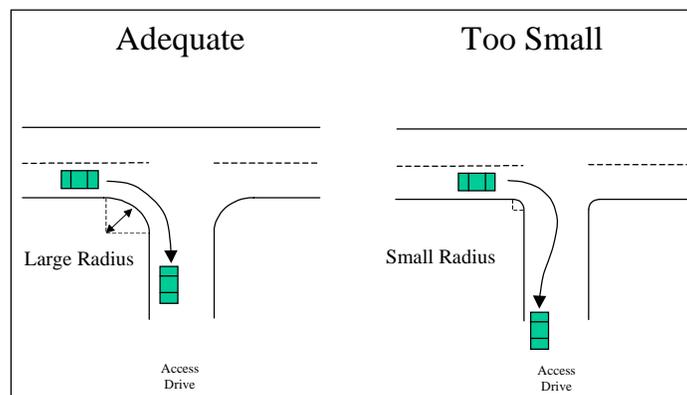


## Driveway Turn Radius

Turn radius refers to the extent that the edge of a commercial driveway is “rounded” to permit easier entry and exit by turning vehicles. Driveway entrances with longer turn radii help slower, turning traffic move off the arterial more quickly. They also help traffic leaving a driveway turn and enter the stream of traffic more efficiently. Guidelines for turn radii are generally applied to nonresidential developments and subdivisions.

### Why is turning radius important?

Driveway turn radius is important because it impacts *speed differential*, the difference between the speed of vehicles that are continuing along the main roadway versus those that are turning into or out of the driveway. Keeping the speed differential low is very important for safety reasons. Turning vehicles must slow appreciably to enter a driveway. Longer turn radii allow vehicles to turn into and out of driveways at a higher speed (see figure below). They also prevent turning vehicles from encroaching upon oncoming traffic or traffic in adjacent lanes.



A longer turn radius creates a more rounded corner. This allows the vehicle to enter and exit the driveway more quickly and without encroaching upon traffic in adjacent lanes.

### When is turn radius most important?

Longer radii are most desirable in situations where vehicles are exiting from a higher speed roadway or when a high volume of driveway traffic is expected. In practice, sufficiently long turn radii can be achieved by designing the driveway to accommodate the largest vehicle expected to use the driveway. For example, designing a driveway to accommodate the unrestricted entry of the occasional delivery truck or bus ensures a higher entry speed for automobiles.

**What is a reasonable turn radius?**

NCHRP Report 348 recommends a minimum 25-foot turn radius in urban areas, although a 35-foot radius may be needed to accommodate buses and single unit trucks. In most suburban settings, 25 to 50 foot radii are desirable; however, longer radii are desirable where turning islands or dual turning lanes are provided. A minimum 15-foot radius is recommended in areas of heavy pedestrian traffic such as business districts and school crossings. Shorter radii are recommended only for residential drives from low-speed roadways.

**What factors should influence the turn radius?**

The preferred turn radii will depend, primarily, on the type of vehicles to be accommodated, the number of pedestrians crossing the driveway, and the operating speeds of the accessed roadway. Because larger vehicles require longer turn radii, the turn radii should be designed to accommodate the largest vehicle generally expected to use the driveway. For example, a driveway to a service station should be designed to accommodate a gasoline delivery truck. Tight radii should only be used for serving residential drives from low-speed roadways.

In addition, turning radii and driveway throat width are interrelated: Many different combinations of turn radius and driveway width provide the same level of driveway operations. For a given level of service, shorter radii require wider driveways than longer radii. For example, a 33 foot wide two-lane driveway with 5-foot turn radii provides about the same level of service as a 37 foot wide drive with a square corner. NCHRP Report 348 recommends that agencies select a very limited number of standard designs.

**How does the turn radius impact pedestrian safety?**

The use of longer turning radii should also consider the impact on pedestrian safety. A tradeoff may be involved where pedestrian safety is a key concern. Longer turning radii increase the distance of the pedestrian crossing and allow for higher vehicle speeds. Solutions include shortening the turning radii or introducing a pedestrian refuge island in the driveway.

**Are there issues that should be considered in conjunction with turn radius?**

Driveway turn radius is closely related to the following access management subjects: driveway width, driveway grade, internal circulation in land developments (including driveway throat length), driveway-related crashes, and speed differential between turning vehicles and through traffic.