

## GEOMETRIC DESIGN STANDARDS FOR RURAL PRINCIPAL ARTERIAL SYSTEM (GS-1M)

	TERRAIN	DESIGN SPEED (km/h)	MINIMUM RADIUS (METERS)	(6)	MIN. WIDTH OF LANE	(1)		(2)		(3)	(4)	(5)
				STOPPING SIGHT DISTANCE (METERS)		MINIMUM WIDTH OF TOTAL SHOULDERS (Graded + Paved)		PAVED SHOULDER WIDTH				
				MIN.	FILL		CUT		RT.	LT.		
FREEWAYS	LEVEL	110	502	220	3.6 m	5.2 m	4.3 m	3.6 m	1.2 m	3.6 m	CS-4B	2 THRU LANES SAME DIRECTION = 1.5m + PAVE. WIDTH + 4.3m 3 OR MORE THRU LANES SAME DIRECTION = 4.3m + PAVE. WIDTH + 4.3m
	ROLLING	100	394	185								
	MOUNTAINOUS	80	230	130								
OTHER PRINCIPAL ARTERIALS	LEVEL	110	502	220	3.6 m	3.9 m	3.0 m	2.4 m	1.2 m	3.0 m	CS-4 OR 4B	UNDIVIDED & DIVIDED 3 OR MORE THRU LANES SAME DIRECTION = 3.0m + PAVE. WIDTH + 3.0m
		100	394	185							CS-4 OR 4E	
	ROLLING	100	394	185								
		80	230	130								
	MOUNTAINOUS	80	230	130								
		60	124	85						1.8 m	CD-3 OR 3B	

### GENERAL NOTES

**Freeways** - A design speed of 110 km/h should be used for Rural Freeways. Where terrain is mountainous a design speed of 100 km/h or 80 km/h, which is consistent with driver expectancy, may be used. All new and major reconstructed Interstate facilities will have a 110 km/h design speed unless a lower design speed is approved by the Location and Design Engineer and FHWA.

**Other Principle Arterials** - A design speed of 60 to 110 km/h should be used depending on terrain, driver expectancy and whether the design is constructed on new location or reconstruction of an existing facility. An important safety consideration in the selection of one of the lower design speeds in each range is to have a properly posted speed limit which is enforced during off peak hours.

Incorporated towns or other built-up areas, Urban Standard GS-5(M) may be used for design. "Built-up" is where there is sufficient development along the roadway that justifies a need to channelize traffic into and out of properties utilizing curb and gutter.

Standard TC-5.01R(M) (2001 AASHTO Green Book) superelevation based on 8% maximum is to be used for all Rural Principle Arterials.

Clear Zone and Recoverable Area information can be found in Appendix A(M), Section A-2(M) of the Road Design Manual.

If medians are included, see [Section 2E](#) of the Road Design Manual

For maximum grades relative to terrain and design speed, see AASHTO Green Book, Chapter 7, Exhibit 7-2. For Freeways, see Chapter 8, Exhibit 8-1.

### FOOTNOTES

- (1) Shoulder widths shown are for right shoulders and independently graded median shoulders with no additional width necessary for guardrail situation. On non-Interstate a 2.4 m graded median shoulder will be provided when the mainline is 4 lanes (both directions). For 6 or more lanes, the median shoulder provided will be the same as that shown for independent grading. On Freeways, if truck traffic is less than 250 DDHV, the minimum width of total shoulder should be 4.6 m for fills and 3.6 m for cuts.
- (2) When the mainline is 6 or more lanes, the left paved shoulder width should be the same as the right paved shoulder. On Freeways, if truck traffic is less than 250 DDHV, the minimum right paved shoulder width should be 3.0 m.
- (3) Ditch slopes to be 6:1 - 3.0 m and 3.6 m widths and 4:1 1.8 m width. **A hydraulic analysis is necessary to determine actual depth requirement.**
- (4) Additional or modified slope criteria to apply where shown on typical sections.
- (5) Vertical clearance at roadway underpasses for new and reconstructed bridges is to be 5.05 m (0.3 m additional clearance required for non-vehicular overpasses). 4.2m shoulder on bridges may be reduced to 3.6m minimum when truck traffic is less than 250 DDHV.
- (6) **For additional information on sight distance requirements on grades of 3 percent or greater, see Exhibit 3-2 of the 2004 AASHTO Green Book.**

**FIGURE A - 1 - 1M\***