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OVERVIEW + CONTEXT

A.1 What is the British Columbia Active Transportation Design Guide?





Multi-Use Pathway, Kidston Road, Coldstream B.C.

A.1

WHAT IS THE BRITISH COLUMBIA ACTIVE TRANSPORTATION DESIGN GUIDE?

This chapter introduces the document by providing an overview of the British Columbia Active Transportation Design Guide, including a summary of the purpose, scope, and goals of the Design Guide. This chapter also outlines the relationship to *CleanBC* and *Move. Commute. Connect: B.C.'s new strategy for cleaner, more active transportation*. Finally, this chapter summarizes the list of design guidelines that form the basis for this document, introduces the concept of design flexibility and need for professional judgement, and outlines legislative and other considerations.



PURPOSE

The British Columbia Active Transportation Design Guide is a comprehensive set of planning and engineering guidelines offering recommendations for the planning, selection, design, implementation, and maintenance of active transportation facilities across the province. The primary audience for the Design Guide is design professionals in the engineering, planning, landscape architecture, and architecture fields. It may also be a valuable resource for elected officials, community groups, and the general public.

The Design Guide brings together engineering principles and best practices from the municipal, provincial, national, and international levels. It was developed with input from a diverse range of stakeholders from across B.C. Stakeholders included staff from the provincial government as represented by the Ministry of Transportation and Infrastructure (MOTI), local and regional governments, Indigenous communities, advocacy groups, professional associations, and academics (see **Appendix A** for a full list of stakeholders who participated in the process).

The goals of the Design Guide are:

- To provide a reference that is **useful for communities of all types, sizes, and contexts**;
- To create **consistency in the design of active transportation facilities** throughout the province;
- To provide a **widely available resource** to increase the quality of the design of active transportation facilities throughout B.C. and beyond; and
- To **support provincial grant programs** with design guidance specific to B.C. to clarify the provincial government's expectations for the design of active transportation facilities.

SCOPE

The Design Guide addresses all human-powered modes of transportation, focusing primarily on walking, cycling, and rolling (see **Chapter B.1** for a full range and description of the various active transportation users). The Design Guide also discusses other emerging modes of transportation, including small, one-person electric vehicles (such as electric bicycles, e-scooters, segways, electric skateboards, and hoverboards). Furthermore, the Design Guide considers winter-based active modes (such as skiing, skating, kiksledding, and snowshoeing), water-based active modes (such as paddling, kayaking, and canoeing), and horseback riding, although these modes tend to be used more for recreation than daily transportation. Providing seamless connections to transit, ferries, and other forms of transportation is also a key focus of the Design Guide to enable an integrated, multi-modal transportation system serving the diverse needs of all British Columbians.

The Design Guide is intended to address daily active transportation needs and does not cover recreational trail development, such as dedicated hiking, cross-country skiing, or mountain biking trails. Furthermore, the Design Guide is not intended to provide detailed guidance for motor vehicle-related design elements such as medians, travel lane widths, or parking lane widths. Guidance for these elements can be found in other documents, including municipal, provincial, and national standards and guidelines.

RELATIONSHIP TO PROVINCIAL INITIATIVES

Active transportation is a key priority for the Government of British Columbia. The Design Guide is an initiative of *CleanBC*, the provincial government's plan for achieving a prosperous, balanced, and sustainable future. *CleanBC* has a number of strategic focuses, including:

- » **SUSTAINABLE TRANSPORTATION**

- » **CLEANER AND MORE EFFICIENT TECHNOLOGY**

- » **INTRODUCING NEW CLEAN ENERGY OPTIONS**

- » **REDUCING AND MAKING BETTER USE OF WASTE**

- » **SIGNIFICANTLY INCREASING INDUSTRIAL ELECTRIFICATION**

- » **REDUCING EMISSIONS FROM FORESTRY, LAND USE, AND AGRICULTURE**

- » **IMPROVING COMMUNITY DESIGN AND SERVICES**



The provincial government has also developed a B.C. Cycling Policy, which lays out a number of actions to improve cycling, including considering provisions for cycling on new and upgraded provincial highways, involving local and regional governments and interest groups as project stakeholders, considering all types of people who cycle when designing facilities, and providing consistent usage of signage and pavement markings. The B.C. Cycling Policy sets out the goal of integrating cycling on the province's highways wherever feasible by providing safe, accessible, and convenient bicycle facilities and by supporting and encouraging cycling.

To support this goal, the provincial government has been cost-sharing cycling infrastructure projects with local governments since 2008 through the BikeBC program.

The Design Guide was developed in parallel with *Move. Commute. Connect: B.C.'s new strategy for cleaner, more active transportation*, which engaged residents across the province to create a provincial framework to advance active transportation across B.C. This strategy provides the policy vision for B.C. and supports the provincial government's three key commitments to British Columbians: to make life more affordable, to deliver the services people count on, and to build a strong, sustainable economy.

APPLICATION OF THE DESIGN GUIDE

The Design Guide has been developed with two overarching applications in mind:

- To provide suggested guidance for local and regional governments for the planning, selection, design, implementation, and maintenance of active transportation facilities for projects under their jurisdiction, based on local, national, and international best practices; and
- To provide suggested guidance for the planning, selection, design, implementation, and maintenance of active transportation facilities on roadways under provincial jurisdiction, recognizing the province's mandate and the current jurisdictional and legislative framework for active transportation within provincial rights-of-way (see **Chapter F.1**).

Providing design guidance for all B.C. communities requires a broad spectrum of design solutions, as B.C. is a vast province with a wide range of community types, geographies, and climate conditions. The planning and design of active transportation facilities can differ substantially between urban, suburban, and rural contexts. Furthermore, rural areas can be subdivided into different categories, each requiring unique

considerations (see **Chapter B.2**). All designs should be applied with sound professional judgement that considers the unique context of each project – there is no one-size-fits-all solution to the design of active transportation facilities. See the Design Flexibility and Professional Judgement subsection on page A11 for further details.

The Design Guide offers best practice design solutions and encourages designing fully accessible facilities for people of all ages and abilities. However, it is recognized that active transportation facilities may not be appropriate or feasible on all roadways, and that context-specific constraints may make it challenging to create fully accessible facilities or facilities that are comfortable for people of all ages and abilities. Design professionals should strive to provide the best possible active transportation facility for the given context, even where the best practice design solution may not be feasible. See **Chapter B.2** for details regarding guiding principles, network planning, and facility selection.

The Design Guide is intended to be applied during the construction of new facilities and the rehabilitation of existing facilities. It is not intended as an assessment tool to measure existing facilities or to trigger rehabilitation projects.



Edgemont Boulevard, North Vancouver, B.C.

Provincial Context

At the provincial level, there are a number of regulations and pieces of legislation that shall be considered. The regulations made under the *B.C. Motor Vehicle Act (MVA)* outline the laws that govern the operation of all B.C. road users (including people driving motor vehicles, walking, cycling, and using other active modes), and define the rules of the road and related offenses and sanctions. Any facility under the provincial government's jurisdiction shall comply with the *B.C. MVA*. Pavement markings (such as cross-ride markings), regulations (such as cycling in a crosswalk), and traffic controls (such as bicycle signal heads) are not currently defined in the *B.C. MVA*.

Local and Regional Government Context

The *B.C. MVA* enables local and regional governments to regulate the operation of roads and road users through local bylaws. They may use these powers to allow new and emerging technologies or design elements on roads under their jurisdiction. Local governments (and road users) shall still abide by the *B.C. MVA* on roadways under MOTI jurisdiction within their communities.

An example of a local government using this power is the City of Vancouver, which amended its Road & Traffic Bylaw 2849 in 2017 to allow people cycling to ride in a crosswalk without dismounting, as long as the crosswalk is marked with elephant's feet cross-ride pavement markings – something that is not currently covered in the *B.C. MVA*. Local governments may also enact bylaws and regulations beyond the roadway, governing parks, pathways, and other areas that are not under the jurisdiction of the *B.C. MVA*.

RELATIONSHIP TO EXISTING STANDARDS AND GUIDELINES

The Design Guide does not outline mandatory standards or requirements. Rather, it provides recommended guidelines to assist the provincial government and local and regional governments in applying best practices to the planning, selection, design, implementation, and maintenance of active transportation facilities. The Design Guide is meant to supplement – not replace – any existing local, provincial, or national guidelines, standards, and regulations.

Furthermore, many local and regional governments rely on the provincial, national, and international reference documents listed on the next page. The Design Guide reflects a synopsis of the existing best practices and research that has been compiled with the applicability of the B.C. context in mind as of the time of publication in 2019. In general, the recommendations in the Design Guide align with the current national guidelines set out by the Transportation Association of Canada (TAC) and provincial guidelines. The Design Guide goes beyond the existing guidance in places, adding new material and covering some material in greater depth.

Reference Documents

The Design Guide incorporates relevant and recent research, guidance, best practices, and lessons learned regarding the planning, selection, design, implementation, and maintenance of active transportation facilities from local, provincial, national and international sources.

The reference documents reviewed for the Design Guide reflect current standards and best practices at the time of publication in 2019. However, it is recognized that best practices and research into the planning, selection, design, implementation, and maintenance of active transportation facilities is rapidly evolving. While the provincial government may update the Design Guide periodically to reflect emerging best practices, it is the responsibility of design professionals to ensure these guidelines are applied with an understanding of changing standards.

Definitions of key terminology used throughout the Design Guide are provided in the **Glossary** section at the end of the Design Guide. A complete list of reference documents is provided in the **References** section at the end of the Design Guide. The core reference documents that form the basis of the Design Guide are listed to the right.

Consider the Context

Because the Design Guide was developed based on national and international best practices, some active transportation facilities included in the Design Guide may not currently be allowed under existing federal, provincial, and/or local laws. All designs that are developed throughout the province that reference the Design Guide shall be carefully considered using sound professional judgement and shall consider legislative and site-specific constraints and risks based on local context, as well as the roles and responsibilities of the implementing jurisdiction.

Transportation Association of Canada (TAC) National Guidelines

Pedestrian Crossing Control Guide (2018)

Canadian Guide to Traffic Calming - Second Edition (2018)

Geometric Design Guide for Canadian Roads (2017)

Manual of Uniform Traffic Control Devices for Canada (MUTCDC) - Fifth Edition (2014)

Traffic Signal Guidelines for Bicycles (2014)

Bikeway Traffic Control Guidelines for Canada - Second Edition (2012)

Guide for the Design of Roadway Lighting (2006)

Illumination of Isolated Rural Intersections (2001)

Province of British Columbia Guidelines

B.C. Supplement to TAC Geometric Design Guide 2019 – 3rd Edition (2019)

B.C. Community Road Safety Toolkit (2018)

Design Exception Process (Technical Circular T-05/18) (2018)

Bridge Standards and Procedures Manual (2016)

2016 Standard Specifications for Highway Construction (2016)

Overview of B.C. Highway Functional Classification (2014)

Electrical and Traffic Engineering Manual (2013)

British Columbia's Bicycle Traffic Control Guidelines – Unpublished Draft (2012)

Manual of Standard Traffic Signs & Pavement Markings (2000)

Pedestrian Crossing Control Manual for British Columbia (1994)

Local, Regional, National, and International Guidelines

<i>Alberta Transportation et al.: Alberta Bicycle Facilities Design Guide (2019)</i>	<i>Massachusetts Department of Transportation (MassDOT): Separated Bike Lane Planning & Design Guide (2015)</i>
<i>Federal Highway Administration (FHWA): Bikeway Selection Guide (2019)</i>	<i>Portland Bureau of Transportation: Neighbourhood Greenway Assessment Report (2015)</i>
<i>National Association of City Transportation Officials (NACTO): Don't Give Up At The Intersection - Designing All Ages and Abilities Bicycle Crossings (2019)</i>	<i>Alberta Transportation: Trails in Alberta Highway Rights-of-Way Policies, Guidelines, and Standards (2015)</i>
<i>AC Transit: Multimodal Corridor Guidelines (2018)</i>	<i>CSA: S6-14 – Canadian Highway Bridge Design Code (2014)</i>
<i>BC Transit: BC Transit Infrastructure Design Summary (2018)</i>	<i>NACTO: Urban Bikeway Design Guide (2014)</i>
<i>TransLink: Bus Infrastructure Design Guidelines (2018)</i>	<i>Ontario Traffic Council: Ontario Traffic Manual (OTM) Book 18: Cycling Facilities (2014)</i>
<i>Canadian Standards Association (CSA): B651-18 – Accessible Design for the Built Environment (2018)</i>	<i>Transport for London: London Cycling Design Standards (2014)</i>
<i>Capital Regional District: Capital Region Local Government Electric Vehicle (EV) + Electric Bike (E-Bike) Infrastructure Planning Guide (2018)</i>	<i>City of Boston: Boston Complete Streets – Design Guidelines (2013)</i>
<i>City of Vancouver: Engineering Design Manual (1st ed.) (2018)</i>	<i>City of Cambridge: Bicycle Parking Guide (2013)</i>
<i>Transport Canada: Safety Measures for Cyclists and Pedestrians around Heavy Vehicles (2018)</i>	<i>City of Copenhagen: Focus on Cycling: Copenhagen Guidelines for the Design of Road Projects (2013)</i>
<i>City of Vancouver: Transportation Design Guidelines: All Ages and Abilities Cycling Routes (2017)</i>	<i>Cycling Embassy of Denmark: Collection of Cycle Concepts 2012 (2012)</i>
<i>FHWA: Accessible Shared Streets – Notable Practices and Considerations for Accommodating Pedestrians with Vision Disabilities (2017)</i>	<i>American Association of State Highway and Transportation Officials (AASHTO): Guide for the Development of Bicycle Facilities (2012)</i>
<i>NACTO: Designing for All Ages & Abilities: Contextual Guidance for High-Comfort Bicycle Facilities (2017)</i>	<i>Capital Regional District: Capital Regional District Pedestrian and Cycling Master Plan Design Guidelines (2011)</i>
<i>CROW (Netherlands): Design Manual for Bicycle Traffic (2016)</i>	<i>APBP: Bicycle Parking Guidelines 2nd Edition (2010)</i>
<i>FHWA: Small Town and Rural Multimodal Networks (2016)</i>	<i>BC Transit: Infrastructure Design Guidelines (2010)</i>
<i>NACTO: Global Street Design Guide (2016)</i>	<i>Vélo Québec: Planning and Design for Pedestrians and Cyclists (2010)</i>
<i>Transport Canada: Grade Crossing Standards and Regulations (2016)</i>	<i>Portland State University: Fundamentals of Bicycle Boulevard Planning & Design (2009)</i>
<i>Association of Pedestrian and Bicycle Professionals (APBP): Essentials of Bike Parking (2015)</i>	<i>City of Vancouver: Accessible Street Design (n.d.)</i>
<i>FHWA: Separated Bike Lane Planning and Design Guide (2015)</i>	

DESIGN FLEXIBILITY AND PROFESSIONAL JUDGEMENT

The guidance provided in the Design Guide is based on the premise that the design of transportation infrastructure is contextual; design flexibility is needed to reflect site-specific conditions and to enhance safety and comfort for all travel modes, particularly vulnerable users such as people walking and cycling. No single document can address the range of situations encountered during a design process. It is therefore critical that the guidelines contained in this document are applied by a design professional exercising sound professional judgement. As noted above, some facilities recommended in the Design Guide may not currently be allowed under existing federal, provincial, and/or local laws. All designs that reference the Design Guide shall be carefully considered using sound professional judgement and shall consider legislative and site-specific constraints.

In an effort to provide design flexibility, the Design Guide includes specific, targeted language to describe where, and the extent to which, desirable design parameters may be varied to reflect site-specific challenges.

Design Choice

The Design Guide leaves ample room for design choice and flexibility. Design professionals should adhere to other established guidelines and standards and apply sound judgement, with the safety and comfort of all users of paramount importance.

The following are referenced throughout the document:

- **Desirable:** Desirable dimensions represent the recommended upper limit for most applications to achieve the highest quality facility design and maximize user safety, accessibility, and comfort.
- **Constrained Limit:** Constrained limit dimensions represent the recommended lower limit for most applications to achieve acceptable facility design and maintain user safety, accessibility, and comfort. The constrained limit may not be desirable, but could possibly be required due to site-specific constraints.
- **Minimum:** Minimum dimensions are generally below the constrained limit and should only be considered in exceptional circumstances.

Where it is determined that certain guidelines cannot be achieved due to site-specific circumstances, professional judgement should be applied to satisfy safety, operational, and other facility design considerations. It should be noted that choosing a design that follows minimum or constrained limit width dimensions may require retrofitting at additional cost in the future, especially as user volumes increase. Design professionals should identify situations where relevant guidelines have not been adhered to, document the rationale for doing so, and monitor the safety of any such facility to make changes as needed. TAC provides direction for documenting design exceptions in the *TAC Geometric Design Guide for Canadian Roads*, Chapter 1, Section 1.5.

DESIGN GUIDE ORGANIZATION

The Design Guide is organized into nine overarching sections, each containing a number of chapters covering more detailed topics. Throughout the Design Guide, a number of **Case Studies** have also been included to highlight examples of active transportation facilities and programs, and **Reference Notes** have been provided to summarize recent relevant research. Key pieces of information have been highlighted with colour throughout the guide. The Design Guide sections are introduced below:

- 1 Sections A and B** introduce the Design Guide and set out the planning and design framework, including basic design parameters, universal design considerations, and behavioural and operating characteristics.
- 2 Sections C, D, and E** provide mode-specific guidance covering pedestrian, bicycle, and multi-use facilities.
- 3 Section F** provides an overview of active transportation facilities on roadways under provincial jurisdiction, outlining the province's mandate and describing which facilities are appropriate.
- 4 Section G** provides guidance for intersections and crossings, which are some of the most complex and important parts of an active transportation facility.
- 5 Section H** describes amenities including multi-modal integration, end-point facilities, wayfinding, lighting, , and new modes of transportation.
- 6 Section I** describes important post-implementation considerations, including celebrating and launching new facilities, monitoring and reporting, and maintenance.
- 7 A Glossary** is provided to outline key terminology used throughout the Design Guide.
- 8 References** used throughout the Design Guide are outlined in a reference list.
- 9 Appendix A** contains a full list of stakeholders who participated in the process by attending webinars, completing an on-line survey, and/or providing direct input to the process. Stakeholders included staff from the provincial government, local and regional governments, representatives of other government agencies, Indigenous communities, advocacy groups, professional associations, and academics.
- 10 Appendix B** outlines the signage and pavement markings that are relevant to active transportation facilities.
- 11 Appendix C** provides specific design guidance for various traffic calming and traffic diversion measures.