TABLE 5.8 Vehicle Dimensions and Turning Radii

Vehicle	Length	Width	Wheel base	R*	R_1	D
Small car	15 ft, 6 in	5 ft, 10 in	9 ft, 2 in	20 ft	10 ft, 11 in	10 ft
Compact car	16 ft, 11 in	6 ft, 3 in	10 ft	21 ft, 6 in	12 ft	11 ft
Standard car	18 ft	6 ft, 10 in	10 ft, 8 in	22 ft, 6 in	12 ft, 8 in	11 ft, 6 in
Large car	19 ft	6 ft, 10 in	11 ft	23 ft	13 ft	12 ft
City bus	40 ft	8 ft, 6 in	-	53 ft, 6 in	33 ft	22 ft, 6 in
School bus	40 ft	8 ft	-	43 ft, 6 in	26 ft	19 ft, 6 in
Ambulance	20 ft, 11 in	7 ft	-	30 ft	18 ft, 9 in	13 ft, 3 in
Limousine	22 ft, 6 in	6 ft, 6 in	-	29 ft	16 ft	16 ft
Trash truck	29 ft	8 ft	-	32 ft	18 ft	16 ft
UPS truck	23 ft, 2 in	7 ft, 7 in	-	28 ft	16 ft	14 ft
Fire truck	31 ft, 6 in	8 ft, 4 in	-	48 ft	34 ft, 6 in	15 ft, 6 in

*The R value of the vehicle selected as the design vehicle should not exceed the radii of a paved circle.
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street design and for the nature of the area in which the street is situated. Collector streets should be designed for larger vehicles such as buses and tractor trailers, and residential streets should be designed for smaller vehicles. Figures 5.7 through 5.13 provide turning path dimensions for different vehicles. Also, the discussion on cul-de-sac design in this chapter includes a discussion on design vehicle selection.

Sight distance calculation

Sight distance design is concerned with providing the operator of a vehicle with safe and adequate forward visual access. *Sight distance* is the distance forward at which a driver has an unobstructed view of the road. For design purposes, minimum sight distance requirements are determined based on the assumed length of time between the driver's recognizing an object in the road and his or her being able to come to a complete stop from the design speed of the road. The factors affecting sight distance are the horizontal and vertical arrangement of the road, the height of the operator's eye, and the height of the object to be seen (see Figs. 5.14 and 5.15).

The *sight-to-stopping distance,* or *stopping distance,* is determined as a combination of the time and distance that pass from the moment of perception to reaction (PR) until the vehicle stops. PR can be expressed as follows: $\mathrm{PR} = 1.47(t)(V)$ where PR is the stopping distance at a given speed, t is the total of the perception time and length of time braking, and V represents the speed of the vehicle.

Braking distance is calculated as $d = V^2/30f$ where d represents the braking distance, V is the velocity of the vehicle when braking begins, and f is the coefficient of friction between the tires and pavement (see Table 5.9).