

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

	TERRAIN	DESIGN SPEED (MPH)	MINIMUM RADIUS	(6)	MIN. WIDTH OF LANE	(1)		(2)		(3)	(4)	(5)			
				STOPPING SIGHT DISTANCE		MINIMUM WIDTH OF TOTAL SHOULDER (Graded + Paved)		PAVED SHOULDER WIDTH					MINIMUM WIDTH OF DITCH FRONT SLOPE	SLOPE	NEW AND RECONSTRUCTED MINIMUM BRIDGE WIDTHS AND VERTICAL CLEARANCES
				Min.		FILL	CUT	RT.	LT.						
FREEWAYS	LEVEL	75	2215'	820'	12'	17'	14'	12'	4'	12'	CS-4B	2 THRU LANES SAME DIRECTION = 6' + PAVE. WIDTH + 14' 3 OR MORE THRU LANES SAME DIRECTION = 14' + PAVE. WIDTH + 14'			
		70	1821'	730'											
	ROLLING	60	1204'	570'											
	MOUNTAINOUS	50	760'	425'									CS-4E		
OTHER PRINCIPAL ARTERIALS	LEVEL	70	1821'	730'	12'	13'	10'	8'	4'	10'	CS-4 OR 4B	UNDIVIDED & DIVIDED 3 OR MORE THRU LANES SAME DIRECTION = 10' + PAVE. WIDTH + 10'			
		60	1204'	570'						CS-4 OR 4E					
	ROLLING	60	1204'	570'											
		50	760'	425'											
	MOUNTAINOUS	50	760'	425'						6'	CS-3 OR 3B		2 THRU LANES (DIVIDED) SAME DIRECTION = 6' + PAVE. WIDTH + 10'		
		40	465'	305'											

GENERAL NOTES

Freeways - A design speed of **75** mph should be used for Rural Freeways. Where terrain is mountainous a design speed of 60 mph or 50 mph, which is consistent with driver expectancy, may be used. All new and major reconstructed Interstate facilities will have a **75** mph design speed unless a lower design speed is approved by the Location and Design Engineer and FHWA.

Other Principal Arterials - A design speed of 40 to 70 mph 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 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 (2001 AASHTO Green Book) superelevation based on 8% maximum is to be used for all Rural Principal Arterials.

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

If medians are included, see [Section 2E-3 of Chapter 2E](#) of the [Road Design Manual](#).

For additional information on roadway widths and maximum grades relative to terrain and design speed, see AASHTO Green Book, Chapter 7, Exhibit 7-2 and 7-3; 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 situations. On non-Interstate, an 8' 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 shall be 15' for fills and 12' 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 shall be 10'.
- (3) Ditch slopes to be 6:1 - 10' and 12' widths and 4:1 - 6' 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 16'-6" (1' additional clearance required for non-vehicular overpasses). 14' Shoulders on bridges may be reduced to 12' 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 - 1*