

GEOMETRIC DESIGN STANDARDS FOR URBAN MINOR ARTERIAL STREET SYSTEM (GS-6)

	DESIGN SPEED (MPH)	MINIMUM RADIUS		(11) MINIMUM STOPPING SIGHT DISTANCE	(10) MIN. WIDTH OF LANE	(3) STANDARD CURB & CURB & GUTTER	BUFFER STRIP WIDTH		(4) MINIMUM SIDEWALK WIDTH	(5) SLOPE	NEW AND RECONSTRUCTED MINIMUM BRIDGE WIDTHS AND VERTICAL CLEARANCES	
		U	ULS				LT.	RT.				
STREETS WITH CURB & GUTTER	60	1204'	-	570'	12'	CG-3 / CG-7	(9)	5'	2:1	See Footnote (6)		
	50	929'	-	425'								
	45	713'	795'	360'	(1) (2) 11'	(13) (14) CG-2 / CG-6						
	40	536'	593'	305'								
	35	373'	408'	250'								
	30	251'	273'	200'								
	DESIGN SPEED (MPH)	MINIMUM RADIUS		(11) MINIMUM STOPPING SIGHT DISTANCE	(10) MIN. WIDTH OF LANE	(12) (15) MINIMUM WIDTH OF TOTAL SHOULDERS (GRADED + PAVED) CUT & FILL		(7) MINIMUM PAVED SHOULDER WIDTH	(8) MINIMUM WIDTH OF DITCH FRONT SLOPE		(5) SLOPE	
		U	ULS			With GR	Without GR					LT.
(12) STREETS WITH SHOULDER DESIGN	60	1204'	-	570'	12'	14'	10'	4'	8'		10' @ 6:1	2:1
	50	929'	-	425'								
	45	713'	795'	360'	(1) (2) 11'						6' @ 4:1	
	40	536'	593'	305'								
	35	373'	408'	250'								
	30	251'	273'	200'								

GENERAL NOTES*

Design Speeds for Urban Arterials generally range from 40 to 60 mph and occasionally may be as low as 30 mph. The lower (40 mph and below) speeds apply in the central business district and intermediate areas. The higher speeds are more applicable to the outlying business and developing areas.

Standard TC-5.11R (Rural) superelevation based on 8% maximum is to be used for 60 mph design speed.

Standard TC-5.11U (Urban) superelevation based on 4% maximum is to be used for design speeds less than 60 mph.

Standard TC-5.11ULS (Urban Low Speed) superelevation based on 2% maximum may be used for design speeds less than or equal to 45 mph.

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 minimum widths for roadway and right of way used within incorporated cities or towns to qualify for maintenance funds see [Code of Virginia Section 33.2-319](#).

For maximum grades relative to terrain and design speed, see AASHTO Green Book, Chapter 7, Section 7.3.2, page 7-29, Table 7-4.

FOOTNOTES

- (1) Lane width to be 12' at all interchanges.
- (2) Where heavy truck volume (equal to or greater than 10%) or bus traffic is anticipated, an additional 1 foot width should be considered.

- (3) Or equivalent City or Town design.
- (4) A width of 8' or more may be needed in commercial areas.
- (5) Slopes 3:1 and flatter shall be used when the right of way is behind the sidewalk (or sidewalk space) in residential or other areas where slopes will be maintained by the property owner.
- (6) See [Manual of the Structure and Bridge Division – Volume V – Part 2 Design Aids – Chapter 6 Geometrics](#).
- (7) Where the mainline is 6 or more lanes, both right and median paved shoulders shall be 8' in width. For additional guidance on shoulder widths/reductions, see AASHTO Green Book, Chapter 7, Section 7.2.11, page 7-13.
- (8) A hydraulic analysis is necessary to determine actual depth requirement.
- (9) For buffer strip widths see Appendix A(1), Section A(1)-1 Bicycle & Pedestrian Facility Guidelines.
- (10) Situations having restrictions on trucks may allow the use of lanes 1 foot less in width.
- (11) For additional information on sight distance requirements on grades of 3 percent or greater, see AASHTO Green Book, Chapter 3, Section 3.2.2, page 3-2, Table 3-2.
- (12) For information on reduced shoulder widths, see AASHTO Green Book, Chapter 7, Section 7.2.3, page 7-5, Table 7-3.
- (13) Where bicycle accommodation is next to curb or curb and gutter, mountable curb (CG-3) or mountable curb and gutter (CG-7) shall be used for design speeds of 45 mph and below.
- (14) See Appendix J for guardrail installation adjacent to curb or curb and gutter.
- (15) Total shoulder widths include the paved portion and are applicable to the left and right shoulder.

FIGURE A - 1 - 6