CITY BUILDING PROGRAM | FALL 2024

Draft Street Manual

The City of Calgary is updating its citywide planning documents to work together seamlessly, creating a concise 30-year vision and 10-year action plan for Calgary's future. The City Building Program results in three planning tools: the Calgary Plan, the Zoning Bylaw, and the Street Manual

The City Building Program is currently engaging with industry and other external interested parties on the draft of the Street Manual.

1 - CALGARY PLAN	2 - ZONING BYLAW	3 - STREET MANUAL
Merging and updating the Municipal Development Plan with the Calgary Transportation Plan	Currently called the Land Use Bylaw 1P2007	Combining elements of the Complete Streets Guide with the Design Guidelines for Subdivision Servicing (Calgary's road standards)

Vision

The Street Manual will guide how streets are designed in both new and established communities. It will focus on enabling safe and inclusive streets for all Calgarians, while advancing Calgary's environmental and economic goals.

The new guide will better integrate the role of streets in the development of communities, high-activity areas, and industrial areas across the city.

What is being updated?

The design guide will simplify street classifications, update detailed cross sections and design guidance for walking, wheeling, transit, goods movement, vehicular traffic and intersection design. Better retrofit design and traffic calming guidance will be included. Existing complete street policies will be refined and moved to the Calgary Plan.

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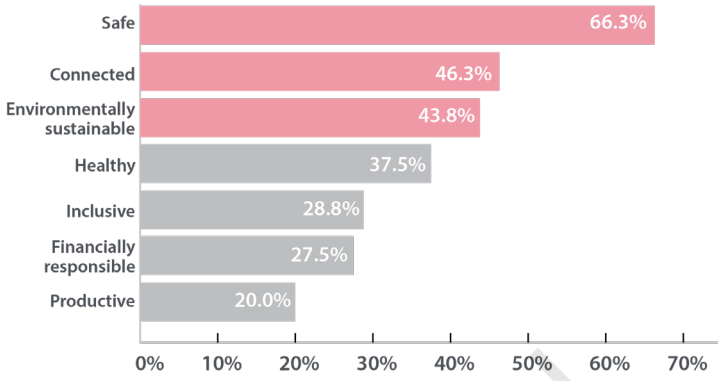
Phase 2 Engagement

WHAT WE HEARD

During Phase 2 Engagement, we asked Calgarians which Street Manual Objectives were most important to them. The top three were:

- **Safe**
- **Connected**
- **Environmentally Sustainable**



Results of participant's selection of their top three objectives.

Key Objectives

OBJECTIVES	DESCRIPTION	WHAT WE ARE DOING
SAFE	Using a Safe System Approach, design and operate streets to prevent deaths and serious injury.	• Lowering target speeds • Narrowing streets & travel lanes in residential areas • Separating pedestrians & cyclists in residential areas from vehicular traffic
CONNECTED	Connect Calgarians to their destinations and create opportunities for social interactions by connecting streets, public realm, and buildings.	• Providing the space and design elements in the urban realm for users to interact • Connecting walking and wheeling/cycling to transit
ENVIRONMENTALLY SUSTAINABLE	Mitigate pollution and support climate action by expanding the urban forest, manage stormwater, and enable travel by walking, wheeling and transit.	• Creating space for public street trees with soil volumes to sustain them • Providing opportunities for integrating low impact development • Incorporating facilities to encourage walking and wheeling/cycling
HEALTHY	Support belonging, emotional well-being and physical health by creating comfortable environments to live and play.	• Providing comfortable facilities to encourage walking and wheeling/cycling • Incorporating universal design elements
INCLUSIVE	Enable affordable travel options and incorporate universal design to support independent mobility for all ages and abilities	• Incorporating facilities to encourage affordable travel options • Incorporating universal design elements
FINANCIALLY RESPONSIBLE	Support both short- and long-term financial sustainability by minimizing costs from collisions, constructions, maintenance and pollution.	• Designing to optimize use of right-of-way space • Minimizing pavement width • Designing for efficient maintenance
PRODUCTIVE	Enable productive commercial and industrial areas by supporting goods movement, access, and parking.	• Facilitating goods movement by providing adequate street, intersection and driveway width • Providing on-street opportunities for commercial loading and parking

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Key Improvements

- Street classifications are simplified
- Improved retrofit guidance
- On-street parking is re-examined
- Walking environment is more comfortable
- More public street trees
- Safer bicycle/wheeling facilities

Timeline

JAN-NOV 2024 DRAFT 1, DRAFT 2, AND EXTERNAL DRAFT DEVELOPMENT	The Street Manual team has been working closely with the wider City Building Program team and internal interested parties to develop two drafts of the Street Manual over the past year. We now have a draft ready to share and discuss with industry and other external interested parties.
DEC 2024 -FEB 2025 PHASE 4 ENGAGEMENT ON EXTERNAL DRAFT	An external draft of the Street Manual and supporting materials will be circulated for a 4-week period to external interested parties in late-November. After this review period, workshops will be held to discuss/resolve major issues.
MAR-APR 2025 FINAL DRAFT DEVELOPMENT	During this time, the final draft will be developed incorporating feedback from Phase 4 engagement and completing Chapter 9: Intersections and Chapter 10: Traffic Calming.
Q2 2025 FINAL DRAFT ENGAGEMENT AND ADMINISTRATIVE APPROVAL	The complete Chapter 1-10 document will be engaged on with internal and external interested parties one last time prior to seeking administrative approval for the updated design guidelines in the Street Manual.

Connections

The development of the Street Manual is directed by the Key Directions, Mobility Policies, and Maps of the Calgary Plan. There is also a direct connection to the Zoning Bylaw in the public realm, where private lands and public right-of-way interface. The connections between these documents is summarized below.

CALGARY PLAN

Key Direction #8: Connecting Mobility Networks

- Safe, accessible, affordable and convenient travel options for people of all ages & abilities.
- Walking, wheeling, and transit are the preferred travel options.
- Efficient movement of goods in industrial areas and Calgary region.

Calgary Plan Maps

- Street Classifications & Target Design Values informed by: Wheeling Network (Map 3), Primary Transit Network (Map 4), Road & Street Network (Map 5), Primary Goods Movement (Map 6)
- High Activity Street locations are informed by the City Structure Map (Map 7)

ZONING BYLAW

- Accessible design requirements (barrier-free path from public infrastructure to front-entrance)
- Public realm setbacks, landscaping, and driveway access to street requirements
- Parking (motor vehicle, barrier-free, loading, pick-up/drop off, visitor, and bicycle) requirements

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Document Structure and Chapters

CHAPTER 1

INTRODUCTION

This chapter covers the vision, objectives, and purpose of the street manual before covering key concepts that guide the document. How to use the document, the design process, and design exception process is also covered.

CHAPTER 2

DESIGN CONTROLS & STREET CLASSIFICATION

This chapter covers key design principles, target speed (aligned to the Safe System Approach), the operating envelope for users and vehicles and the street classifications.

CHAPTER 3

ALIGNMENT & LANE CONFIGURATION

The guidelines in this chapter outline the design parameters for horizontal and vertical alignments, crossfall, and superelevation that applies to street design in Calgary. The following sections detail specific design guidance that supplements or supercedes guidance contained in Chapter 3 of the TAC Geometric Design Guide for Canadian Roads (TAC GDG).

CHAPTER 4

CROSS-SECTION ELEMENTS

This chapter covers design zones and their respective design requirements, target values, design domain values and typical cross-sections by street classification. There is also guidance on bus stops and sound attenuation.

CHAPTER 5

BICYCLE FACILITY DESIGN

This chapter provides specific design guidance for bicycle facilities including cycle tracks/ protected bicycle lanes, multi-use paths/bicycle paths. Bikeway facility selection, geometric design elements, bike ramps, universal design elements, and facilities at transit stops are also covered.

CHAPTER 6

WALKING AND WHEELING FACILITY DESIGN

This chapter provides specific design guidance for pedestrian facilities including sidewalks, multi-use pathways, walkways and trails. Walkway geometric design elements, frontage zone elements, universal curb ramp design, and mid-block crosswalk design is covered.

CHAPTER 7 & 8

ROADSIDE DESIGN & ACCESS

Chapter 7 provides design guidance for higher-speed road side design such as clear zones and recoverable side sloping. Chapter 8 provides design guidance for site specific and community access, including dead-ends and emergency access.

CHAPTER 9 & 10 (Future Chapters, Q1 2025)

INTERSECTION DESIGN & TRAFFIC CALMING

Chapter 9 will provide design guidance for intersection design including universal design and crossing elements for pedestrians and cyclists. Chapter 10 will provide design guidance around traffic calming existing streets that have been over-designed.

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CHAPTER ONE

Introduction

This introductory chapter outlines the vision, objectives, purpose, use, and design philosophy used in this street manual that applies to street design in Calgary.

1.1	**VISION**	The Street Manual will help create a thriving city with inclusive communities that are supported by a network of streets that are safe for all Calgarians, regardless of how they move.
1.2	**OBJECTIVES**	Through implementing the Street Manual, Calgarians will benefit from streets that are: Safe, Connected, Environmentally Sustainable, Healthy, Inclusive, Financially Responsible, and Productive.
1.3	**PURPOSE**	The Street Manual is to be used by designers, planners, and engineers working on behalf of the City of Calgary or private parties in the design and construction of public roads and streets.
1.4	**RELATIONSHIP TO OTHER DESIGN DOCUMENTS**	The Calgary Plan is a statutory document which establishes a planned mobility infrastructure system to support the long-term vision for Calgary. The Street Manual provides guidance on how to implement this vision. The Manual relies heavily on the guidance of TAC GDG, MUTCDC, AND NACTO urban street design guide.
1.5	**USE OF THE STREET MANUAL**	While the Street Manual is framed as design guidelines, it is directive in nature and not to be viewed as merely ideas or suggestions. The guidelines are to be followed as closely as possible.
1.6	**SAFE SYSTEM APPROACH**	This approach strives to minimize conflicts by minimizing speed differential and, where possible setting low design/target speeds.
1.7	**DESIGNING TO SUPPORT UNIVERSAL ACCESSIBILITY**	To create an environment that is accessible for people with varying abilities, the following principles of universal design are employed: Equitable Use, Flexibility in Use, Simple and Intuitive Use, Perceptible Information, Tolerance for Error, Low Physical Effort, Size and Shape for Approach and Use
1.8	**STREET DESIGN ZONES**	The zones include: Adjacent Land Uses, Frontage Zone, Walking Through Zone, Furnishing Zone, Flex Zone, and Travelled Way.
1.9	**DESIGN EXCEPTIONS**	These sub-sections describe the process of either a) using the prescriptive cross-sections of Chapter 4 or b) using the design domain guidance to meet specific contexts/constraints or c) using the design exception process if a) or b) cannot be used.

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CHAPTER TWO

Design Controls & Street Classification

This chapter outlines the design controls (e.g. size, mass, visibility, potential speeds) that define the travel characteristics of different users and inform street and intersection design. Street classifications are also introduced.

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2.1	**INTRODUCTION**	The guidelines in this chapter outline the design controls (size, mass, maneuverability, visibility and potential speeds) which are required to recognize the travel characteristics and physical limitations of different travel options. These controls inform street and intersection design. This chapter also outlines Street classifications (the hierarchical grouping of streets depending on there role) which assist in establishing priorities and design features appropriate for each street.
2.2	**STREET DESIGN PRINCIPLES**	Through implementing the Street Manual, Calgarians will benefit from streets that are: Safe, Connected, Environmentally Sustainable, Healthy, Inclusive, Financially Responsible, and Productive.
2.3	**TARGET SPEED**	The Street Manual is to be used by designers, planners, and engineers working on behalf of the City of Calgary or private parties in the design and construction of public roads and streets.
2.4	**DESIGN USERS AND VEHICLES**	The Calgary Plan is a statutory document which establishes a planned mobility infrastructure system to support the long-term vision for Calgary. The Street Manual provides guidance on how to implement this vision. The Manual relies heavily on the guidance of TAC GDG, MUTCDC, AND NACTO urban street design guide.
2.5	**CLASSIFICATION OF STREET TYPE**	While the Street Manual is framed as design guidelines, it is directive in nature and not to be viewed as merely ideas or suggestions. The guidelines are to be followed as closely as possible.

2.5.1	**FLOW & EXCHANGE**	Flow is related to prioritizing movement and is designed to allow safe travel at relatively higher travel speeds. Exchange is related to prioritizing interactions and access with adjacent land uses, destinations, and intersecting streets.
2.5.2	**STREET CLASSIFICATION & FUNCTION**	

STREET CLASSIFICATION	SEGMENT	INTERSECTION
LOCAL	Exchange (Place)	Exchange (Place)
COLLECTOR	Exchange	Exchange
ARTERIAL	Flow	Exchange
SKELETAL	Flow	Flow

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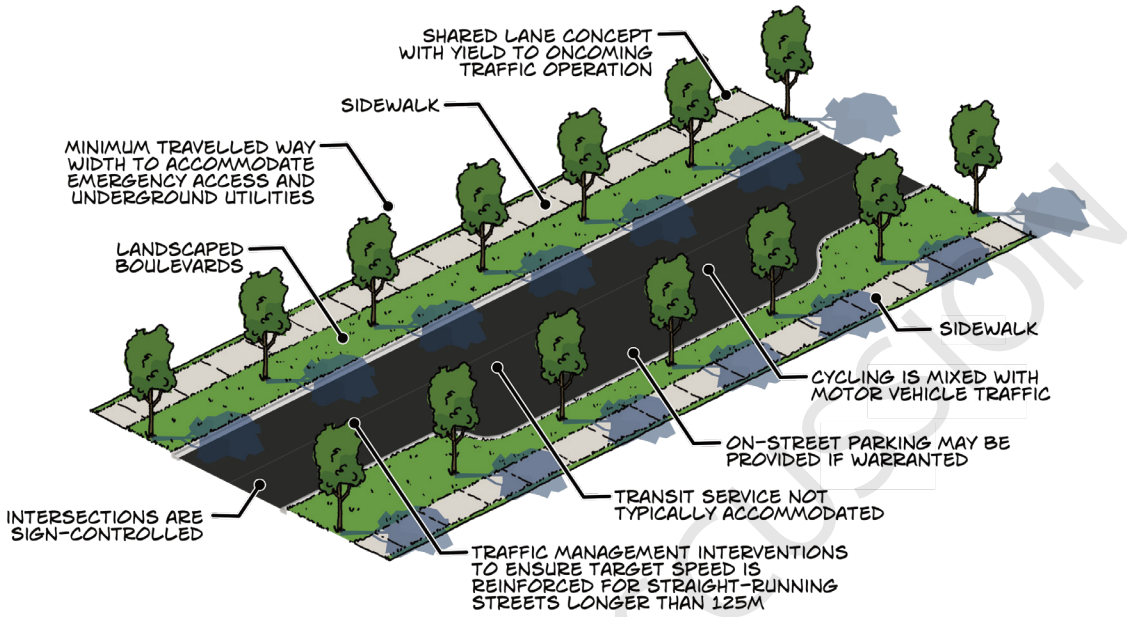
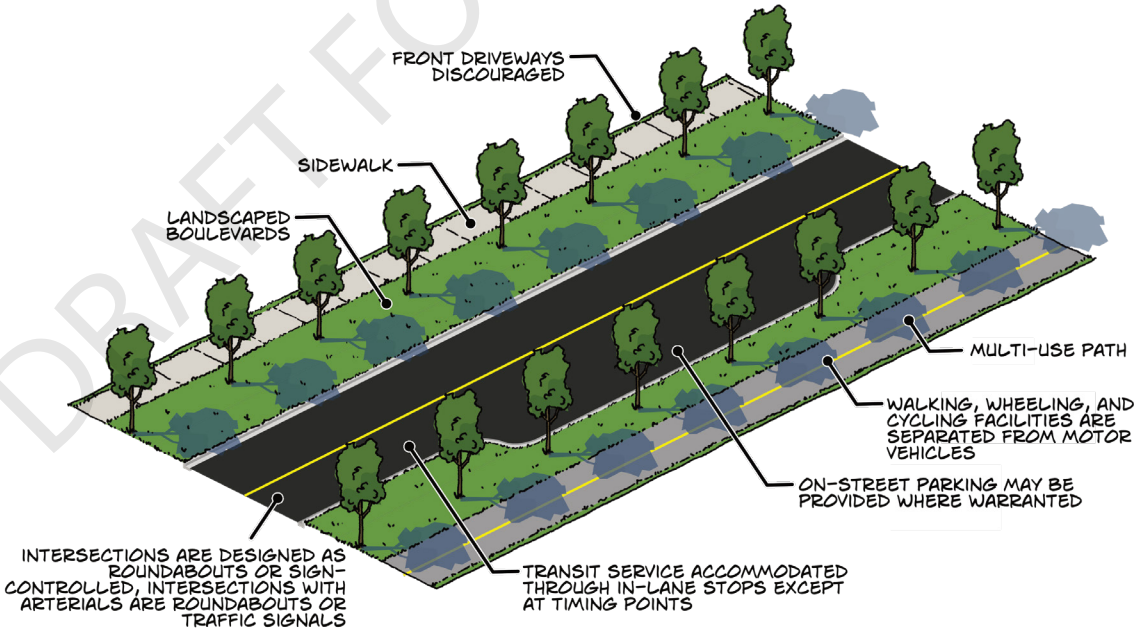
STREET CLASSIFICATION - LOCAL



STREET CLASSIFICATION - COLLECTOR



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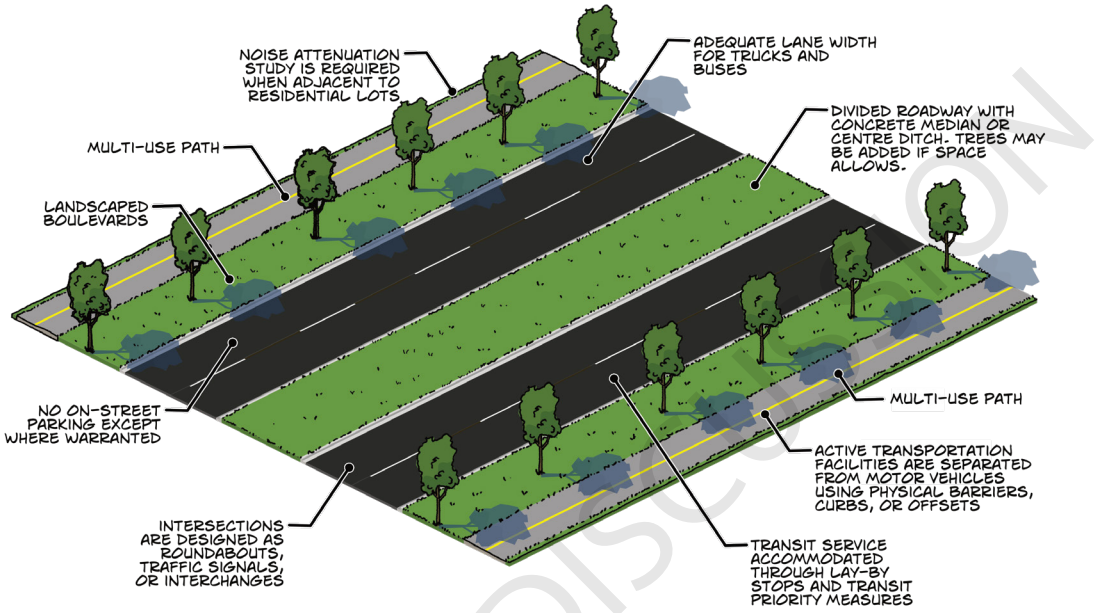
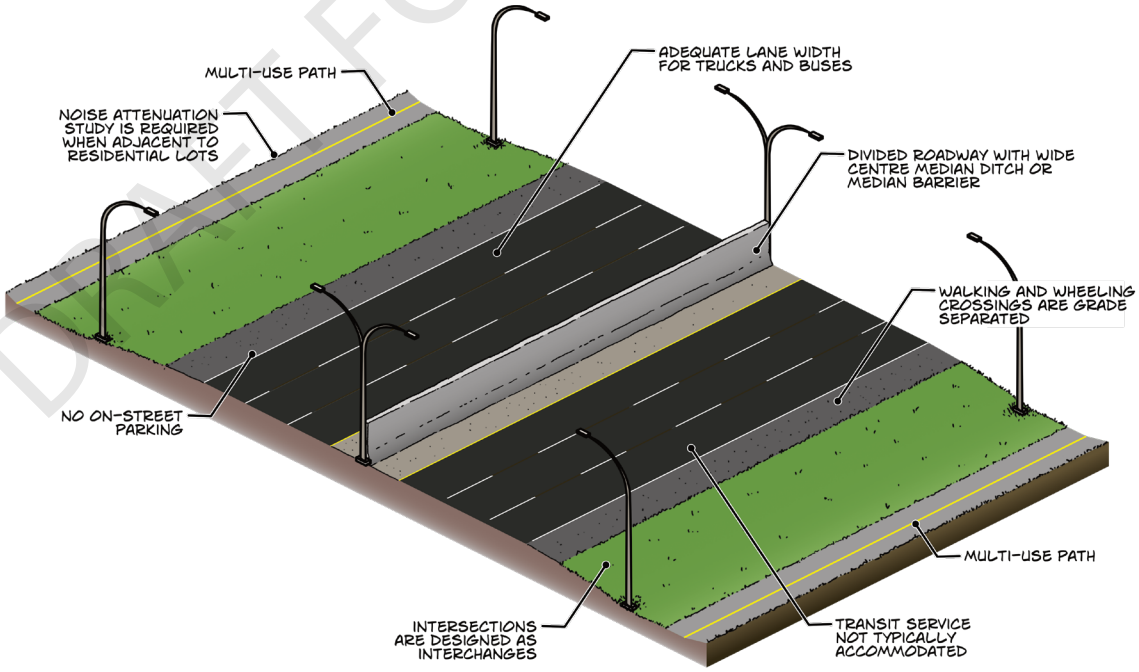
STREET CLASSIFICATION - ARTERIAL



STREET CLASSIFICATION - SKELETAL



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CHAPTER THREE

Alignment & Lane Configuration

This chapter outlines the design parameters for horizontal, vertical and other geometric elements of street design in Calgary.

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3.1	**INTRODUCTION**	The guidelines in this chapter outline the design parameters for horizontal and vertical alignments, crossfall, and superelevation that applies to street design in Calgary. The following sections detail specific design guidance that supplements or supersedes guidance contained in Chapter 3 of the TAC Geometric Design Guide for Canadian Roads (TAC GDG).	
3.2	**HORIZONTAL ALIGNMENT**	**Travelled Way Crossfall**	• Local and Collector Streets: 2% • Arterial Streets and Skeletal Roads: 3%
		Superelevation	• Arterial Streets* & Skeletal Roads: max e = 0.06m/m • Retrofit: max e = 0.04 m/m (*70km/hr or greater)
		Transition Spirals	• Minimum Length: 60 m
		Furnishing Crossfall	• Minimum cross slope: 2% from the top of curb to the sidewalk or multi-use path. • Maximum 5% when hardscaped, and 10% when landscaped.
		Flex Zone Crossfall	• Cross slope should follow the cross slope of the Travelled Way and be graded toward the edge of the street.
3.3	**VERTICAL ALIGNMENT**	**Grades**	• All streets and alleys shall have a minimum grade of 0.6%. • The grade of at least one access street to any particular area of a subdivision must be less than or equal to 8%.
		Vertical Curves	• The minimum acceptable length for a vertical curve is 30 m except for the smoothing vertical curves used for superelevation runoff and tangent runout.

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CHAPTER FOUR

Cross Section Elements

This chapter provides the design parameters for cross section elements that apply to street design in Calgary. It presents the functions, target values, and design domain for each design zone.

4.1	**INTRODUCTION**	The guidelines in this chapter provide the design parameters for cross section elements that apply to street design in Calgary. The following sub-sections detail specific design guidances that supplements or supersedes that contained in Chapter 4 of the Transportation Association of Canada Geometric Design Guidelines (TAC GDG) as well as sections of Chapters 5 (Bicycle Facility Design) and Chapter 6 (Pedestrian Facility Design).
4.2	**DESIGN ZONES**	This section describes the design zones of the street and their functions. The zones include: Frontage Zone, Walking and Wheeling, Through Zone, Furnishing Zone, Flex Zone, Traveled Way, Utilities & Trees.* **see back side for diagram*
4.3	**TARGET VALUES**	Target values for each design zone and guidance on utility line assignments and tree placement are provided. These values are used to develop the cross-sections in Section 4.4. If target values cannot be achieve, an acceptable range of values (Design Domain) is provided in Section 4.5.
4.4	**CROSS SECTIONS**	13 technical cross-sections have been developed to provide guidance for the most common street classifications and contexts. This includes: Local, Local - Industrial, Local - High Activity, Alley, Local - Rural Collector, Collector - Industrial, Collector - High Activity Arterial - 4 Lanes 50 km/hr, 4 Lanes 70 km/hr, High Activity, 6 Lanes Skeletal
4.5	**DESIGN DOMAIN**	For situations where constraints or other considerations preclude the use of the cross-sections in Section 4.4, Design Domain allows deviation from Target Values within certain ranges. This section provides those ranges for each design zone and some guidance to their use.

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4.6	**BUS STOPS**	The location of Bus Stops is determined and approved by Calgary Transit. More information on the design of bus stops in relation to intersections will be provided in Chapter 9. This chapter provides some guidance on bus stop types, bus stop pads, and bus stop aprons. Additional technical guidance is provided in the Calgary Transit Bus Design Guidelines.
4.7	**SOUND ATTENUATION, VISUAL SCREENING, AND FENCING**	Guidance on the requirements and approval process for noise fences, visual screening, and fencing is provided in this section. There are related policies that are referenced.
4.8	**RETROFIT STREET DESIGN**	This section will includes a decision tree that will provide guidance around priorities when design zone values within the design domain can't be achieved. This section is still under development.

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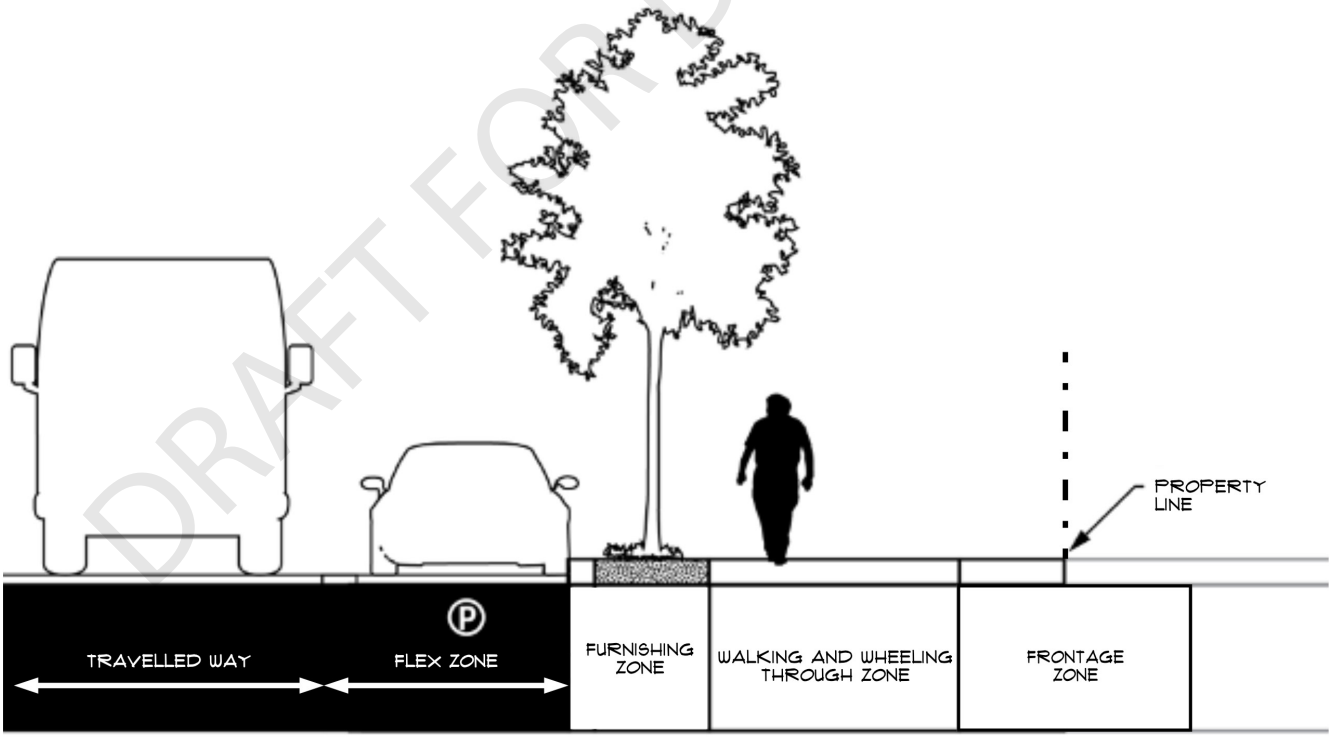
DESIGN ZONES



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CHAPTER FIVE

Bicycle Facility Design

This chapter's guidelines apply to the design of bicycle facilities in Calgary, aligning with the City's Network Guiding Principles for the "Always Available for All Ages and Abilities" (5A) Network to ensure safety and comfort for people of all ages and abilities.

5.1	**BIKEWAY FACILITY TYPES**	There are four bikeway facility types used in Calgary that are described in this section including target values and design domain ranges: • Cycle Tracks / Protected Bike Lanes (including Raised Cycle Tracks) • Multi-Use Paths / Bike Paths • Local Street Bikeway • Painted On-Street Bike Lanes *see back side for diagram
5.2	**BIKEWAY FACILITY SELECTION**	The Bikeway Facility Selection Framework (decision tree) summarizes the factors, including motor vehicle speeds and volumes, at which each bikeway facility is most likely to be suitable for the Design User. The framework includes operational considerations related to street context, which can also influence the suitable bicycle facility type. Once motor vehicle speeds exceed 40 km/hr, cycle tracks or multi-use paths should be provided.
5.3	**BIKEWAY DESIGN ELEMENTS AND DETAILS**	This section provides detailed design guidance around bikeway alignment (cross slopes, horizontal and vertical curves), surface material, grade, lateral alignment shifts, horizontal and vertical clearances, facilities at grade separation. Bike ramps, bikeway facilities at transit stops, and raised cycle tracks with universal design elements will be included but are still under development.

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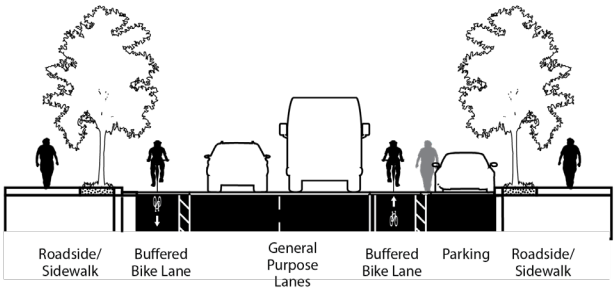
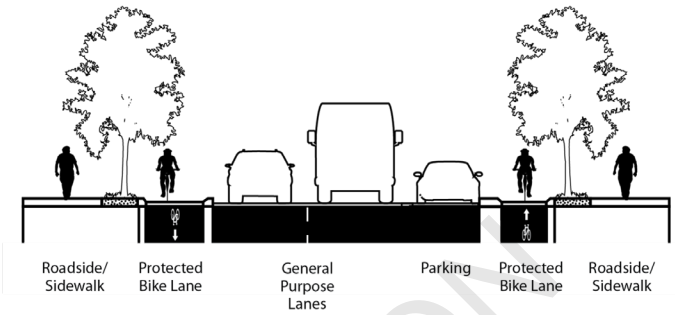
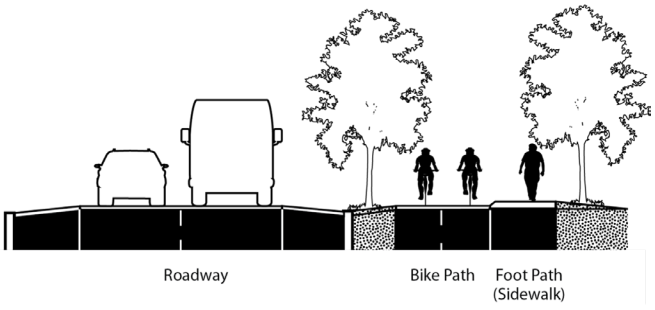
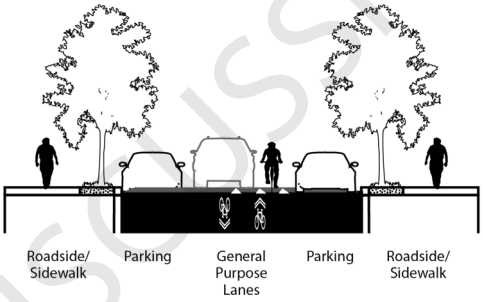
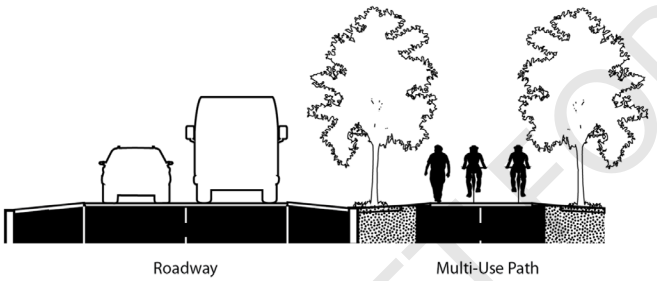
BIKEWAY FACILITY TYPES











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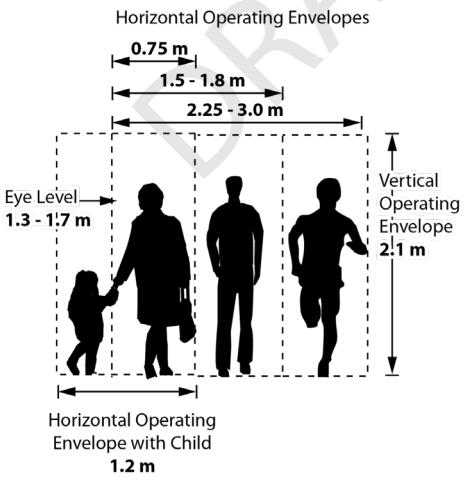
CHAPTER SIX

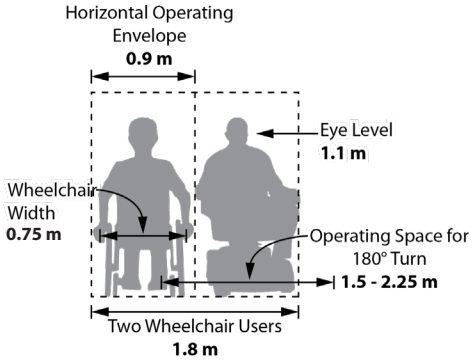
Walking & Wheeling Facility Design

This chapter's guidelines apply to the design of the four pedestrian facility types used in Calgary.

6.1	**PEDESTRIAN FACILITY TYPES**	There are four pedestrian facility types used in Calgary that are described in this section including target values and design domain widths: • Sidewalks- Multi-Use Paths • Neighborhood Walkways (not located in the street right-of-way) • Trails (not located in the street right-of-way)
6.2	**PEDESTRIAN DESIGN ELEMENTS AND DETAILS**	This section provides detailed design guidance around surface materials for the different street design zones; grade and cross slope; vertical clearance; accessible widths; turning areas; obstructions; curb ramps; tactile walking surface indicators; driveway and alley crossings; mid-block crosswalks; pedestrian overpasses; community mailboxes and illumination.

PEDESTRIAN DESIGN ELEMENTS AND DETAILS





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CHAPTER SEVEN

Roadside Design

This chapter outlines the general principles for roadside design that applies to streets in Calgary intended for higher speed streets (>70 km/h).

7.1 INTRODUCTION

The guidelines in this chapter outline the general principles for roadside design that applies to street design in Calgary and is intended for higher speed (greater than 70 km/h) streets (skeletal roads or rural roads). This chapter uses the TAC Geometric Design Guide for Canadian Roads (TAC GDG) Chapter 7 content.

General guidance on streets in urban environments is provided in Section 7.7 of the TAC GDG. Establishing a clear zone is not always practical or desirable. This does not preclude instances in the lower speed urban environments where roadside barriers may be warranted.

For specific guidance on roadside design for Skeletal Roads, higher speed streets, and rural streets related to clear zone requirements, barrier warrants, and barrier design, the current edition of Alberta Transportation's Roadside Design Guide should be used.

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CHAPTER EIGHT

Access

This chapter outlines the access management philosophy and typical street access design parameters. Generally, driveway access should be limited to avoid disruptions in walking and wheeling routes and increase tree planting opportunities.

8.1	**INTRODUCTION**	The TAC Geometric Design Guide for Canadian Roads (TAC GDG) Chapter 7 outlines the access management philosophy and typical street access design parameters. The following sections provide specific design guidance that supplements or supersedes guidance contained in Chapter 8 of the TAC GDG. In general, driveway accesses should be limited, with a preference for shared access driveways where feasible to avoid unnecessary disruptions in walking and wheeling routes and increase the potential for tree planting.
8.2	**CLASSIFICATION ACCESS CONDITIONS**	This section includes a table summarizing access type and spaces.
8.3	**MEDIAN AND TURN LANE REQUIREMENTS**	Median and turn lane requirements are summarized in Chapter 4.
8.4	**DEAD ENDS AND"P" LOOPS**	Any public street that comes to a dead end in a proposed subdivision must have a cul-de-sac with sufficient turning space for the design vehicle for the street based on its classification. The maximum allowable length of a cul-de-sac is 120m. Alternative emergency vehicle access is required for a cul-de-sac that exceeds 120m in length.
8.5	**EMERGENCY ACCESS TO PRIVATE SITES**	The intent of this section is to provide direction with regard to minimum emergency vehicle access requirements to private roads, access lanes, and parking lots within private sites. This section provides specific guidance for public access, emergency access and driveways.

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