



# TRAFFIC AND SAFETY MANUAL

## Chapter 7 – Traffic Engineering Studies 7G – Sight Distance Studies

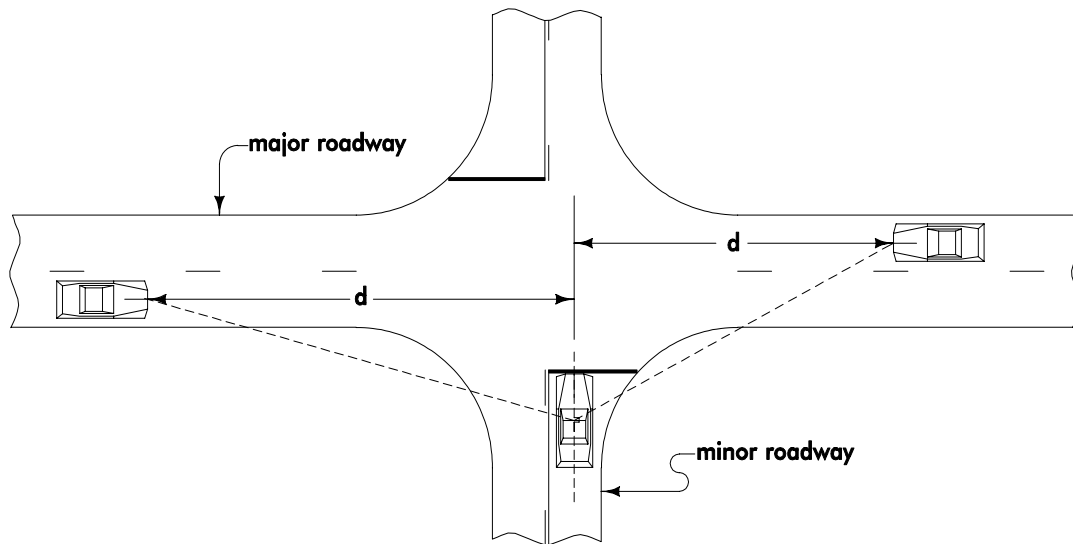
### Access Control

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#### General

The efficiency and safety of a highway depend to a large extent upon the amount and character of interruptions to the movement of traffic. The primary cause of these interruptions is vehicular movements to and from businesses, residences, and other developments along the highway. Regulation and overall control of highway access are necessary to provide efficient and safe highway operation and to utilize the full potential of the highway investment.

Sight distance for access control purposes is defined in [Administrative Rule 761—112.1\(306A\)](#) as the distance of clear vision ( $d$ ) along a primary highway in each direction from any given point of access where a vehicle must stop before entering the highway. This is shown in Figure 1, below.



**HORIZONTAL SIGHT DISTANCE**

**Figure 1**

#### Criteria

An access location should be established where desirable sight distance is available and shall not be authorized in a location providing less than minimum sight distance, as shown in Table 1. The finished surface elevation of an entrance over a culvert, or the location where a culvert would normally be placed, should be lower than the primary highway pavement, preferably an extension of the 4 percent shoulder grade, to prevent surface water from draining onto the highway pavement. The shoulder grade should be extended onto the entrance at a distance sufficient to provide a safe platform

for a vehicle to stop before entering the highway. Sight distance at an access location is measured from the driver's height of eye (3.5 feet) to the height of an approaching vehicle (4.25 feet).

**Table 1**  
**Sight Distance**

Posted Daytime Speed Limit	Desirable Sight Distance	Minimum Sight Distance
30	305	200
35	360	250
40	425	305
45	495	360
50	570	425
55	645	495
60	730	570
65	820	645
70	910	730

## Procedures

### Determine The Available Sight Distance

The available sight distance is determined by making observations at the site under study. Assumptions used for the study are as follows:

1. The driver's eye height on the proposed entrance is 3.50 feet.
2. The height of the approaching vehicle is 4.25 feet above the surface of the highway in the critical lane, the lane that will result in the least amount of sight distance for each direction of travel.
3. The location of the stopped driver's eye on the proposed entrance is 14.5 feet behind the near edge of the traveled way of the highway if there will be no stop line on the entrance. If there will be a stop line on the entrance, the location of the driver's eye is 18 feet from the traveled way.
4. For a divided highway with a median width of 30 feet or greater the location of the stopped driver's eye is in the median for traffic approaching from the right.
5. The lateral location of the driver's eye on the entrance will depend on the number of approach lanes on the entrance, generally one but with a possibility of more. The sight distance criteria must be met for all entrance approach lanes.
6. The height of the driver's eye relative to the edge of the traveled way of the highway must be established as a component of the design of the proposed entrance. In general at a rural location, there should be a 4% downgrade from the edge of the pavement to the lateral location of the stopped driver's eye.

The available sight distance is determined by first placing a target at the location of the stopped driver's eye on the proposed entrance. The observation point is 4.25 feet above the roadway at the center of the critical lane. The observer moves away from the fixed target until it becomes obscured, or toward the fixed target until it comes into view. The distance (d) from Figure 1 is then measured.

This procedure may need to be repeated for multiple entrance approach lanes or multiple lanes on the highway, depending on the horizontal and vertical geometry of the location under study.

### **Determine Whether Criteria Are Met**

The available sight distance needs to be compared with the needed sight distance to determine if sight distance requirements are met. This information is used along with other requirements of [Administrative Rule 761—112.1\(306A\)](#) to determine whether the access will be granted.

## **Documentation**

For many studies, the findings, conclusions and recommendations must be clearly conveyed to those who are responsible for acting on the results. This is done through the use of a memo, letter or more formal report. Some study presentations include the use of forms, tables or graphs depicting the data collected. The documentation for an access control sight distance study should include when, where and by whom the study was conducted, and that it was done in conformance with established guidelines. The needed sight distance from Table 1 should be shown and compared to the measured available sight distance to show why or why not the location meets sight distance criteria.

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