

Technical Circular T-04/12

December 4, 2012

To: All HQ Directors, Highways, Transportation Planning & Policy, Partnerships
All Regional Directors
All District Managers, Transportation
All Regional Managers, Engineering
All Regional Highway Design Managers
All Provincial Approval Officers

SUBJECT: SUBDIVISION ROADS -- DESIGN FLEXIBILITY and USE OF A GEOMETRIC DESIGN CRITERIA SHEET

PURPOSE:

The Ministry has received requests for variance or flexibility in road design parameters, similar to that available for its own projects. Both the ministry and the subdivision applicant want roads that are built to support land subdivision, to be suitable for safe operation, efficient maintenance, and appropriate for the use intended. This Technical Circular establishes the range of design parameters, and the procedure for setting those parameters by use of a geometric design criteria sheet for subdivision roads.

BACKGROUND:

British Columbia presents extreme variation in subdivision road design context, in terms of road network, terrain, climate, and land use. Consequently, the Ministry may encounter development proposals that require exceptions to its existing subdivision roads standards in order to design roads appropriate to the situation.

To address the above issues, revised geometric design parameters have been developed to allow for more flexibility. These revised parameters are shown in the appendix as Table 1420.A.1, Table 1420.A.2 and Table 1420.E. These tables will replace Table 1420.A and Table 1420.E in Chapter 1400 of the *BC Supplement to TAC Geometric Design Guide*.

A design criteria process has been developed to aid in reaching agreement on the geometric design parameters to be used for each project.

POLICY:

A Design Criteria Sheet may be applied as part of the Ministry of Transportation and Infrastructure's subdivision approval process. The Design Criteria Sheet (shown in the appendix) will have the "MoT Guidelines Criteria" filled out by Ministry staff based on the attached revised design parameters and the project context. The developer's engineer shall fill in the "Proposed Project Criteria". If variance from the MoT Guidelines Criteria is proposed, the Design Criteria Sheet must be returned for Ministry acceptance, with valid engineering justification for the proposal.

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APPENDIX

Table 1420.A.1 – Rural Design Parameters

Road Classification	Local Roads***			Collector Roads			
	30	40	50	50	60	70	80
Speed (km/h)							
Minimum Radius, (metres)*	20	40	75	75	120	190	250
Minimum stopping sight distance, (metres)	30	45	65	65	85	110	140
Decision Sight Distance, DSD (metres)**	40 - 110	55 - 110	75 - 145	75 - 145	95 - 175	125 - 200	155 - 230
K value, crest vertical curves, taillight height	2	4	7	7	13	23	36
K value, sag vertical curves, headlight control	4	7	12	12	18	25	32
Minimum overhead clearance, (metres)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Maximum desirable grade in percent*	10	10	10	8	8	8	8

Rural parameters based on TAC Superelevation Rate for Urban Design - E max: 0.06 m/m, normal crown: 0.02 m/m.

Table 1420.A.2 – Urban Design Parameters

Road Classification	Local Roads***			Collector Roads		
	30	40	50	50	60	70
Speed (km/h)						
Minimum Radius, (metres)*	30	65	80	80	130	200
Superelevation that radius is based on (%)	RC	RC	4	4	4	4
Minimum stopping sight distance, (metres)	30	45	65	65	85	110
Decision Sight Distance, DSD (metres)**	40-110	55-110	75-145	75-145	95-175	125-200
K value, crest vertical curves, taillight height	2	4	7	7	13	23
K value, sag vertical curves, headlight control	4	7	12	12	18	25
Minimum overhead clearance, (metres)	5.0	5.0	5.0	5.0	5.0	5.0
Maximum desirable grade in percent*	10	10	10	10	10	10

Urban parameters based on TAC Superelevation Rate for Urban Design - E_{max}: 0.04 m/m, normal crown: -0.02 m/m,
RC = reverse crown: +0.02 m/m

*Avoid the combined use of maximum grade and minimum radius. Maximum grades are to be reduced by 1% for each 30 metres of radius below 150 metres.

** Lower DSD values are appropriate at intersections within a subdivision, while the higher values should be used at more complex intersections. DSD along numbered highways may even be higher.

*** This includes cul-de-sacs, frontage roads, and backage roads.

Table 1420.E – Finished Top and Shoulder Widths

Collector				
Rural or Urban (open shoulder)^a (Fig. 1420.F)		Urban (curb & gutter) (Fig. 1420.H)		
Min. Top Width	Min. Paved Width	Top Width	Paved Width	Parking
10.0	7.0	10.0	8.2	one side
1.5 gravel shoulder		0.6 curb plus 0.3 gravel shoulder		
Local				
Rural or Urban (open shoulder)^a (Fig. 1420.G)		Urban (curb & gutter) (Figs. 1420.H and I)		
Min. Top Width	Min. Paved Width	Top Width	Paved Width	Parking
8.0	7.0 ^b	11.8	10.0	both sides
		10.0	8.2	one side
0.5 gravel shoulder		0.6 curb plus 0.3 gravel shoulder		

- a) For open shoulder roadways, the minimum top and paved widths may be increased to suit district preferences at the discretion of the Ministry Representative. In conjunction with increased paved widths, gravel shoulder widths may be reduced but may be no less than 0.5 m wide. The specified top width must be maintained.
- b) In some circumstances, a paved width less than 7.0 m may be allowed at the discretion of the Ministry Representative. In conjunction with decreased paved widths, gravel shoulder widths must be increased to maintain the specified top width.



Project:
eDAS File #:
Your File #:

Design Element	Present Conditions	MoT Guidelines Criteria	Proposed Project Criteria	Achieved Project Criteria	Comments / Notes *
Road Classification		Urban Local			
Posted Speed	km/h	50 km/h	km/h	km/h	
Design Speed	km/h	50 km/h	km/h	km/h	
Curb & Gutter or Open Shoulder		Open Shoulder			
Basic # of Lanes		2			
Minimum Horiz. Curve Radius	m	80 m	m	m	T 1420.A.1 or A.2
Min K Factor on Vertical Curve	Crest	7			T 1420.A.1 or A.2
	Sag	12			
Maximum Grade	%	10%	%	%	T 1420.A.1 or A.2
Maximum Superelevation	%	4%	%	%	T 1420.A.1 or A.2 S 1420.05.08
Minimum Stopping Sight Distance	m	65 m	m	m	T 1420.A.1 or A.2
Finished Top Width	m	8.0 m	m	m	T 1420.E
Paved Width	m	7.0 m	m	m	T 1420.E
Gravel Shoulder Width	m	0.5 m	m	m	T 1420.E
Cul-de-sac or Hammerhead (Fig. 1420.F – L)		Cul-de-sac			Fig. 1420.G
Clear Zone - Offset Width	m	4 m	m	m	S 620.13
Minimum Right-of-Way Width	m	20 m	m	m	S 1420.05
Catchment Width in Rock Cuts	m	0.6 m	m	m	F 1420.D
AADT/SADT (xxxx <i>Design Year</i>)					
Truck Volume	%	%	%	%	
Design Vehicle		I-BUS			
Intersection Type (Local, Collector, Arterial, T Intersection, Protected T) (Fig. 710.D – H)		Collector			S 710
Driveway Access Type (Residential or Commercial; Fig. 1420.O or BC Supp. Sect. 730 Type 1A, 1B, 2A, 2B)		Commercial			
		Type 1B			

* - Justification for deviation from guidelines and proposed mitigation must be referenced by footnote number and documented on the following page(s). [Notes Legend: F = Figure, S = Section, T = Table]

MoT CRITERIA: District Development Approvals: _____ Date: _____
(Print Name)

PROPOSED CRITERIA: Engineer of Record: _____ Date: _____
(if proposed or achieved criteria is different than MoT criteria) (Print Name)

ACCEPTED BY: Regional Mgr, Engineering: _____ Date: _____
(for exceptions to standards) Prop. Achvd (Signature)

ACCEPTED BY: Chief Engineer: _____ Date: _____
(for major exceptions to standards) (Signature)

Project:
eDAS File #:
Your File #:

Comments / Notes:

SAMPLE