

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

	DESIGN SPEED (km/h)	MINIMUM RADIUS		(11) STOPPING SIGHT DISTANCE	MIN. WIDTH OF LANE	(3) STANDARD CURB & GUTTER (10)	BUFFER STRIP WIDTH	(4) MINIMUM SIDEWALK WIDTH	(5) SLOPE	(8) (9) NEW AND RECONSTRUCTED MINIMUM BRIDGE WIDTHS AND VERTICAL CLEARANCES
		U	ULS	MIN.						
STREETS WITH CURB & GUTTER	80	280	-	130	3.6m	CG-7	(10)	1.5m	2: 1	SAME AS CURB TO CURB OF APPROACHES
	70	222	227	105	(1) (2) 3.3m					
	60	150	149	85						
	50	99	94	65	CG-6					
	DESIGN SPEED (km/h)	MINIMUM RADIUS		STOPPING SIGHT DISTANCE	MIN. WIDTH OF LANE	(7) (12) MINIMUM WIDTH GRADED SHOULDERS		(6) MINIMUM WIDTH OF DITCH FRONT SLOPE	(5) SLOPE	(8) (9) (12) NEW AND RECONSTRUCTED MINIMUM BRIDGE WIDTHS AND VERTICAL CLEARANCES
		U	ULS	MIN.		FILL W/GR	CUT & FILL			
(12) STREETS WITH SHOULDER DESIGN	80	280	-	130	3.6m	3.3m	2.4m	1.8m	2: 1	2.4m + PAVEMENT WIDTH + 2.4m
	60	150	149	85	(1) (2) 3.3m					
	50	99	94	65						

**GENERAL NOTES**

A minimum design speed of 50 km/h 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-5.01U (M) (Urban) (2001 AASHTO Green Book) superelevation based on 4% maximum.

Standard TC-5.04ULS (M) (Urban-Low Speed) (2004 AASHTO Green Book) superelevation based on 2% maximum may be used with a design speed of 70 km/h 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 33.1-41.1](#).

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

Maximum grades of short lengths (less than 150 m) and one-way down grades may be 2% steeper.

For maximum grades relative to terrain and design speed, see AASHTO Green Book, Chapter 6, Exhibit 6-8.

**FOOTNOTES**

(1) 3.6m when Design year ADT exceeds 2000. Where feasible, lanes should be 3.6m in industrial areas; however, where available or attainable R/W imposes severe limitations 3.3m lanes can be used in industrial areas., 3.0m lanes can be used in residential areas, based upon design speed and traffic volumes. (See AASHTO Green Bk., Exhibit 6-5).

- (2) Lane width to be 3.6 m at all interchange locations.
- (3) Or equivalent City or Town Design.
- (4) A width of 2.4 m 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) Ditch slopes to be 4:1 - 1.8 m width and 3:1 - 1.2 m width. A hydraulic analysis is necessary to determine actual depth requirement.
- (7) When Design year ADT exceeds 2000VPD, with greater than 5% total truck and bus usage: Provide 1.2 m wide paved shoulders when the graded shoulder is 1.5 m wide or greater. All shoulders not being paved will have the mainline pavement structure extended 0.3 m, on the same slope, into the shoulder to eliminate raveling at the pavement edge (See Standard GS-11 for shoulder design).
- (8) Where the approach roadway width (traveled way plus shoulder) is surfaced, that surfaced width shall be carried across all structures if that width exceeds the width shown in this table.
- (9) Vertical clearance at roadway underpasses for new and reconstructed bridges is to be 5.05 m desirable and 4.45 m minimum (0.3 m additional clearance required for non-vehicular overpasses).
- (10) For buffer strip widths see [Appendix A, Section A-5 Bicycle & Pedestrian Facility Guidelines](#).
- (11) For additional information on sight distance requirements on grades of 3 percent or greater, see Exhibit 3-2 of the 2004 AASHTO, Green Book.
- (12) For information on reduced shoulder widths, see Exhibit 6-5 of the 2004 AASHTO Green Book.

**FIGURE A - 1 - 7M\***