

GEOMETRIC DESIGN STANDARDS FOR URBAN COLLECTOR STREET SYSTEM (GS-7)

	DESIGN SPEED (MPH)	MINIMUM RADIUS		(10) MINIMUM STOPPING SIGHT DISTANCE	(13) MINIMUM 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							
STREET WITH CURB & GUTTER	50	929'	-	425'	12'	CG-3 / CG-7	(9)	5'	2:1	
	45	713'	795'	360'	(1) (2) (12) 11'	(14) CG-2 / CG-6				
	40	536'	593'	305'						
	35	373'	408'	250'						
	30	251'	273'	200'						
	DESIGN SPEED (MPH)	MINIMUM RADIUS		(10) MINIMUM STOPPING SIGHT DISTANCE	(13) MINIMUM WIDTH OF LANE	(7) (11) MINIMUM WIDTH OF GRADED SHOULDERS CUT & FILL		(6) MINIMUM WIDTH OF DITCH FRONT SLOPE	(5) SLOPE	See Footnote (8)
		U	ULS			With GR	Without GR			
(11) STREET WITH SHOULDER DESIGN	50	929'	-	425'	12'	12'	8'	6' @ 4:1	2:1	
	45	713'	795'	360'	(1) (2) (12) 11'					
	40	536'	593'	305'						
	35	373'	408'	250'						
	30	251'	273'	200'				4' @ 3:1		

GENERAL NOTES

A minimum design speed of 30 mph or higher should be used for collector streets, depending on available right of way, terrain, adjacent development and other area controls.

In the typical street grid, the closely spaced intersections usually limit vehicular speeds and thus make the effect of design speed of less significance. Nevertheless, the longer sight distances and curve radii commensurate with design speeds higher than the value indicated result in safer highways and should be used to the extent practicable.

Standard TC-5.11U (Urban) superelevation based on 4% maximum.

Standard TC-5.11ULS (Urban-Low Speed) superelevation based on 2% maximum may be used with a design speed of 45 mph or less.

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](#).

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

For maximum grades relative to terrain and design speed, see AASHTO Green Book, Chapter 6, Section 6.3.1, page 6-12, Table 6-8.

FOOTNOTES

- (1) Lane width should be 12' in industrial areas. Where Right of Way is restricted 11' lanes may be used in industrial areas. (See AASHTO Green Book Chapter 6, Section 6.2.2 and 6.3.2, page 6-5, Table 6-5).
- (2) Lane width to be 12' at all interchange locations.
- (3) Or equivalent City or Town Design.
- (4) 8' or more may be needed in commercial areas.

- (5) 3:1 and flatter slopes shall be used when right of way is behind the sidewalk (or sidewalk space) in residential or other areas where the slopes will be maintained by the property owner.
- (6) A hydraulic analysis is necessary to determine actual depth requirement.
- (7) When Design year ADT exceeds 2000 VPD, with greater than 10% total truck and bus usage: Provide 4' wide paved shoulders (right and left) when the graded shoulder is 5' wide or greater. Provide 5' wide paved shoulder when design year ADT exceeds 2000 VPD, with 5% or more truck and bus usage and the route is an AASHTO approved U.S. Bicycle Route (1, 76 or 176) or designated as a bicycle route on a locally adopted transportation plan. All shoulders not being paved will have the mainline pavement structure extended 1', on the same slope, into the shoulder to eliminate raveling at the pavement edge. (See Standard GS-11 for shoulder design).
- (8) See [Manual of the Structure and Bridge Division – Volume V – Part 2 Design Aids – Chapter 6 Geometrics](#).
- (9) For buffer strip widths see Appendix A(1), Section A(1)-1 Bicycle & Pedestrian Facility Guidelines.
- (10) 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 3-3, Table 3-2.
- (11) Where shoulders are provided, roadway widths in accordance with Table 6-5, page 6-6 should be considered. (See AASHTO Green Book, Chapter 6, Section 6.3.2, page 6-13.)
- (12) Where heavy truck volume (equal to or greater than 10%) or bus traffic is anticipated, an additional 1 foot width should be considered.
- (13) Situations having restrictions on trucks may allow the use of lanes 1 foot less in width.
- (14) 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.

FIGURE A - 1 - 7*