DESIGNING GREAT STREETS

YORK REGION
Transportation Services

York Region

Acknowledgements

Designing Great Streets could not have been possible without the contributions of many Regional staff and stakeholders. Thank you.

These guidelines are a comprehensive street design resource for Regional staff and their many stakeholders. The contributions of these staff and stakeholders has been critical to the development of these guidelines. The project team, including the Regional Municipality of York Transportation Services staff and project consultant Brook McIlroy, would like to thank those that contributed to the completion of these guidelines, including the following:

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- Active and Sustainable Transportation
- Business Planning and Technology
- Capital Planning and Delivery
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- Public Health
- Road and Traffic Operations
- Streetscaping
- Transportation Asset Management
- Transportation Planning
- Transportation Project Management Office
- York Region Rapid Transit Corporation
- York Region Transit

Local Area Municipalities

- Town of Aurora
- Town of East Gwillimbury
- Town of Georgina
- Township of King
- City of Markham
- Town of Newmarket
- City of Richmond Hill
- City of Vaughan
- Town of Whitchurch-Stouffville

External Stakeholders

- Brampton Transit
- City of Toronto
- City of Mississauga
- Durham Region
- Peel Region
- Toronto and Region Conservation Authority
- Toronto Transit Commission
- Town of Whitby

- Engineering consulting industry
- York Region residents

GREAT STREETS
Building Roads that Build Community 2019

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Executive Summary

Executive Summary

A Context Sensitive approach to road design will ensure York Region's roads are fully integrated with planned land use and built form, allowing the Region to respond to changing conditions and create age friendly complete communities

Road design plays an important role in city building and the establishment of a sense of "place". Evolving best practices call for cross-disciplinary collaboration and approaches to street design that integrate boulevard and roadway design while recognizing the unique attributes of the area and land uses. This approach is often called Context Sensitive Solutions (CSS). It shifts the focus from planning for vehicle capacity to planning for streets that provide greater mobility for all users and greater integration with the community.

This update to The Regional Municipality of York road design process guideline is consistent with direction and policies in the 2016 Transportation Master Plan. It also integrates the road design process with land use and existing community characteristics. Like many municipalities in Ontario, the Region is working to plan its transportation infrastructure to accommodate additional growth in residents and employees as well as changing demographics. The Region is striving to make more efficient use of land and resources, promoting intensification in urban areas, while developing a more sustainable, interconnected system of mobility that is sensitive to climate change. Road design to support evolving communities and land uses is an integral component of building communities to meet the needs of all residents.

These guidelines are intended for planners, urban designers, architects, landscape architects, engineers, developers and others who may be involved with the Regional road design process.

These guidelines are expected to be used by multidisciplinary design teams to produce resilient road design options that suit the specific, current settings and proposed future land uses.

The Vision of these guidelines is:

> *To create vibrant streets for York Region that provide a range of safe and reliable transportation options, while being sensitive to adjacent land uses and needs of the community.*

The key elements of this Study are summarized below.

Six Road Typologies

These guidelines include six road typologies that reflect the Region's aspirations for the Regional road network.

1. City Centre Street
2. Avenue
3. Main Street
4. Connector
5. Rural Road
6. Rural Hamlet Road

Sample sections and plans are provided for each typology, along with key operational and urban design attributes.

Design Guidelines

The guidelines outline best design practices for elements of the roadway (between the curbs) and the boulevard (between the curb and building

face), as well as adjacent natural heritage features. They are intended to assist the road design team in developing design detail for projects that reflect the best practices for each typology.

Decision Making Process

This step-by-step process guides design teams through a flexible and multidisciplinary process of street design and prioritization of multiple items. It contains worksheets, a detailed matrix and toolbox to be used in designing Regional roads.

The process directs design teams to undertake a thorough analysis of the future setting and land use surrounding the road, the identification of broad-based objectives and the priority mode of movement to identify the preferred typology or typologies. Roadway and boulevard elements are selected and a process of refinement is used to lead the team through the development of an appropriate cross-section based on land use, community needs, project objectives and constraints. A summary of the decision making process is illustrated on the next page.

Implementation

Adoption of the recommendations in the guidelines has implications for the Municipal Environmental Assessment process, the best practices for maintenance and operations and the costs for road construction.

Regional roads pass through a variety of contexts

Summary of Decision Making Process

1 OPPORTUNITY STATEMENT

- Identify the issues the project will address

2 REVIEW CONTEXT

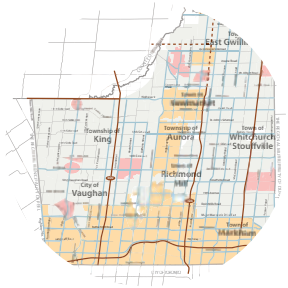
- Determine the policy context (e.g. land use, transit)
- Determine the planned physical context (e.g. right-of-way width, built form)
- Determine financial context (e.g. capital/ lifecycle)

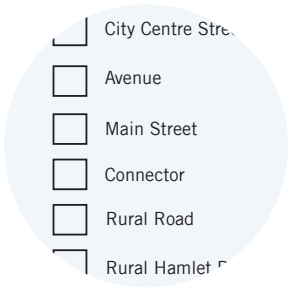
3 PRODUCE OBJECTIVES

- Determine objectives (e.g. priority modes of movement, planned context)
- Refer back to objectives throughout process

4 SELECT A TYPOLOGY

- Refer to typology matrix
- Select appropriate typology or hybrid typologies based on objectives, priority mode of movement and planned context





5 DETERMINE ELEMENTS OF THE STREET

- Refer to Toolbox
- Identify Boulevard and Roadway Elements
- Determine whether elements need to be refined to fit in available space

6 REFINE ELEMENTS

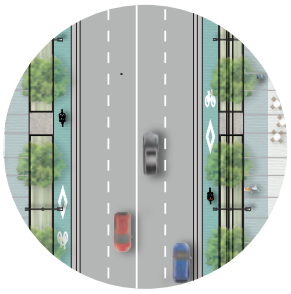
- Refer to Toolbox
- Cycle between Step 6 and 5 until required/ preferred elements fit in available space
- Refine in order of priority

7 BUILD PLAN & SECTION

- Compile all elements into a recommended section for the Regional road
- Confirm section satisfies the objectives in Step 3

8 BUILD INTERSECTIONS & TRANSITIONS

- Refer to guidance provided for the design of Intersections and Transitions



REVISIT OPPORTUNITY STATEMENT

- Check back to ensure that the solution developed will address issues identified in the Opportunity Statement

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1.0 Introduction

1.1 Guidelines Overview

York Region's road network reflects and supports provincial and Regional planning objectives. It contributes to city building and creating a sense of place.

York Region is one of the fastest growing regional municipalities in Canada, growing from a population of approximately 169,000 people in 1971 to a projected 1.8 million by 2041. Its nine local municipalities are experiencing considerable change and diversity, ranging from densely populated urban areas to small hamlets with vast agricultural lands. These diverse settlement patterns are mirrored by an equally diverse transportation network that is continually evolving to meet the needs of a growing and aging population.

Road design that supports evolving land use and intensification is an integral component of building complete communities that can effectively accommodate and respond to growth. The Province of Ontario's planning policies have required local and regional municipalities to focus on increased accessibility and mobility for Ontarians, more sustainable forms of transportation, sensitivity towards climate change and intensification in urban and built-up areas in response to this growth and other factors. This results in pressures on land, transportation networks and other resources.

In October 2006, York Regional Council approved *Towards Great Regional Streets* which became the Region's design guidelines for six-lane Regional roads. The purpose was to provide a standardized approach to designing six-lane Regional roads while ensuring all modes of transportation were accommodated and enhanced streetscaping was provided. Dufferin Street between Steeles Avenue and Glen Shields Avenue, now built, was designed based on these guidelines.

York Region has evolved further in the past 10 years and there is recognition that one standard of road design is not enough. To best serve our citizens, a customized approach is required to reflect the street and the community it serves.

It is increasingly recognized that road design plays an important role in city building and the establishment of a sense of 'place'. Evolving best practices call for cross-disciplinary collaborative approaches to street design that integrate boulevard and roadway design and recognize the unique attributes of different places and land use contexts. This approach is referred to as Context Sensitive Solutions (CSS). It seeks to shift the focus from planning for vehicle capacity to planning for streets that provide greater mobility for all users and contribute to a greater integration of land use

and community. Street design is now considered an integral component of the built form, urban design, public realm, health, safety and vibrancy of the community. It is also considered a key mechanism to promote sustainability and protection of the environment.

The Region has undertaken Designing Great Streets ("guidelines") to update its road design process and develop road typologies that recognize the expanded role Regional roads play in keeping with current thinking on progressive roadway and urban design. The resulting priorities for accommodating pedestrians, cyclists, transit users and vehicles, in combination with the planned land use for each street, promote a more holistic means for creating street designs for individual projects. These guidelines are intended to simplify decision making for planners, urban designers, architects, landscape architects, engineers, developers and others involved in the road design process.

These guidelines provide:

- A set of six road typologies that reflect the Region's aspirations for the Regional road network
- Design Guidelines outlining best practices for all elements of the street (between the curbs) and boulevard (between the curb and building face) as well as adjacent natural heritage features
- A Decision Making Process that guides designers through a flexible process to assess the long-term goals for Regional roads, as well as design roads supporting all modes of transportation in a growing urban environment

Implementation of these road typologies and the decision making framework will guide the design of Regional roads to provide multimodal transportation options while supporting community development and adjacent land uses.

A model for a cross-disciplinary, collaborative approach to street design

1.2 How to Use These Guidelines

These guidelines contain six sections. The first two sections provide background information and key guiding documents. Sections three and four provide guidance for the elements involved in the road design process. Section five and six provide the tools and process to produce a context sensitive road design.

Section 1: Introduction
This section contains an overview of the Designing Great Streets guidelines, a summary of the overall urban design vision and principles and a summary of best practices.

Section 2: Context
This section contains relevant policy frameworks at the Provincial, Regional and Municipal levels, and a summary of key technical documents.

Section 3: Road Typologies
This section contains six road typologies developed for York Region, along with their respective defining characteristics, key opportunities and challenges and design and operational attributes.

A sample section and plan are provided for each typology with a toolbox of roadway and boulevard elements.

Section 4: Design Guidelines
This section includes the best practices for each of the boulevard and roadway elements found in an urban or rural cross-section of a Regional road. It also includes guidelines for the design of intersections and transitions for three urban road typologies, and general guidelines relating to the design and construction of all Regional roads. These guidelines are useful for confirming design specifics as part of the Detailed Design Process. References are provided for further details.

Section 5: Implementation
This section identifies how to integrate the decision making process outlined in Section 6 into the Region's road design process, the Municipal Environmental Assessment process and identifies best practices for maintenance and operations.

Section 6: Decision Making Process
This section contains process worksheets to be used by the design teams to update or design new Regional roads in a context-sensitive manner. The decision-making process is to be used collaboratively by Regional staff, consultants, municipal staff and stakeholders, with professional judgment and negotiation playing critical roles in design development.

1.3 Urban Design Vision and Guiding Principles

Urban Design Vision

To create vibrant streets for York Region that provide a range of safe and reliable transportation options while responding to adjacent land uses and needs of the community.

Guiding Principles

1. Guide solutions to reflect the context.
2. Guide the process to reflect the transitioning role of the street.
3. Plan projects in collaboration with the community.
4. Plan for multiple transportation modes to promote sustainable, flexible solutions.
5. Use sound professional judgment to determine priorities for the street design.

1.4 Best Practices Summary

Context Sensitive Solutions emphasize multidisciplinary collaboration and holistic street design

Context Sensitive Solutions (CSS) is a recognized design approach that emphasizes the importance of a multidisciplinary collaboration process that is supportive of a holistic roadway design to better reflect place and long-term growth. Research on best practices in implementing a CSS design process reviewed leading context-sensitive approaches to street design in Ontario, Canada and the United States. Various regulatory bodies and industry standard associations have also recommended context sensitive approaches that act as guidance for local municipalities and regions.

Regulatory Bodies and Industry Standard Associations

The United States **Federal Highway Administration** has developed CSS principles within the transportation planning process. This approach is to be collaborative, multidisciplinary and comprehensive, resulting in improved road design solutions that support multi-modal transportation goals and future community development objectives.

The National Cooperative Highway Research Program (NCHRP) also published its recommended practice, An Expanded Functional Classification System for Highways and Streets, in 2018. It utilizes a CSS approach to develop a contextually appropriate design that supports modal needs such as walkable communities and active transportation.

Similarly, the **Transportation Association of Canada (TAC)** released its geometric design standards for Canadian jurisdictions. Their work emphasized movement away from simply providing engineering standards to encouraging designers to use professional judgment and expertise to design more context sensitive and appropriate solutions.

The Complete Streets for Canada movement is also related to CSS. This movement, championed by organizations such as the National Association of City Transportation Officials (NACTO) and the Toronto Centre for Active Transportation (TCAT), calls for the provision of safe, convenient and comfortable travel for all users regardless of the mode of transportation. Many design approaches recommended through Complete Streets support CSS, including accessible pedestrian facilities, safe cycling measures, reduction of emphasis and space devoted to vehicle movement and increased priority for transit.

Canadian Jurisdictions

In Ontario, several municipalities and regions recently released road network guidelines based on a context sensitive approach. In 2013, the **Region of Waterloo** developed design guidelines for Regional Transportation Corridors. It provides design guidelines and recommended cross-sections for a new street classification system that encompasses the roadway and boulevard. It also includes a flexible decision-making process and toolkit to guide the design process and respond to changing priorities and conditions along the roadway.

Peel Region followed with its Road Characterization Study in 2013, using a CSS approach to develop road typologies, illustrative

cross-sections and access control guidelines. Both classification systems emphasize the integration of the supporting built form and land use character adjacent to the road in question.

The **City of Ottawa** has adopted a Complete Streets Implementation Framework (2015) that emphasizes boulevard and streetscaping elements. This framework follows a circumstantial approach depending on land use context and character and also considers sustainable infrastructure with the intent of reducing the impact of street design on the environment.

In 2018, the **City of London, Ontario**, developed its London Complete Streets Design Manual, which demonstrates a CSS approach to developing street typologies, complete with cross-section illustrations.

The **City of Edmonton, Alberta**, released its Complete Streets Design and Construction Standards in 2018, which adopts a CSS approach and a holistic perspective of street design. These standards aim to help develop a network of streets that are safe, attractive and comfortable for all users in all seasons, while also considering operational and maintenance challenges.

American Jurisdictions

In the United States, jurisdictions including **Los Angeles County, Miami-Dade County** and **the Cities of Chicago and San Diego** have adopted road design manuals and guidelines based on the CSS approach. In **Los Angeles,** the Model Design Manual for Living Streets guides local municipalities in developing similar design guidelines of their own. It was funded by the **County of Los Angeles Health Department** and emphasizes the benefits of CSS and complete streets in promoting active lifestyles and environmental sustainability and in combating negative health impacts of sedentary lifestyles.

Miami-Dade County's Complete Streets Design Guidelines (2016) strive to support the design and development of streets that are safe for all users. This document emphasizes on applying context-sensitive street elements to produce comfortable and accessible streets for all transportation modes. It identifies three sets of street element typologies (streets, overlays, and land use), which intermingle and contribute to the complete street. The guidelines aim to help engineers, planners, and policy makers design various roadways with all travelers in mind.

> "Context sensitive solutions (CSS) is a collaborative, interdisciplinary approach that involves all stakeholders in providing a transportation facility that fits its setting. It is an approach that leads to preserving and enhancing scenic, aesthetic, historic, community, and environmental resources, while improving or maintaining safety, mobility, and infrastructure conditions."
>
> *– Results of Joint AASHTO / FHWA Context Sensitive Solutions Strategic Planning Process, Summary Report, March 2007*

Similarly, Complete Streets Chicago identifies a road typology system that uses right-of-way width, building type and land use to classify roads. It also uses a modal hierarchy as a key determinant of design priorities and values. Crossings and intersections are noted as critical in creating complete streets, with a goal of creating compact and safe crossings.

The City of San Diego's Transportation & Storm Water Design Manuals: Street Design Manual (2017) recognizes the variety of users and purposes that a street must serve, and its importance in shaping urban form. The document describes the street as a city organized along a corridor, with economic, social, political and ecological implications. This manual is divided into six sections; Roadway & Alley Design, Pedestrian Design, Traffic Calming, Street Lighting, Parkway Configurations, and Design Standards. The manual emphasizes that each of these six elements should be considered in the design of a new street, as well as retrofitting an existing one.

Best practices and guidelines have been drawn from all these examples to develop these design guidelines and approaches.

2.0 Context

Many areas in York Region are growing and urbanizing quickly

2.1 Context

York Region is one of the fastest growing municipalities in Canada, with an extensive network of Regional roads passing through a wide variety of contexts

York Region is located in the heart of the Greater Toronto Area (GTA) and consists of nine cities and towns: Aurora, East Gwillimbury, Georgina, King, Markham, Newmarket, Richmond Hill, Vaughan and Whitchurch-Stouffville. The Region covers 1,776 square kilometres, stretching from the City of Toronto in the south to Lake Simcoe and the Holland Marsh in the north, and from Peel Region in the west to Durham Region in the east.

York Region, like other regions in the Greater Golden Horseshoe, is experiencing a rapidly growing and aging population. It has grown from 169,000 people in 1971 to an estimated population of 1,160,000 in 2015. By 2041, York Region is expected to grow to a population of almost 1.8 million people and will support 900,000 jobs.

York Region is made up of a system of centres and corridors, surrounded by urban areas, rural towns, villages and hamlets, as well as significant natural heritage features and agricultural lands. One key objective of the York Region Official Plan (2010) aims to enhance the Region's urban structure through city building, intensification and compact, age friendly complete communities. In part, this is to protect the valuable natural features of York Region, which include Lake Simcoe and the Oak Ridges Moraine, an east-west rolling topography that consists of forested areas, wetlands and kettle lakes covering 500 square kilometres. Protecting these natural features requires designing transportation systems that are sensitive to climate change. For example, the urban heat island effect, greenhouse gas effect and temperature change is being managed in York Region through planning and design.

A significant component of age-friendly, complete communities is the road network, which is as diverse as York Region itself. York Region currently characterizes its street network based on the planned basic road width, ranging from 20 to 60 metres, rather than function or intended traffic volume.

Public transportation is provided by York Region Transit (YRT). Through Viva, the Region is expanding its bus rapid transit network to more efficiently serve riders and commuters of all ages and abilities. This involves constructing more than 34 kilometres of funded rapid transit routes, 28 kilometres of which will be completed by 2021. There is also an addditional 32 kilometres of unfunded transit route upgrades, totaling 66 kilometres of planned transit upgrades. In response, the design of roadways is increasingly accommodating bus rapid transit infrastructure, with all levels of government committing to provide $3.2 billion in total investment to the Regional rapid transit system by 2021. Other improvements include creation of a Frequent Transit Network, expansion of curbside Viva service, expansion of on-demand service, and scheduling optimization.

The following is a summary of major technical, Provincial, Regional and Municipal planning policy and strategic documents that affect Regional roads and adjoining lands. The guidelines and recommendations contained in this document are intended to support achievement of the objectives identified in this Section. These policy and technical documents should be referenced for further guidance on specific road network and design objectives.

2.2 Legislative and Technical Framework

Current planning policies and all levels of government and technical standards and guidelines establish the essential framework for the development of an enhanced mobility network

The following is a summary of major technical, Provincial, Regional and Municipal planning policy and technical standards and guidelines that inform Regional roads and adjoining lands. Legislated policies and plans (such as official plans) need to be adhered to and technical standards need to be met, while guidelines provide detailed guidance on specific issues. Overall, the guidelines and recommendations contained in *Designing Great Streets* are intended to support achievement of the objectives identified in the documents in this Section. These legislative and technical documents should be referenced for further guidance on specific road network and design objectives.

Provincial Documents

Provincial Policy Statement (2014)

The *Provincial Policy Statement* (PPS) provides overall direction for planning and development in the Province of Ontario. All Regional and 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 environment and resources. It provides support for a context-sensitive approach to road design, stating "transportation and land use considerations shall be integrated at all stages of the planning process" (Section 1.6.7.5). It also calls for land use patterns, densities and mixes that will reduce trip length and frequency and support alternative transportation modes. The use of active transportation, transit, transit-supportive development and the provision of connectivity among transportation modes is promoted.

The PPS also highlights the importance of coordination between municipalities and other levels of government, agencies and boards (Policy 1.2), as well as the coordination and co-location of public facilities such as schools, libraries and recreational facilities to improve accessibility by active and public transportation (Policy 1.6.5). It calls for strengthening the protection of provincially planned transportation corridors and the promotion of land use compatibility for lands adjacent to planned and existing corridors (Policy 1.6.8).

Places to Grow Act (2005) and the Growth Plan for the Greater Golden Horseshoe (2017)

Places to Grow is the provincial legislation pertaining to growth planning in Ontario. The *Growth Plan for the Greater Golden Horseshoe* outlines the Greater Golden Horseshoe's (GGH) growth plan through 2041. It establishes population and employment targets for municipalities and identifies Urban Growth Centres and urban growth boundaries within the GGH. In conjunction with the *Greenbelt Plan (2005)*, it limits urban expansion, encouraging intensification in areas already built-up and with existing infrastructure. This intensification will result in more efficient use of land and resources and increased viability of transit and alternative modes of transportation. To conform to the Growth Plan, municipalities will accommodate expected growth, in part, through changes to roadway design and planning for adjacent land uses.

The Growth Plan also directs that "the transportation system within the GGH will be planned and managed to...offer a balance of transportation choices that reduces reliance upon the automobile and promotes transit and active transportation" (Section 3.2.2). Through the 2017 update to the Growth Plan, Ontario became the first province to adopt a policy on Complete Streets.

Climate Change Strategy (2015) and Five-Year Climate Change Action Plan, 2016-2020 (2016)

Climate Change Strategy identifies five sections that work together to help establish Ontario as a high productivity low carbon economy and society. The actions and initiatives outlined in each of the five sections are intended to reach the carbon emission reduction targets of 15 percent, 37 percent and 80 percent below 1990 levels by 2020, 2030 and 2050 respectively. Specific actions include building green infrastructure (Section 1.4), integrating climate change mitigation and adaptation considerations into government decision-making and infrastructure planning (Section 2.2), establishing reduced greenhouse gas emissions as an important factor in transportation and land use planning initiatives (Section 4.5) and integrating climate change adaptation considerations in infrastructure decision-making (Section 5.1).

The *Five-Year Climate Change Action Plan* builds on the *Climate Change Strategy* by setting the foundation to meet emission reduction targets by 2020, 2030 and 2050. The document intends to help reach the 2020 emission target of 15 percent below 1990 levels and also to establish the foundation to reach the 2030 and 2050 targets. Eight Action Areas are identified that includes transportation and land-use planning. Each Action Area contains strategies that are further expanded into individual actions, intentions and visions. Specific actions include supporting cycling by improving the commuter cycling network (Transportation 3.1), empowering municipalities to set green development standards (Land-Use Planning 1.1), and eliminating minimum parking requirements (Land-Use Planning 1.4).

Accessibility for Ontarians with Disabilities Act (2005, Consolidated 2016)

The *Accessibility for Ontarians with Disabilities Act, 2005* (AODA) promotes opportunities for persons with disabilities through identification, removal and prevention of barriers, and aims to increase access for people of all abilities. The Design of Public Spaces Standard under the AODA sets out technical requirements to help organizations make new and redeveloped public areas accessible, including but not limited to exterior paths of travel, ramps, curbs, rest areas and on-street parking spaces.

The Growth Plan for the Greater Golden Horseshoe (2017) encourages intensification in already built up areas

Ontario Transit Supportive Guidelines (2012)

Ontario's *Transit Supportive Guidelines* contain strategies, guidelines, case studies and best practices related to transit-friendly land-use planning, urban design and transit operations. The intention of this document is to provide practitioners with the necessary tools, resources and knowledge to create transit supportive environments to increase transit ridership. Guidelines are provided for community structure (Section 1.1), creating complete streets (Section 2.2) and creating a transit-supportive urban form (Section 2.4). *Transit Supportive Guidelines* is not policy so professional judgment should be exercised when using this document.

Ontario Freight Supportive Guidelines (2016)

Ontario's *Fright Supportive Guidelines* recognizes the importance of a safe and efficient freight transportation system to maintain economic vitality. The guidelines presented in this document are intended to help governments and practitioners create safe and efficient freight-supportive communities through coordinated land-use, mobility planning, urban form, design,

operations and awareness of freight related needs. Guidelines are provided for improving integration between transportation and land-use planning (Section 2.4), specific site design for various land uses (Section 3.0), road design and operational guideline requirements, by-laws, policies and practices (Section 4.4) and best practices case studies (Section 6.0).

Metrolinx: Mobility Hub Guidelines

Mobility Hub Guidelines provides guidance and support for planning and development at mobility hubs in the Greater Toronto and Hamilton Area (GTHA). This document refers to Metrolinx's The Big Move (and its successor, the 2041 Regional Transportation Plan) to identify all mobility hubs in the GTHA, and generally defines a mobility hub as a transit station including the surrounding area within an 800 metre radius. Furthermore, this document recognizes the importance of mobility hubs in improving economic vitality, creating a sense of place, creating sustainable urban forms and enabling and encouraging all modes of travel.

The purpose of this document is to provide practitioners with guidelines and resources for improving and developing mobility hubs, inspire the incorporation of mobility hubs in plans and planning activities, and to serve as a tool and resource. Specific guidelines are provided for clear mode share and transportation performance targets (Guidelines 2.1-2.2), complete and safe streets (Guidelines 2.3-2.6), parking management and reduction (Guidelines 4.4-4.5) and creating a strong sense of place (Guidelines 6.1).

Regional Documents

York Region Official Plan (2010, Office Consolidation 2016)

The *York Region Official Plan* (ROP) outlines broad goals for growth management, the economy, environment and community within York Region. Key objectives are to:

- Direct a minimum of 40 percent residential intensification to built-up areas
- Develop enhanced mobility systems using a "people and transit first approach" to connect land use and transportation planning (Section 1.2)

Chapter five of the ROP addresses intensification, to be focused in York Region's centres and corridors. Chapter seven focuses on mobility, including pedestrian and cycling connections, transit and street design. According to the ROP, the typical road allowance for Regional roads is 36 to 45 metres.

The ROP identifies four Regional centres, which are Markham Centre, Newmarket Centre, Richmond Hill/Langstaff Gateway and Vaughan Metropolitan Centre. There are also four Regional corridors, which include sections of Yonge Street, Highway 7,

A rural road in York Region

Davis Drive and Green Lane East. The Regional Centres are expected to support the highest densities and greatest mix of land uses in York Region and should have an integrated mobility plan that considers all mobility choices.

The ROP emphasizes the encouragement of active transportation options through a variety of policies and initiatives. Section 7.2 outlines goals to create an active transportation system and programs, provide transit service convenient and accessible to all and ensure streets support all modes of transportation.

The ROP also calls for infrastructure design and construction sensitive to natural features and functions, avoiding key natural heritage and hydrologic features where possible (Section 2.1.12).

Other relevant objectives are to:

- Work with local municipalities to coordinate their infrastructure within Regional rights-of-way, including street lighting, sidewalks and cycling facilities
- Work with local municipalities, where necessary, to ensure sidewalks and street lighting are provided on both sides of all arterial and collector streets with transit
- Require local municipalities to adopt land use and site design policies promoting sustainable modes of transportation
- Ensure streets support all modes of transportation, including walking, cycling, transit and automobile use
- Plan and protect future urban and rural streets to accommodate transportation demands
- Require all new development applications to demonstrate that the development meets or exceeds the York Region Transit-Oriented Development Guidelines
- Promote sustainability and protect and enhance the natural heritage system
- Improve air quality, and mitigate and adapt to the impacts of climate change

York Region Transportation Master Plan (2016)

The future success of York Region as the number one destination within the GTHA for people to live, work and play is dependent on the Region's ability to build an interconnected system of mobility. This update to the Transportation Master Plan (TMP) sets out the infrastructure and policy requirements to enable the Region to build and maintain such a system. This includes additional transit infrastructure, roads infrastructure and a system of sidewalks and trails to further enable active transportation.

The TMP, endorsed by Regional Council in June 2016, provides a 25-year outlook to respond to the following challenge:

To create an advanced interconnected system of mobility in the Greater Toronto and Hamilton Area (GTHA) in order to give York Region residents and businesses a competitive advantage, making York Region the best place to live, work and play in the GTHA.

To address this challenge, the TMP proposed a number of actions, policies and strategies driven by the following objectives:

1. Create a world class transit system
2. Develop a road network fit for the future
3. Integrate active transportation in urban areas
4. Maximize the potential for employment areas
5. Make the last mile work

Objective two (Develop a road network fit for the future) includes a section on the *Designing Great Streets* Strategy. This section highlights the *Designing Great Streets* typologies and the decision making process. These guidelines are a response to the strategy in the TMP.

Action items related to Designing Great Streets include:

- Review and update York Region Road Design Guidelines, standards and processes to better integrate the context sensitive solutions toolbox and better serve community needs
- Integrate the Designing Great Streets Decision Making Process into capital planning and delivery

York Region Pedestrian and Cycling Planning & Design Guidelines

The *York Region Pedestrian and Cycling Planning & Design Guidelines* utilize the six road typologies outlined in *Designing Great Streets* to provide guidance and support for the design and construction of cycling and walking facilities. This illustrates pedestrian and cycling facility selection tools and cross sections for Regional road retrofit projects, reconstructed or new Regional roads.

Design guidelines are provided for:

- Pedestrian facilities
- Cycling facilities
- Multi-use paths
- Clearances
- Surface Course

The *York Region Pedestrian and Cycling Planning & Design Guidelines* are a valuable companion resource to *Designing Great Streets* and provide detailed guidance in the application of pedestrian and cycling facilities. It also supports *Designing Great Streets* by providing guidelines for intersection treatments.

York Region Road Design Guidelines (2016)

The *Regional Roads Design Guidelines* assist consultants and Regional staff in the preparation of design and construction tender packages for Regional road improvements and expansion projects. This document provides detailed design guidance, to complement the CSS approach outlined in *Designing Great Streets*. It also provides necessary tools for producing packages in conformance to York Region requirements. Specific design and information requirements are provided for:

- Cross-sections
- Driveways and entrances
- Electrical and signal design requirements
- Erosion and sediment control
- Horizontal control
- Intersections
- Pavement design
- Road-side safety requirements
- Sidewalks
- Storm Drainage
- Streetscape standards
- Street tree preservation and planting
- Traffic data analysis
- Traffic data and geometric design elements
- Utility coordination and relocation
- Vertical control

York Region is growing and accommodating new uses in urban and rural areas

Smart, Sustainable Streets, An Integrated Approach to Street Design (2016)

This manual creates a balanced and harmonious approach to the use of often constrained boulevard space where forestry, operations, corridor approvals, streetscape, active and sustainable transportation and traffic and electrical infrastructure are located together. This document outlines a balanced approach to active transportation design and supports and aligns with Vision 2051, York Region Official Plan and *Designing Great Streets*. (To access this document, please refer to York Region eDOCS #9303920 "Smart, Sustainable Streets, An Integrated Approach to Street Design". Alternatively, contact the Program Manager, Streetscaping.)

Regional Streetscape Policy (2001)

The *Regional Streetscape Policy* outlines minimum standard levels of treatment for a road hierarchy of Regional centres, corridors and roads to reinforce the role of the street as a place and an experience, while meeting the transportation needs of the community. To complement these streetscapes, the policy has designated entryway points and gateways to enhance a sense of arrival and place within the Region. The intent is to apply a high standard of design to the street to engage all modes of transportation including walking, cycling, automobile, truck and transit, creating a lively streetscape for a positive civic image.

Transit-Oriented Development Guidelines (2006)

York Region's *Transit-Oriented Development Guidelines* are used to shape development that is transit-supportive, pedestrian-friendly and well-designed. They assist in understanding and implementing the transit-oriented development elements included in the Regional Official Plan and other guiding policies and include a checklist to help assess how well a policy or project incorporates transit-oriented development elements.
Key transit-oriented development principles are outlined according to six themes:

1. Pedestrians - encourage access, safety and comfort
2. Parking - provide well-designed, attractive facilities putting transit first
3. Land use - attract the right type, intensity and mix of land uses
4. Built form - address transit through appropriate massing, density and height
5. Connections - link buildings and the spaces between them to transit
6. Implementation - apply transit-oriented development approaches throughout the planning process

Towards Great Regional Streets: Design Guidelines for 6-Lane Regional Roads (2008)

These policy and design guidelines apply to roads identified in the Region's 10 year Capital Plan for six lane widening in order to accommodate increased transit service, on-road cycling, improved streetscaping and heightened transportation demands. The guidelines recommend a right-of-way with two all-purpose travel lanes at 3.3 metres, a High Occupancy Vehicle (HOV) lane at 3.5 metres and a dedicated cycling lane at 1.5 metres per direction. The standard provides for a convertible six-lane cross-section allowing for an HOV or bike lane simply by adding or adjusting pavement markings and signing.

These guidelines inform *Designing Great Streets*, however do not prevail over it. In the case of any discrepancies between this and *Designing Great Streets*, *Designing Great Streets* takes precedence. These guidelines still apply for any standards or guidelines not covered by *Designing Great Streets*.

Municipal Documents

Each of the nine cities and towns within York Region identified centres and corridors as key areas for intensification and roadway improvements, in conformance with the York Region Official Plan. This section provides an overview of the existing municipal Official Plans and how they guide roadway design.

Town of Aurora: Official Plan (2010, Revised 2015)

Section 3.10 of the Aurora official plan addresses Transportation and the Mobility of People and

Goods. Due to scarce capacity on Aurora's roads, transportation improvements aim for a more balanced transportation system supporting transit, walking, cycling and cars. The official plan states arterial roads have a minimum right-of-way width of 26 to 36 metres, depending on anticipated traffic volumes, and a minimum of 36 metres where bicycle paths, street landscaping, centre boulevards and wider boulevards are proposed. Other guidelines for arterial roads include the requirement for sidewalks on both sides of the street, accommodation of transit and safe cycling where the Town's resources permit and pedestrian flow is light.

Town of East Gwillimbury: Official Plan (2010, Office Consolidation 2018)

The East Gwillimbury official plan identifies a number of pedestrian and transit-oriented centres and corridors that provide focal points for the highest densities in the municipality. Regional corridors in East Gwillimbury include Yonge Street and Green Lane and should have wider streets with a high level of streetscape design to create an attractive community edge and provide a pedestrian-scaled proportion to the right-of-way (Section 3.2.3.3). Section 3.3.1 addresses the design of the public realm and calls for streetscaping to promote ease of multi-modal travel and the placement of sidewalks to provide uninterrupted pedestrian movement to transit stops, commercial centres and all community amenities. The official plan promotes public transit and the compatibility of the transportation system with existing and future land uses (Section 7.2). It also emphasizes the provision of active transportation options, especially within the urban area (Section 7.2.2).

Town of Georgina: Official Plan (2016)

As one of the Region's most rural municipalities, the Town of Georgina has limited transit service, however its official plan encourages transit supportive community design measures in anticipation of future transit service. It requires arterial and collector roads to accommodate transit vehicles and amenities (Section 9.2.3.5). The primary network for active transportation in the Rural Area shall consist of cycling routes along roadways and the trail system. Sidewalks and cycle trails are the primary system for pedestrian and cyclist movement within the Secondary Plan Areas (Section 9.2.4.1). Finally, consideration shall be given to the inclusion of bicycle lanes in rights-of-way for new or reconstructed arterial and collector roads (Section 9.2.4.7).

Township of King: King City Community Plan (2000, Amendment 54 to the Official Plan 1970); Nobelton Community Plan (2005, Amendment 57 to the Official Plan 1970) and Schomberg Community Plan (1998, Amendment 47 to the Official Plan 1970)

The King City Community Plan identifies planned land uses and includes a Transportation Strategy with objectives for the road network. In accordance with principles of transit-oriented design, collector and arterial roads shall be designed to accommodate transit facilities and subdivisions shall be designed to permit effective pedestrian access to transit routes (Section 8.4.2). It also describes a number of design principles relevant to the design of roadways, including the design of attractive streetscapes, core area enhancement and distinct gateways (Section 9.2).

The Nobelton Community Plan calls for the preservation of the existing character of the built environment as part of its Urban Design Policies (Section 4.2). The plan classifies the roads within Nobelton into Regional Arterial Roads, Township Roads and Local Roads and prescribes guidelines for each typology (Section 4.4.1). Guidelines for street design (Section 4.4.4), parking (Section 4.4.5) and pedestrian and cycling networks (Section 4.4.6) are also provided.

The Schomberg Community Plan classifies roads based on function (Section 4.2.2) that is further prescribed with guidance based on policies outlined in Section 4.2.3. Policies for parking facilities (Section 4.3), pedestrian and cycling circulation (Section 4.4) and public transit are also provided.

City of Markham: Official Plan (Region Approved 2014)

The Markham official plan calls for the

accommodation of future growth within the confines of a compact urban envelope (Section 2.1). Section 7 addresses transportation goals, objectives and policies, including promotion of environmentally sustainable travel choices, transit-supportive land use planning and adoption of a 'complete streets' philosophy (Section 7.1). Direction is given to design and construct roads to balance safety and the needs of all users, encourage a more compact urban form, enhance the quality of the streetscape and place increasing emphasis on moving people rather than vehicles (Section 7.1.3.6). The official plan also calls for better integration of land uses and connections with road design (Section 7.1.3.6 d). Transportation demand management and active transportation are key objectives and the official plan calls for support for walking and cycling as competitive mobility choices (Section 7.1.4.2).

Town of Newmarket: Official Plan (2006, Office Consolidation 2016)

The Newmarket Official Plan promotes the development of sustainable transportation improvements and encourages growth in support of a sustainable community (Section 1.3). The official plan recognizes the need to plan mutually supportive land uses and transportation networks and the need to improve walking, cycling and transit facilities (Section 1.3.4). It also strongly supports the development of the rapid transit system on Yonge Street and Davis Drive (Section 1.3.4). Intensification is linked with the creation of more transportation choices and urban design policies promote the principle of connectivity (Section 4.4 and 12.2.2). Specific guidance for the design of arterial roads prohibits on-street parking, requires sidewalks on both sides of the street and outlines streetscape design elements (Section 15.2 and 15.8). As part of the Official Plan, Newmarket's Urban Centre Secondary Plan provides guidance on streetscapes and boulevards with respect to elements that promote pedestrian amenity, comfort, convenience and safety (Section 7.3.6). It also recognizes how street network and block structure in Newmarket's Urban Centres will be planned to support active transportation and connectivity for all modes of transportation (Section 7.3.6). It further outlines how street network and block structure in Newmarket's Urban Centres will be planned to support active transportation and connectivity for all modes of transportation (Section 8.2).

Town of Richmond Hill: Official Plan (2010, Office Consolidation 2017)

Guiding principles for municipal development laid out in the Richmond Hill's official plan, include the development of complete, integrated and vibrant communities and direction of growth to built-up areas (Section 2.2). The plan calls for transit and pedestrian-oriented development and the promotion of mobility, connectivity and accessibility throughout the Town (Section 2.2 and 3.5.1). Transit-oriented development and the integration of land uses and transportation planning is emphasized, especially in centres and corridors (Section 3.1.4 and 3.5.4). The Yonge Street and Highway 7 Regional corridors are identified as Regional rapid transit corridors which will accommodate a range of transportation modes and land uses, with prioritization given to public transit and active transportation (Section 3.5.1, 3.5.2 and 3.5.3).

City of Vaughan: Official Plan (2010, Office Consolidation 2017)

The City of Vaughan Official Plan, updated in 2010, includes the following major goals (Section 1.5):

- Moving around without a car
- Design excellence and memorable places
- A green and sustainable city
- Directing growth to appropriate locations

With regards to transportation, it focuses on strengthening pedestrian, bicycle and transit networks and systems over the next 25 years (Section 4). In addition, it expects to shift growth away from greenfield locations to promote intensification and reurbanization in built-up areas. Changes to street design and adjacent land uses will emphasize infill and intensification in select areas, streetscape improvements to make streets enjoyable and safe, and the accommodation of all modes of travel in an integrated fashion (Section 4.1). The City of Vaughan also has a Transportation Master Plan and Pedestrian and Bicycle Master Plan.

Town of Whitchurch-Stouffville: Official Plan 2000 (Office Consolidation 2017)

Section 5.2 of the Official Plan describes the Town's Transportation Plan. Section 5.2.3.1 states the primary system for pedestrian movement shall be the trail system and bicycle movement will be accommodated in the street right-of-way. Consideration shall be given for the inclusion of bicycle lanes in road rights-of-way for new and reconstructed arterial and collector roads. There is limited transit service in Whitchurch-Stouffville, though the OP states that the Town shall support transit supportive urban design measures, such as the accommodation of transit facilities in arterial and collector roads, and the design of subdivisions to permit effective transit routes and supportive pedestrian access (Section 5.2.4.3).

Key Technical Documents

Designing Walkable Urban Thoroughfares: A Context Sensitive Approach (ITE, 2010)

Founded in a CSS approach, this document calls for multidisciplinary and collaborative road design processes. It identifies ways that CSS approaches can be applied, describes the principles and benefits of CSS, and provides guidance on selecting road typologies and the design of specific boulevard and roadway elements.

Global Street Design Guide (2016)

This guide is the first-ever worldwide standard for redesigning city streets to prioritize safety, pedestrians, transit and sustainable mobility for an urban century. Created with the input of 72 cities in 42 countries, this new manual presents 21 street typologies and 50 unique street and intersection transformations applicable worldwide. With over 40 case studies, the guide shows, in actionable terms, how to redesign streets to put people first. From moving more people with transit lanes, to dedicating space for vibrant economic activity like street vendors, this new global toolkit is applicable to a variety of contexts worldwide.

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 strategic use of right sizing (or road diets) is explained in this guide and is encouraged in practice because it truly makes streets context sensitive. The *Urban Bikeway Design Guide* provides guidance on the design of bike lanes, bicycle boulevards, cycle tracks, intersections, signals, markings and signs.

Planning and Design for Pedestrians and Cyclists, A Technical Guide (2010)

This guide provides best practices, key concepts and guidance on the design of active transportation routes and facilities. It includes guidelines to promote active transportation for the following key elements:

- Paths and trails
- Walkways, bikeways, roadways and public spaces
- Lighting, signs and street furniture
- Public transit elements and access
- Maintenance and operations

Ontario Traffic Manual

The *Ontario Traffic Manual* provides guidance for road design and construction to ensure uniformity in traffic control devices and systems across Ontario. It promotes 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.

Manual of Uniform Traffic Control Devices for Canada (2014)

This manual specifies standards and guidelines for the preferred methods in the design, dimensions, installation, application and use of traffic control devices such as traffic signs, road markings and signals. It ensures all traffic control devices conform to a uniform national standard.

Geometric Design Guide for Canadian Roads (TAC)

The Transportation Association of Canada (TAC) is a national association promoting safe, secure, efficient, effective and environmentally and financially sustainable transportation services in support of Canada's social and economic goals. Its 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.

Geometric Design Standards for Ontario Highways (Ministry of Transportation)

This manual provides a common approach to road design for road authorities in 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.

Canadian Standards Association Standard C22.3 No. 1-15 Overhead Systems

This standard applies to electric supply, communication lines and fenced supply stations. It provides direction on clearance, separation and spacing of overhead line components and

Dufferin Street in Vaughan has recently been redesigned to better accommodate multiple modes of transportation

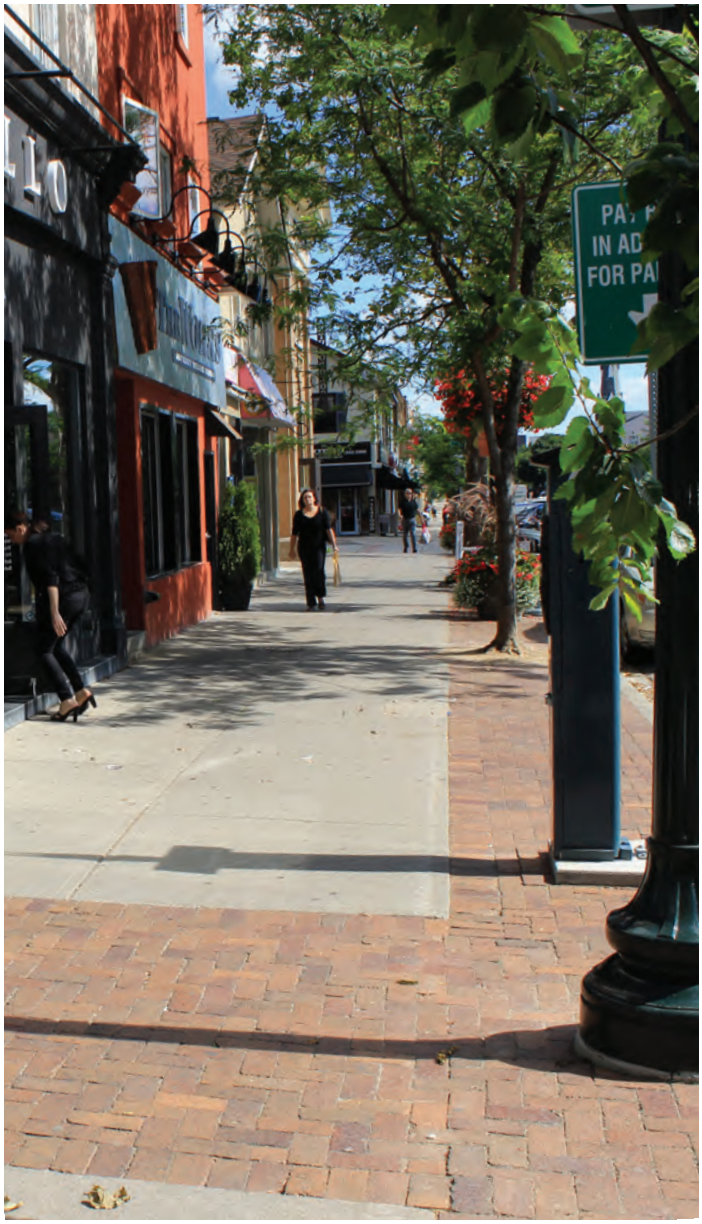
relationships to each other, buildings and the ground. The clearances, separations and spacings specified are the basic values required for public safety and are not intended to address the limits of approach to electrical installations as specified in occupational health and safety regulations.

Ontario Provincial Standards Specifications and Drawings (2013)

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

Ontario Regional Common Ground Alliance – Best Practices (Version 8.0, 2014)

The Ontario Regional Common Ground Alliance promotes efficient and effective damage prevention for Ontario's vital underground infrastructure. It developed best practices through a collaborative approach. This document to develops new, and improves existing, practices with regard to the planning, design and construction of utility corridors.



3.0 Road Typologies

3.1 A New Approach to Road Characterization

The development of six Regional Road Typologies provides a new characterization system for roads in York Region, in line with Official Plan directions

The Regional Road Typologies identified in these guidelines present a new approach to road characterization for York Region, in line with what is encouraged in the York Region Official Plan. This road typology system is intended to meet the mobility needs of communities in the Region, while responding to and supporting adjacent land uses, natural heritage and built form.

In response to existing policies and technical best practices, this document identifies six new Regional road typologies that characterize conditions found in York Region:

1. City Centre Street
2. Avenue
3. Main Street
4. Connector
5. Rural Road
6. Rural Hamlet Road

For each road typology, a brief description, key design opportunities and challenges, urban design and operational attributes and sample plans and sections are provided.

These typologies replace the current system of roadway classification used by the Region and updates to policies and guidelines such as the Regional Official Plan and Access Guidelines for Regional Roads will need to be updated.

As described in Section 2.2, in addition to identifying planned right-of-way widths, the Regional Official Plan states that street hierarchy should support the Region's proposed urban structure as well as active modes of transportation and compact mixed-use urban forms that can more readily support higher levels of transit service.

Regional roads vary in context between more urban corridors (such as Davis Drive above) and rural corridors

3.2 Objectives

Integration of boulevard and roadway design, when merged with appropriately-zoned built form, will promote place-making throughout the Region

Each road typology considers, and places emphasis on, surrounding context and land use as determinants of road design. The typologies are descriptive in nature and include design guidelines for both road and boulevard elements to ensure they are mutually supportive. Though six typologies have been identified, flexibility is built into each one to ensure they can respond to the variety of conditions found in the Regional road network.

The recommended road typologies also provide a cohesive vision for Regional road design where jurisdiction for road elements is shared between the Region and cities and towns.

Each road typology outlined in this section includes a range of widths for various elements found within the roadway and boulevard components of the right-of-way. The sections and toolbox are to be used in conjunction with the Decision Making Process (Section 6.0) to assist design teams to understand what is possible within the confines of the existing and future road context.

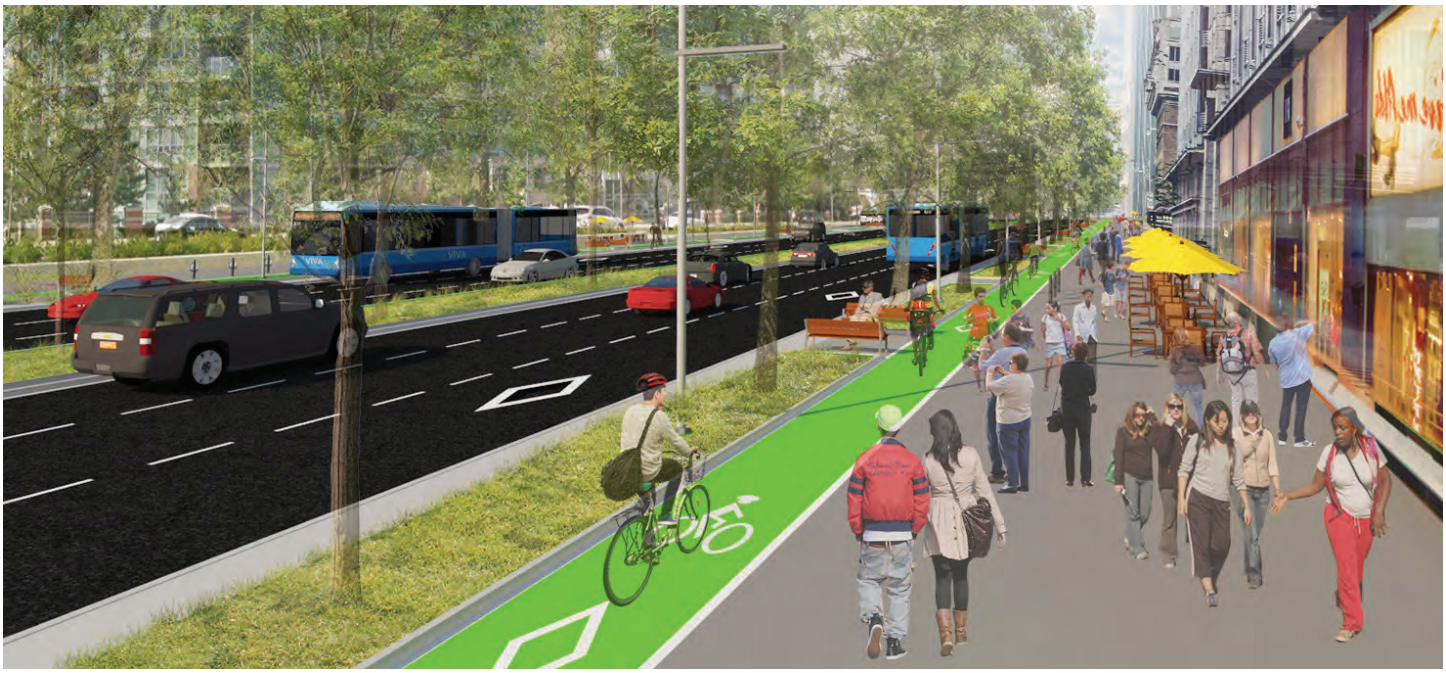
Please note, this document references many resources for further information. These resources may be updated from time to time and professional judgment should be applied if discrepancies arise between *Designing Great Streets* and its resources.

3.3 Typologies

The six road typologies and their corresponding descriptions are provided on the following pages. Refer to Section 4.0 Design Guidelines for further direction on roadway and boulevard elements.

City Centre Street

Envisioned to become York Region's most urban, dense, mixed-use places



Introduction

City Centre Streets run through York Region's most urbanized and dense mixed-use areas, including Provincial Urban Growth Centres and Regional Centres. City Centre Streets prioritize transit and pedestrians to the greatest extent possible. These roads are critical in supporting the planned function, density, range and mix of uses in urbanizing contexts throughout York Region, and in providing choice to a growing number of residents, workers and visitors.

Key Design Opportunities and Challenges

City Centre Streets include street-oriented buildings and a wide diversity of uses. As a result, they will experience high levels of pedestrian and transit ridership. City Centre Streets will increasingly accommodate dedicated transit or transit priority facilities. There may be opportunities to limit the number of vehicle travel lanes and dedicate more space to pedestrian facilities. However a major challenge with this typology is the accommodation of above-ground utility infrastructure. Passive traffic calming elements, on-street parking, wide sidewalks and highly porous street connections will support a high quality public realm, on-street commercial uses and amenity space.

Examples of City Centre Streets

Yonge Street
North York City Centre
City of Toronto

King Street West
Hamilton City Centre
City of Hamilton

Highway 7
Markham City Centre
City of Markham

City Centre Street - Attributes

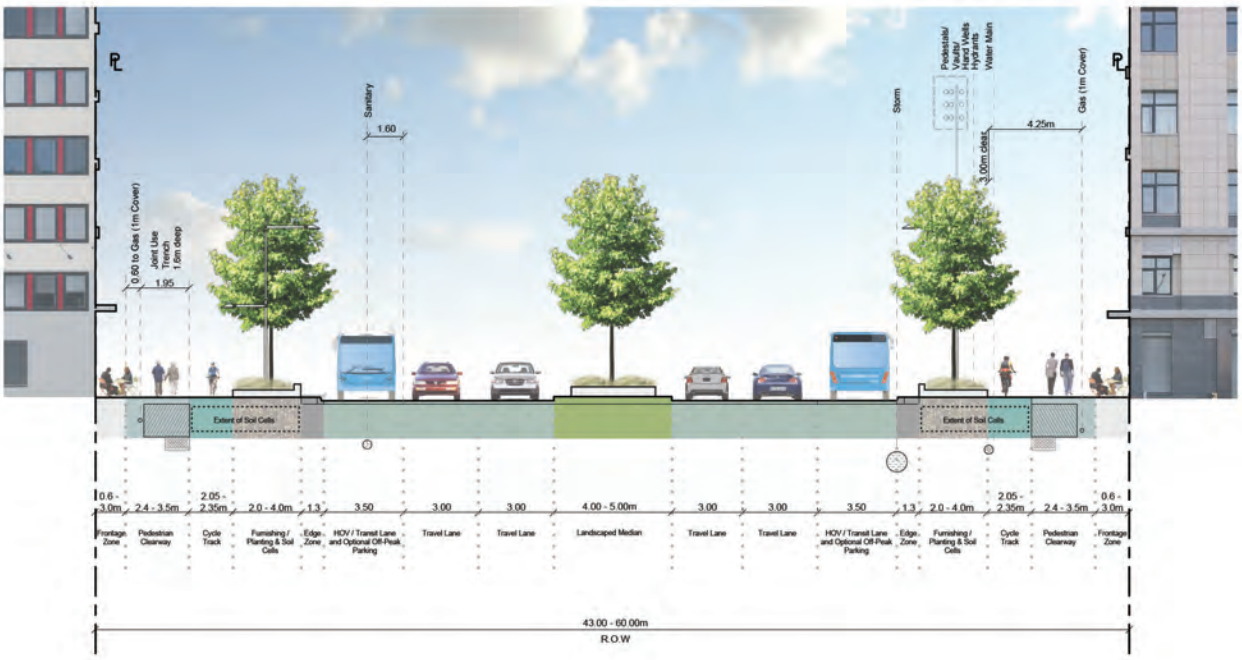
Urban Design Attributes

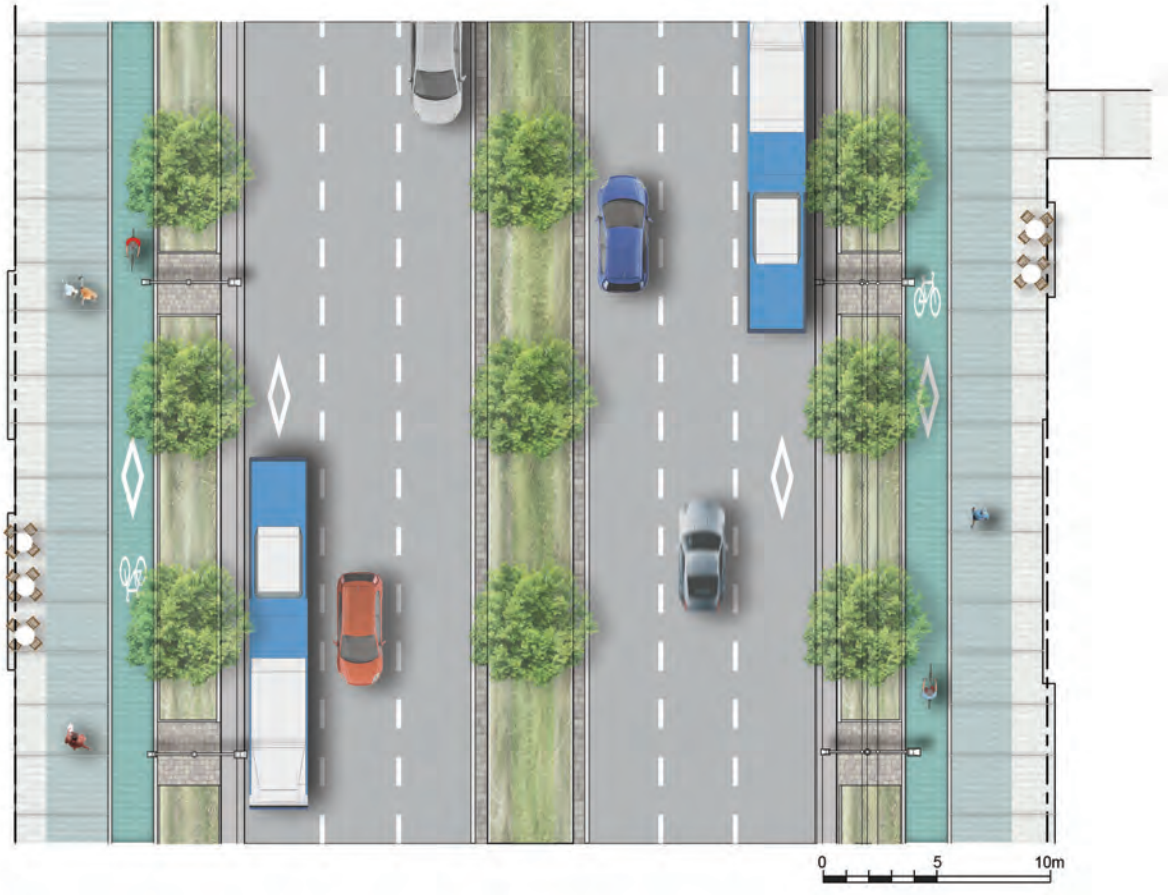
Land Use Designations	Residential, commercial, mixed-use, office, institutional, open space
Land Use Context	Transitioning from medium density to high density, mixed-use city centre
Planned Building Scale and Orientation	Mixture of street-oriented built form of varied size. Increase in density and height in growth centres
Boulevard Treatment	Boulevard should have an urban cross section including wide sidewalks, frontage zone, transit amenities, public art and street furniture
Soft Landscape Elements	Street trees, shrub/perennial beds, raised planters, green infrastructure

Operational Attributes

Right-of-Way Width Range	43m - 60m
Flow Characteristics	Interrupted flow by passive traffic calming (narrow lanes, on-street parking, mid-block pedestrian crossings) and signals
Design Speed	50 - 60 km/h
Maximum No. of Lanes	Six lanes
Median	Optional: access control, turn lane protection, pedestrian refuge, special character, landscaped median
Local Street Connectivity	Highly porous
Access Management	Highest degree of private access control desirable. Commercial Loading Zone (CLZ) and/or rear lot servicing provision necessary
Transit	Can accommodate dedicated transit facility, transit priority lanes and mixed traffic transit
Goods Movement Corridor	Limited goods movement corridor. Ideally restricted to off-peak and/or weekends
Cycling Provisions	Cycle track
Crosswalks	Pedestrian crossings formalized only as controlled crosswalks mid-block and at intersection. Dedicated cycle crossing facilities on routes with cycle track
On-Street Parking	Optional (in curb lane)
Minimum Intersection Spacing	215m
Utilities	Underground and Joint Utility Trench (JUT) preferred. Spacing must still be reserved for telecommunications/pedestals/hydro/above ground boxes. Utility tunnels under sidewalk as a means to address space constraints
Stormwater Management Approach (SWM)	Limited space for SWM facilities. Adequate end of pipe treatments should be met. Integrate low-impact development approaches.
Street lighting	Type of lighting and standards typically set by local municipality. Pedestrian-scale lighting required
HOV/Transit Priority	Optional for four lanes. Required for six lanes

City Centre Street - Sample Section





Please refer to the toolbox on pages 62 and 63 for additional details on boulevard and roadway elements and their measurements.

Avenue

A vibrant urban context balanced with priority for all modes of transportation

Introduction

Avenues are designed to support transit, active modes of transportation and high levels of vehicle and goods movement. They may be flanked by areas transitioning from large format retail to medium-to high-density street-oriented development, increasing in density near transit nodes and growth centres.

Key Design Opportunities and Challenges

Avenues are found in urban contexts and will prioritize transit and active transportation modes. In contrast to City Centre Streets, however, they may have a greater vehicle carrying capacity and may be wider. This and the adjacent urban or semi-urban context call for protected cycling infrastructure. Wider boulevards may include stormwater management infrastructure within the cross-section.

Examples of Avenues

Davis Drive
Town of Newmarket

Highway 7
City of Markham

Yonge Street
City of Markham/City of Vaughan

Avenue - Attributes

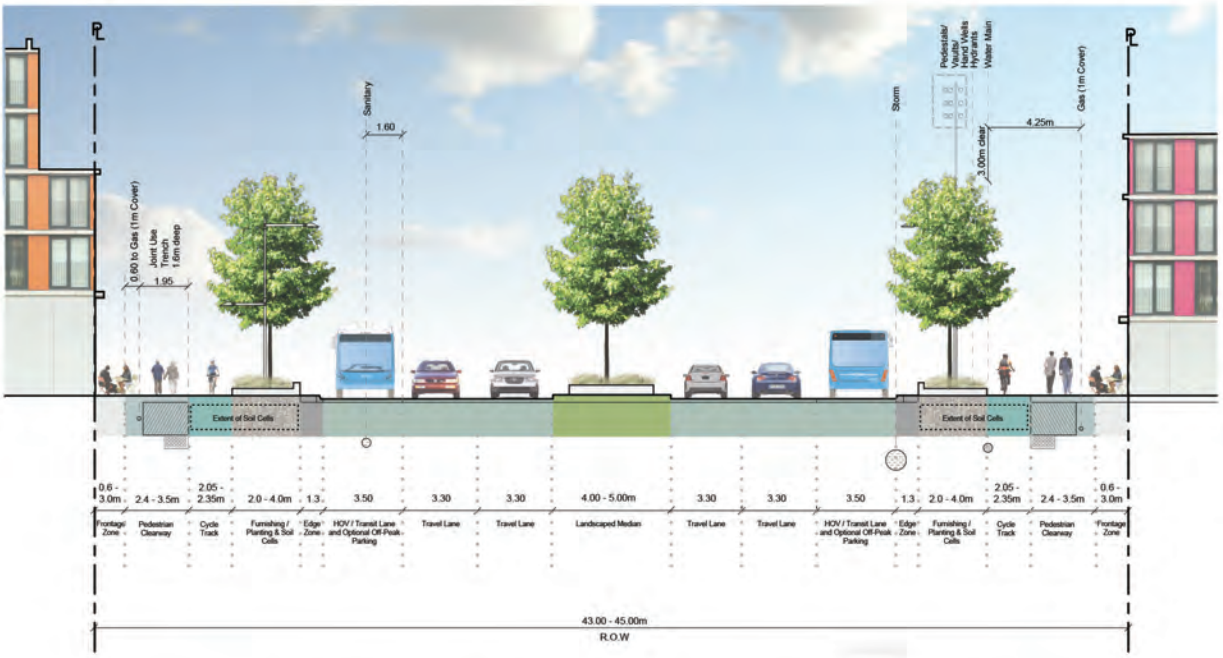
Urban Design Attributes

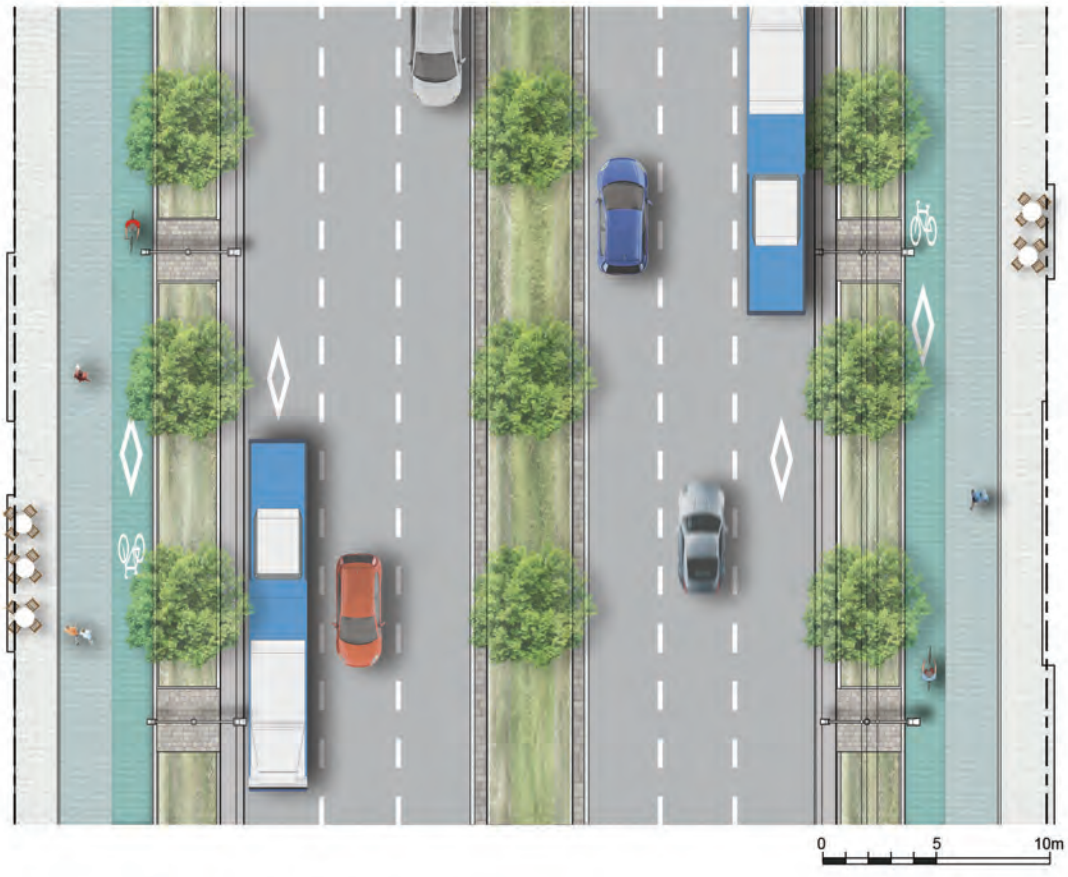
Land Use Designations	Commercial, mixed-use, office, residential, institutional, industrial
Land Use Context	Existing medium and large format retail transitioning to medium density street-oriented development
Planned Building Scale and Orientation	Mixture of street-oriented built form of varied size. Increase of density and height adjacent to transit nodes and when approaching growth centres
Boulevard Treatment	Boulevard treatment should reflect the street's active transportation priority and also have an urban cross section including a cycle track, sidewalks, and appropriate pedestrian and transit amenities
Soft Landscape Elements	Street trees, shrub/perennial beds, raised planters, green infrastructure

Operational Attributes

Right-of-Way Width Range	43m - 45m
Flow Characteristics	Uninterrupted flow except at signals and roundabouts
Design Speed	50 - 60 km/h
Maximum No. of Lanes	Six lanes
Median	Optional: access control, turn lane protection, pedestrian refuge, special character, landscaped median
Local Street Connectivity	Highly porous
Access Management	High degree of private access control desirable
Transit	Can accommodate dedicated transit facility, transit priority lanes and mixed traffic transit
Goods Movement Corridor	Supports goods movement
Cycling Provisions	Cycle track
Crosswalks	Pedestrian crossings formalized only as controlled crosswalks mid-block and at intersection. Dedicated cycle crossing facilities on routes with cycle track
On-Street Parking	No
Minimum Intersection Spacing	215m
Utilities	Underground and JUT preferred. Spacing must still be reserved for telecommunications/pedestals/hydro/above ground boxes. Utility tunnels under sidewalk as a means to address space constraints
Stormwater Management Approach	Spacing should be provided for end of pipe swales and sediment control measures. Option to consider local SWM Ponds as outfall locations. Integrate low-impact development approaches
Street lighting	Type of lighting and standards typically set by local municipality
HOV/Transit Priority	Optional for four lanes. Required for six lanes

Avenue - Sample Section





Please refer to the toolbox on pages 62 and 63 for additional details on boulevard and roadway elements and their measurements.

Main Street

Support for established street-oriented built form with an urban, pedestrian-focused street

Introduction

Main Streets are found in smaller urban settings and often include a main street and/or a historical building fabric and small-scale street-oriented built form, surrounded by stable residential neighbourhoods. Though not necessarily dense, these areas have an urban and active character which serves important needs in the community.

Key Design Opportunities and Challenges

The pedestrian and mixed-use character of Main Streets will be strengthened through road and boulevard design. Street side cycle tracks, wide sidewalks, on-street parking, mid-block pedestrian crossings and frontage zones will support infill development and limited intensification. However, accommodating these desirable elements may be a challenge given that Main Street buildings often create constraints to design within a narrow right-of-way. Retaining a narrow street and boulevard width, promoting transit priority presence and limited goods movement will help to preserve and strengthen the character of Main Streets.

Examples of Main Streets

Keele Street - Maple
City of Vaughan

Prospect Street
Town of Newmarket

Keele Street - King City
Township of King

Main Street - Attributes

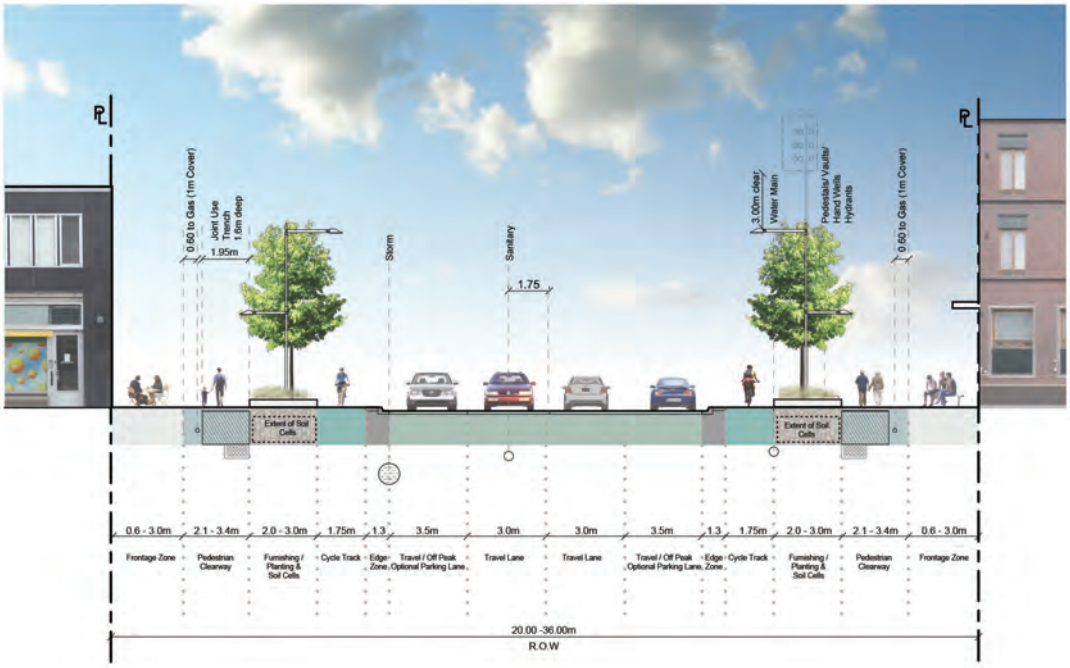
Urban Design Attributes

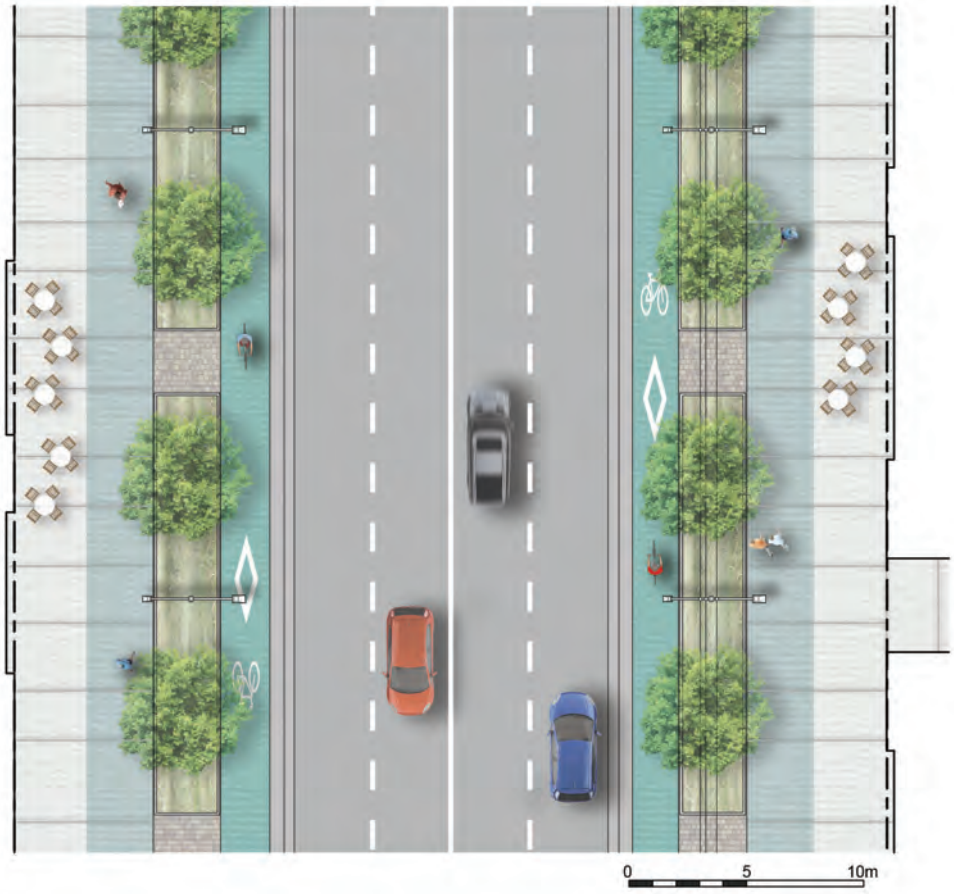
Land Use Designations	Mixed-use, residential, commercial, institutional, open space, historic districts
Land Use Context	Existing heritage building fabric not transitioning but with infill development and limited intensification
Planned Building Scale and Orientation	Mixture of small scale street-oriented built form
Boulevard Treatment	The boulevard should have an urban cross section including wide sidewalks, frontage zone, transit amenities, public art and street furniture
Soft Landscape Elements	Street trees, shrub/perennial beds, raised planters, green infrastructure

Operational Attributes

Right-of-Way Width Range	20-36m
Flow Characteristics	Interrupted flow by passive traffic calming (narrow lanes, on-street parking, mid-block pedestrian crossings) and signals
Design Speed	40 - 50 km/h
Maximum No. of Lanes	Four lanes
Median	No
Local Street Connectivity	Highly porous
Access Management	Highest degree of private access control desirable. Commercial Loading Zone (CLZ) and/or rear lot servicing provision necessary
Transit	Can accommodate transit priority lanes and mixed traffic transit
Goods Movement Corridor	Limited goods movement corridor. Ideally restricted to off-peak and/or weekends
Cycling Provisions	Cycle track
Crosswalks	Pedestrian crossings formalized as controlled crosswalks and uncontrolled mid-block pedestrian crossings. Dedicated cycle crossing facilities.
On-Street Parking	Optional (in curb lane)
Minimum Intersection Spacing	215m
Utilities	Underground and JUT preferred. Spacing must still be reserved for telecommunications/pedestals/hydro/above ground boxes. Utility tunnels under sidewalk as a means to address space constraints
Stormwater Management Approach	Limited space for SWM facilities. Adequate end of pipe treatments should be met. Integrate low-impact development measures with streetscape elements
Street lighting	Type of lighting and standards typically set by local municipality. Pedestrian-scale lighting required
HOV/Transit Priority	Optional (four lanes)/No (two lanes)

Main Street - Sample Section





Please refer to the toolbox on pages 62 and 63 for additional details on boulevard and roadway elements and their measurements.

Connector

Generous landscaped boulevards, enhanced transit and active transportation elements for stable neighbourhoods

Introduction

Connectors prioritize goods and vehicle movement, while also supporting transit and active transportation. They are predominantly residential or industrial, with small- to medium-scale built form that is typically set back from the street.

Key Design Opportunities and Challenges

Connectors have generous green boulevards. A key opportunity on these streets is to enhance vehicle movement, through uninterrupted flow and reduced permeability. There is also opportunity for dedicated transit facilities or transit priority lanes. Multi-use paths provide safe movement for pedestrians and cyclists of all ages and abilities and other modes of active transportation.

Examples of Connectors

16th Avenue
City of Markham

Wellington Street
Town of Aurora

Dufferin Street
City of Vaughan

Connector - Attributes

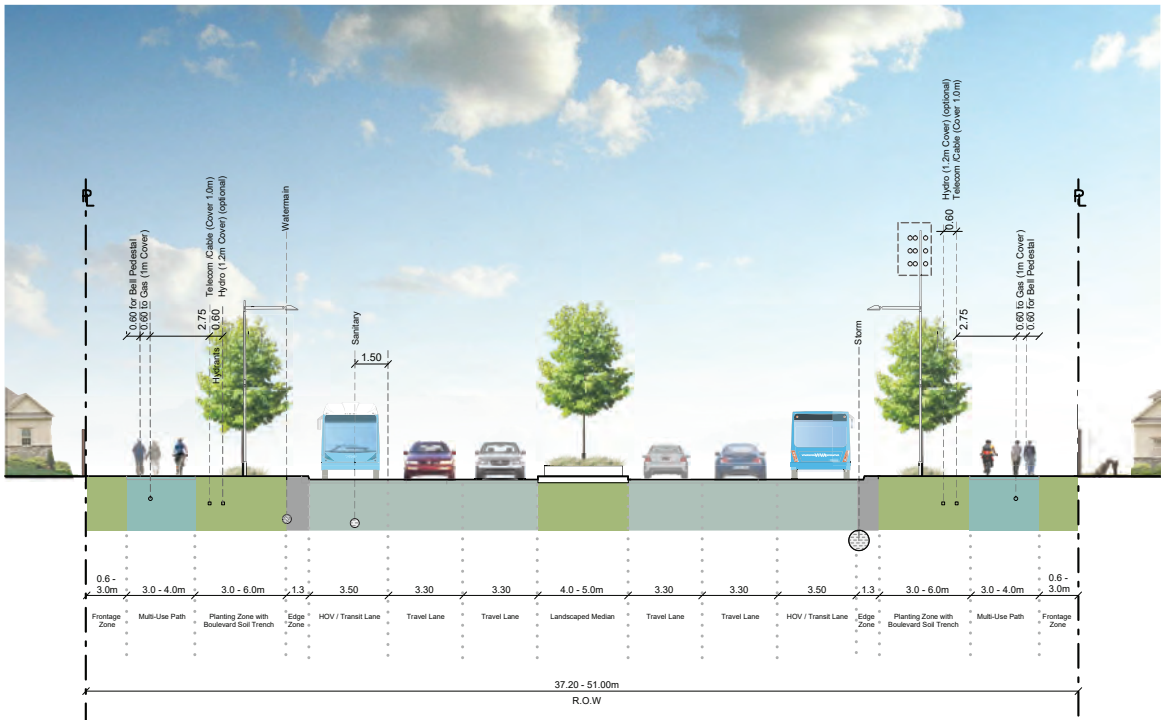
Urban Design Attributes

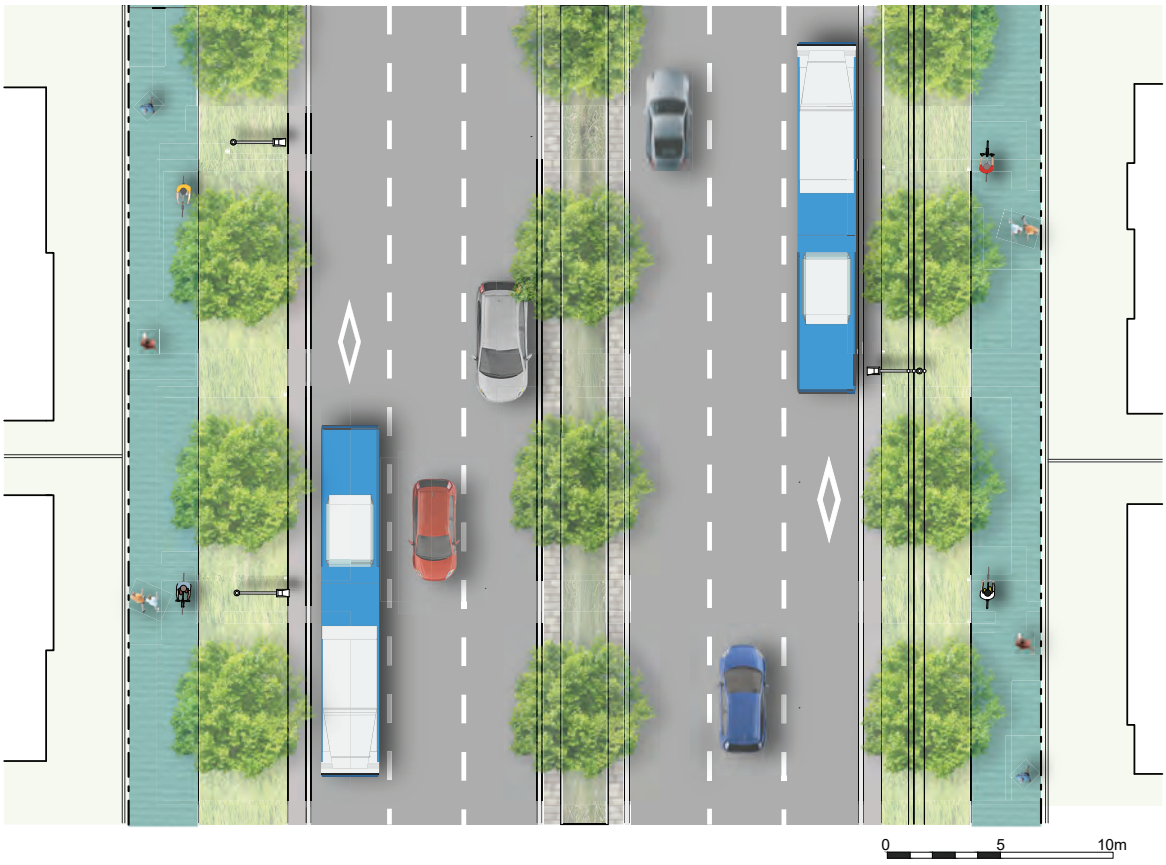
Land Use Designations	Mixed-use, residential commercial, industrial
Land Use Context	Predominantly suburban residential/industrial/commercial not transitioning
Planned Building Scale and Orientation	Mixture of small to medium scale built form set back from street or not oriented towards the street
Boulevard Treatment	Boulevard treatment should reflect the street's primary function of moving vehicles. The boulevard should have a semi-urban cross section including multi-use path, pedestrian and transit amenities
Soft Landscape Elements	Street trees, shrub/perennial beds, green boulevards, green infrastructure

Operational Attributes

Right-of-Way Width Range	36m - 45m
Flow Characteristics	Uninterrupted flow except at signals, roundabouts and controlled cross walks
Design Speed	60 - 70 km/h
Maximum No. of Lanes	Six lanes
Median	Optional: access control, turn lane protection, pedestrian refuge, landscaped median
Local Street Connectivity	Moderately porous
Access Management	Moderate degree of private access control desirable
Transit	Can accommodate dedicated transit facility, transit priority lanes and mixed traffic transit
Goods Movement Corridor	Primary goods movement corridor
Cycling Provisions	Multi-use path
Crosswalks	Pedestrian crossings formalized only as controlled crosswalks mid-block and at intersection. Dedicated cycle crossing facilities on routes with multi-use path
On-Street Parking	No
Minimum Intersection Spacing	215m
Utilities	Utility corridor provided for above ground hydro and below grade telecommunications, gas, storm, and sanitary, to be placed at standard right-of-way offset locations
Stormwater Management Approach	Spacing should be provided for end of pipe swales and sediment control measures. Option to consider local SWM ponds as outfall locations. Integrate low-impact development approaches
Street lighting	Type of lighting and standards typically set by local municipality
HOV/Transit Priority	Optional for four lanes. Required for six lanes

Connector - Sample Section





Please refer to the toolbox on pages 62 and 63 for additional details on boulevard and roadway elements and their measurements.

Rural Road

Safe, efficient vehicle movement through rural agricultural fabric

Introduction

A large part of York Region is served by Rural Roads, which play an important role for agricultural and goods movement. Rural Roads move through much of York Region's typical agricultural fabric. Traffic and goods movement dominate, though active transportation facilities may also be present where demand exists.

Key Design Opportunities and Challenges

Rural Roads prioritize vehicle movement for private vehicles, goods or agricultural uses. They are not porous and provide for an uninterrupted flow of traffic. They may be flanked by typical agricultural rural fabric or clusters of low density residential, industrial or other uses. As these are rural roadways, paved shoulders are used for cycling. Rural ditching and sediment control measures are also key stormwater management mechanisms along these roads.

Examples of Rural Roads

Davis Drive

Town of East Gwillimbury/Town of Whitchurch-Stouffville

King Road

Township of King

Bloomington Road

Town of Aurora

Rural Road - Attributes

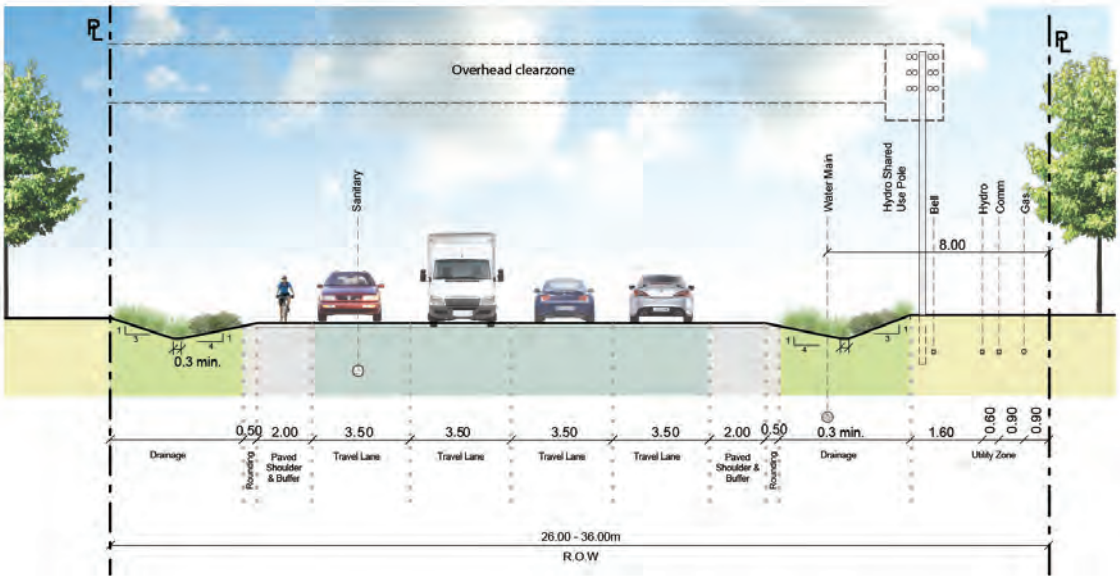
Urban Design Attributes

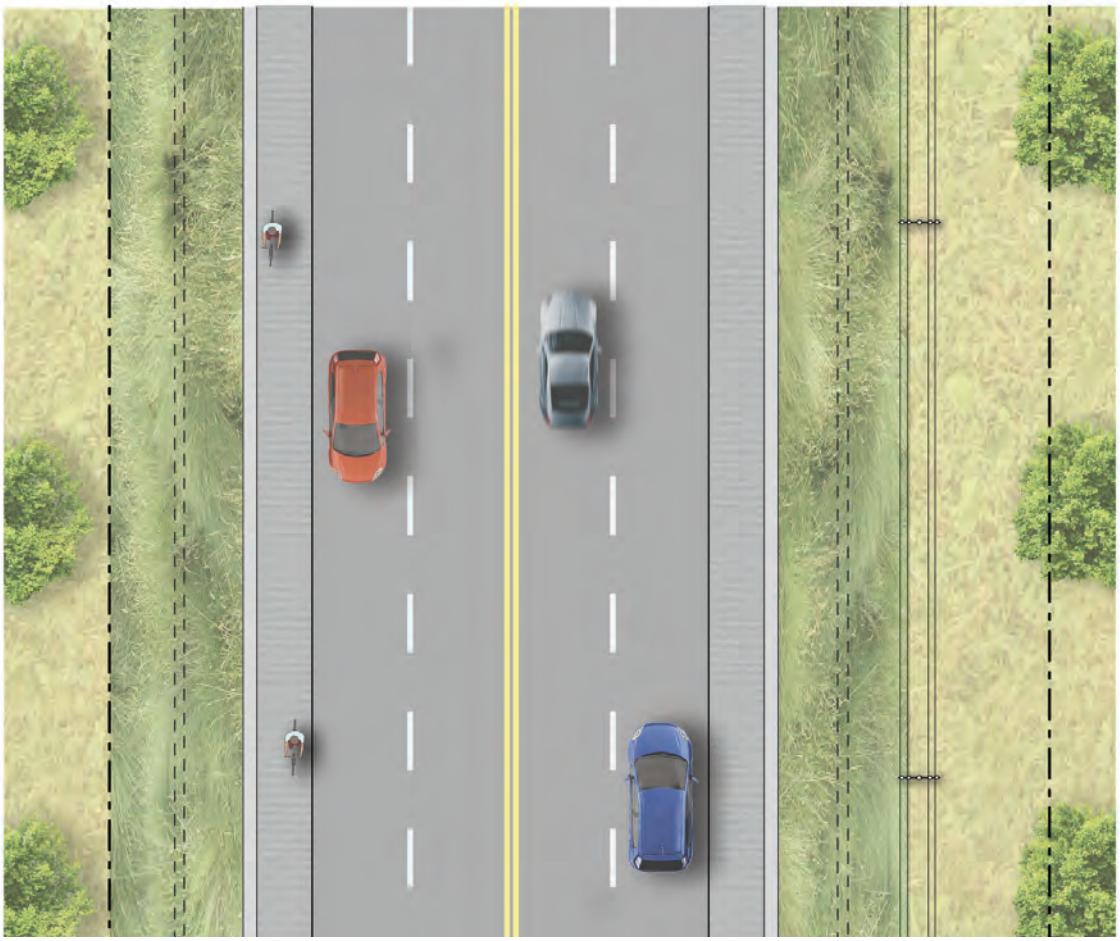
Land Use Designations	Agriculture, institutional, industrial, open space, commercial, residential
Land Use Context	Predominantly agriculture with clusters of low density residential, industrial clusters, institutional and commercial uses
Planned Building Scale and Orientation	Typical agricultural rural fabric. Variety of built form sizes, oriented to but set back from the street
Boulevard Treatment	Paved shoulder to support cycling. Multi-use path separated from street optional in higher demand areas
Soft Landscape Elements	Naturalized drainage swales, street trees where there are no existing trees adjacent to the roadway, green infrastructure

Operational Attributes

Right-of-Way Width Range	26-36m
Flow Characteristics	Uninterrupted flow except at signals, stop signs, roundabouts and controlled cross walks
Design Speed	80 - 90 km/h
Maximum No. of Lanes	Four lanes
Median	Optional painted median
Local Street Connectivity	Not porous
Access Management	Access control not necessary
Transit	Can accommodate transit in mixed traffic
Goods Movement Corridor	Primary goods movement corridor
Cycling Provisions	Paved shoulder with buffer, multi-use path optional
Crosswalks	Pedestrian crossings at signalized intersections
On-Street Parking	No
Minimum Intersection Spacing	300-350m
Utilities	Utility corridor provided for above ground hydro and below grade telecommunications, gas, storm, sanitary, to be placed at standard right-of-way offset locations
Stormwater Management Approach	Rural ditching and effective sediment control measures e.g. rock check dams etc. to be used. Integrate low-impact development approaches
Street lighting	Provided at intersection locations as required
HOV/Transit Priority	N/A

Rural Road - Sample Section





Please refer to the toolbox on pages 62 and 63 for additional details on boulevard and roadway elements and their measurements.

Rural Hamlet Road

Small rural communities with street-oriented built form

Introduction

Rural Hamlet Roads run though small communities throughout York Region. They serve residents working or living in the area and motorists and goods vehicles traveling through York Region. Hamlets are often centred around an intersection and include a small number of commercial or other uses that serve the community.

Key Design Opportunities and Challenges

In contrast with Rural Roads, Rural Hamlet Roads slow traffic and become more porous through small, "four-corners" settlements. These roads will be designed to support the local community, as well as active transportation. As they are associated with clusters of low-density residential or commercial plots with a small-scale street-oriented built form, boulevards should include multi-use paths and can also include street trees, on-street parking and other amenities to support local community and retail activity.

Examples of Rural Hamlet Roads

Leslie Street - Sharon
Town of East Gwillimbury

19th Avenue - Almira
City of Markham

Victoria Road - Udora
Town of Georgina

Rural Hamlet Road - Attributes

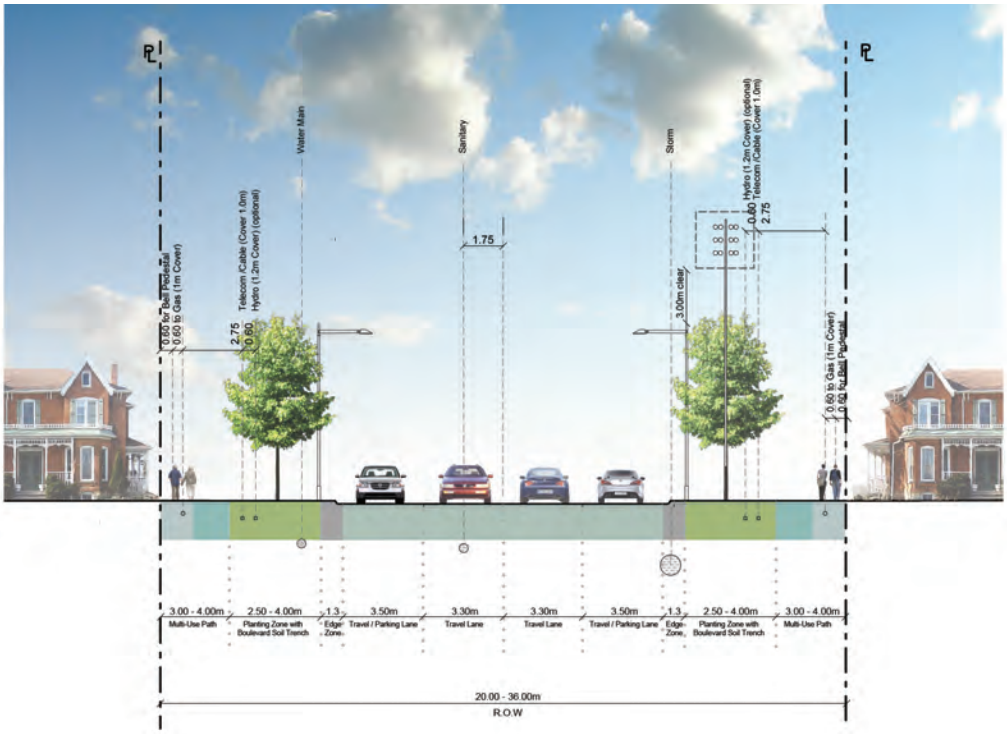
Urban Design Attributes

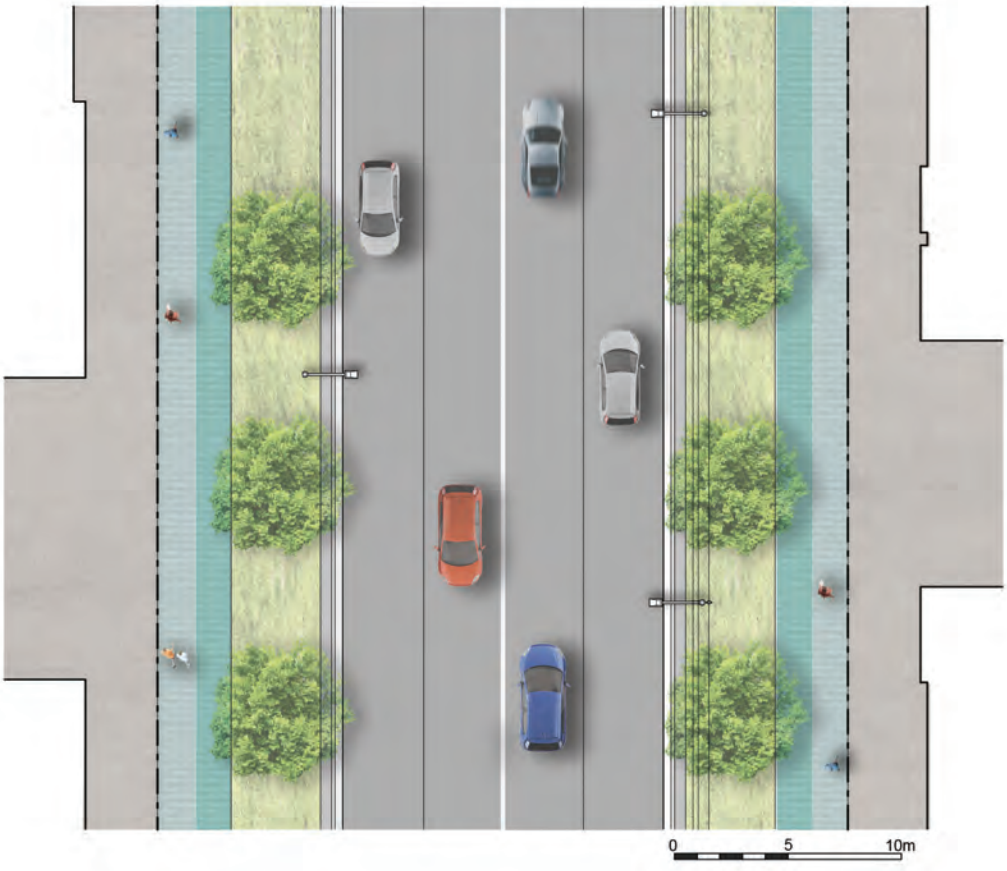
Land Use Designations	Commercial, residential, open space
Land Use Context	Clusters of low density residential and/or commercial plots, typically at a junction
Planned Building Scale and Orientation	Variety of built form sizes, oriented to but set back from the street in rural areas, mixture of small scale street-oriented built form in villages and hamlets
Boulevard Treatment	Multi-use path to support retail activity. Street trees and pedestrian/feature lighting as upgrades
Soft Landscape Elements	Street trees, green boulevard, green infrastructure

Operational Attributes

Right-of-Way Width Range	20-36m
Flow Characteristics	Uninterrupted flow except at signals, stop signs, roundabouts and controlled cross walks
Design Speed	50 - 60 km/h
Maximum No. of Lanes	Four lanes
Median	Turn lane protection
Local Street Connectivity	Highly porous
Access Management	Moderate degree of private access control desirable
Transit	Can accommodate mixed traffic transit
Goods Movement Corridor	Supports goods movement
Cycling Provisions	Multi-use path
Crosswalks	Pedestrian crossings formalized only as controlled crosswalks mid-block and at intersection
On-Street Parking	Optional (in curb lane)
Minimum Intersection Spacing	215m
Utilities	Utility corridor provided for above ground hydro and below grade telecommunications, gas, storm, sanitary, to be placed at standard right-of-way offset locations.
Stormwater Management Approach	Traditional SWM facilities, adequate end-of-pipe treatments should be met, integrate low-impact development approaches
Street lighting	Provided at intersection locations as required
HOV/Transit Priority	N/A

Rural Hamlet Road - Sample Section





Please refer to the toolbox on pages 62 and 63 for additional details on boulevard and roadway elements and their measurements.

toolbox: boulevard elements

road typology	city centre street		avenue		main street		connector		rural road		rural hamlet road	
right-of-way	43-60 m		43-45 m		20-36 m		36-45 m		26-36 m		20-36 m	
element width	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Frontage Zone	0.6	3.0	0.6	3.0	0.6	3.0	0.6	3.0	-	-	0.6	3.0
Pedestrian Clearway Incl. Clearances*	2.4	3.5	2.4	3.5	2.1	3.4	-	-	-	-	-	-
Cycle Track Incl. Clearances/Buffer*	2.05	2.35	2.05	2.35	1.75	2.05	-	-	-	-	-	-
Multi-Use Path Incl. Clearances*	-	-	-	-	-	-	3.0**	4.0**	3.0	4.0	3.0	4.0
Planting and Furnishing Zone	2.0***	4.0	2.0***	4.0	2.0	3.0	3.0****	6.0	-	-	2.5****	4.0
Edge Zone	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	-	-	1.3	1.3
Transit Facilities	Within Planting and Furnishing Zone		Within Planting and Furnishing Zone		Within Planting and Furnishing Zone		Within Planting and Furnishing Zone		-	-	-	-
Pedestrian/Feature Lighting	Within Planting and Furnishing Zone		Within Planting and Furnishing Zone		Within Planting and Furnishing Zone		Within Planting and Furnishing Zone		-	-	-	-
Site Furnishings	Within Planting and Furnishing Zone		Within Planting and Furnishing Zone		-	-	-	-	-	-	-	-

Mandatory Element

Optional Element

*Please refer to the York Region Pedestrian and Cycling Planning & Design Guidelines for more details on clearances and buffers.

** In some contexts, a Cycle Track or a Multi-Use Path on one side of the road only may be more appropriate for the Connector typology. Consult the York Region Pedestrian and Cycling Planning & Design Guidelines.

*** In circumstances the where minimum width is implemented, a minimum 350mm high planter wall is required to guard trees against salt splash on the street side of the planter box.

**** In circumstances where the minimum width is implemented, trees will not be centered in the boulevard to ensure minimum curbside offset is achieved.

toolbox: roadway elements

road typology	city centre street		avenue		main street		connector		rural road		rural hamlet road	
right-of-way	43-60 m		43-45 m		20-36 m		36-45 m		36 m		20-36 m	
element width	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Inside Travel Lane(s)	3.0	3.3	3.3	3.3	3.0	3.3	3.3	3.3	3.5	3.5	3.3	3.5
Outside Travel Lane (Curb Lane)/Parking	3.5	3.5	3.5	3.5	3.5*	3.5*	3.5	3.5	3.5	3.5	3.5*	3.5*
Continuous Centre Turn Lane	-	-	-	-	-	-	3.5	5.0	-	-	-	-
Painted Centre Median	-	-	-	-	-	-	-	-	1.2	2.0	-	-
Landscaped Median	4.0	5.0	4.0	5.0	-	-	4.0	5.0	-	-	-	-
Shoulder, Buffer and Rounding	-	-	-	-	-	-	-	-	2.5	2.5	-	-

Mandatory Element

Optional Element

*A two lane Main Street or Rural Hamlet Road requires 4.25m travel lanes in both directions to allow for maintenance operations around obstacles (e.g. a disabled vehicle)

4.0 Design Guidelines

Roadway and boulevard elements are selected and designed to support adjacent context

4.1 Street Design Guidelines

Guidelines outline best practices for the design of boulevard and roadway elements

This section's design guidelines outline best practices for boulevard and roadway elements found on Regional roads. Both are critical to creating a cohesive street design that functions effectively within its context. Boulevard elements are located between the curb and the building frontage of a street. Roadway elements are found between the two curbs.

This section also outlines guidelines for intersections, transitions and general street elements.

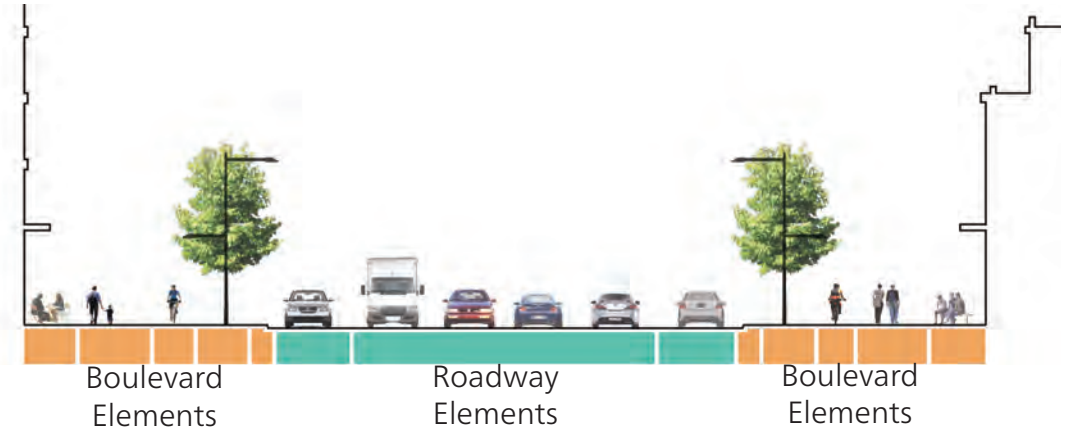
Using This Section
The location of each element within the cross-section and the typologies to which it can apply are identified through shading and colours in the Typology and Cross-Section Keys. Examples are shown below.

Note, this document references many resources for further information. These resources may be updated from time to time and professional judgment should be applied should discrepancies arise between *Designing Great Streets* and its resources.

Typology Key: Element applies to bolded typologies and does not apply to light grey typologies.

City Centre Street	**Connector**
Avenue	Rural Road
Main Street	Rural Hamlet Road

Cross-Section Key: Boulevard elements are identified with orange and roadway elements are identified with green.



4.2 Boulevard Guidelines

Frontage Zone

City Centre Street	**Connector**
Avenue	Rural Road
Main Street	Rural Hamlet Road

This zone is located between the pedestrian clearway and the building frontage or property line. It provides a dedicated area for spill-out retail, patios, window shopping and building entrances. It may also contain street furniture and building or retail signage.

Objectives

The Frontage Zone demarcates the transition from public to private realm and can serve different uses depending on the adjacent land use and road typology. It is particularly important in urban areas, where street-related retail and pedestrian activity is common and encouraged. This zone should be designed to add to the character and activity of the street by introducing the potential for patios and spill-out retail to the street.

Guidelines

- The Frontage Zone may contain private seating areas, planters, signage and temporary retail displays. In areas with retail at-grade, this zone should be wider to accommodate active at-grade uses
- Elements from this zone should not impede the pedestrian clearway in any manner
- The Frontage Zone may be within the public right-of-way or on adjacent private property
- If located in the public right-of-way, no permanent elements may be installed without Regional or Municipal approval
- Overhanging signage can be installed if it does not interfere with pedestrian travel and meets local signage regulations

Further Details

- York Region Pedestrian and Cycling Planning & Design Guidelines

The Frontage Zone supports active at-grade uses

Pedestrian Clearway

City Centre Street	**Connector**
Avenue	Rural Road
Main Street	**Rural Hamlet Road**

The Pedestrian Clearway is the portion of the boulevard which is dedicated to the movement of pedestrians. It should be located directly adjacent to the building frontage, property line or frontage zone, depending on the road typology.

Objectives

The Pedestrian Clearway is critical in creating a pedestrian-oriented street, as this is the main space for pedestrian movement. All Regional roads, except Rural Roads, should include the pedestrian clearway to achieve goals of creating complete, walkable communities that are also friendly to all ages and abilities. In active urban areas, the pedestrian clearway should be as wide as possible within the boulevard. It must also meet accessibility standards and should remain clear of obstructions, horizontally and vertically, at all times.

Guidelines

- Pedestrian Clearway should be designed to meet the *Accessibility for Ontarians with Disabilities Act* standards and must remain unobstructed both horizontally and vertically
- A continuous, even and level public sidewalk should be provided on both sides of Regional roads, unless an alternate pedestrian route such as a multi-use path is provided
- The sidewalk should be constructed of brushed concrete to facilitate pedestrian movement and barrier-free accessibility
- Where crossings over unsignalized driveways occur, clearways should be continuous and marked with materials that provide visual contrast from the roadway pavement.
- Sidewalk edges and curbs should be graded at intersections to provide barrier-free access for people with disabilities. Tactile pavers at sidewalk edges are required to help warn pedestrians
- Signage boards within the pedestrian clearway should not be permitted when a Planting and Furnishing Zone or Frontage Zone is provided
- Overhead signage and canopies should not be located any lower than 2.5 metres above the clearway
- Seating and retail spill-out spaces should not be permitted within the pedestrian clearway
- Permeable or unit paving should generally not be used in the pedestrian clearway
- Additional width or a clearance are required to account for the comfortable operating space beyond the essential surface on which people walk or bicycle, as well as to provide a separation between people and hazards or objects
- Refer to the York Region Pedestrian and Cycling Planning & Design Guidelines for further details related to clearances and buffers

Further Details

- York Region Pedestrian and Cycling Planning & Design Guidelines
- York Region Streetscape Design Review Manual
- York Region Road Design Guidelines

Cycle Track

City Centre Street	Connector
Avenue	Rural Road
Main Street	Rural Hamlet Road

Cycle tracks are off-street bicycle facilities that provide additional safety and comfort for cyclists over on-street bike lanes or shared facilities. They are located within the boulevard, physically separated from vehicle traffic and designated for the exclusive use of cyclists.

Objectives

Cycle tracks provide additional safety for cyclists riding on Regional roads. As a result of separated design, the tracks appeal to a wider range of cyclists, including those not comfortable riding in mixed traffic. They also reduce the risk and severity of bike-vehicle collisions and conflicts such as 'dooring'.

Guidelines

- Cycle tracks can be uni-directional (one way) or bi-directional (two way). Care should be taken when considering a bi-directional cycle track as this configuration will have significant impact on intersection design
- Where a cycle track is located next to a sidewalk in constrained conditions, a clear delineation between facilities should be provided
- Ensure there are sufficient sight lines at intersections
- Ensure appropriate design treatments for pedestrian crossings and transit facilities where they meet or intersect with a cycle track
- Access points (or driveways) along a road with a cycle track should be eliminated or amalgamated wherever possible to avoid conflict with the cycle track
- Where cycle tracks cross driveways and intersections, they should be continuous
- In a City Centre Street and Avenue typology, locating the cycle track next to the edge zone may be more appropriate in cases where the posted speed is less than 60 km/h
- Refer to the York Region Pedestrian and Cycling Planning & Design Guidelines for further details related to clearances and buffers

Further Details

- York Region Pedestrian and Cycling Planning & Design Guidelines
- OTM Book 18 - Bike Facilities

Cycle tracks can encourage hesitant cyclists to use this mode of active transportation

Multi-Use Paths

City Centre Street	**Connector**
Avenue	**Rural Road**
Main Street	**Rural Hamlet Road**

Multi-use paths are located in the boulevard and shared by pedestrians, cyclists and other non-motorized modes of movement. Multi-use paths are appropriate on arterial roads in suburban, rural or industrial areas where no traditional pedestrian/cycling facilities are provided.

Objectives

Multi-Use Paths encourage alternate modes of travel on a safe, dedicated facility well-protected from vehicle traffic and provide important connections to larger cycling and trail networks.

Multi-use paths provide important connections to the wider trail system

Guidelines

- Multi-use paths should be designed to distinguish between walking and cycling/rollerblading areas to minimize conflicts
- Multi-use paths should be constructed with a durable surface, such as asphalt or concrete, and should consider the seasonal nature of the path in choice of materials (e.g. if it is to be cleared of snow in winter)
- Multi-use paths should be connected to existing pedestrian and cyclist networks and provide access to natural heritage features
- Multi-use paths can be used as mid-block pedestrian crossings through adjacent development when appropriate
- Multi-use paths should be fully accessible to all ages and abilities
- Where appropriate, paths should include adequate amenities, such as seating, waste receptacles, lighting and signage and be designed according to site-specific conditions
- Multi-use paths can be provided for a Rural Road typology in higher demand areas or close to generators of pedestrian or cycling traffic
- Consider including marking multi-use paths with pedestrian/cyclist symbols
- Ensure appropriate design treatments for pedestrian crossings and transit facilities where they meet or intersect with a multi-use path
- Refer to the York Region Pedestrian and Cycling Planning & Design Guidelines for further details related to clearances and buffers

Further Details

- York Region Pedestrian and Cycling Planning & Design Guidelines
- OTM Book 18 - Bike Facilities

Planting and Furnishing Zone

City Centre Street	**Connector**
Avenue	Rural Road
Main Street	**Rural Hamlet Road**

The Planting and Furnishing Zone is located between the pedestrian clearway and the edge zone, and provides an additional buffer between vehicles and pedestrians. It should be included on all streets with a pedestrian clearway. It provides space for trees, raised planters, site furnishings and infrastructure such as benches, bicycle parking, transit shelters and utilities.

Objectives

The Planting and Furnishing Zone provides space for street amenities that activate the street and are easily accessible to pedestrians of all ages and abilities. It also creates optimal growing conditions for street trees to ensure a healthy and robust urban forest that provides shade and adds to the character of the street.

Planting and amenities are critical to a high quality public realm

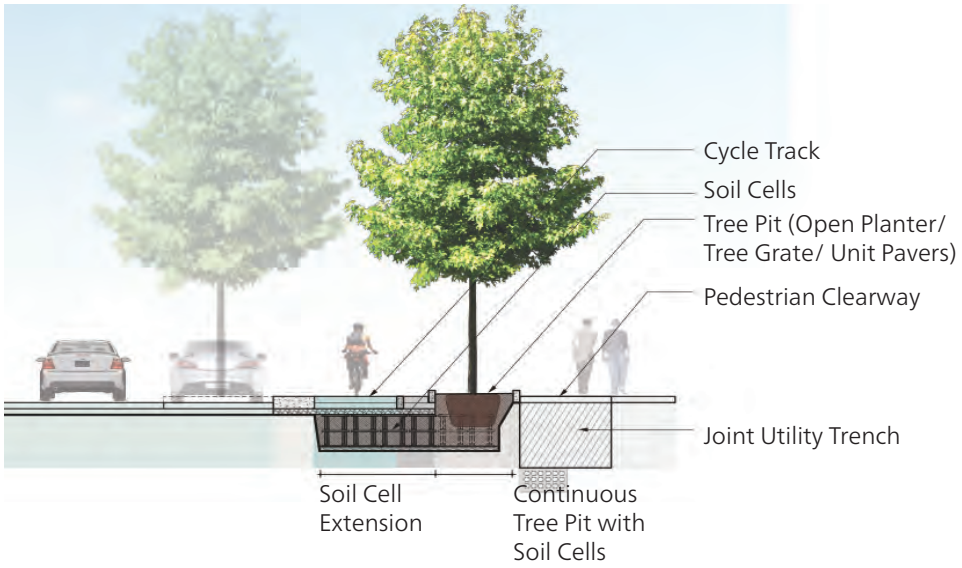
Guidelines

- Street furniture, street trees and public wayfinding signage, transit facilities/amenities should be located within this zone
- No part of the furniture or signage elements should impede travel within the adjacent pedestrian clearway
- This zone can be hardscaped or softscaped. Suburban and rural road typologies will include more softscaping, while urban road typologies may include a mix of hardscaped and softscaped areas
- Street trees should be included in Rural Road typologies where no trees exist adjacent to the roadway. They will function to reduce wind speed, protecting soil of adjacent fields from erosion and can be a buffer to reduce snow drifting
- Hardscaping and softscaping should be designed to be low maintenance and durable
- Where appropriate, low maintenance planting areas should be used at the street edge to soften hard surfaces and buffer the pedestrian clearway from the road
- Hardscaping should have a material difference from the pedestrian clearway to visually differentiate it from vehicle, cycling and pedestrian travel areas
- Permeable paving should be used above soil cells to allow for water and oxygen to reach tree roots
- Where possible and space permits, a double row of street trees should be incorporated
- In hardscape areas, trees should be planted in continuous tree trenches utilizing soil cells to encourage longevity and viability. Soil cells can be extended under on-street parking, multi-use

paths and bike facilities where soil volume is critical (see illustration below)
- Street trees are to be provided with a minimum of 30 cubic metres of soil volume per tree achieved through direct soil access with an additional 14 cubic metres of shared soil access. Trees should have enough soil volume to reach a minimum diameter of 40 cm at 40 years of age
- In softscape areas, trees should be planted in a continuous boulevard soil trench with access to additional soil volume within and outside the right-of-way. Break-out zones should be provided under pedestrian and cycling facilities to allow tree roots to access adjacent soils without damaging infrastructure
- Coordination with utility providers is important to minimize root and crown pruning during utility maintenance and to maximize tree pit and canopy size for healthy tree growth
- Consideration should be given to maintaining appropriate sight distances at major access points
- Where possible, the principles of low impact development should be applied to control stormwater on-site and minimize discharge to the local stormwater system
- Consider aligning street trees, pedestrian/ feature lighting, street lighting and hydro poles to minimize conflict with pedestrians
- In a Main Street or Rural Hamlet Road where a full planting and furnishing zone with street trees is not possible due to right-of-way constraints, alternative plantings (shrubs/ perennials) and/or furnishings should be discussed with the local municipality and/or business improvement associations

Further Details
- York Region Street Tree Preservation and Planting Design Guidelines
- YRT Co-ordinated Street Furniture Urban Design Guidelines

Soil cells create conditions for street trees to grow to maturity



Edge Zone

City Centre Street	**Connector**
Avenue	Rural Road
Main Street	**Rural Hamlet Road**

The Edge Zone, located between the Edge of Pavement and the Planting and Furnishing Zone, is comprised of curb and gutter and maintenance strip, acting as a buffer between the roadway and boulevard.

Objectives

The Edge Zone provides a safety buffer against car doors/mirrors and to accommodate road signage and plays an important role in road maintenance, especially for snow storage in winter.

Guidelines

- The edge zone is 1.3 m including a 0.8 m maintenance strip, 0.2 m curb and 0.3 m gutter
- Overlap between the Edge Zone and the Planting and Furnishing Zone may be considered as long as minimum offsets between trees and roadway are maintained
- The edge zone should not overlap with cycling facilities
- The maintenance strip contains a paved splash strip which may take up all or part of the maintenance strip
- The Edge Zone's splash strip should be constructed of durable a material appropriate for snow storage
- A narrow curb and gutter should be considered in constrained Main Street typologies

Further Details

- York Region Road Design Guidelines

The edge zone demarcates the boulevard from the roadway

Low-Impact Development

City Centre Street	Connector
Avenue	Rural Road
Main Street	Rural Hamlet Road

Low-impact development (LID) is an approach to managing stormwater run-off at the source by replicating natural watershed functions. It uses simple, cost-effective streetscape elements to capture, detain and treat stormwater where it falls.

Objectives

LID involves the use of streetscape features to manage rainfall at the source and protect and enhance water quality by replicating the function of natural watersheds. LID options should be considered on all projects for new and existing streets. They play a critical role in improving water retention and should be designed to protect the quality of York Region's groundwater and watersheds. They can also help decrease the footprint of Regional Roads and impact of adjacent properties. LIDs can be designed to enhance the streetscape, protect animal habitats and provide additional streetscape space in the boulevard that is both functional and aesthetic. LID options should be considered where they offer reduced operations and maintenance costs and reasonable functioning lifespans when compared with traditional stormwater management systems.

Guidelines

- Incorporate LID practices where possible, as appropriate to road typology. Low-impact development options include:
  - Bioretention planters, units or curb extensions
  - Bio-swales or drainage swales
  - Permeable paving
  - Pre-cast tree planters or soil cells
- Identify appropriate low-impact development options for the road typology and planned maintenance and inspection practices
- Ensure appropriate monitoring and maintenance regimes are established
- Where possible, replace unnecessarily paved areas with permeable materials (medians, dedicated parking lanes/lay-bys, traffic islands)
- In rural areas, convert degraded culverts and ditches to grass swales
- Use salt tolerant, non-invasive shrubs and grasses
- Where possible, water should pass through engineered filter media and include an underdrain which conveys the filtered stormwater to a storm drain system or other suitable surface outlet
- All applicable environmental acts and regulations must be adhered to

Further Details

- York Region Sight Triangle Manual

Transit Facilities

City Centre Street	**Connector**
Avenue	Rural Road
Main Street	**Rural Hamlet Road**

Transit facilities include all amenities associated with the provision of transit, including seating, pads, shelters, waste receptacles, lighting and route information and should be located in the Planting and Furnishing Zone to maximize visual connections between the shelter and the approaching transit vehicle as well as minimize conflicts with pedestrian and cycling movement.

Objectives

Safe and comfortable transit facilities are critical to encouraging transit ridership. The design of transit facilities should emphasize connections with alternative modes of movement to provide seamless and convenient transfers from one mode to another. Well-designed transit facilities that are barrier-free and do not interfere with the pedestrian clearway also minimize user conflicts and facilitate convenient pedestrian access for all ages and abilities.

Guidelines

- Transit shelters should include a shelter for weather protection, appropriate seating with armrests, waste receptacles, lighting and route information, especially in busy pedestrian areas. Where adjacent to street lighting, lighting on shelters may not be required
- Sidewalks should connect directly to transit shelters to encourage active transit use and ensure safety and convenience
- Transit stops and shelters should have barrier free access and be located in a way that does not interfere with pedestrian and cycling movement
- Protect sight lines in the location and design of transit facilities
- Provide concrete pads in the waiting and loading areas of transit stops. The pads should be flush with the sidewalk to provide accessibility to passengers using wheelchairs and textured to provide tactile directional cues for people with vision loss
- Use transit shelters with transparent walls to improve pedestrian safety and provide visual connection between waiting transit users and approaching transit vehicles
- In some cases it may make more sense to place the transit facility in between the sidewalk and the property line/frontage zone.
- Shelter openings should preferably face the sidewalk, especially if the shelter is between the road and the sidewalk. This reduces road splash and snow clearing problems
- Tree planting should be provided adjacent to the shelter to provide shade, a wind break and an attractive environment
- Run-off from shelter roofs should be directed to adjacent tree pits or other soft landscaping

Further Details

- York Region Pedestrian and Cycling Planning & Design Guidelines
- York Region Transit Drawings and Specifications (Latest versions available through the YRT Capital Assets group.)

City Centre Street	**Connector**
Avenue	Rural Road
Main Street	**Rural Hamlet Road**

Pedestrian/Feature Lighting

Pedestrian/feature lighting may be installed in addition to standard lighting fixtures to enhance pedestrian experience and safety. Lighting features may be installed directly on buildings, or located in the Planting and Furnishing Zone.

Objectives

Pedestrian/feature lighting animates streets and sidewalks, enhancing safety and emphasizing streetscape character. Its design should reflect its context and the surrounding cultural environment. Lighting can also be used to highlight special features, such as heritage buildings, character areas or landscaping and art features.

Guidelines

- In urban areas, lighting should be pedestrian-scale, while in more rural contexts or along multi-use paths, pedestrian/feature lighting should enhance safety and visibility to encourage use
- Design and location should consider sustainability and the impacts of light pollution (e.g. "dark sky" compliant), including energy efficiency, directional lighting that reduces wasted energy, LED lighting, solar power and street reflectors/street sensors (to help regulate brightness and when lights turn on and off)
- Downcast pedestrian-scale lighting should be provided in urban areas, at key intersections, along multi-use paths and at transit stops
- Pedestrian/feature lighting can be located within the Planting and Furnishing Zone or within the Frontage Zone if affixed directly to buildings
- Consideration should be given to providing additional or feature pedestrian-scale lighting in areas with high volumes of pedestrian activity
- Consolidate road and pedestrian lighting onto one pole, where possible, to minimize visual clutter. Similarly, attach a light arm/luminaire to hydro poles where appropriate
- Downcast, pedestrian-scaled lighting enhances safety and visibility on streets. At gateways and focal points, lighting can be used to accent special features, such as heritage properties, landscaping and signage
- The design process for Regional roads should consider the potential and future locations of pedestrian lighting and should coordinate with local municipalities or business associations to determine if pedestrian lighting is required

Pedestrian/feature lighting adds to pedestrian safety and character

4.3 Roadway Guidelines

Transit/High Occupancy Vehicle Lanes

City Centre Street	**Connector**
Avenue	Rural Road
Main Street	Rural Hamlet Road

Transit/HOV Lanes can help move more people more efficiently by allowing only multi-occupant vehicles in a designated lane. The lanes can be in effect during certain times on certain days (i.e. peak periods on weekdays) or 24/7 and can be limited to 2+ or 3+ occupants/vehicle. Benefits of implementing Transit/HOV Lanes include changing travel behaviour, maximizing people-moving capacity, improving transit operations, making efficient use of the Region's right-of-way, reducing vehicles on the road and reducing CO_2 emissions. HOV/Transit lanes form a complementary network to the Region's existing, planning and proposed rapid transit lanes.

Objectives

All proposed widenings of Regional roads should consider impacts to the community and property acquisition requirements and costs. If a widening is deemed necessary, a widening to six lanes should generally not be undertaken to accommodate all traffic, but rather to accommodate HOV lanes in order to encourage more efficient usage of the road and transit ridership. However, it may be necessary to allow all traffic in the short-term, with a clear understanding that over the longer term the curb lanes would be dedicated to HOV or transit exclusively. Consideration should also be given to implementing Transit/HOV lanes where they contribute to a larger network as opposed to isolated segments.

Guidelines

- Streetscaping features and the softspace is an important element for six lane widening projects to soften the wide hardscape
- Transit/HOV lanes should include pavement markings and signage indicating their designation
- Transit/HOV lanes should be in operation during peak times (Monday to Friday generally from 7 a.m. to 10 a.m. and from 3 p.m. to 7 p.m.) when the operational benefits are greatest. However, in the long-term, the Transit/HOV lanes could ultimately be dedicated exclusively to Transit/HOV without time restrictions once usage and demand levels warrant expanded hours of operation
- Transit/HOV lanes should be designated for 2+ or 3+ occupants/vehicle
- Exclusive right-turn lanes or bus bays should be limited where property restrictions exist on 6 lane widenings

Further Details

- York Region Road Design Guidelines

Transit/HOV lanes prioritize vehicles containing multiple persons

Vehicle Travel Lanes

City Centre Street	Connector
Avenue	Rural Road
Main Street	Rural Hamlet Road

Vehicle travel lanes provide for the safe and efficient movement of vehicles. The recommended number of travel lanes for the desired level of service varies by road typology.

Objectives

To minimize the amount of road surface and width of crosswalks and dedicate as much of the road allowance as possible to boulevard elements, the number of travel lanes should be reduced as much as possible without adversely impacting the mobility objectives and modal priorities for the corridor.

Guidelines

- Outside travel lanes (curb/shoulder lanes) may include on-street parking at non-peak periods (City Centre Street and Main Street)
- Curbs should be mountable and continuous across private entrances when pedestrian and cycling modes of travel exist on the boulevard
- Clearly distinguish between travel lanes and shoulders (when not used as on-road cycling facility) to discourage the use of the shoulder as a travel lane. This can include:
  - Pavement of contrasting colour and/or texture
  - Pavement edge striping - effective when the shoulder is partially paved with the same material as the through travel lane
  - Use of shoulders with a steeper cross-slope than the adjacent travel lane

Further Details

- York Region Road Design Guidelines

Consider an appropriate number of vehicle travel lanes to fit mobility goals for the corridor

Medians

City Centre Street	**Connector**
Avenue	**Rural Road**
Main Street	Rural Hamlet Road

Medians are placed between opposing traffic lanes and can be painted or raised. They serve a variety of functions and are generally used on wider roads with higher speeds of vehicle traffic where access control is desired.

Objectives

Medians may be used for safety and separation functions by acting as a barrier between opposing lanes of traffic. They also provide access control and reduce the risk of collisions due to turning traffic. In isolated cases, medians (with pedestrian push buttons) provide refuge for pedestrians when crossing multi-lane roadways at signalized crossings. Medians may also be used to locate infrastructure, such as traffic signals, signage and light standards, or for landscaping to create a sense of place or community character.

Guidelines

- Landscaped medians should have a 30m setback from the intersection stop bar to enable the provision of left-turn lanes at intersections and proper visibility
- Do not use medians on narrow rights-of-way where spatial and visual connection between opposite sides of the street is important
- Consider landscaped medians for special districts or important roads
- Landscape materials should have particular regard for survivability, salt tolerance and the need for consistency with landscaping on the road edge and adjacent lands
- Consider planting trees in raised median along roadways with design speeds of 70 km/h and less
- Include proper tapers for approaching traffic (see OTM Book 11)
- Ensure medians designed for pedestrian refuge are fully accessible and *Accessibility for Ontarians with Disabilities Act* compliant and include appropriate signage, signals and surface textures (see OTM Book 6)
- Aim to provide continuity and avoid piecemeal arrangements to achieve full impact of median
- Medians should also account for two stage crossing where applicable to achieve a more optimized intersection operation and signal timing. Special consideration should also be given to medians greater than 1.5m to achieve the functionality and requirements of York Region Standard Drawing E-8.07 (e.g. flexible delineators) by incorporating other means in the streetscape design.
- First responders should be consulted as breaks in medians may be required for operations
- Medians at signalized intersections should be kept as narrow as possible to shorten pedestrian crossing distance

Further Details

- OTM Book 6 & 11
- York Region Access Guidelines for Regional Roads
- York Region Road Design Guidelines

On-Street Parking

City Centre Street	Connector
Avenue	Rural Road
Main Street	Rural Hamlet Road

On-street parking is generally provided adjacent to or in the curb lane.

Objectives

On-street parking facilitates the creation of a vital and active street and supports local retail and should be considered where a main street retail environment exists or is planned. On-street parking encourages walking and slows the speed of traffic, thereby improving safety for pedestrians and the visibility of shops. It can also be used as short-term loading space and it can serve as visitor parking on residential streets.

On-street parking calms traffic, encourages activity on the street and supports local retail

Guidelines

- Promote on-street parking on streets with land uses directly accessible from the roadway to promote retail and business uses and shield pedestrians from traffic
- Ensure pedestrians at crosswalks are easily seen by motorists. This can be accomplished by restricting parking adjacent to the crosswalk. This strategy can also be applied at transit stops
- Do not consider on-street parking on streets with a posted speed of over 50 km/h
- Consider metering on-street parking to promote short-term parking
- Refer to York Region Pedestrian and Cycling Planning & Design Guidelines (2018) for appropriate buffering and safety for cyclists in bicycle facilities
- Consultation shall take place prior to the construction or redevelopment of on-street parking as prescribed in O. Reg. 191/11
- On-street parking cannot be counted toward on-site parking requirements
- On-street parking should be no closer than 20 metres from a bus stops to allow for safe maneuvering of buses

Further Details

- O. Reg. 191/11: Integrated Accessibility Standards
- York Region Pedestrian and Cycling Planning & Design Guidelines
- York Region Lay-By Parking Bylaw

4.4 Intersection Design

Keep It Compact

The overarching principle for intersection design in urban areas is to keep them as compact as possible to better prioritize pedestrian and cycling movement. Intersections are shared spaces and should be designed to ensure users are aware of one another and move predictably to reduce the number and severity of collisions.

Objectives
The intersection guidelines in this section support a clear hierarchy of modes in urban areas.

1. Pedestrians
2. Bicycles
3. Public transport
4. High occupancy vehicles
5. Single occupancy vehicles

These guidelines recognize the benefits of slower design speeds and constrained streets in urban contexts. Urban areas should reward proximity and short trips at the expense of long trips and capacity.

The following design guidelines aim to:

- Keep intersections compact
- Create a sense of shared space at intersections, so users are aware of each other and can make predictable movements
- Prioritize pedestrian movement and accessibility, as well as safe turning movements for cyclists and vehicles
- Pursue the systematic slowing of motorists to context-sensitive speeds through traffic calming/self-enforcing intersection design
- Prioritize safety and access for users of all ages and abilities, as appropriate to the street typology
- Provide intersections allowing all movements

Further Details

- York Region Pedestrian and Cycling Planning & Design Guidelines

Create safe, shared spaces for multiple modes of movement at intersections

Reduced Curb Return

City Centre Street	Connector
Avenue	Rural Road
Main Street	Rural Hamlet Road

Curb returns guide vehicles in turning corners and separate vehicular traffic from pedestrian areas at intersections. The curb return radius impacts the function of the intersection, with tighter curb returns being better for pedestrians and longer returns being better for large trucks and buses.

Objectives

The curb return radius on all urban road typologies should be reduced to the greatest extent possible to increase walkability and pedestrian safety. A tighter curb return results in safer intersection / crosswalk design, slows right-turning vehicles at crosswalks, improves visibility between motorists, pedestrians and cyclists, reduces crossing distances and prevents high speed turns. Larger curb return radii may be considered only on roads with higher right-turn truck movements to address the potential conflict between pedestrians and the rear wheels of the trucks.

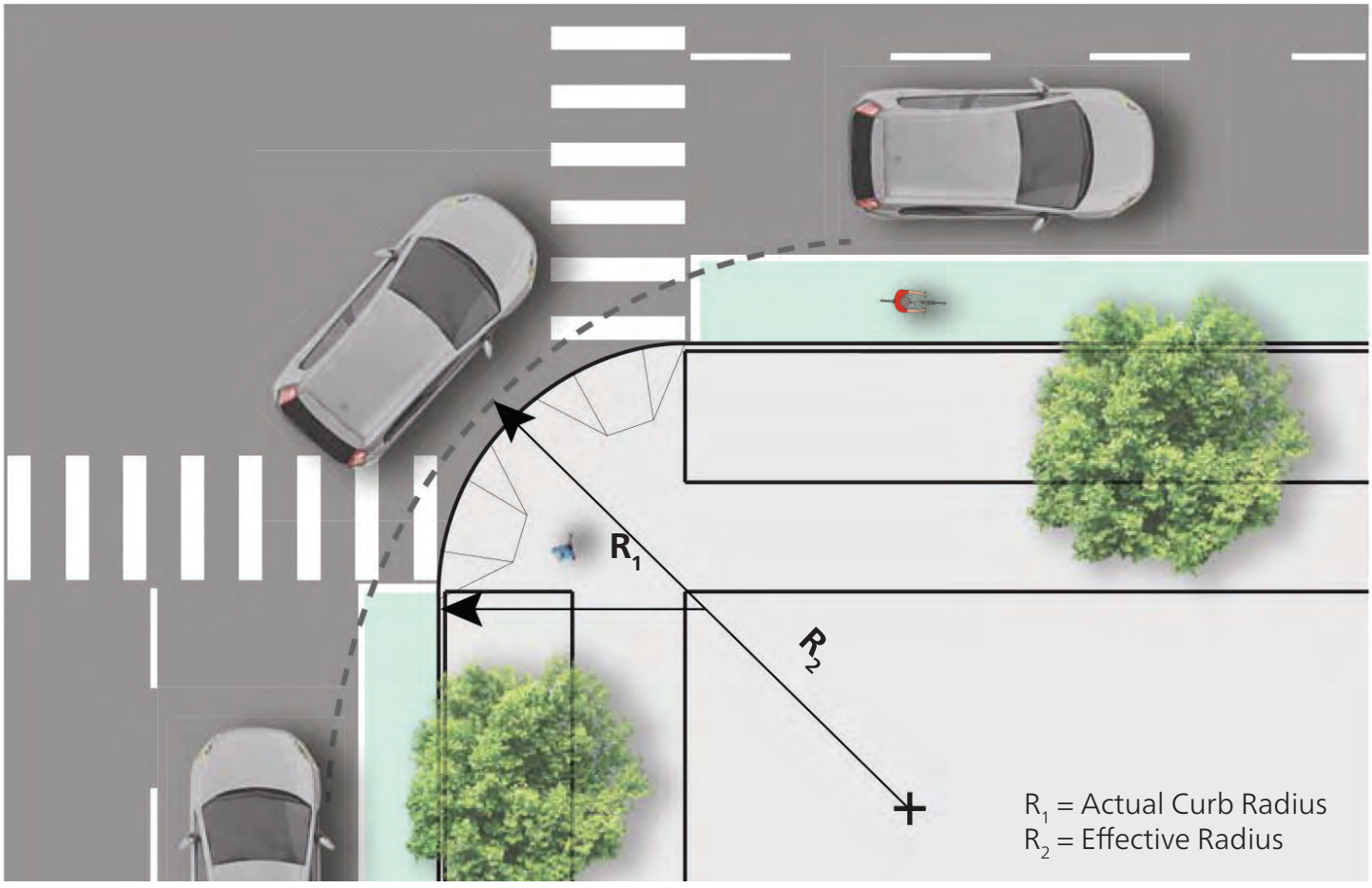
Guidelines

- The designer should keep in mind the effective turning radius will be larger than the actual curb radius when considering the effect of parking and cycling lanes in the roadway cross-section
- On City Centre Street and Main Street typologies that intersect with other roadway classifications, and where there is significant pedestrian activity, moderate traffic volumes and a large percentage of passenger vehicles, a curb radius of 6.0 metres to 7.5 metres should be considered
- To avoid oversized curb radii, determining the appropriate design vehicle early in the process is important. The curb radii should be designed to accommodate the largest vehicle type frequently turning the corner. This approach assumes the occasional large vehicle can encroach into the opposing travel lane. Selecting a curb radius that is too small where right turns by buses or larger trucks are frequent can jeopardize safety and degrade the curb. In some cases, the placement of bollards at curbside could be considered as an additional level of safety for pedestrians
- Generally, a curb radius of 7.5 metres to 9 metres will accommodate most turns on the Avenue typology, particularly on roads with less than 5 per cent trucks. A curb radius of 7.5 metres with a parking lane should permit a single unit truck to turn without encroachment
- Implementing a more walkable community may require that large vehicles encroach entirely into adjacent same-direction travel lanes. If encroachment into an opposing lane is required, the stop line for opposing traffic should be recessed farther from the intersection to permit turns. In some cases, trucks may encroach into the second lane in a four lane condition however should not encroach into an oncoming traffic lane
- For intersections on typologies with a significant number of larger vehicles, the designer should consider the following:
  - Identify the design turning vehicle for the intersection
  - Select curb radii to suit the turning needs of the design turning vehicle
  - Evaluate the benefit of tapered compound circular radii

- Transit Supportive considerations:
  - Avoid using right-turn channels that enable higher vehicle speeds and increase crossing points
  - Maintain the minimum curb radii required to accommodate turning vehicles in order to reduce speed and minimize crossing distances for pedestrians
- Cycle Facility considerations
  - Changes to curb radii should have a neutral impact on the operation of cycling facilities
  - Reduction in curb radii should also be considered at residential and commercial driveways to promote urbanization and provide a safer boulevard/sidewalk

Further Details

- York Region Road Design Guidelines
- York Region Access Guidelines for Regional Roads



Reduce curb returns on urban typologies to ensure safer crosswalk design and reduce crossing distances

Sight Triangles

City Centre Street	Connector
Avenue	Rural Road
Main Street	Rural Hamlet Road

Sight triangles are an important component of intersection design. Their purpose is to ensure sufficient sight distance for the driver of a vehicle to perceive potential conflicts and carry out the necessary action to avoid the conflict and negotiate the intersection safely.

Objectives

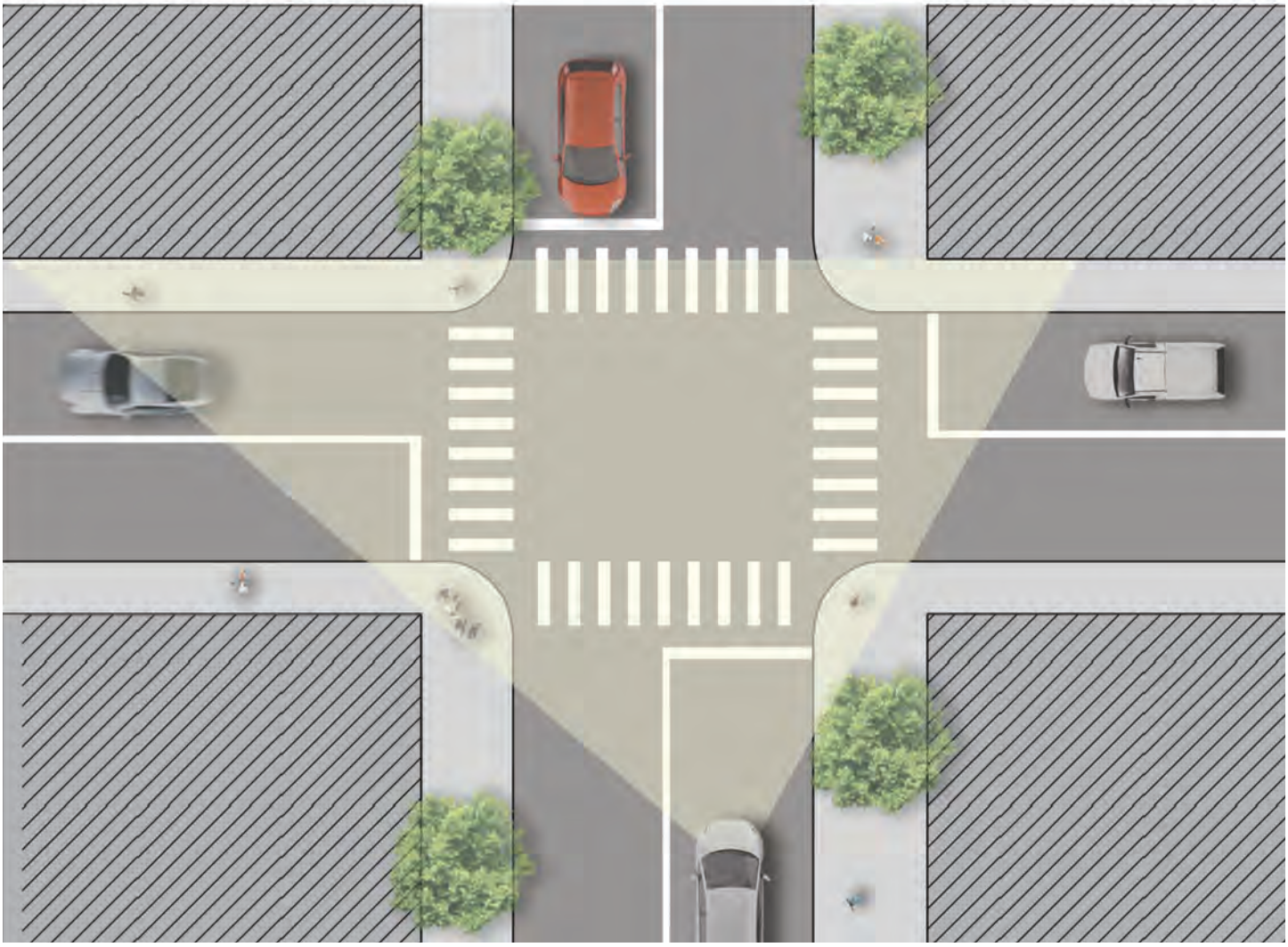
Sight triangles provide clear visibility between motorists, pedestrians and cyclists and enhance walkability. The implementation of a properly designed sight triangle will mitigate the risk of potential conflicts between all modes of travel and increase public safety.

Guidelines

- In urban areas when buildings are located at the property line, lack of sight triangles is best addressed by means of "4 way stop" conditions or "no right turn on red" for signalized intersections
- The area within the sight triangle as defined in Section 2.3.3.2, Sight Triangles, of the TAC Geometric Design Manual, should be free of obstructions that block a motorist's view of potentially conflicting vehicles, pedestrians and cyclists entering the travel lanes
- Ensure there is adequate space for a refuge area adjacent to the crosswalk by removing / relocating obstructions to facilitate the clear and unobstructed view of on-coming vehicles
- Ensure that vegetation is set-back from the crosswalk and that there is sufficient space for snow storage during the winter months
- Ensure the area within the sight triangle is well lit
- If the sight triangle for the desired operating speed and intersection control is obstructed, efforts should be made to eliminate, move or mitigate the obstruction
- To improve sight lines, restrict parking near intersections, properly trim vegetation, move stop lines back from crosswalks and use curb extensions
- Mature trees should be trimmed when branches encroach into the sight triangle area. Planting of new trees in the sight triangle area is discouraged
- Refer to York Region Transit Drawings and Specifications for location of transit stops in relation to sight triangles
- Avoid the placement of utilities, road signs, transit stops and other similar boulevard elements in the sight triangle

Further Details

- York Region Sight Triangle Manual
- York Region Access Guidelines for Regional Roads
- York Region Transit Drawings and Specifications (Latest versions available through the YRT Capital Assets group.)
- TAC Geometric Design Manual



Sight triangles ensure sufficient sight distance at intersections to avoid conflicts and improve safety

Roundabouts

City Centre Street	Connector
Avenue	Rural Road
Main Street	Rural Hamlet Road

A roundabout is a circular-shaped intersection where traffic continuously flows through the intersection in a counterclockwise direction. Although a roundabout is similar to neighbourhood traffic circles and old-style rotary intersections, its geometric features allow it to provide superior traffic carrying capacity and exhibit better safety performance than other types of circular intersections.

Objectives

Roundabouts accommodate the volumes of traffic generally experienced on Regional roads and typically outperform, in terms of delays and queues, similar sized All-Way Stop Control or signalized intersections. They also provide a greater level of safety for motorists than other types of intersections, lower negative environmental impacts because of reduced delays and provide opportunities to improve roadway aesthetics.

Guidelines

- Undertake an Intersection Control Study to assess the feasibility prior to implementing a modern roundabout
- Design of roundabouts should conform to the general design principles of good composition and speed control through adequate deflection for entering traffic
- Roundabouts should be designed to accommodate buses, farm equipment in rural settings, and large trucks such as fire department ladder trucks and tractor trailers
- Include marked crosswalks around the perimeter of the roundabout for pedestrians and discourage pedestrian crossing to the central island
- Only paint hatching where required to visually increase the diameter of the centre island
- Crosswalks at roundabouts should generally be zebra markings (2.5 metres x 0.45 metres), unless there are very low pedestrian volumes (less than 20 pedestrians in eight hours)
- Where there are very low pedestrian volumes at the roundabout, then parallel striped crosswalks are acceptable. The curb cut should be 2.5 metres wide
- Consult with the Region's Streetscaping team regarding landscaping of roundabouts
- Refer to York Region Pedestrian and Cycling Planning & Design Guidelines (2018) for further information on cycling and pedestrian facilities in roundabouts

Further Details

- NCHRP Report 672 Roundabouts: An Informational Guide (Oct 2010)
- York Region Pedestrian and Cycling Planning & Design Guidelines

Keele Street and Lloydtown-Aurora Road Roundabout, York Region Roundabouts may reduce delays and queues on Regional roads

Crosswalk Treatment

City Centre Street	Connector
Avenue	Rural Road
Main Street	Rural Hamlet Road

Crosswalks assist pedestrians in safely crossing streets by signifying the crossing point for vehicles approaching an intersection. The design of a crosswalk can greatly influence a crossing's safety and effectiveness.

Objectives

Crosswalks at controlled intersections on the urban street typologies should be designed to minimize the distance traveled by pedestrians. On wider intersections, a refuge area on a median should be provided to increase pedestrian safety. Crosswalk markings on all street typologies should be consistent wherever possible to eliminate uncertainty for users.

Guidelines

- Crosswalks must be controlled, easily understood, clearly visible and incorporate realistic crossing opportunities for pedestrians
- Crosswalks should be oriented at 90 degrees to the curb for shortest crossing distance
- Crosswalks may incorporate unique pavement treatments or markings that alert drivers and indicate pedestrian priority
- Pavement treatments or markings must be non-slip/non-skid, durable and long-wearing so they remain highly visible for many years
- Introduce zebra markings at crosswalks at signalized intersections for increased visibility
- Consider unique crosswalk treatments to reflect the character of the neighbourhood
- Locate catch basins outside the crosswalk that provides for safe movement across the street
- School route crossings should be considered for additional safety measures
- Consider raised crossing almost to sidewalk height to eliminate ramps for pedestrians, increase the visibility of the crossing and to slow motorists to the desired speed in urban areas. Ramp slopes should be gentle enough to allow for easy plowing and easy access for older residents and those who use assistive devices (motorized and non-motorized). Refer to OTM Book 15 for further specifications
- Transit supportive considerations:
  - At signalized intersections with high pedestrian traffic, consider the use of a pedestrian priority phase to enable simultaneous pedestrian crossings in all directions
  - Consider two stage crossings with pedestrian push buttons for long crossings and/or in areas of high senior/child traffic areas

Further Details

- York Region Enhanced Zebra Pavement Marking Detail at Signalized Intersections
- Accessibility for Ontarians with Disabilities Act, 2005, S.O. 2005, c. 11 (Cons. 2016)
- OTM Book 15
- York Region Road Design Guidelines
- York Region Pedestrian and Cycling Planning & Design Guidelines

Zebra markings at crosswalk enhance visibility

Right- / Left-Turning Lanes

City Centre Street	Connector
Avenue	Rural Road
Main Street	Rural Hamlet Road

Right- / left-turn lanes are exclusive lanes that dedicate space to vehicles making turning movements, removing them from through-lanes.

Objectives

Turn lanes contribute to an efficient transportation network by providing additional motor vehicle capacity and improving the level of service for motorists, as well as reducing collisions from unsafe lane changes at intersections. They also contribute to efficient transit operations when used as a near-side bus bay/queue jump lane.

Guidelines

- City Centre Street and Main Street typologies:
  - Exclusive right-turn-only lanes should not be implemented as they increase pedestrian crossing time. The curb lane should be a shared through-right-turn lane for these typologies
  - Consider prohibiting left turn movements. In general, where left turn movements are permitted an exclusive left turn lane should be limited to single lane.
- Avenue typology
  - Exclusive right-turn lanes should only be considered when the surrounding road network does not have the capability or capacity to manage traffic without the right-turn lane
  - In general, where left turn movements are permitted an exclusive left turn lane should be limited to single lane.
- Left-turn lanes at signalized intersections:
  - At existing signalized intersections, the need for turn lanes should be based on signalized motor vehicle capacity analysis
  - For new signal installations on streets with posted speed of 50 or 60 km/h, the need for exclusive lanes is based on signalized motor vehicle capacity analysis
- Permit U-turns only when pedestrian safety will not be negatively impacted
- Discourage the use of channelized right-turn islands
- Consider rapid transit infrastructure needs on VivaNext Expansion Plan routes
- Consider the dual use of a right-turn lane as a bus bay/queue jump lane for transit

Further Details

- York Region Road Design Guidelines

Left-turn lanes can reduce delays at intersections

Cycling Facilities at Intersections

City Centre Street	Connector
Avenue	Rural Road
Main Street	Rural Hamlet Road

Cycling facilities at intersections may include lane delineations, turning facilities, signage, signalization and markings. Appropriate bike facilities through intersections depend on the road typology. Road designers should refer to the York Region Pedestrian and Cycling Planning & Design Guidelines (2018) for more information.

Objectives

York Region promotes the safe and comfortable year-round operation of cycling routes through design, signage, enforcement and maintenance, and encourages people to cycle more often for both utilitarian, recreation and health purposes. As one of the most common areas of conflict between cyclists and other modes of movement, intersections need to be designed so the interaction of motorists, cyclists and pedestrians is consistent, predictable and safe.

Guidelines

- Delineations, turning paths, pavement symbols, signage and road surface should be clearly visible to cyclists and motorists. Visibility is especially important at intersections where various modes of transportation interact and cyclists are most likely to get into accidents
- Conflict between cyclists and other modes of travel should be kept at a minimum by separating uses, having cyclists travel in the same direction as automobile traffic and providing appropriate facility widths with sufficient space for encounters, passing and evasive maneuvers
- Bike boxes (example provided in image below) should be considered on roads with designated cycling facilities, significant volumes of cyclists and wide intersections to enable cyclists to complete difficult left turn, increase cyclist visability, improve motorist behaviour and reduce the risk of "right hook" collisions after a green signal.

Further Details

- York Region Pedestrian and Cycling Planning & Design Guidelines
- OTM Book 18

A bike box at an intersection improves cyclists' visibility and allows them to proceed first

4.5 Transitions

Transitions occur when:

1. One road typology changes into another
2. The context changes from rural to urban (or vice versa)
3. The desired operating speed changes along a roadway

Transitions must be considered on all road typologies.

City Centre Street	**Connector**
Avenue	**Rural Road**
Main Street	**Rural Hamlet Road**

A transition area can be permanent or temporary. For example, a temporary transition would manage the phasing or staging of construction. Transitions may occur when major intersection improvements are planned and completed in advance of improvements to the sections of roadway on either side. In this case, the intersection designer needs to consider the future role of the road and design the intersection to accommodate known cross-sectional elements of future road improvements.

Permanent transitions can take place over a length of street or at an intersection, when typologies change. Designers need to understand the edges of York Region and edges of neighbourhoods, corridors, hamlets and towns to determine how the street design should adjust and transition in response.

Objectives

Transitions give consideration to change in context and the various modes of travel, in addition to geometric design requirements. The objective is to manage transitions to give clear visual cues to vehicle operators that change is occurring and to ensure they can respond accordingly.

Transitions serve as visual cues of changes in:

- Functional emphasis from automobile-oriented to pedestrian-oriented
- Change in road typology or speed
- Width of road, either a narrowing/widening of lanes or decrease/increase in number of lanes
- Land use, such as a transition between a commercial and residential district

Cross-sectional changes, such as the overall curb to curb width of the street as appropriate for the context and street type, need to be managed in the transition area. Transitions from one speed zone to another should be introduced to give motorists adequate time to prepare for, and react to, changes in roadway design. Designers need to 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 it is upcoming. Transitions are also ideal locations for entrance features or gateways. These design features mark a

boundary or change in jurisdiction or territory (e.g. entering or leaving a special district, main street, neighbourhood, town) or announce a special place or area.

Guidelines

- Transition areas need to accommodate changes in speed, context, cross-section and road typology, such as a change from a Connector to a Rural Road

A transition area along a roadway exists where one road typology, or context, transforms into another

Roadway Measures

- Transition areas should be located so decision site distance in accordance with the TAC Geometric Design Guidelines for Canadian Roads is achieved
- Where difference in the desired speeds between the two contexts is great, a transition speed zone is required to avoid large reductions in the speed limit by providing two or more speed limit reductions
- At minimum, speed-reduction zones use regulatory speed limit signs. Speed limit reductions should occur on tangent sections distant from intersections
- Differences in design speed at transitions should not be more than 20 km/h. Drivers should be warned well in advance of the transition
- Changes in speed zones can utilize other traffic control devices such as warning signs and beacons, or can utilize appropriate traffic calming measures such as changes in the cross-section
- Where the transition zone is particularly short, periodic measures, such as speed platforms or rumble strips in rural areas only, may be considered
- Changes in the width and number of travel lanes and the shoulder treatment can also serve to calm traffic
- The shortest transition can be achieved at an intersection by the use of a roundabout. The desired speed and contexts can be different on the various roads connecting to the roundabout

- When introducing a curb at the transition between a rural and urban cross-section, the curb on the urban section is normally flared out to match the edge of the shoulder on the rural section. Flare rates of 24:1 for a design speed of 80 km/h and 15:1 for 50 km/h are considered appropriate. The end of the curb is normally tapered down to be flush with the shoulder surface to prevent blunt impacts between the curb and vehicle tires or snow clearing equipment
- Means of reducing overall street and traveled way pavement width include, however are not limited to:
  - Reducing the number of lanes
  - Reducing lane widths
  - Dropping through-lanes as turning lanes at intersections
  - Providing on-street parking or bicycle lanes
  - Providing a raised curbed median
- The design of transition areas can include the changing of a shoulder on a rural cross-section to an edge zone on the urban cross-section

Boulevard and Built Form Measures

- Traffic calming measures can include element changes (e.g. street trees, lower street lights, curbs, textured paving, on-street parking) and periodic entrance features and coordinated street furniture
- Land use and building style can provide visual cues to transition, particularly street defining designs in commercial and retail areas such as buildings addressing the right-of-way, awnings and glazing
- Changes in building height and setback are also measures to calm traffic. Introducing taller buildings closer to the street helps to inform drivers of the change from a rural or suburban context to an urban context
- Vertical elements, such as street trees in which the height is equal to or greater than the street width, can also influence driver perceptions and behaviour
- Entrance features or gateways can contribute to traffic calming in transition areas. Such treatments can include streetscape features, planting beds, signage, way-finding, entrance architectural and building features, art and hardscape features such as medians, curb extensions, and decorative pavements

Transition elements into a neighbourhood include stop signs, a narrowing of the roadway and change in speed

4.6 General Guidelines

Design Speed

Design speed, the speed selected as a basis to establish appropriate geometric design elements for a roadway corridor, includes the following cross-sectional design elements:

- Travel lane width
- Cycling lane width
- Curb radii
- Shoulder width
- Clear zone
- Sight triangles
- Sight distance

Objectives

When selecting a design speed for a corridor, respect the roadway typologies to create a safer environment for all corridor users, including motorists, pedestrians, cyclists and transit users. The relationship between posted speed and design speed is key.

Design speed is a primary factor in selecting the horizontal and vertical alignments for roadways and influences how comfortable motorists feel traveling the corridor and the resulting operating speed. It is important to select geometric design elements that support comfortable travel without encouraging drivers to exceed a roadway's intended operating speed.

Guidelines

- Setting an equivalent roadway design speed and posted speed for lower speed corridors provides a measure of comfort, safety and flexibility in corridor design. This practice is used in several US states including Pennsylvania and Virginia. NCHRP Report 504 also suggests future flexibility within the AASHTO policy to follow these same guidelines
- Additional information regarding this practice can be found in the ITE *Designing Walkable Urban Thoroughfares: A Context Sensitive Approach (2010)* and the New Jersey Department of Transportation and Pennsylvania Department of Transportation's *Smart Transportation Guidebook – Planning and Designing Highways and Streets that Support Sustainable and Livable Communities (March 2008)*
- For lower speed corridors (with posted speeds of 60km/h or less), it is recommended that the design speed equal the posted speed
- For roadway corridors with a posted speed of 70km/h or greater, it is recommended that the design speed be 10km/h greater than the posted speed (see Table 1 on the following page). This will allow greater flexibly for the designer in terms of radius, clear zone and other roadway elements/features within the right-of-way, while delivering a safer and more cost-effective roadway
- Table 1 shows Recommended Posted vs Design Speeds for Regional Roads

Further Details

- ITE: Designing Walkable Urban Thoroughfares: A Context Sensitive Approach (2010)
- New Jersey DOT/Pennsylvania DOT: Smart Transportation Guidebook – Planning and Designing Highways and Streets that Support Sustainable and Livable Communities (March 2008)

Consider appropriate design speed and posted speed for the roadway

Table 1 Recommended Posted Speeds and Design Speeds for Regional Roads	
Posted Speed (km/h)	**Design Speed (km/h)**
40	40
50	50
60	60
70	80
80	90
90	100
100	110

Utilities

The provision of utilities by means of designating utility corridors is one of the primary roles of the public road allowance. Underground and above ground utilities have major impacts on the design and function of a roadway.

Most Regional capital works projects have constraints that generally require the designer to develop consensus amongst the owners/operators of the pipework and utilities under the guidance of the Region as the right-of-way manager.

Objectives

Above and below grade utilities need to be located in a safe and efficient manner. Coordinating utilities and boulevard elements is essential to ensure adequate access for repairs and services, to minimize disruptions to the pedestrian clearway and traffic and to ensure the safety of maintenance personnel. However, strategies should also be adopted to create a relatively compact edge of road condition.

Guidelines

- Consider joint utility trenches to achieve a higher quality pedestrian realm and narrower right-of-way
- Consideration should be given to maximizing the service life of all infrastructure in the right-of-way, as well as minimizing lifecycle costs by means of coordination and the completion of an integrated planning and design process with the right-of-way stakeholders
- Standards for the placement and location of utilities must be observed, however the design of these spaces should proactively consider coordination, impact on the public realm and long-term service life
- Coordinate the scheduling of Regional, public and/or private utility capital works programs
- Implement damage prevention programs
- Document and retain as-built records of all constructed infrastructure
- Bury hydro facilities, services and utilities where practical, in order to minimize visual impact in accordance with the Regional Official Plan policy 7.5.6.
- A 3 metre separation between power lines and any physical development is preferred however, it is understood a 3 metre separation may not always be practical in urban areas. The minimum setback between the back of curbs and the edge of poles is 1 metre.
- Locate utility poles 3-4 metres from the

property line on rural roads and in accordance with existing guidelines for minimum sightline and sight triangle distances
- Overhead clearance requirements are a function of site condition and may vary along an alignment. Ensure the overhead clearance zone is in accordance with CSA Standard C22.3 No.1-15 Overhead Systems
- Minimize the visibility of utility accessories, such as utility boxes, by providing accessories in inconspicuous places and/or by screening them with plantings. Ensure such screening does not interfere with access to the accessories. Utility providers should also consider innovative methods of containing utilities and determining locations for large utility equipment and utility cluster sites
- Coordinate streetscape plans with service/utility plans to minimize long-term conflicts with tree roots and branches
- Maintain a 1 metre clearance between watermain and tree roots
- Consider subsurface or trenchless technology installation rather than tree removal to address conflicts with underground utilities
- Where feasible and to assist with concealing utility infrastructure, consider using paver trays that are clearly identified and easy to remove

Further Details
- York Region Sight Triangle Manual
- CSA Standard C22.3 No.1-15 Overhead Systems

Hydro lines and trees are offset to allow trees to grow to maturity

Noise Attenuation

Traffic on arterial roads adjacent to residential areas can cause disruptive noise to residents. This is especially true on higher speed, higher volume arterial roads. Noise levels must conform to provincial and municipal guidelines and York Region's Traffic Noise Mitigation Policy.

The traditional solution has been to build noise attenuation fences or walls to isolate the arterial road from adjacent neighbourhoods, thereby imposing a continuous barrier to pedestrian traffic. Alternatives that are more context-sensitive exist to design the roadway itself to reduce vehicle noise.

Objectives

Noise attenuation strategies should begin with the design of the road itself in supporting a posted speed reduction. This can be accomplished through the provision of visual cues to reduce vehicle noise, such as narrowed traffic lanes, paving material changes, on-street parking or vegetation near intersections. Remaining noise should be blocked without the use of fences or walls, to the greatest extent possible. If, as a last resort, noise fences or walls are required, every effort should be made to reduce their visual impact and avoid blocking pedestrian and bike access.

Guidelines

- Promote street oriented development. Where possible, buildings themselves should buffer vehicle noise as opposed to other noise attenuation measures such as walls, fences and berms
- Reduce noise at the source by reducing the speed of vehicles through design consistent with the roadside environment
- Eliminate rattling maintenance hole covers as a source of noise by positioning them where vehicles will be less likely to run over them (e.g. at the centre of traffic lane)
- Necessary land requirements should be determined in the development application process prior to draft approval (e.g. plans of subdivision), including keeping sight lines and sight triangles clear
- Avoid using noise attenuation fences or walls if possible. They should only be used as a last resort and should integrate pedestrian connections to the adjacent communities
- Integrate the design of attenuation fences and walls with their surroundings using a variety of designs, colours and textures, vines and other plantings. If required, attenuation fences or walls should be visually appealing. Select materials based on life span and future maintenance

Further Details

- Standard Operating Procedures (SOPs) for Traffic Noise Mitigation on Regional Roads and York Region Noise Barrier Design Standards (To access the latest version of this document please contact the Program Manager, Portfolio Implementation, Transportation and Infrastructure Planning branch)

Landscaped berm beside a roadway reduces noise for adjacent homes

Special Character Streets/Scenic Roads

Historic downtowns, heritage buildings and natural spaces are some of the most valued assets of any community and provide an important sense of place and identity for the municipality. They are both a link to the past and an anchor for future economic growth. The design of arterial roads through such areas is typically unique, reflecting the specific history and/or visual or natural character of each place. The balance between land use, built form and the transportation characteristics of the road corridor also tend to be very specific and unique.

The term "Scenic Roads" refers to Regional roads characterized by natural, cultural heritage and recreational features that contribute to their scenic value. These features may include traditional main streets, large trees, heritage buildings, rural character, watercourse crossings, views to natural beauty and interesting highway geometry.

Objectives

It is an objective of the York Region Official Plan to encourage and support the conservation of significant landscapes, views and vistas. Defining features of a Scenic Road should be identified during the beginning stages of the Decision Making Process, and where feasible, the scenic value of such features should be protected and/or enhanced along Regional roads. Local municipalities should be encouraged to establish policies in their Official Plans to protect the scenic value of Regional roads.

Guidelines

- Priority should be given to maintaining those features which are special or scenic, provide ecosystem services and intrinsic natural value and preserve the character of the place. This includes heritage or unique built form, heritage planting, scenic road configurations such as bends or valleys and open space connectivity
- On scenic main streets, avoid narrowing sidewalks and removing on-street parking and/or landscaping. The presence of slow moving through-traffic, on-street parking and a quality public realm are all required to preserve and enhance existing retail uses
- Only consider a by-pass of a hamlet or village after completing a market feasibility study, which can be included within the Environmental Assessment process, having regard for the provisions of the York Region Official Plan
- Allow for flexibility in road widths through the Environmental Assessment process to reduce impacts on the natural heritage system, such as watercourse crossings
- Examine unique design initiatives, such as higher order landscaping and streetscaping, for places of historic, cultural or natural importance, in consultation with the public and community
- Integrate the design of the road edge with adjacent open spaces, where arterial roads cross or are adjacent to significant natural areas, watercourses and open spaces

Further Details

- York Region Official Plan

Scenic road over watercourse, St. John's Sideroad

Natural Heritage

The natural heritage system, also called the Greenlands System in York Region, includes terrestrial and aquatic habitats, such as wetlands, watercourses, forests and meadows and landform features such as valleys and linkage areas. Road networks can significantly impact the terrestrial natural heritage system, valley land management and water management. Road crossings of the natural heritage system can also contribute significantly to urban design and sense of place.

Objectives

Road design and construction should avoid key natural heritage and hydrologic features where possible. Road design should improve the resiliency of the natural heritage system to the stressors of climate change and integrate the natural environment into the design process early on and wherever possible.

It is the policy of the Official Plan (2010, Cons. 2016) to enhance natural heritage systems (e.g. Section 2.1.20 and 8.2.4). More efficient and sustainable modes of transportation (including transportation demand management) will reduce the need to expand infrastructure, which helps protect natural heritage features in the Region.

Guidelines

- Integrate natural heritage system into all road design projects in close proximity to, or otherwise impacting, natural heritage features
- Minimize impacts to the natural heritage system, such as reduced road widths over sensitive corridors and implementation of low-impact development measures
- Consider options to maintain natural connectivity of the landscape for ecological purposes, such as the addition of animal or amphibian crossings
- Consider opportunities for naturalized planting as opposed to street tree planting
- Preserve existing vegetation and incorporate reforestation and naturalization along roads
- Consider opportunities for trail connections and the facilitation of safe road crossings for trail users
- Undertake strategic enhancements to the Greenlands System as part of road design wherever possible
- Work with the local Conservation Authority to identify other opportunities, such as sizing and locating crossing structures appropriately
- Consider urban forests along roadways as a tool to manage species diversity, provide soil volume and quality, expand the urban canopy, and manage stormwater, noise pollution and traffic calming
- Consider opportunities for using the natural heritage system and urban forests to moderate micro climate effects and build climate change resilience for road infrastructure and the community
- All applicable environmental acts and regulations must be adhered to

Further Details

- York Region Forest Management Plan (2016)

Major Infrastructure

Major infrastructure considered in the road design and construction process includes bridges, overpasses, railway crossings, retaining walls, pumphouses and other utility infrastructure.

Objectives

Infrastructure found within or adjacent to the street should be fully integrated within the road design process. Consider opportunities to enhance the viewscape of the natural heritage system and explore architectural form, finishes and colours that make infrastructure a positive feature or better integrated into a community and context.

Guidelines

- Apply attributes of Regional road typologies to major infrastructure
- Consider integrated design of major pieces of infrastructure so they reflect and are sensitive to the context
- Integrate parapet walls, columns, ornamental lighting, railings, lookouts, public art and environmental features where possible, considering local history, architecture, natural species or special characteristics
- Enhancements should be low maintenance and not obstruct movement or sightlines
- Consider ease of access to utility infrastructure

Screening of utilities infrastructure is integrated into streetscape and bus stop design

Access Control

Access control determines the number, spacing and design of access points to roads, such as intersections, driveways and curb cuts, that are appropriate for the specified road typology.

Objectives

The objectives of access control include:

- Safety: Good access control can reduce vehicular collision rates. Controlling the number and width of driveways reduces areas of exposure for pedestrians and cyclists along a roadway
- Mobility: Spacing traffic signals at appropriate distances permits signals to be coordinated for optimized operation. Optimal signal spacing can reduce the need to increase a roadway's capacity through widening
- Aesthetics: By providing raised medians and reducing the width of driveways, more room can be used for streetscape

Guidelines

- The highest level of access control is desirable for the City Centre Street and Main Street typologies to address safety issues associated with the greater quantity and frequency of interactions between vehicular and active modes of travel
- A high level of access control is desirable for the Avenue typology to support its function as a goods movement corridor with generally uninterrupted flow characteristics
- A moderate degree of access control is desirable for the Connector and Rural Hamlet Road typologies given the reduced frequency of interactions between vehicular and active modes of travel
- Sidewalks, walkways and cycle tracks should be continuous across private entrances and special tiles/grooves should be considered to warn pedestrians when approaching driveways
- Table 2 shows the comparison between the road classification in the Access Guidelines for Regional Roads and the Designing Great Streets typologies. The Access Guidelines should be updated to reflect the Designing Great Streets typologies
- Where intersections are more than 500m apart, pedestrian crossings to access transit stops should be considered.

Further Details

- York Region Access Guidelines for Regional Roads

Table 2: Road Classification

Class	Access Guidelines Description	Designing Great Streets Description
I	Rural - 2 Lane	Rural Road
II	Rural - Multilane	Rural Road
III	Main Street	Main Street/Rural Hamlet Road
IV	Commercial/Commuter	Connector/City Centre Street
V	Commuter	Connector/Avenue
VI	Expressway	N/A

Servicing and Commercial Loading Zones

Servicing and loading are essential functions in urban environments and road design must consider the need for building access for servicing, including garbage, utilities and maintenance. Commercial loading zones are also required for deliveries and pick-ups at commercial, office, institutional and other buildings.

Objectives

Access points for servicing and loading should be located to minimize interruptions for pedestrians, cyclists, transit users and other vehicles on the street. Loading zones should provide convenient access to commercial and office buildings, while not obstructing movement.

Guidelines

- Require formal rear laneways as part of new development
- Access, servicing and loading should be integrated within buildings to minimize visual and physical impacts on the public realm. Where this is not possible, it should be located at the side or rear of buildings and visual impact minimized through careful screening
- Where possible, service, loading and outside storage areas should be coordinated
- Shared access to these facilities is encouraged to minimize curb cuts and the movement of servicing and loading vehicles
- Servicing enclosures and storage areas should be constructed of materials that complement the main building. Chain link fencing is highly discouraged
- Where curbside or dedicated lay-by loading is necessary, adequate space and coordination with on-street parking must be considered
- Reduce loading and unloading times by encouraging efficient use of curbside loading space
- Ensure the allocation of curbside loading space is consistent with the adjacent land use
- Right-size loading zones for the land uses they will service
- Create safe curbside loading zones that do not cross cycle tracks where possible

Further Details

- York Region Access Guidelines for Regional Roads
- Ontario Freight Supportive Guidelines (2016)

Parking and servicing accessed from a rear lane

Public Art

Public art is art that is temporary or permanent, is accessible to the public and enhances or provides interest to the public realm. It can also educate or bring awareness to a special aspect of the area or community. Some art can be integrated into a planned public works project, such as sidewalk inlays. Other pieces are stand alone and represent an element or character of the place. Public art can be used to bring awareness to unique context and heritage or to highlight landmarks, views and vistas. Public art is supported in York Region's Official Plan (2010) (Policy 3.4.13), and is even encouraged as part of development proposals (Policy 5.4.6(k)).

Objectives

Public art should be used where possible to beautify, improve and provide interest to the public realm. Public art pieces should be located in areas that do not interfere with the pedestrian clearway or vehicular traffic.

Examples of public art integrated into streetscape

Guidelines

- Recommended public art locations include sites of cultural significance or high-use areas such as public parks, plazas, street intersections, walkways, trails, courtyards, gardens and institutional or public building sites
- The use of public art should be limited near forms of traffic control (e.g. stop signs) in order to minimize driver distractions and sightline obstructions
- Public art should be designed specifically for its location and to add to the identity and profile of the community
- Public art pieces should be durable and easily maintained
- Public art should be physically and visually accessible, barrier-free and incorporate universal design principles. For example, public art is encouraged to incorporate Braille on interpretive materials and include touchable maquettes whenever possible

Traffic Signal and Illumination

Above ground infrastructure such as traffic signals, control boxes and illumination poles are infrastructure that support a safe and efficient traffic movement and must be considered in the road design and construction process.

Objectives

The placement of this infrastructure is based on specific guidelines/standards and needs to be fully integrated within the road design process. Consider the context and opportunities to apply a unique design that reduces pole clutter and creates a sense of place. This can be achieved through finishes, colours that make the infrastructure a feature that contributes positively to the community. Colour, texture, coordinate with other elements within the boulevard such as crosswalk ramps, planters, planted areas, site furniture, etc. This is especially important in city centres, urban avenues and connector road typologies.

Strategic placement of illumination poles reduces clutter and creates a sense of place

- Apply an integrated design approach for traffic signals and illumination poles
- Traffic signal and illlumination pole placement at all intersections shall ensure clear and unencumbered access for pedestrians and cyclists
- Consider consolidating poles to reduce pole clutter, improve operations and meet accessibility requirements
- Consider underground and overhead utilities as well as street trees to ensure that proper clearances are maintained
- Consider energy efficient light standards and dark sky compliant luminaires that support and complement municipal streetscaping objectives
- Consider colour coordinating traffic signal and illumination poles where possible
- Colour and textured enhancements to traffic signals and illumination poles should be a high quality architectural finish to reduce maintenance
- Consider integrating traffic signal boxes within the planting and furnishing zone to improve accessibility for pedestrians and minimize potential future relocation costs
- Consider painting or wrapping traffic signal boxes in a manner that is sensitive to the surrounding streetscape. The finish may be featured as an artistic piece of infrastructure

Climate Change Mitigation and Adaptation

Greenhouse gases (GHGs) directly contribute to climate change, which is leading to changes in long-term weather patterns, extreme weather events and natural hazards. From 2009 to 2017, the oil and gas sector and transportation sector saw the largest increases in GHG emissions as compared to other industry sectors. Climate change will have serious human, environmental and economic costs that will impact how the transportation system is designed and how it functions.

The Region is committed to ensuring the environmental health of its residents and is managing emissions and greenhouse gases through sustainable transportation infrastructure planning and implementation.

Objectives

Climate change will affect the way the Region plans, designs, constructs, operates, maintains, and decommissions infrastructure. Designing streets that encourage more sustainable forms of transportation will help communities reach their GHG reduction goals. Designing streets that are resilient to the damaging effects of climate change will minimize costly future investments, disruptions to operations and protect human health and wellbeing.

Guidelines

Designing streets for climate change requires both mitigation measures to reduce GHG emissions and adaptation measures to manage the impacts of climate change. Mitigation measures have the potential to reduce emissions that contribute to climate change in support of Ontario's Climate Change Action Plan goals of reducing GHG emissions and shifting to a low carbon economy. Adaptation methods will be important to consider in the design of streets. Adaptation methods will result in streets that are more resilient to the impacts of climate change and that support a more resilient natural heritage system.

Low-impact developments are cost-effective, with functional and aesthetic benefits

Mitigation Measures:

- An environmental assessment can track and document climate considerations such as air, water and natural features including historical climate data for the study area (where available) and representation of data through charts, graphs and tables.
- Through street design, discourage the use of single occupant vehicle vehicles, instead promoting carpooling, transit and active transportation
- Specify in construction contracts the local sourcing of aggregates, a minimum level of overall recycled content, the on-site reuse of fill, the use of materials that are easily at their end of life, and a minimizing of materials sent to the landfill (i.e. silt soxx instead of silt fence)
- Specify in construction contracts materials with lower carbon footprints
- Design construction contracts to encourage sourcing from suppliers with strong sustainability policies and practices
- Explore opportunities to minimize impacts to woody vegetation and to increase woody vegetation, as woody vegetation is a carbon sink

Adaptation Measures:

- Ensure environmental assessments identify relevant climate change risks and vulnerabilities
- Consider materials and measures that can address urban heat islands and increase the solar reflectivity of impervious surfaces, such as light coloured aggregates in asphalt or concrete
- Design crossing structures to minimize the risks to life and property from flooding and erosion
- Ensure sufficient boulevard space is dedicated to LID measures to meet water quantity, water quality and erosion targets
- Design roads and structures to be resilient to more frequent freeze-thaw cycles

Further Details

- Climate Change Strategy (2015) and Five-Year Climate Change Action Plan, 2016-2020 (2016)
- Consideration of Climate Change in Environmental Assessment in Ontario
- York Region Forest Management Plan (2016)

Maintain and encourage naturalization along rural roads

Air Quality

Local sources of vehicle pollution such as major roads and highways can play a role in air quality conditions, particularly on communities situated close to the roads. The highest levels of pollutants tend to occur in close proximity to highways and major roads typically within 150 to 200 metres. Poor air quality can have impacts on health including respiratory and cardiovascular systems and can have adverse effects on the natural environment. There has been more research looking at exposure and emissions related to traffic related air pollutants (TRAPs) and how streets and communities can be designed to reduce these impacts.

Objectives

It is important that road projects consider both mitigation measures to reduce traffic emissions as well as adaptation measures to reduce public exposure to TRAPs. Current Region initiatives can help reduce both emissions (e.g. The Region's use of Intelligent Transportation Systems which helps to maximize the Region's ability to move people and vehicles thereby reducing idling) and exposure to TRAPs (e.g. streetscaping design elements in York Region's Streetscape Program that optimize the utilization of street trees which can act as barriers to capture air pollutants).

The air quality guidelines are intended to reduce the impacts associated with TRAPs by designing streets that include mitigation measures to reduce traffic emissions and measures to reduce the public exposure to pollutants.

Guidelines

- Consider street designs that do not disrupt the flow of traffic (e.g. roundabouts), increase efficiency of transit and carpooling, discourage single occupancy vehicle use, promote cycling and walking trips, improve connectivity, address localized congestion points (e.g. intersections) and promote York Region programs such as Transit Oriented Development
- Where sensitive receptors (e.g. senior residences, schools, daycares, hospitals, parks) are in close proximity to major roads, consider including streetscaping design elements to reduce the impacts of traffic pollutants
- Consider choosing certain types of vegetation and planting the vegetation in way that can help reduce exposure to traffic pollutants
- Environmental assessments should identify and address relevant air quality impacts
- Employ best practices during construction including vehicles/machinery and equipment in good repair, equipped with emission controls, and as applicable, properly maintained and operated within regulatory requirements, and use of dust control measures

Further Details

- York Region Corporate Air Quality Strategy (2008)

Encroachments

Encroachments are elements that extend into the adjacent streetscape area, such as hanging signage protruding into the pedestrian clearway or street lighting located in the Planting and Furnishing Zone protruding into the roadway.

Objectives

Encroachments create a layering of streetscape elements that, if considered carefully, can help to frame the street and pedestrian realm.

Guidelines

- Typical encroachments include awnings, at-grade signs, overhead signs, planting and public art
- Encroachment of features such as awnings, lighting and planting is acceptable depending on the circumstances
- If adjacent private building elements encroach into the public boulevard (e.g. awnings or signage), they are not permitted to impede the pedestrian clearway
- Buildings should not encroach into the right-of-way
- Encroachments should not conflict with utilities. Encroachment agreements will be required

Hanging signage helps to frame the street