

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 (mph)		40-3.0	10-20	10-20	25-35	30-45
	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	12 to 14 ft	9 to 12 ft	10 or 11 ft	11 or 12 ft
		Typical Surface Type		HMA / Aggregate		HMA	HMA
	Shoulder	Width (4)	51-6.02(05), 45-1.0	1 ft	2 ft	2 to 4 ft	2 to 4 ft
		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			
	Auxiliary Lane	Lane Width	51-6.02(05), 45-1.0	Desirable: 10 ft			
		Shoulder Width		Desirable: 2 ft; Minimum: 1 ft			
	Obstruction-Free Zone (5)			51-6.02(06)	Desirable: 3 ft	Desirable: 6.5 ft	Desirable: 10 ft
	Side Slopes	Cut	Foreslope	51-6.02(05), 45-3.0	Desirable: 4:1; Maximum: 1½:1		
			Ditch Width		Minimum: 0 ft (V-Ditch)		
			Backslope		Desirable: 4:1; Maximum: 1½:1		
		Fill	Desirable: 4:1; Maximum: 1½:1				
Bridge	New or Reconstructed Bridge	Structural Capacity	60-3.02	HS-20			
		Clear-Roadway Width	45-4.0	Travelway + 5 ft		Travelway + Shoulders	
	Existing Bridge to Remain in Place	Structural Capacity	60-3.02	HS-15			
		Clear-Roadway Width	45-4.0	Minimum: Travelway			
	Vertical Clearance (Recreational Road Under)	New or Replaced Overpassing Bridge	44-4.0	15 ft			
		Existing Overpassing Bridge		14.5 ft			
Vertical Clearance (Recreational Road Over Railroad) (6)			Ch. 69	23 ft			

GEOMETRIC DESIGN CRITERIA FOR RECREATIONAL ROAD

Figure 51-6B

Design Element			Manual Section	15 mph	20 mph	25 mph	30 mph	40 mph	50 mph	
Alignment Elements	Stopping Sight Distance	2-Lane (1b)	51-6.02(02), 42-1.0	80 ft	115 ft	155 ft	200 ft	250 ft	305 ft	
		1-Lane (1a)		160 ft	230 ft	n/a	n/a	n/a	n/a	
	Passing Sight Distance		42-3.0	n/a	n/a	n/a	1090 ft	1470 ft	1835 ft	
	Intersection Sight Distance		46-10.0	170 ft	225 ft	280 ft	335 ft	445 ft	555 ft	
	Minimum Radius (e=4%)		51-6.02(04), 43-2.0	70 ft	125 ft	205 ft	300 ft	565 ft	930 ft	
	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-value)	Crest	2-Lane (1b)	44-3.0	3	7	12	9	16	25
			1-Lane (1a)		12	25	n/a	n/a	n/a	n/a
		Sag	2-Lane (1b)		10	17	26	37	49	64
			1-Lane (1a)		27	44	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 or 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 a two-lane roadway or a one-way roadway with either one or two lanes.
2. Access Control. 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 14 ft 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 2 ft.
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.