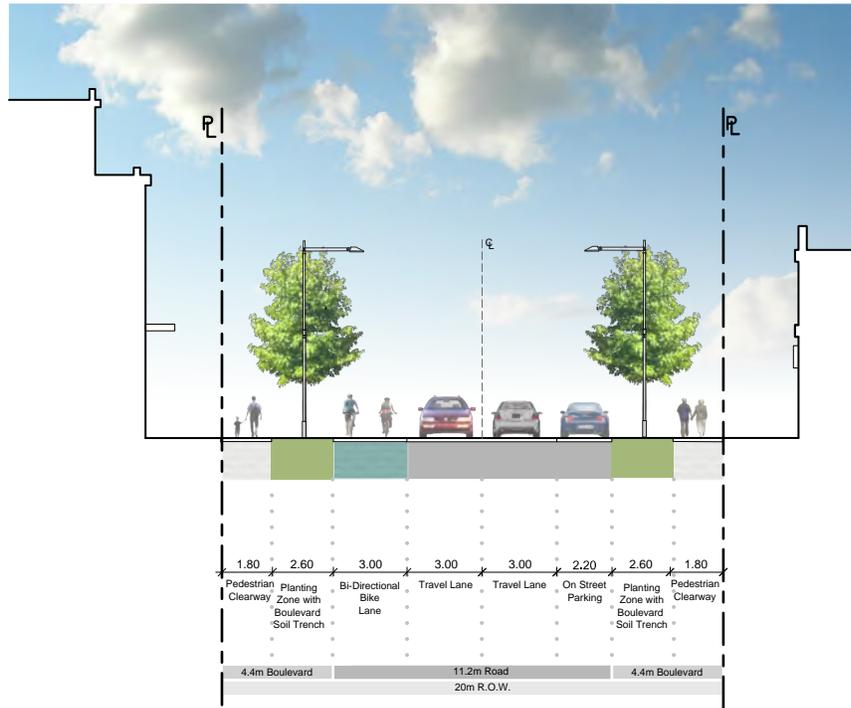
# CONNECTOR (30m R.O.W.)



# NEIGHBOURHOOD STREET (20m R.O.W.) Option 1

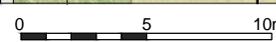
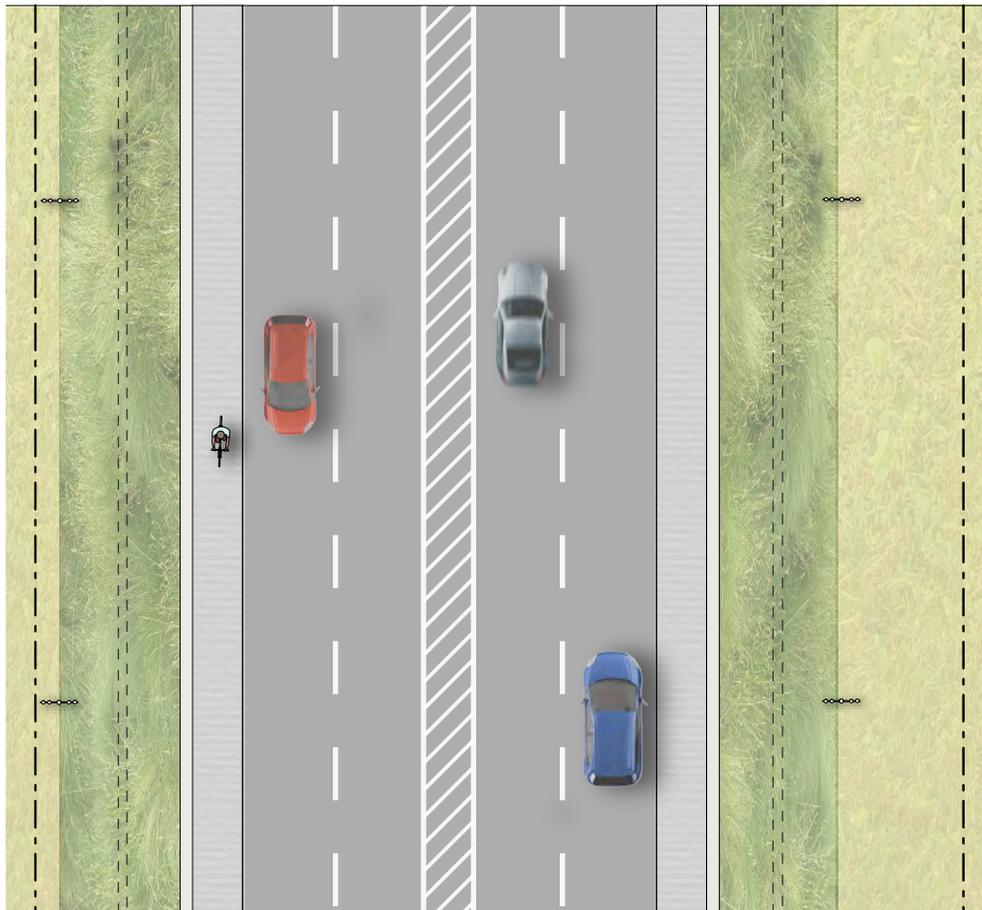
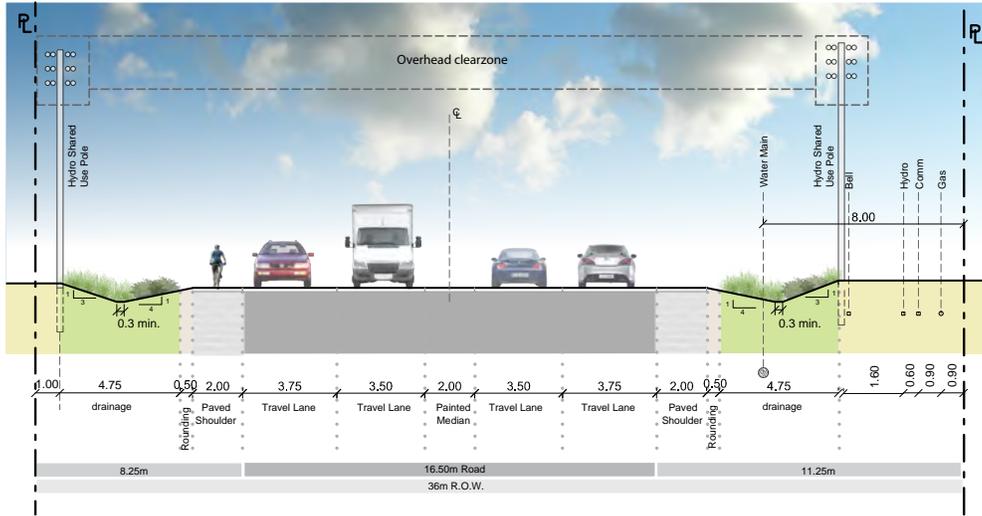


# NEIGHBOURHOOD STREET (20m R.O.W.) Option 2



0 5 10m

# RURAL ROAD (36m R.O.W.)



# RURAL VILLAGE (36m R.O.W.)

