



## Section 3: Driveway Design Principles

Anchor: #i1007221

### General Guidelines

The following guidelines apply to all driveways to a state highway.

1. The driveway placement should be such that drivers approaching from the main roadway will have sufficient sight distance to ascertain the driveway's location in order to safely decelerate and complete the entry maneuver. Also, the driveway placement should be such that an exiting driver will have sufficient sight distance to judge a safe gap in oncoming traffic. For selecting appropriate driveway spacing distance, refer to the TxDOT Access Management Manual.
2. Each driveway radius should accommodate the appropriate design vehicle. This will generally be the passenger car (AASHTO P design vehicle) unless the driveway will routinely be expected to handle more than four larger vehicles per hour. Examples of facilities for which a larger design vehicle would normally be appropriate include truck terminals, bus terminals, and connections that serve the loading docks of shopping centers. Figure C-1 illustrates the effects of the radius on the right-turn entry and exit maneuver.
3. Figure C-2 illustrates various driveway design elements including return radius, entry width, exit width, throat width, and throat length.
4. With the exception of private residential driveways, farm/ranch driveways, field driveways, and driveways that are designed and signed for one-way operation (i.e. ingress or egress only but not both), driveways should be designed to accommodate simultaneous entry and exit by the appropriate design vehicle.
5. Driveways that cross sidewalks are located in a developing area where pedestrian traffic can be expected, should be designed to maintain an accessible route that is at least four feet wide across the driveway.
6. One-way driveways should have a minimum throat length of 50 feet (15 m) and preferably 75 feet (23 m).

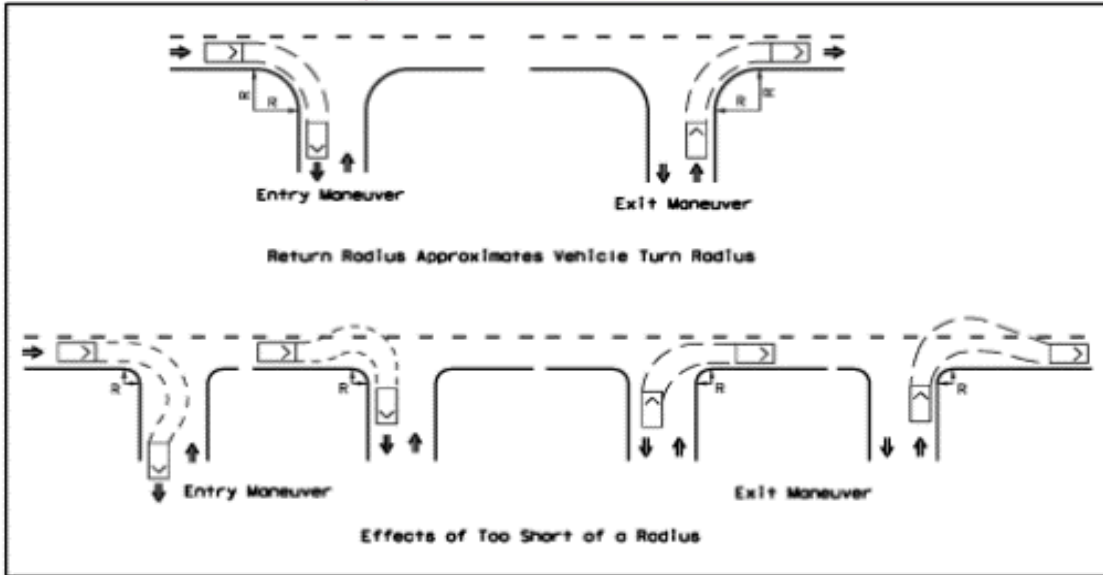


Figure C-1. Effects of Return Radius on the Right-Turn Maneuver

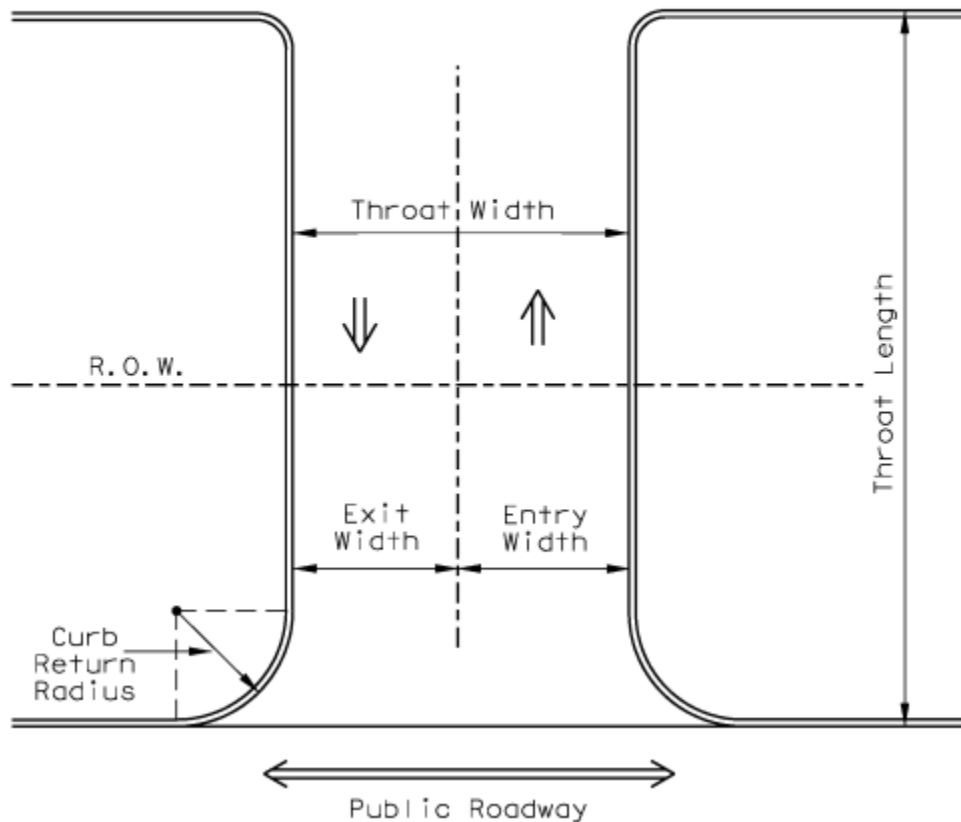


Figure C-2. Driveway Design Elements

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### Geometrics for Two-Way Driveways

The following are standards for two-way driveways.

1. Private Residential Driveway – Driveways serving single-family or duplex residences are normally designed as non-simultaneous two-way driveways. Standard design criteria for private residential driveways are provided in Table C-1. However, for existing cases where the criteria cannot be obtained, every attempt should be made to match the existing driveway width at the ROW line.
2. Commercial Driveways – At locations where the expected volume of large vehicles is four or more per hour, the design should be based on the appropriate design vehicle. Such situations include, but are not limited to, truck stops, warehouses, concrete batch plants, sources of aggregate, RV sales/truck sales and RV parks. The design should also consider future roadway traffic and local conditions and incorporate simultaneous two-way driveways if justified.



Anchor: #i1006061Table C-1. Design Criteria for Private Residential Driveways							
Radius		Throat Width		Radius		Throat Width	
US Customary Units			Metric Units				
(ft.)	Standard(ft.)	Maximum(ft.)	(m)	Standard(m)	Maximum(m)		
15	14	24	4.5	4.2	7.2		
1.							

<sup>1</sup>. Reference Regulations for Access Driveways to State Highways for suggested minimum values.

3. Two exit lanes are recommended when the expected driveway exit volume exceeds 200 vph.
4. In cases where one-way operation is appropriate, a condition of the driveway permit should require that appropriate one-way signing be installed and maintained.
5. Table C-2 provides standard design criteria for two-way commercial driveways that would be expected to accommodate only P and SU design vehicles.

Anchor: #i1006102Table C-2. Designs for Two-Way Commercial Driveways				
Condition	US Customary Units		Metric Units	
	Radius (R) (ft)	Throat Width (W) (ft)	Radius (R) (m)	Throat Width (W) (m)
One entry lane and one exit lane, fewer than 4 large vehicles per hour (see Fig. C-3)	25	28	7.5	8.4
One entry lane and one exit lane, 4 or more SU vehicles <sup>3</sup> per day (see Fig. C-3)	30	30	9.0	9.0

One entry lane and two exit lanes, without divider (see Fig. C-4)	25	40	7.5	12.0
One entry lane and two exit lanes, with divider (see Fig. C-5)	25	44 <sup>(1)</sup> -50 <sup>(2)</sup>	7.5	13.2 <sup>(1)</sup> -15.0 <sup>(2)</sup>
Two entry lanes and two exit lanes, with divider (see Fig. C-6)	25	56 <sup>(1)</sup> -62 <sup>(2)</sup>	7.5	16.8 <sup>(1)</sup> -18.9 <sup>(2)</sup>
(1)4 ft. [1.2 m] wide divider, face-to-face of curbs (2)10 ft. [3.0 m] wide divider, face-to-face of curbs (3)Driveway designs for larger vehicles will be considered on a case by case basis				

6. Service Driveways – Service driveways should be designed considering the vehicle type and frequency of use, current and future traffic operations on the state highway, and other local conditions.
7. Field Driveways – The distance from the edge of the shoulder to a gate should be sufficient to accommodate the longest vehicle (or combination of vehicles such as a truck and trailer) expected. At a minimum, this will normally be a truck with trailer.
8. Farm/Ranch Driveway – A typical design for a farm/ranch driveway should provide a 25-foot return radii and a 20-foot throat width. The distance from the edge of pavement must be sufficient to store the longest vehicle, or combination of vehicles, expected. At a minimum, this will normally be a truck with trailer.

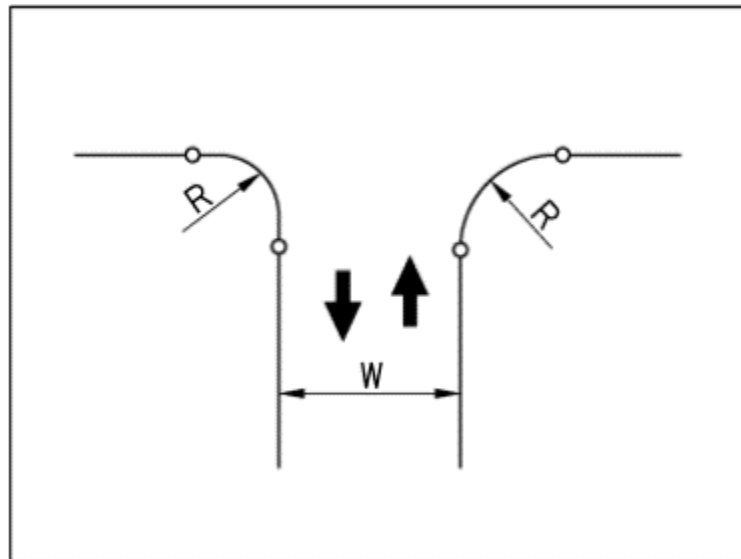


Figure C-3. One Entry Lane/One Exit Lane

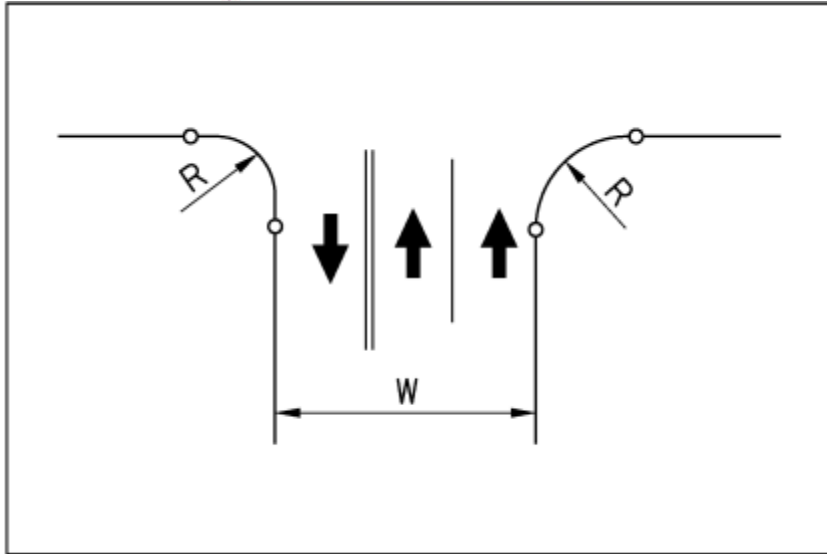


Figure C-4. One Entry Lane/Two Exit Lanes (Without a Divider)

See Table C-2 for Suggested Dimensions Based on Conditions.

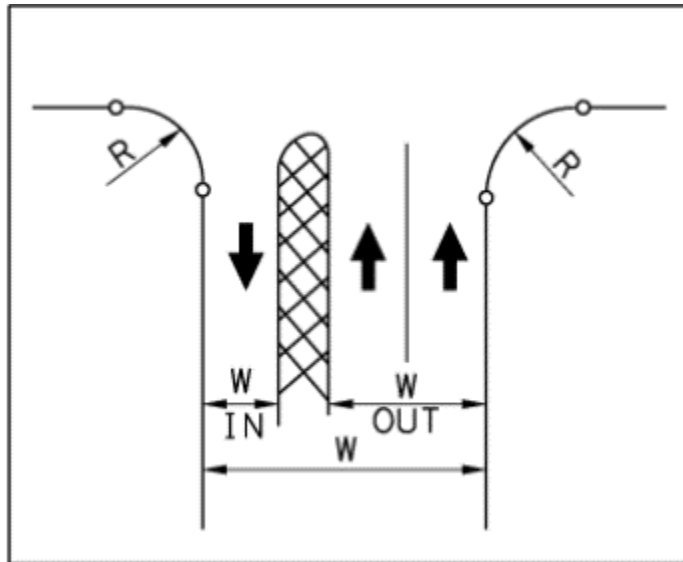


Figure C-5. One Entry Lane/Two Exit Lanes (With a Divider)

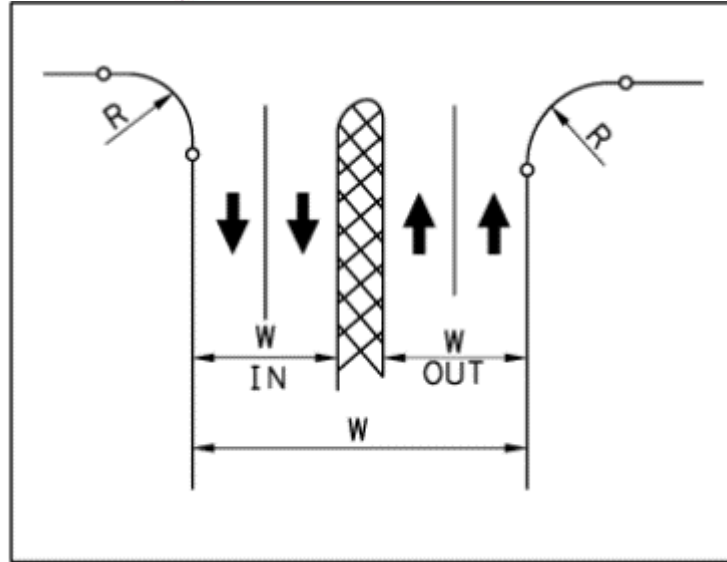


Figure C-6. Two Entry Lanes/Two Exit Lanes (With a Divider)

See Table C-2 for Suggested Dimensions Based on Conditions.

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## Divided Driveways

A raised or depressed separation between the entry and exit sides of a divided driveway needs to be visible to drivers. Suggested treatments and divider sizes are shown in Table C-3:

Anchor: #i1006160 Table C-3. Dimensions for Dividers in the Driveway Throat to Separate Entry and Exit Sides of the Driveway

Treatment	Width	Length
Slightly raised <sup>(1)</sup> ( 4in [ 100 mm]) with contrasting surface <sup>(1)</sup>	4 –15 ft [1.2 – 4.5 m]	20 ft [ 6.0 m]

<sup>(1)</sup>For Rural - Rounded edges, 30° to 45° slope. (See Figure C-7)

Figure C-7 illustrates a slightly raised divider (height 4 inches [100 mm]).

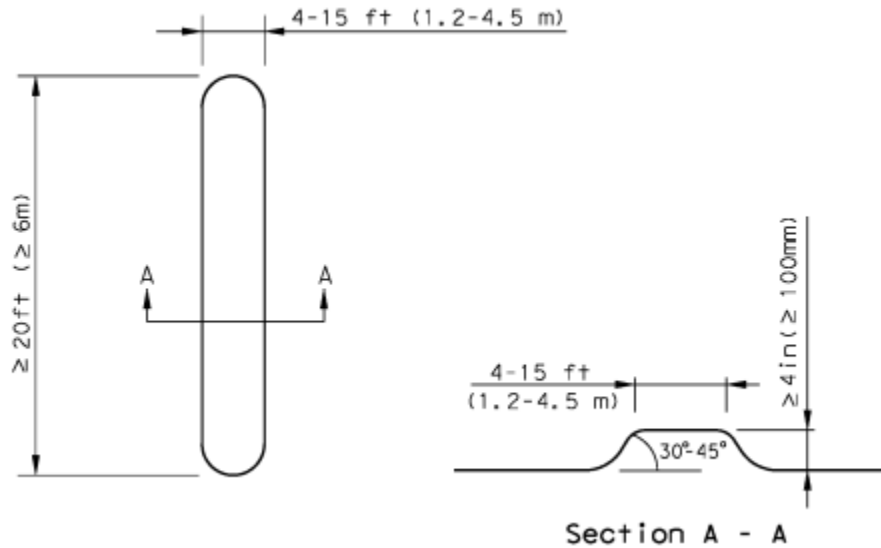


Figure C-7. Illustration of Slightly Raised Divider

A divided driveway is desirable in the following situations:

1. There are a total of four or more entering and exiting lanes.
2. A large number of pedestrians (30 or more in a one-hour interval) routinely cross the driveway.

Locating signing and lighting within a divider may assist approaching drivers in determining the driveway's location and geometrics.

An excessively wide divider may confuse drivers and cause them to think there are two closely spaced, two-way driveways. To avoid this problem, the recommended maximum width of a divider is 15 feet [4.5 m]. On the other hand, a divider that is too small may not be adequately visible to the motorist. Therefore the recommended minimum width of a slightly raised divider (height  $> 4$  inches) is 4 feet [1.2 m].