



Date 2019-04-24

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To: All Manual Holders

Re: *BC Supplement to TAC Geometric Design Guide, 2019 3rd edition*

This manual (in a black three ring binder) replaces the 2007 edition of the *BC Supplement to TAC Geometric Design Guide* (red binder). Refer to the list on the following pages which outlines the most significant updated material.

Designers are advised to read the Preface of the manual which explains the policy of the BC Ministry of Transportation & Infrastructure in using the 2019 edition of the *BC Supplement to TAC Geometric Design Guide* to produce designs for roads under the Ministry's jurisdiction.

The holder of the manual should visit the Internet site of the BC Ministry of Transportation & Infrastructure on a regular basis, and particularly at the start of a design assignment, to verify that their manual is up-to-date.

For any questions or comments on the content of the *BC Supplement to TAC Geometric Design Guide*, contact the following persons:

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Significant Updates for 2019 Edition

Chapter 100 Highway Design Process

- Major revisions to section 100.3.1 Planning Stages; minor revisions throughout the remainder of the chapter
- References to 'CAiCE' have been replaced with 'AutoCAD Civil 3D'

Chapter 300 Alignment:

- Added section under 330.01 on Maximum Superelevation for Auxiliary Truck Climbing Lanes
- Table 330.F - revised SSD and K values due to tail light height change (from 0.38 m to 0.60 m) per 2017 TAC Geometric Design Guide (TAC GDG)

Chapter 400 Cross Sections:

- Fig. 440.A to 440.F - revised Notes regarding pavement thickness, revised gravel shoulder widths
- Fig. 440.D - revised Superelevation Section detail
- Fig. 440.G - revised Barrier Setback on Wall Section, added notes on anchoring barrier

Chapter 500 Low-volume Roads:

- Table 510.B - updated SSD in accordance with 2017 TAC GDG
- Table 510.C - revised to show SSD distances for various grades
- Table 510.D - revised per 2017 TAC GDG Table 2.5.4
- Table 510.I - revised SSD and K values
- NEW Table 510.J Maximum Grades.
- Section 510.07 c) - NEW section on Peace District LVRs taken from Technical Circular T-3/03
- Fig. 510.P - revised to show both Type C or D pavement structure on one cross section.
- NEW Fig. 510.Q Cross Section for Peace District Low-Volume Roads

Chapter 600 Safety Elements:

- NEW section 610.02 Concrete Low Barrier Installations
- Fig. 610.A - some notes have been updated (most significantly Note 2 added under Figure 2)
- NEW section 610.03 Cable Barrier
- NEW Figure 620.B Example of Clear Zone Concept for Ditch Cut
- Fig. 630.B - replaced, based on 2017 TAC GDG Fig. 7.6.12
- Section 640.01 - new explanation on flare layout dimensions
- Table 640.A and B - revised X_A and Y_A dimensions in accordance with 2011 AASHTO *Roadside Design Guide*; revisions to Notes
- Fig. 640.B - replaced, based on 2017 TAC GDG Fig. 7.6.7; additional explanatory notes provided for 80 km/h example calculation
- Fig. 640.C - layout dimensions for opposing flare revised; added Layout Plan annotation in conjunction with Note 3 revisions
- Fig. 640.D - layout dimensions for flare tables revised; added Note 6
- Fig. 640.F - updated nomenclature of metal barrier parts
- Fig. 640.G - revised title; updated information for Barrier Connection Parts List; updated references to SP drawings; removed Bridge Cross Section and Parts List
- Section 650.01 - section on 'Paint Marking for SRS' was removed
- Removed Fig. 650.E Typical Paint Marking for SRS

Chapter 700 Intersections & Accesses:

- Fig. 710.K - revised Detail 'A' reference to concrete pedestals to correspond with the current SP635 drawings in the *Standard Specifications for Highway Construction*
- Fig. 710.L - revised P.L. distances for Stop condition for 60 and 70 km/h
- NEW Fig. 710.M and 710.N - Intersection Layout – Smart Channel Right Turn
- NEW section 720.04 Design Vehicle Over-Length Configurations
- NEW Fig. 720.C to 720.G Design Vehicle Schematics
- Fig. 730.A to 730.C - revised paint lines
- Fig. 730.D - revised notes regarding transverse slopes
- Section 740 Roundabouts - expanded discussion and explanation of design principles throughout including new figures and tables

Chapter 900 Auxiliary Facilities:

- Section 910, 920, 930, 940 - incorporated revised sections issued in July 2014
- Fig. 920.A and 930.A - diverge taper changed to 90 m from 50 m to match dashed lane line pavement marking standards (per Technical Circular T-06/14)
- Section 950 Commercial Vehicle Inspection Sites - added new section released in July 2014
- NEW Section 960 Transit Facilities

Chapter 1000 Hydraulics:

- NEW section 1010.02 Climate Change Adaptation
- NEW Fig. 1010.A Sample Design Criteria Sheet for Climate Change Resilience
- Section 1040.02 - Durability - structural design life increased to 75 years
- NEW Table 1050.C Inlet Capacities - capacities based on old H763GR form

Chapter 1100 Railway Crossings and Utilities:

- Revisions throughout sections 1110.09, 1110.10, 1110.11, 1110.12 and 1110.14
- Revisions in Figures 1110.A., 1110.E, 1110.F and 1110.G

Chapter 1200 Contracts and Drawings:

- Minor revisions throughout, mostly regarding job titles for signatories
- NOTE - section 1220 Sample Contract Drawings will be updated at a later date once more examples of drawings produced using Civil 3D are available. Therefore, the July 2011 sample drawings have been retained.

Chapter 1400 Subdivision Roads:

- References to *Standard Specifications for Highway Construction* changed to *Design Build Standard Specifications for Highway Construction*
- A number of references to the "Ministry Representative" throughout this chapter have been replaced with "Designer" to align with *Design Build Standard Specifications*.
- NEW section 1410.01.02 Engineering. (Previous section 1410.01.02 'Inspections' has moved to section 1410.12)
- Revised section 1410.07.02 Pavement Design Standards in accordance with Technical Circular T-01/15 'Pavement Structure Design Guidelines'
- NEW section 1410.07.04 Geotextile and Geogrid Specifications
- NEW Tables 1420.A.1 and 1420.A.2 (introduced in Technical Circular T-04/12) - have been further revised to distinguish them as Collector and Local Road Design Parameters rather than Rural and Urban. Sight distance and K value parameters have been revised in accordance with the 2017 TAC GDG.
- Fig. 1420.B, 1420.C, and 1420.D - pavement structure revised per Technical Circular T-01/15, added geosynthetic for fine grained subgrade, revisions to some notes
- Revised Table 1420.E per Technical Circular T-04/12
- Fig. 1420.F to 1420.I - titles revised to indicate either Open Shoulder or Curb & Gutter (rather than Urban or Rural)
- Fig. 1420.F - revised paved width per Table 1420.E
- Section 1420.07 - added paragraph on utility setback for curb and gutter locations
- Section 1420.09 - additional wording on requirements for bridges/structures
- NEW Sample Subdivision Design Criteria Sheet and Subdivision Design Drawing Checklists (introduced in Technical Circular T-04/12)

Chapter 1500 Alpine Ski Village Roads:

- References to *Standard Specifications for Highway Construction* changed to *Design Build Standard Specifications for Highway Construction*
- Revised section 1510.07.02 Pavement Design Standards in accordance with Technical Circular T-01/15 'Pavement Structure Design Guidelines'
- Table 1520.B – revised sight distance and K value parameters in accordance with the 2017 TAC GDG
- Fig. 1520.D, 1520.E, and 1520.F - re-ordering and revisions to some notes
- Fig. 1520.K - revised 1st and 4th bulleted notes
- Fig. 1520.L - added note at bottom regarding possibly needing larger diameter culverts

Chapter 1600 Noise Policy

- NEW chapter

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Ministry of
Transportation
and Infrastructure



**BC Supplement to TAC
Geometric Design Guide
2019
3rd Edition**

ISBN: 978-0-7726-7322-0

ACKNOWLEDGEMENTS

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MoTI Section	Preface		TAC Section	
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PREFACE

The ***British Columbia Supplement to TAC Geometric Design Guide*** serves many purposes:

- It provides the designer with specific information and instructions related to the production of Contract Documents and Drawings for the tendering of Construction Projects;
- It provides, in one location, certain operational and procedural instructions pertaining to established BC Ministry of Transportation & Infrastructure's (BC MoTI) process for highway design projects.
- It summarizes geometric design elements as well as other non-geometric standards that are relevant to the designer, complementary to the TAC Geometric Design Guide, and specific to BC MoTI projects. Most of the non-geometric standards are matters of policy while most geometric design elements are governed by basic rules of physics.

The ***British Columbia Supplement to TAC Geometric Design Guide (or BC Supplement)*** explains the preferred recommended practice for use on BC MoTI projects. The latest edition of the ***Transportation Association of Canada's "Geometric Design Guide for Canadian Roads" (or TAC Guide)*** is the principal source for basic design principles. The AASHTO publication ***"A Policy on Geometric Design of Highways and Streets" (or AASHTO Guide)*** is also recommended as a secondary reference.

The guidelines contained in the BC Supplement are not meant to be universally applicable. The dimensions shown are either "typical values" (i.e. those which are most commonly used) or "limiting values", specifically stated as recommended minimum or maximum. The "limiting values" are the limits within which a design will lead to the construction of a safe and economical highway. The designer should also note that the BC Supplement recommends certain values or practices to ensure consistency of design on the Provincial Highway system and to achieve life cycle economies.

The application of geometric elements should be carefully considered within the context of the goals of the project. In the absence of other specific Ministry policy, the geometric elements provided in this Manual are applicable to all Highway Designs, tempered by engineering judgement. The Ministry Executive has endorsed **"Corridor Ambient Geometric Design Elements Guidelines Policy"** (See TAB 13). Highway Projects that fall under this Policy are not constrained to the geometric elements within this Manual or the TAC Guide; however, the designer should still consider these two manuals as references for geometric design. *For all projects, including those governed by the Ambient Corridor Policy, Ministry operational instructions, process and Contract Drawing preparation is still governed by the applicable sections of this Manual.*

Highway Designers are urged to use the **BC Supplement** and the **TAC Guide** in a manner that will not stifle their technical judgement and creativity, particularly with regard to staying away from the "limiting values". The designer should evaluate the safety risks of using several limiting values for a combination of design elements at any one location. Higher values are more appropriate where the incremental life cycle benefits in terms of safety, aesthetics, operational efficiency and flexibility in future upgrading, would offset any present increase in construction costs. It is often preferable to use higher values for those design parameters that govern alignment, as modification at a later stage is more costly. Lower values may be appropriate, where safety and operational efficiencies are not adversely affected; yet construction costs can be decreased. This is particularly relevant on rehabilitation or local improvement projects when the decreased geometric elements are consistent with present geometric elements and the driving experience.

MoTI Section	Preface		TAC Section	
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Manual Format:

The **BC Supplement** is a compilation of BC MoTI recommended design practices and instructions to be used for Ministry projects. These are issued in the form of Technical Documents; each one deals with a specific subject and is cross-referenced to the **TAC Guide** for background information.

The **BC Supplement** is not meant as a complete design guide but as a complement to the **TAC Guide**.

The **British Columbia Supplement to TAC Geometric Design Guide** should be used concurrently with the **TAC Geometric Design Guide for Canadian Roads** as the main references on all BC MoTI design work.

Updates to the **BC Supplement** are effective immediately for all BC MoTI projects that have not yet reached pre-tender meeting stage. Any case for exception must be justified in writing using primarily the design principles contained in the **TAC Guide** (or alternatively the **AASHTO Guide**) and approved by the Ministry Design representative on the project.

Ministry Publication Policy:

- The following Contact is provided for purchasing hard copies of the most current **BC Supplement**.
Queen's Printer Online Publications
ID Stock Number is **7680003586**
Web Page address is: <https://www.crownpub.bc.ca>
- An electronic version of the **BC Supplement** is available from the Ministry of Transportation & Infrastructure's **Geometric Design Guidelines for B.C. Roads** web page. There is no charge for the electronic version. Updates will also be available from this site.
It is the responsibility of the Manual holder to acquire updates from this web page to maintain the currentness of both the hard copy and electronic version of the BC Supplement.
Web Page address is: <http://www2.gov.bc.ca/gov/content/transportation/transportation-infrastructure/engineering-standards-guidelines/highway-design-survey/tac-bc>
- The **TAC Geometric Design Guide for Canadian Roads** must be purchased directly from the Transportation Association of Canada in Ottawa.
Web Page address is: <http://www.tac-atc.ca>

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