3A SPACING OF DRIVEWAYS

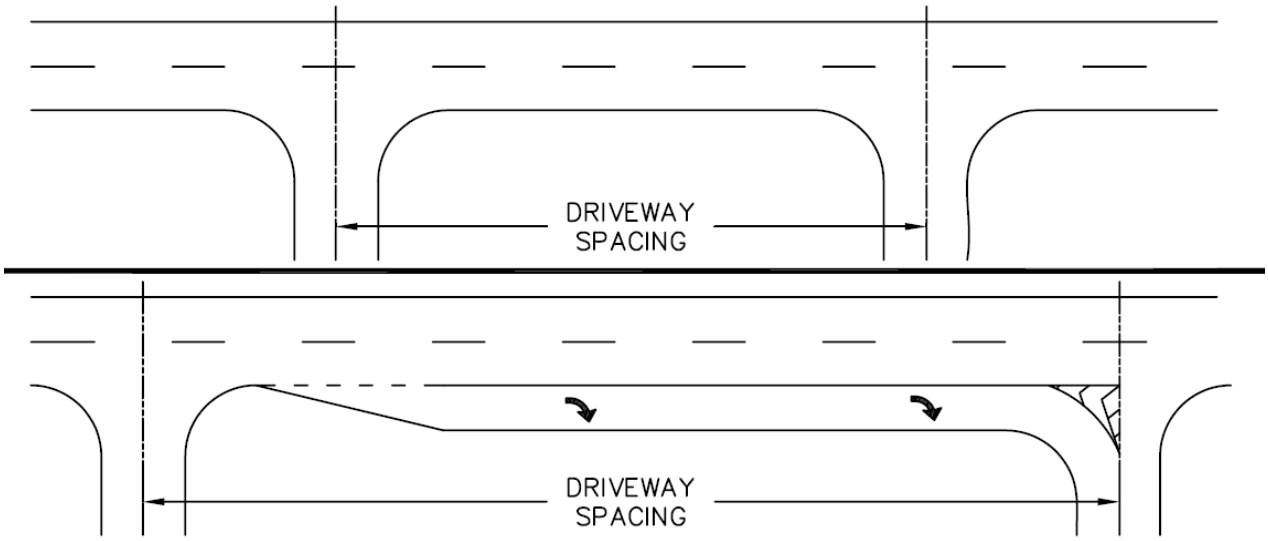
As drivers approach each intersection along a roadway, they are often presented with decisions and may be required to stop or make various maneuvers. When exiting the roadway, it is necessary to decelerate and in some cases, to change lanes. It may also be necessary to adjust speeds in reaction to other vehicles entering into the arterial traffic stream. Driveways should be spaced so that drivers can perceive and react to the conditions at each intersection in succession. Spacing between driveways should be at least equal to the distance traveled, at the posted speed limit, during the normal perception and reaction time plus the distance traveled as the vehicle decelerates to a stop. Each driveway or intersection also requires storage space for vehicles waiting to enter. The distance between intersections should be great enough to provide this storage, allowing each intersection to have its functional boundary separated from those of the next intersection. Crash data also indicate that as the number of driveways along a roadway increases so do accident rates. **Meeting the spacing criteria is not, in itself an indication that driveways or additional driveways will be allowed for a site. Alternative access routes are recommended. This is based on the TRB Access Management Guide.**

Guidelines for driveway spacing, associated with the construction of new driveways, are provided in Table 3-1. Driveways should be separated from any other facility, which accesses a State Highway, whether it is another driveway or a public street. Minimum spacing requirements should apply to driveways on the opposite side of undivided roadways. Variances are defined in Section 2E-1. **Requirements for the length of right and left turn lanes will dictate driveway spacing as shown in Table 4-8 and Table 4-9, and may increase the minimum allowable spacing shown in Table 3-1.** This table is based on the width of the radii.

3A-1 SPACING OF ONE-WAY DRIVEWAYS

Figure 3-1 shows a typical layout of one-way driveways. The spacing criteria presented in Table 3-1 does not apply to the distance between the two one-way driveways (driveway pair).

A driveway pair must be separated from another driveway pair by the distance as shown in Table 3-1. A driveway pair must also be separated from an adjacent two-way driveway in accordance with the spacing criteria in Table 3-1.



POSTED SPEED, MPH	MINIMUM DRIVEWAY SPACING WITHOUT RIGHT TURN LANE (FEET)	MINIMUM DRIVEWAY SPACING WITH RIGHT TURN LANE (FEET)
25	125	125
30	125	219
35	150	244
40	185	294
45	230	369
50	275	419
55	350	444
60	450	494
65	550	550

TABLE 3-1 SPACING CRITERIA FOR DRIVEWAYS, PUBLIC ROADS AND SIDE STREETS

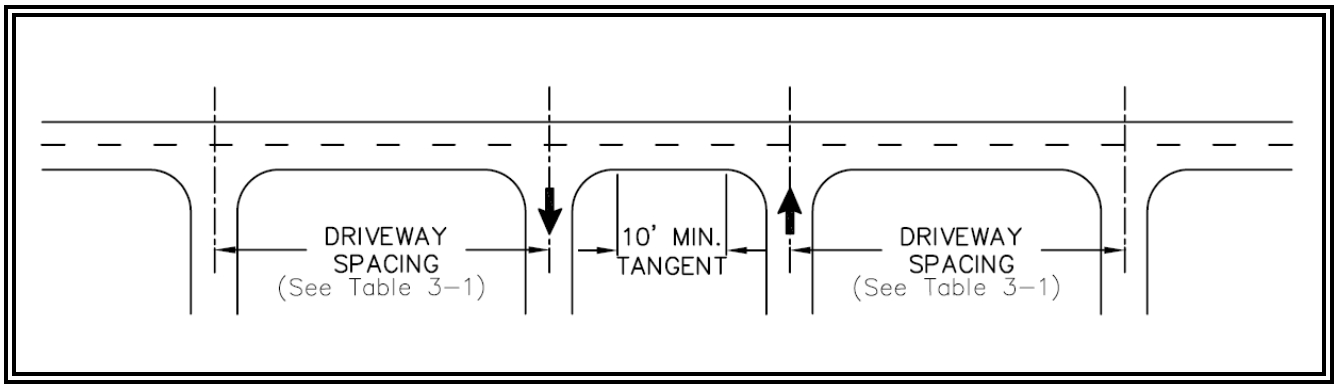


FIGURE 3-1 SPACING CRITERIA FOR ONE-WAY DRIVEWAYS

3A-2 PLACEMENT OF DRIVEWAYS

Not only must driveways be spaced from other driveways as provided above, they must also be located a minimum distance from the property line. The radius return must be a minimum of 4' from the property line or the encroachment agreed to by the adjacent property owner by signing a radius encroachment agreement. This agreement may be waived by the District Engineer if a safety concern exists.

When driveways are to be jointly used by two or more property owners, the property line separation requirements given in the above paragraph can be waived. However, a joint use agreement signed by the affected property owners must be provided to the Access Management Engineer. Either property owner may apply for the driveway permit. Refer to section 3-B (Driveway Alignment)

3A-3 PLACEMENT OF INTERIOR DRIVEWAYS

The placement of the first interior drive which intersects the driveway from the State Route should be as far as possible from the State Route for safe, more efficient operation. The distance between the roadway traffic and the first internal movement shall be a minimum of 200 feet, as shown in Figure 3-1.2. Lots less than 500 deep should maintain, a minimum distance of 100 feet. The distance required should be maintained or increased so as to avoid interference with the mainline traffic flow for large sites with high volumes, heavy truck traffic, and on high volume roadways.

If no other design alternatives exist and interior drives are proposed which do not meet minimum spacing, the left turning movement should be restricted with a raised barrier. Site planning should be done such that Interior Driveways accommodate the right of way at least 100 feet of storage.

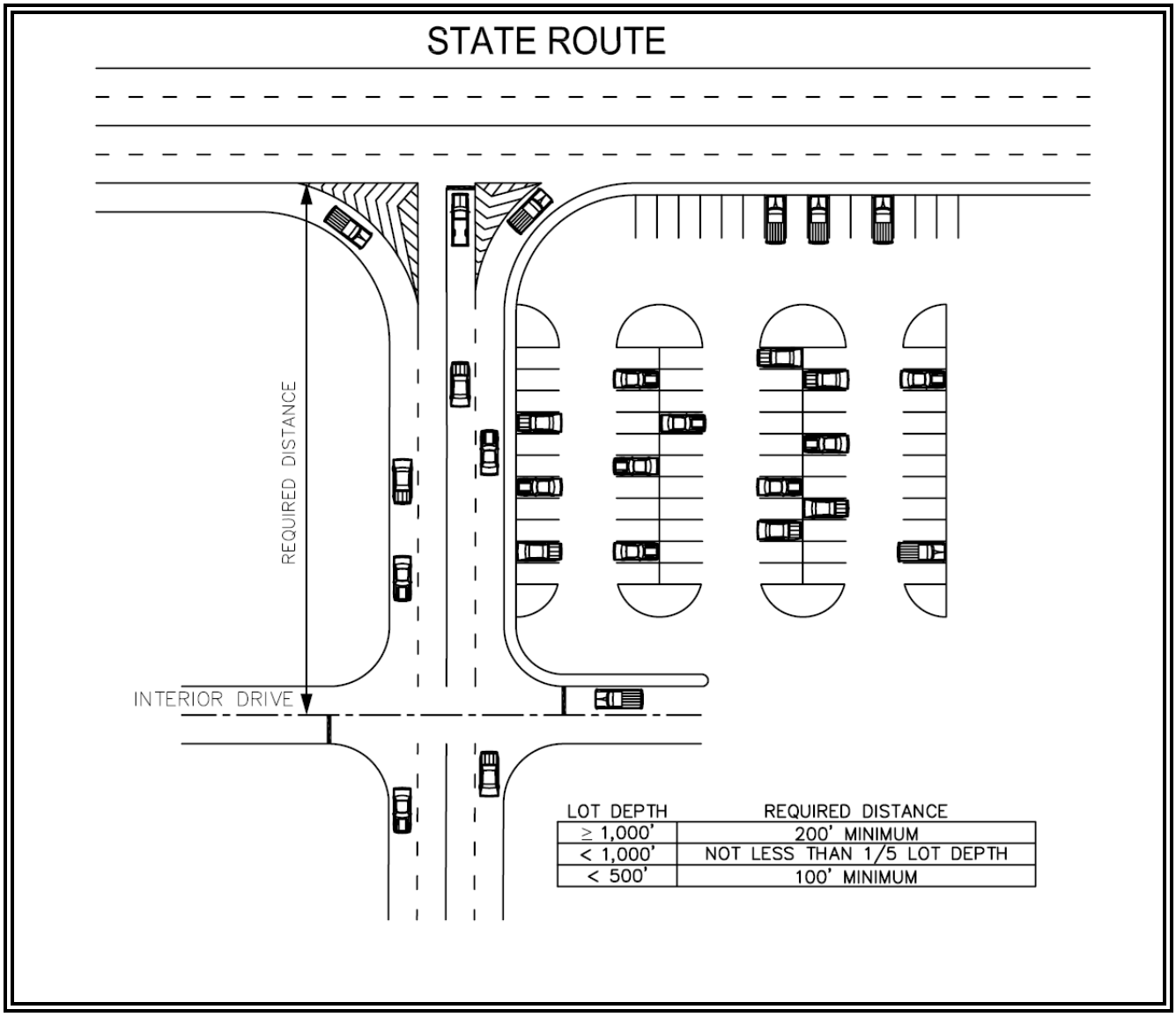


FIGURE 3-1.2 PLACEMENT OF INTERIOR DRIVES

3B DRIVEWAY ALIGNMENT

Driveways should align with other driveways located on the opposite side of the State Highway. If offset driveways cannot be avoided, the same driveway spacing criteria as given in Table 3-1 should be provided, to provide space for left turns. Figure 3-2 shows how the spacing is measured for spacing offset driveways onto undivided highways. Spacing is from Center to Center

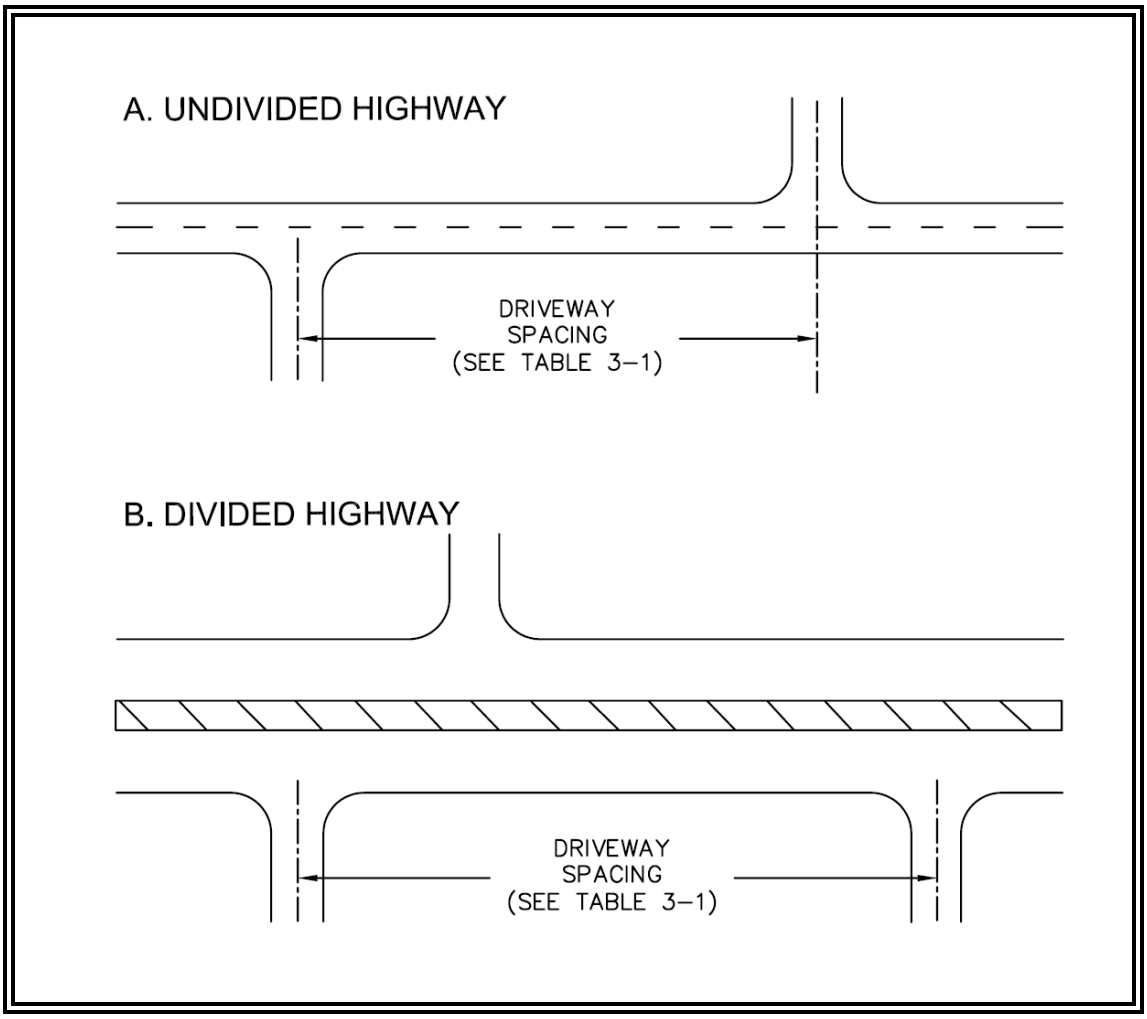
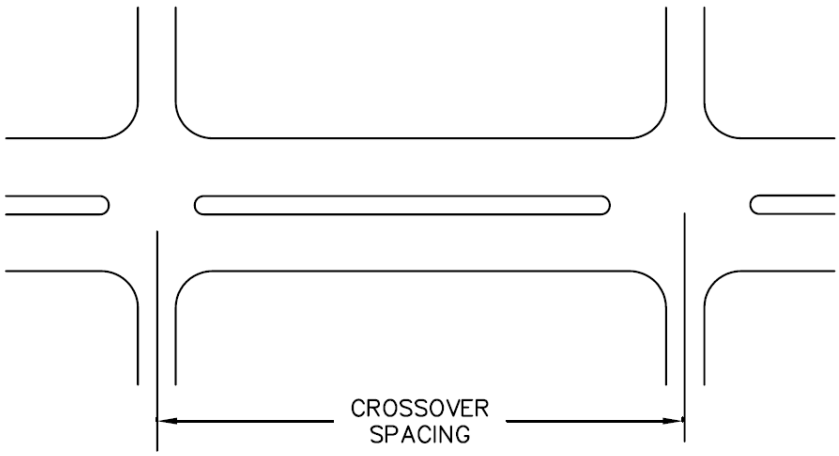


FIGURE 3-2 SPACING OF OFFSET DRIVEWAYS

If the State Highway involved is a divided facility and the driveways do not align with a median crossover, the driveway spacing would only apply to the adjacent driveway located on the same side of the Highway as shown above in Figure 3-2 (B).

3C SPACING OF MEDIAN CROSSOVERS

When the applicant is requesting a median crossover on a divided highway, the spacing standards shown in Table 3-2 apply.



ROADWAY TYPE	CROSSOVER SPACING, Ft	
	Preferred	Minimum
RURAL	2640	1320
URBAN	2000	1000

TABLE 3-2 SPACING OF MEDIAN CROSSOVERS

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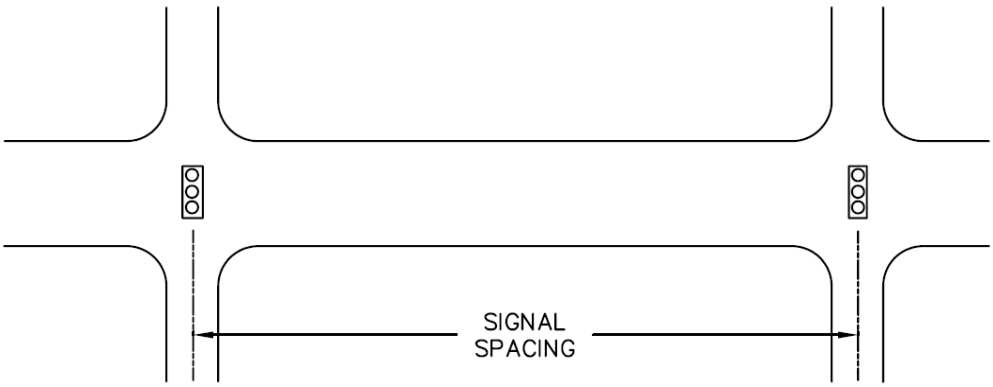
Other factors will also be considered, such as distance to other median openings, adjacent land use, expected traffic volumes, and the resulting volume of U-turns that are likely to occur without the median opening. **Meeting the spacing criteria is not, in itself, an indication that median openings will be allowed.** Refer to TOPPS Policy 4A-4 for medians requiring a break in limited access right-of-way. All median openings will be approved by the Director of Operations or their designee for existing facilities.

NOTE: RURAL or URBAN Roadway Sections- refers to characteristics such as typical section, speed limit, density of street and highway networks, nature of travel patterns, shoulder treatment and lane use.

See definitions section for an explanation of "Urbanized" or "Rural".

3D SPACING OF SIGNALIZED INTERSECTIONS

This section is provided to assist the applicant's engineer in designing sites that may need signalized points of access to the State Highway System. Table 3-3 contains guidelines for the spacing that should be provided between signalized intersections.



ROADWAY TYPE	MINIMUM SIGNAL SPACING, Ft
RURAL	1320
URBAN	1000

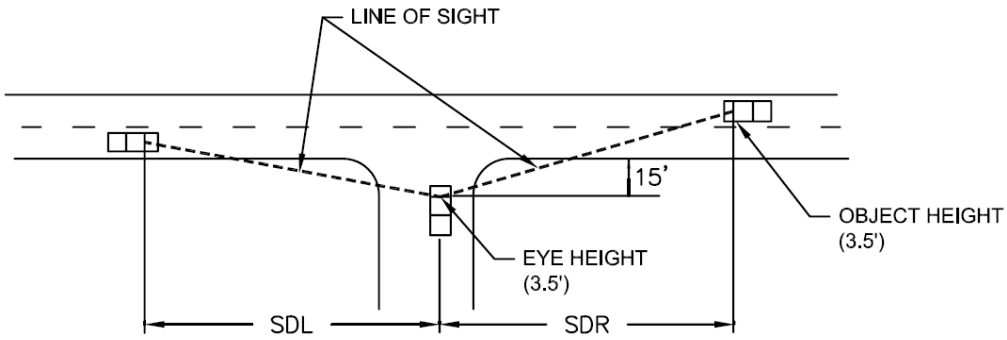
TABLE 3-3 SPACING OF SIGNALIZED INTERSECTIONS

The spacing guidelines provided above are indicative of conditions that normally offer better signal progression for arterial traffic flow. It is recognized that under certain conditions, better operation may result from the introduction of signals with less spacing if the alternative forces high volumes of traffic to an adjacent intersection. Consideration should be given to developing multiple access strategies to a site including access to adjacent signalized intersections.

When the applicant can show, through an alternatives analysis, that better operations can be achieved with less spacing, the Department will consider an exception to the provisions of Table 3-3.

3E SIGHT DISTANCE-without medians

Driveways should be located to provide adequate sight distance. Minimum intersection sight distance criteria are provided in Table 3-4. The line of sight establishes the boundary of a sight triangle, within which there should be no sight obstruction.
Abdul to revise table



ARTERIAL SPEED, MPH	SIGHT DISTANCE (FEET)						
	2 Lane	3 Lanes		4 Lanes		5 Lanes	
	SDL=SDR	SDL	SDR	SDL	SDR	SDL	SDR
30	335	310	355	335	375	355	400
35	390	365	415	390	440	415	465
40	445	415	475	445	500	475	530
45	500	465	530	500	565	530	600
50	555	515	590	555	625	590	665
55	610	570	650	610	690	650	730
60	665	620	710	665	750	710	795
65	720	670	765	720	815	765	860

TABLE 3-4 INTERSECTION SIGHT DISTANCE REQUIREMENTS

The sight distance criteria are based on the time required for a vehicle to make a left turn from a stop-controlled approach to the State Highway (AASHTO Case B1). The time to execute the maneuver is based on recommendations contained in NCHRP Report 383, *Intersection Sight Distance*. The sight distances, for a two-lane road, are the distances traveled at the arterial speed during 7.5 seconds. The time is increased by 0.5 seconds for each additional lane to be crossed.

The sight distances given in Table 3-4 are for undivided highways. If the highway is divided, the effect of the median should be considered in determining the required sight distance. Based on the conditions, it may be feasible for the crossing maneuver to be done in two stages with a stop in the median. However, the intersection should only be treated in this manner if the signing and marking is accordingly provided. Otherwise, the sight distance requirements should be increased to account for the additional width that must be crossed. See AASHTO Green Book, Chapter 9 Intersections, for adjustments due to grades greater than 3% and design vehicles other than passenger cars.