

Design Element		Manual Section	Area Road		Circulation Road	Primary Access Road	
			1-Lane (1a)	2-Lanes (1b)	2-Lanes (1b)	2-Lanes (1b)	
Design Controls	Design Year Traffic (Current AADT)	40-2.0	< 100	≥ 100	≥ 100	≥ 100	
	Design Forecast Year	40-2.0	Current				
	Design Speed (km/h)	40-3.0	20-30	20-30	40-60	50-70	
	Access Control	40-5.0	None (2)				
	Level of Service	40-2.0	Desirable: B; Minimum: D				
Cross Section Elements	Travel Lane	Width	51-6.02(05), 45-1.0	3.6 to 4.2 m (3)	2.7 to 3.6 m	3.0 or 3.3 m	3.3 or 3.6 m
		Typical Surface Type		HMA / Aggregate		HMA	HMA
	Shoulder	Width (4)	51-6.02(05), 45-1.0	0.3 m Aggregate /Earth	0.6 m	0.6 to 1.2m	0.6 to 1.2 m
		Typical Surface Type		Aggregate/Earth			
	Cross Slopes	Travel Lane	45-1.0	2% if HMA; 6% if Aggregate			
		Shoulder		6% if Aggregate; 8% if Earth			
	Auxillary Lane	Lane Width	51-6.02(05), 45-1.0	Desirable: 3.0 m			
		Shoulder Width		Desirable: 0.6 m; Minimum: 0.3 m			
	Obstruction Free Zone (5)		51-6.02(06)	Desirable: 1.0 m	Desirable: 2.0 m	Desirable: 3.0 m	
	Side Slopes	Cut	Foreslope	51-6.02(05), 45-3.0	Desirable: 4:1; Maximum: 1½:1		
			Ditch Width		Minimum: 0 m (V-Ditch)		
			Backslope		Desirable: 4:1; Maximum: 1½:1		
Fill		Desirable: 4:1; Maximum: 1½:1					
Bridges	New or Reconstructed Bridge	Structural Capacity	Part VI	HS-20			
		Clear Roadway Width	45-4.0	Travelway + 1.5 m		Travelway + Shoulders	
	Existing Bridge to Remain in Place	Structural Capacity	Part VI	HS-15			
		Clear Roadway Width	45-4.0	Minimum: Travelway			
	Vertical Clearance (Recreational Road Under)	New or Replaced Overpassing Bridge	44-4.0	4.45 m			
		Existing Overpassing Bridge		4.30 m			
Vertical Clearance (Recreational Road Over Railroad) (6)		Ch. 69	7.00 m				

GEOMETRIC DESIGN CRITERIA FOR RECREATIONAL ROAD

Figure 51-6B

Design Element			Manual Section	20 km/h	30 km/h	40 km/h	50 km/h	60 km/h	70 km/h	
Alignment Elements	Stopping Sight Distance	2-Lane (1b)	51-6.02(02), 42-1.0	20 m	35 m	50 m	65 m	85 m	105 m	
		1-Lane (1a)		40 m	70 m	n/a	n/a	n/a	n/a	
	Passing Sight Distance		42-3.0	n/a	n/a	n/a	345 m	410 m	485 m	
	Intersection Sight Distance		46-10.0	45 m	65 m	85 m	105 m	130 m	150 m	
	Minimum Radius (e=4%)		51-6.02(04), 43-2.0	15 m	35 m	60 m	100 m	150 m	215 m	
	Superelevation Rate		51-6.02(04), 43-3.0	n/a	e _{max} = 4%					
	Horizontal Sight Distance		51-6.02(04), 43-4.0	(7)						
	Vertical Curvature (K-values)	Crest	2-Lane (1b)	44-3.0	1	2	4	7	11	17
			1-Lane (1a)		2	7	n/a	n/a	n/a	n/a
		Sag	2-Lane (1b)		3	6	9	13	18	23
			1-Lane (1a)		6	13	n/a	n/a	n/a	n/a
	Maximum Grade	Level		44-1.02	8%	8%	7%	7%	7%	7%
Rolling		12%	11%		10%	10%	9%	8.5%		
Minimum Grade			44-1.03	Desirable: 0.5%; Minimum: 0.0%						

GEOMETRIC DESIGN CRITERIA FOR RECREATIONAL ROAD

Figure 51-6B (Continued)

GEOMETRIC DESIGN CRITERIA FOR RECREATIONAL ROAD
Footnotes to Figure 51-6B

1. 1-Lane/2-Lanes. For Section 51-6.0 only, the following will apply:
 - a. The criteria for one-lane refer to two-directional traffic on a one-lane road.
 - b. The criteria for two-lanes refer to two-lane roads or a one-way roadway with either one or two lanes.
2. Access Control. Generally, access to private individuals is not provided within the recreational area. However, access may be provided on the primary access road.
3. Travel Lane Width. A total roadway width greater than 4.2 m is not recommended for a one-lane road. For a one-lane road, the travel lane width is predicated upon the type of vehicle expected to use the facility.
4. Shoulder Width. Where a barrier is used, the graded width of shoulder should desirably be increased by 0.6 m.
5. Obstruction-Free Zone. The minimum obstruction-free zone will be the shoulder width.
6. Vertical Clearance (Recreational Road Over Railroad). See Chapter Sixty-nine for additional information on railroad clearance under a highway.
7. Horizontal Sight Distance. For a given design speed, the necessary middle ordinate will be determined by the minimum radius and the stopping sight distance which applies at the site.