

# **Mississippi Department of Transportation**

# **ACCESS MANAGEMENT MANUAL**

**Version 2.0**



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### **ACCESS MANAGEMENT MANUAL REVISION APPROVAL**

I hereby approve of the revisions to the Mississippi Department of Transportation's Access Management Manual found herein.

Approval: \_\_\_\_\_

A handwritten signature in black ink, appearing to read "Mark C. McConnell", is written over a horizontal line.

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2-15-12





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# Section 1 – Introduction

## BACKGROUND

Access management is the systematic control of the location, spacing, design and operation of driveways, median openings, interchanges and street connections to a roadway.<sup>(1)</sup> Access management standards are in place to:

- Maintain the overall safety of the transportation system;
- Minimize congestion;
- Minimize crashes;
- Provide for efficient traffic flow;
- Preserve existing system capacity;
- Provide for pedestrian safety;
- Maintain roadway aesthetics; and
- Provide appropriate access to adjacent business properties.

Access management techniques are relatively straightforward and based on established traffic engineering and roadway design principles. They involve: (1) limiting the number of conflict points; (2) separating conflict points; (3) reducing acceleration and deceleration impacts at access points; (4) removing turning vehicles from through travel lanes; (5) spacing major intersections uniformly to facilitate progressive travel speeds along arterials; and (6) providing adequate site storage. Table 1 provides a summary of beneficial effects that access management techniques can have on highway systems.

It is important to remember that access management is the process of balancing the competing needs of traffic movement and land access. Driveways add to the number of conflict points along a roadway and increased conflicts lead to increased crash rates and poor roadway operations. This access management policy limits the number of conflict points and is designed to minimize speed differentials between through and turning vehicles.

## PURPOSE

The primary purpose of Mississippi's access management policy is to allow access to land development in a manner that preserves the safety and efficiency of the state transportation system. Mississippi's access management program includes the following:

1. A roadway classification system based upon functional criteria;
2. Defining allowable levels of access for each roadway classification, including criteria for signal spacing;
3. Geometric design criteria and traffic engineering analysis; and
4. Adopting appropriate regulations and administrative procedures.

This manual constitutes the Mississippi Department of Transportation's policy for access management and procedures for coordinated development between state highways and the abutting properties which they serve. The manual provides clarification of the Department's administrative procedures and standards as contained in Rule No. 941-7501-04002 Right of Way Encroachment Permits; Rule No. 941-7501-04013 Driveway and Street Connections, Median Openings, Frontage Roads; and Rule No. 941-7501-03001 Processing of Permit Applications.

**Table 1**  
**Summary of Research on the Effects of Access Management Techniques <sup>(1)(2)</sup>**

Treatment	Effects
1. Add a continuous two-way left turn lane (TWLTL)	A. 35% reduction in total crashes B. 30% decrease in delay C. 30% increase in capacity
2. Add nontraversable median	A. >55% reduction in total accidents B. >30% decrease in delay C. >30% increase in capacity
3. Replace TWLTL with a nontraversable median	A. 15%-57% reduction in crashes on 4-lane roads B. 25%-50% reduction in crashes on 6-lane roads
4. Add a left-turn bay	A. 25-50% reduction in crashes for a 4-lane road B. up to 75% reduction in total crashes at unsignalized intersections C. 25% increase in capacity
5. Type of left-turn improvement: (a) painted (b) separator or raised divider	A. 32% reduction in total crashes B. 67% reduction in total crashes
6. Add a right-turn bay	A. 20% reduction in total crashes B. Limit interference with platooned traffic, increased capacity
7. Increase driveway speed from 5 mph	A. 50% reduction in delay per maneuver; less exposure time to following vehicles
8. Visual cues (e.g. signs) at driveways and driveway illumination	A. 42% reduction in crashes
9. Prohibition of on-street parking	A. 30% increase in traffic flow B. 20-40% reduction in crashes
10. Long signal spacing (1/2 mile) with limited access	A. 42% reduction in travel time B. 59% reduction in delay C. 57800 gallons of fuel saved per mile per year

## BUSINESS IMPACTS

Applying access management techniques during the planning and development of site and road projects can help businesses, even those operating on existing corridors, in numerous ways. Some of the benefits and advantages businesses experience due to good access management include:

- Reduced road delays and improved speeds which will preserve and potentially expand the market area of businesses in the corridor;
- Expanded site area parking due to multiple businesses sharing access and driveways;
- Improved business community image by landscaping and other site amenities with installation of medians; and
- Easier internal circulation between businesses by construction of internal connections.

The construction of a landscaped median improves the visual appearance of a corridor and may assist in attracting new investments. In fact, access management projects have often had positive impacts on property values. Studies in Texas, Minnesota, Iowa, and Florida have documented either stable or increased land values for corridors after construction of access control management projects.

Where medians are constructed or median openings are closed, studies have reported relatively little effect on the number of customers making left turns into a business on congested roadways or during peak travel periods due to high volumes of opposing traffic. Other studies have reported where direct left-turns are prohibited many motorists will change their driving or shopping patterns to continue patronizing specific businesses.

An important aspect of minimizing the impact of access management projects and medians is to maintain open access to businesses during the construction phase. Potential actions to mitigate construction impacts include:

- Clearly sign business entrances from the roadway;
- Provide temporary and/or secondary business access points, where feasible;
- Schedule construction during after-business hours or during times of low usage for seasonally-oriented businesses;
- Avoid blocking business entrances with construction equipment or construction barriers;
- Provide alternative parking, if possible and avoid taking or blocking parking spaces;
- Establish a single point of contact in the agency about the construction project to communicate with property and business owners; and
- Provide regular project progress reports to business and property owners.

## DEFINITIONS

For purposes of this manual, the following definitions will apply. Words, terms, and phrases that are not explicitly defined herein will have their commonly accepted meaning.

- *Access* – A public or private roadway used to enter or leave a public highway from adjacent land using an on-road motor vehicle. An access may be a driveway or a street.
- *Access Point* – The intersection of an existing or proposed access (public or private) with the state's public right of way.



- *AADT* – Average annual daily traffic volume – The total two-way yearly traffic volume on a section of roadway, divided by 365; often referred to as the average daily traffic (ADT).
- *Applicant* – The person or entity applying for a driveway permit.
- *Commercial Driveway* – A driveway serving any land use other than single family (or duplex) residential or farming.
- *Commission* – The Mississippi Transportation Commission.
- *Corner Clearance* – The minimum distance, measured parallel to a highway, between the nearest curb, pavement or shoulder line of an intersecting public way and the nearest edge of a driveway or public street, excluding its radii.
- *Department* – The Mississippi Department of Transportation, sometimes referred to as MDOT.
- *Directional Median Opening* – An opening in a restrictive median which provides for U-turns and/or left-turn ingress or egress movements.
- *Full Median Opening* – An opening in a restrictive median that allows all turning and through movements to be made.
- *Fully Developed (Type of Area)* – The land use adjacent to the roadway is less than 10% vacant.
- *ITE* – Institute of Transportation Engineers.
- *ITE Trip Generation Manual* – Indicates the latest edition of [Trip Generation: An ITE Informational Report](#), Institute of Transportation Engineers.
- *Joint Driveway* – A single access point connecting two or more contiguous sites to a public roadway that serves more than one property or development, including those in different ownership or in which access rights are provided in legal descriptions.
- *Level of Service (LOS)* – Defines the carrying capacity of a roadway or intersection, as defined further in the Highway Capacity Manual (Transportation Research Board).
- *Major Intersection* – A public road or private driveway intersection with a state highway exhibiting one or more of the following characteristics: 1) traffic volumes meeting or exceeding MUTCD warrants for signalization; 2) minor approach volumes exceeding (or projected to exceed within five years) 3,000 AADT or 300 peak hour trips; or 3) designation by the State Traffic Engineer (or designee) as a major intersection based on other factors – e.g., adjacent land uses, anticipated safety issues, future growth forecasts, relationship to other planned improvement projects (public or private).
- *MDOT* – The Mississippi Department of Transportation.

- *Median* – The portion of a divided highway separating the traveled ways for traffic in opposing directions.
- *Median Opening Spacing* – The spacing between openings in a restrictive median that allow for crossing the opposing traffic to access property or U-turns. The distance is measured from centerline to centerline of the openings.
- *MPO* – Metropolitan Planning Organization.
- *MUTCD* – Manual on Uniform Traffic Control Devices.
- *Non-Commercial Driveway* – A driveway serving single family (or duplex) residential or farming land uses.
- *Planned Development* – Development that is intended to be subdivided into multiple parcels, with or without multiple business owners.
- *Posted Speed* – The speed limit set and maintained by MDOT.
- *Queuing Analysis* – Mathematical evaluation of a waiting line (queue) of vehicles on a yield-, stop- or signal-controlled approach to an intersection. The analysis involves application of manual and/or computer-simulation methods to estimate a queue's length during a given period (normally the peak hour). Queues longer than the available storage length can cause operational or safety problems.
- *Roadway Design Manual* – Indicates the latest edition of MDOT's Roadway Design Manual.
- *Rural Area* – Area where the land use adjacent to the roadway is more than 70% vacant with no expectations of becoming an Urbanized Area in the next 20 years.
- *SOP* – Standard Operating Procedures.
- *Suburban/Urban Area* – Area where the land use adjacent to the roadway is between 10% and 70% vacant.
- *Transitioning Urbanized Areas* – The area between the existing Urbanized Area boundary and the future projected urbanized boundaries anticipated within the next 20 years as established by the MPO and the MDOT.
- *Urban Area* – A U.S. Bureau of Census designated area as defined and shown on maps as published by the Department or areas which are urbanized due to significant adjacent development. Development may be either residences or businesses that are located on either or both sides of the highway and which average 200 feet or less apart for a distance of not less than 1320 feet measured along the highway.
- *Urbanized Area* – A U.S. Bureau of Census designated city and surrounding area with a population greater than 50,000.

## Section 2 – Roadway Classifications

Under this section of the manual, the roadway classification system for the Mississippi Department of Transportation's roadway system will be defined. The roadway classification system is consistent with the definitions as contained in Rule No. 941-7501-04002 Right of Way Encroachment Permits. However, Type 3 - Conventional Highways have been subcategorized in order to reflect the effects of speed and the abutting land (urban versus rural development) on safety and operations. The minimum design standards for the number and locations of the connections, median type and openings, turn lane requirements, and traffic signal location and distance will all be affected by speed and existing land use development. Listed below are the definitions of the roadway classification types of highways.

### TYPE 1 – FREEWAY

A freeway is defined as a highway or section thereof with full control of access which has been designated as such by order of the Commission. On freeways, no property abutting the through traffic lanes is permitted access except at interchanges constructed at intersecting streets and highways. Frontage roads may be constructed on fully controlled access highways and, where constructed, vehicular access from the abutting property to the frontage road will normally be permitted. The frontage road will then carry such traffic to a cross road or street with an intersection for entry into the through traffic lanes. Pedestrians crossing on controlled access highways are not permitted. Utility lines may be located on the right of way of fully controlled access highways when such location conforms with the requirements of the Department's Rules. Freeways may be developed by stage construction.

### TYPE 2 – PARTIALLY CONTROLLED ACCESS HIGHWAY

1. Highways or sections thereof designated by the Commission as TYPE 2A may have frontage roads constructed on one or both sides of the highway. Right of way may be provided for future construction of frontage roads on one or both sides of the highway. Until such frontage road or roads are constructed, vehicular access from abutting property directly to and from through traffic lanes may be permitted in the same manner as for conventional highways unless the right of access was purchased with the right of way. Upon construction of the frontage roads, vehicular access from abutting property shall be permitted into the frontage road only and then is brought into the traffic lanes over intersecting streets or highways or over approved connections of the frontage road with the through traffic lanes. The right of way of TYPE 2A highways may be used for the construction and maintenance of utility lines and other approved installations in accordance with the Department's Rules.
2. On highways or sections thereof designated by the Commission as TYPE 2B, vehicular travel from and to the through traffic lanes is permitted only at established entrances and exits. The abutter's access rights between such entrances and exits have been or are to be purchased with the right of way. Right of way purchased for access control from the abutting property may be used for the construction and maintenance of utility lines; however, such construction and maintenance must be accomplished without vehicular travel from and to the through traffic lanes or ramps and must comply with the Department's Rules.

### TYPE 3 – CONVENTIONAL HIGHWAY

A conventional highway is a highway consisting of two (2) traffic lanes or divided highways with two (2) or more lanes in each direction without frontage roads on either side, and which has not been designated by the Commission as either Freeways or Partially Controlled Access Highways. On conventional highways, vehicular ingress and egress from abutting property directly to and from the through traffic lanes is permitted, except that direct access may be restricted for safety and / or as indicated in the Access Management Manual and the Department's Rules. The right of way of conventional highways may be used for the construction and maintenance of utility lines and other approved installations in accordance with the Department's Rules.

For determining levels of access and minimum standards such as driveway spacing, conventional highways are subcategorized by speed and area type (rural versus urban).

**NOTE:** Levels of access for Type 2 and Type 3 highways are outlined in Section 3 and Appendix 1 & 2.

## Section 3 – Levels of Access

### TYPE 1 – FREEWAY

For Type 1 – Freeways in urbanized areas, the minimum interchange spacing should not be less than 1 mile. Minimum spacing in urbanized areas between interchanges is necessary for drivers to have sufficient time to make lane changes for entering or exiting the freeway. For suburban areas minimum freeway interchange spacing provides for good route signing and for grade separations of the local road system. Minimum spacing for rural freeway interchanges on the Interstate System should not be less than 3 miles apart or 2 miles apart for non-Interstate facilities. Greater separation of interchanges for transitioning urbanized areas and rural areas may be desirable. Greater separation allows additional interchanges to be constructed as rural areas become urbanized.

A summary of the minimum interchange spacing is shown in Table 2.

Table 2 – Minimum Interchange Spacing <sup>(1)</sup>

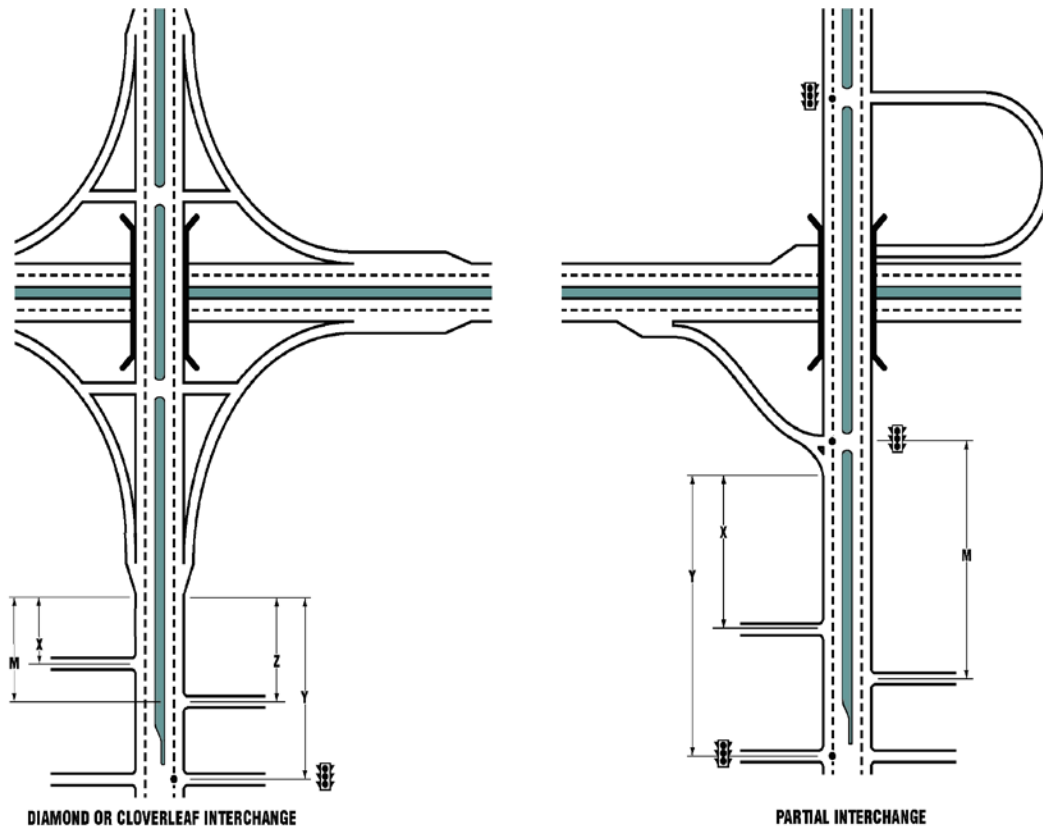
Segment Location / Type	Interchange Spacing Minimums
1. Urban / Interstate	1 MILE*
2. Urban / Non-Interstate	1 MILE*
3. Rural / Interstate	3 MILES
4. Rural / Non-Interstate	2 MILES

\* In urban areas, spacing of less than 1 mile may be developed by grade-separated ramps or by C-D roads, provided that a capacity analysis results in an acceptable LOS.

#### Crossroad Access Spacing at Interchanges:

Minimum access spacing on crossroads for freeway interchange areas is critical for avoiding traffic backups and providing safe maneuvering distances for turning and weaving vehicles to enter the appropriate lanes. Shown in Tables 3 and 4 are minimum spacing requirements. If the proposed distances are less than the minimum spacing then a written justification demonstrating why the recommended distances cannot be met shall be submitted to the appropriate MDOT District Engineer (or designee) for approval or disapproval as an exception.

Table 3  
Minimum Spacing for Freeway Interchange Areas with Multilane Crossroads <sup>(1)(3)</sup>



Minimum Spacing Dimension

TYPE OF AREA	X	Y	Z	M
Fully Developed Area	880'	1760'	880'	880'
Suburban/Urban	880'	1760'	1760'	1760'
Rural	880'	1760'	1760'	1760'

X = Distance from taper to first approach on the right; right in / right out only. Additional driveways located downstream from the first approach must be separated based on the distance requirements as specified in Table 6.

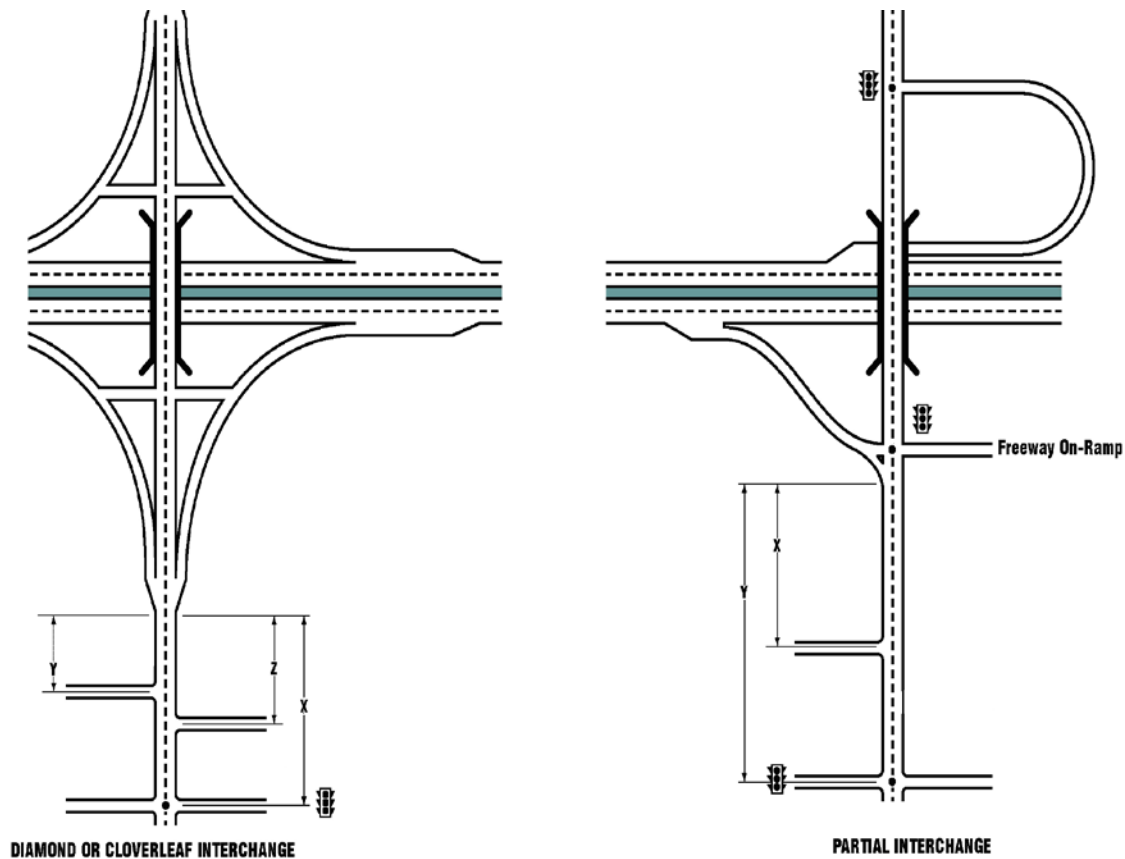
Y = Distance to first major intersection. No four-legged intersections may be placed between ramp terminals and the first major intersection.

Z = Distance between the last access connection and the start of the taper for the on-ramp.

M = Distance to first possible directional median opening, provided the LOS for the weave, merge, and queue are acceptable. M applies to the tip of the taper closest to the crossover. No full median openings are allowed in nontraversable medians up to the first major intersection.

Free-flow ramps are generally discouraged in fully developed urban areas and are questionable in suburban/urban areas because pedestrian and bicycle movements are difficult. For high speed free flow ramps, higher minimum spacing dimensions may be required.

Table 4  
Minimum Spacing for Freeway Interchange Areas with Two-Lane Crossroads <sup>(1)(3)</sup>



Minimum Spacing Dimension

TYPE OF AREA	X OR Z	Y
Fully Developed Area	880'	1760'
Suburban/Urban	880'	1760'
Rural	880'	1760'

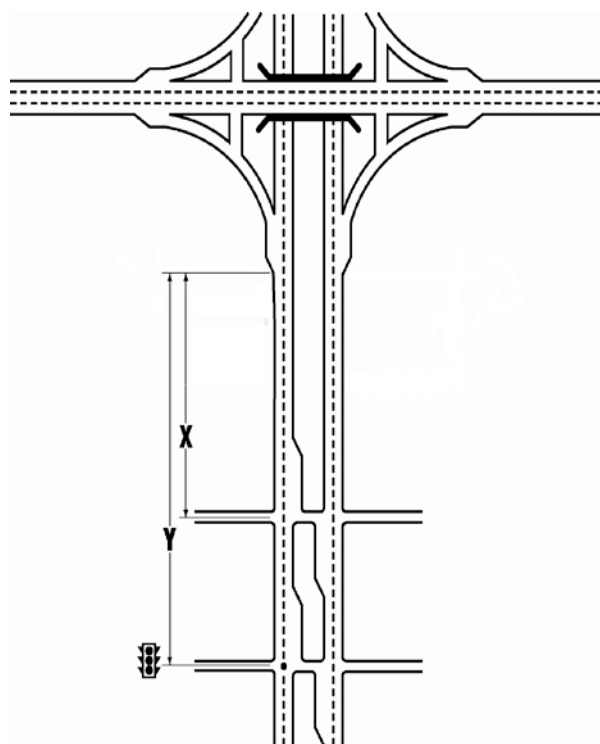
X or Z = Distance to first access connection from the taper of the off-ramp or on-ramp. This dimension provides for either X or Z. However, X and Z should not be the same distance in order to avoid the creation of a four-legged intersection. Additional driveways located between the first access connection and the first major intersection must be separated based on the distance requirements as specified in Table 6.

Y = Distance to first major intersection. No four legged intersections may be placed between ramp terminals and the first major intersection. Y applies to the tip of the taper closest to the crossover.

## TYPE 2 – PARTIALLY CONTROLLED ACCESS HIGHWAYS

For Type 2 – Partially Controlled Access Highways, the minimum spacing for signalized intersections is 1/3 mile for urban areas and 2/3 mile spacing for rural areas. Median opening spacing requirements are defined in Section 5 - Median Policy. Minimum median opening spacing requirements on Type 2B Highways for interchange areas are shown in Table 5. The Type 2B Highway interchange area may include Type 1, 2, or 3 facilities.

Table 5  
Minimum Access Spacing on Type 2B Highways for Interchange Areas



Minimum Spacing Dimension

TYPE OF AREA	X	Y
Fully Developed Urban	1760'	1760'
Suburban/Urban	1760'	1760'
Rural	1760'	3520'

X = Distance from taper to first approach on the right; right in / right out only or the first possible directional median opening provided the LOS for the weave, merge, and queue are acceptable.

Y = Distance to first major intersection. No four-legged intersections may be placed between ramp terminals and the first major intersection.

Free-flow ramps are generally discouraged in fully developed urban areas and are questionable in suburban/urban areas because pedestrian and bicycle movements are difficult. For high speed free flow ramps, higher minimum spacing dimensions may be required.



## TYPE 3 – CONVENTIONAL HIGHWAYS





### Signalized Intersection Spacing

For Type 3 – Conventional Highways, the minimum spacing for signalized intersections will be 1/3 mile for urban areas and 2/3 mile for rural areas. Distances between signals should not vary by more than 10% in order that good progression of traffic may be maintained in both directions.

### Driveway Spacing - General

The minimum spacing for driveways will be as shown in Table 6 and as further described in the following sections. Spacing between driveways is measured from near edge to near edge of adjacent driveways as shown in Figure 1.

**Table 6**  
Minimum Connection Spacing for Driveways on Type 3 Highways

			POSTED SPEED	SPACING DISTANCE
COMMERCIAL DRIVEWAY		>50 PEAK HOUR TRIPS AND ≥2000 AADT	≤30mph	185'
			35mph	245'
			40mph	300'
			45mph	350'
			≥50mph	425'
		≤50 PEAK HOUR TRIPS OR <2000 AADT	NA	100'
NON- COMMERCIAL DRIVEWAY		≥2000 AADT	NA	50'
		<2000 AADT	NA	25'

**NOTE:** The above criteria are also summarized in Appendix 2.

The criteria in Table 6 apply to individual sites with multiple driveways to a highway, and also govern the allowable spacing between driveways located on adjacent properties. Exceptions to the minimum connection spacing may be approved for the following conditions if it is determined that MDOT does not want to purchase the right-of-way.

1. As a result of an MDOT action such as construction modifications the property would become land-locked.
2. Exception is necessary in order to replace reasonable access that may be lost due to MDOT highway reconstruction or modification.

On undivided highways, access points on opposite sides of the road should be aligned. Where this is not possible, driveways should be offset by at least 150 feet (distance between nearest edges) where two minor traffic generators are involved, or by at least 300 feet where at least one driveway will serve a site generating more than 50 peak hour trips.

All driveways serving properties other than single-family/duplex residential or farming are considered commercial.

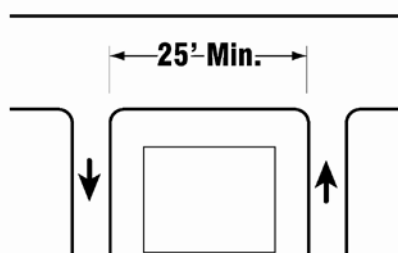
#### Commercial Driveway Spacing

Table 6 - Section A lists the minimum spacing between commercial driveways for sites along highways with greater than 2,000 AADT that generate greater than 50 total trips during the peak hour based on the most recent edition of the ITE Trip Generation Manual. Appendix 3 provides examples of facilities generating greater than 50 trips.

For commercial driveways located on highways with less than 2,000 AADT or generating 50 trips or less during the peak hour, the minimum driveway spacing may be reduced to 100 feet as shown in Table 6 - Section B. The 2,000 AADT should be measured based on traffic forecasts for the design year of the proposed development or project.

The State Traffic Engineer may allow two one-way driveways to serve a commercial property. Distances between adjacent one-way commercial driveways with inbound traffic upstream from the outbound drive must have a minimum separation distance (measured from near edge to near edge) of 25 feet. (See Figure 1.) Islands having a minimum length of 25 feet measured parallel to the highway must be built between the closely spaced driveways to form definite entrances and exits to the degree needed to channelize traffic and prevent paving of the entire frontage, thereby eliminating parking on the highway right of way directly in front of the business places and immediately adjacent to the roadway. The maximum width of a one-way entrance driveway will be 16 feet. Maximum widths for one-way exit driveways will be 16 feet for single-lane exits and 30 feet for two-lane exits.

Figure 1  
Minimum Distance Between Adjacent One-Way Commercial Driveways



#### Non-Commercial Driveway Spacing

For non-commercial driveways located along Type 3 highways with 2,000 AADT or greater, the minimum connection spacing will be 50 feet. However, where traffic volumes are less than 2,000 AADT, the minimum driveway spacing may be reduced to 25 feet. These distances are shown in Table 6 - Sections C & D.

Where the minimum permitted non-commercial driveway spacing is 25 feet, the driveways shall be so located within the applicant's frontage that the flared portion or curb return adjacent to the traveled way will not encroach on adjacent frontage. A minimum distance of 12½ feet should be reserved between the driveway and boundary property line so as to preserve a 25 foot neutral area between non-commercial driveways.

### Joint Use Driveways

Applications for joint use driveways (two adjacent property owners using the same driveway) or for driveways with less than the required 25 foot neutral area between non-commercial driveways will be reviewed for approval on a case by case basis. However, in all such applications, the applicant must provide acceptable documentation from the adjacent (sharing) property owner confirming his/her agreement to the joint usage. (In most cases, a notarized letter would be considered acceptable documentation.)

### Planned Developments

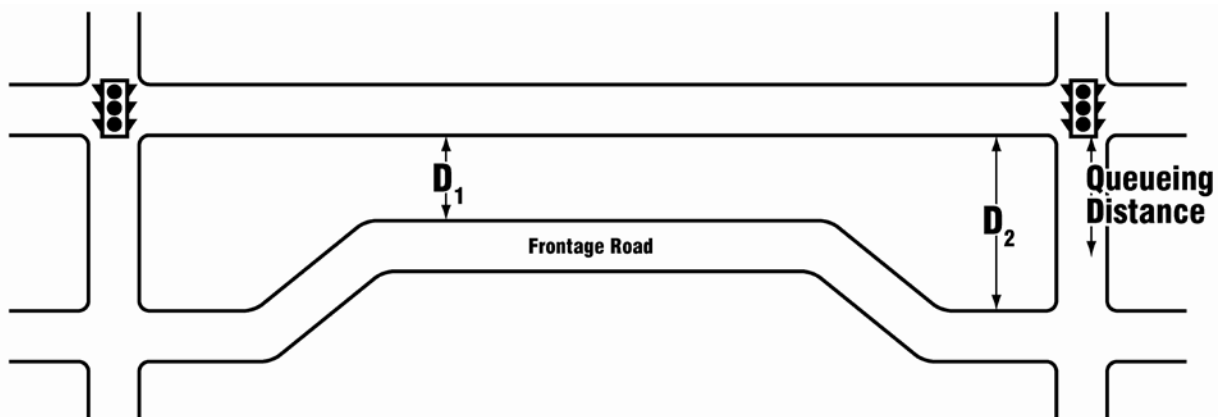
Master, planned developments that are intended to be subdivided into multiple parcels, with or without multiple business owners, will be viewed as a single development/business enterprise and will be subject to the guidelines within this Manual as such. Master developers of planned developments should apply for a driveway permit in the early stages of development so that access may be provided in a manner that will most safely and efficiently serve the overall development at full build-out, and to avoid any misunderstandings among future parcel owners regarding their individual access. Individual parcel owners who seek driveway permits that are found to be part of a larger, planned development will be treated as part of a single business entity consisting of the master development.

No more than two (2) two-way driveways shall be permitted for any planned development or individual parcel of property which has a frontage of 300 feet or less. Additional entrances or exits for developments or parcels having a frontage in excess of 300 feet shall only be permitted if the additional access would create a safer condition. Additional access must be reviewed and approved as part of the appeals process (described in Section 8) if a second driveway cannot meet the minimum connection spacing requirements described in this Manual. Where frontage is 50 feet or less, only one two-way driveway will be permitted, the width of which shall not exceed 25 feet measured parallel to the centerline of the highway.

## FRONTAGE ROADS

Frontage roads for both Type 1 and Type 2 Highways shall meet the driveway access requirements as specified for Type 3 highways. Minimum frontage road separation from the main highway is shown in Figure 2.

Figure 2  
Minimum Frontage Road Separation



Where:  $D_1$  = Minimum midblock separation (>25 ft.)

$D_2$  = Minimum separation at intersection (minimum 150 ft.; >300 ft. preferred)

## Section 4 – Geometric Requirements

### ACCESS DESIGN - GENERAL

The Roadway Design Manual<sup>(4)</sup> establishes the geometric requirements for proper design of all at-grade intersections (public road or private driveway) and grade-separated interchanges on state highways. The Roadway Design Manual provides criteria and guidance for the following:

- General design controls (e.g., selection of design vehicle, horizontal/vertical alignment, capacity analysis);
- Dimensions for turning radii, turning roadways and channelizing islands;
- Warrants and criteria for auxiliary turn lanes, continuous two-way left-turn lanes and restrictive medians;
- Intersection sight distance (ISD) requirements and computation methods; and
- Design criteria for driveways (rural and urban).

In addition to requirements established by the Department, designers of driveways may find additional guidance in NCHRP Report 659 – Guide for the Geometric Design of Driveways<sup>(9)</sup>. In general, driveways shall be built so that:

- Connection spacing and other criteria outlined in this Manual and the Roadway Design Manual are met;
- Sufficient capacity is provided to accommodate forecasted traffic demand;
- Vehicles can enter and exit efficiently without causing undue delay to through traffic;
- On-site traffic circulation does not obstruct or interfere with traffic flow on the main highway; and
- Drivers will not have to back into the roadway when exiting, or perform other potentially unsafe maneuvers.

For all private developments that involve dedication of an access road for public use, the access will conform to applicable criteria for public road intersections (e.g., median opening design/spacing, signal spacing, intersection sight distance, turning radii) as established in this Manual and in the Roadway Design Manual.

### MAJOR INTERSECTIONS

Public or private access to a state highway that is deemed to be a “major intersection” is subject to more rigorous design and spacing requirements than other access connections. Where referenced as such in this Manual, a major intersection is defined as a public road or private driveway intersection with a state highway that exhibits one or more of the following characteristics: 1) traffic volumes meeting or exceeding MUTCD warrants for signalization; 2) access approach volumes exceeding (or projected to exceed within five years) 3,000 AADT or 300 peak hour trips; or 3) designation by the State Traffic Engineer (or his designee) as a major intersection based on other factors – e.g., land use area (urban, suburban/urban, rural), anticipated safety issues, future growth forecasts, relationship to other planned improvement projects (public or private).

### CORNER CLEARANCES

Corner clearance is the minimum distance, measured parallel to a highway, between the nearest curb, pavement or shoulder line of an intersecting public way and the nearest edge of a driveway or public street, excluding its radii. The purpose of corner clearance is to remove conflicting movements from an intersection's functional area and

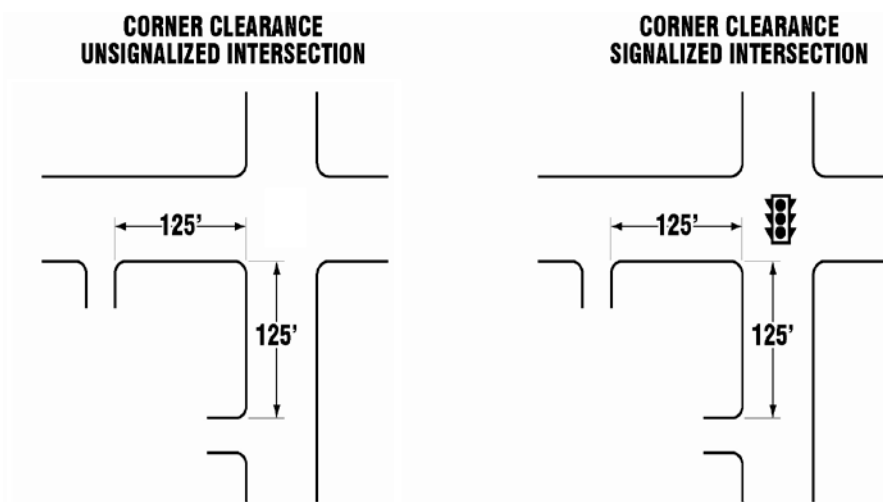
provide sufficient stacking space for queued vehicles at the intersection so that driveways are not blocked. Adequate corner clearance must therefore be provided at all public road intersections and at any private access connection designated as a major intersection.

No driveway will be permitted to enter directly into an intersection, and no part of a driveway entrance or exit will be permitted within a corner radius. Driveways must turn traffic into the traffic stream of the main highway or intersecting side street before it is permitted to pass through the intersection. Unless an exception is granted, the minimum corner clearance for driveways on Type 2 and Type 3 highways will be established by an intersection queuing analysis or 125 feet, whichever is larger.

For applicants submitting a traffic impact study, the queuing analysis must be presented in the study and give an estimate of queue lengths forecasted during the peak hour of the study's design year. If a traffic study is not required, the queuing analysis must be approved by the State Traffic Engineer (or designee). In all cases, the State Traffic Engineer (or designee) reserves authority to prohibit certain turning movements (e.g., by requiring right-in/right-out only access or a raised median to prevent left turns) if it is deemed necessary to address a safety concern.

Exceptions may be approved if as a result of MDOT action the property would become landlocked. If an exception to the minimum corner clearance is requested and approved, the access will be right-in/right-out only, and under no circumstances will any part of a driveway be permitted to connect with either the highway or intersecting side street within 50 feet from the near edge of the adjacent highway/street.

Figure 3  
Corner Clearance



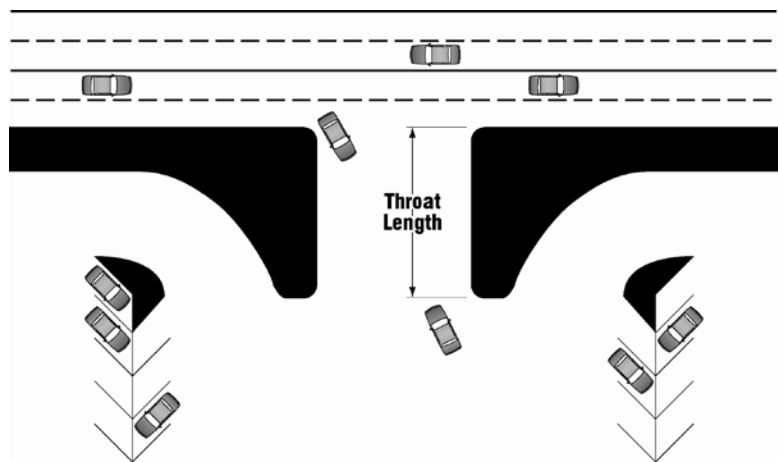
## THROAT LENGTH DISTANCES

The connection depth of a driveway (throat length) as measured from the edge of the abutting roadway (through or auxiliary lane) to the near edge of the internal circulation road or buffer area shall be of sufficient length to allow a driver to enter the site without interfering with the mainline of traffic. Table 7 shows examples of minimum throat lengths based on selected site activities. A minimum throat length of 30 feet may be sufficient for small commercial

developments generating less than 50 peak hour trips. For larger developments, throat lengths up to and in excess of 250 feet may be necessary to provide adequate storage for exiting vehicles and to avoid interference with entering vehicles or onsite traffic circulation. Greater distances may be required by the State Traffic Engineer (or designee) where deemed necessary by a queuing analysis.

Throat lengths will be independently determined by the State Traffic Engineer (or designee) for land uses not included in Table 7. Applicants submitting a traffic impact study shall calculate recommended throat lengths and demonstrate that site access will not interfere with mainline traffic. Note that the width of an auxiliary right turn lane on the abutting road will not be included as part of the required throat length measurement.

**Table 7**  
**Minimum Throat Lengths <sup>(5)</sup>**



SITE ACTIVITY	TYPICAL MIN. THROAT LENGTH
Small Commercial Development (e.g., Strip Shopping Center)	30'
Mid-size Shopping Center (Supermarket, Drug Store) or Office Center	80'
Regional Shopping Center/Mall or Office Complex	250'
Regional Office Complex	250'

**SIGHT DISTANCE REQUIREMENTS**

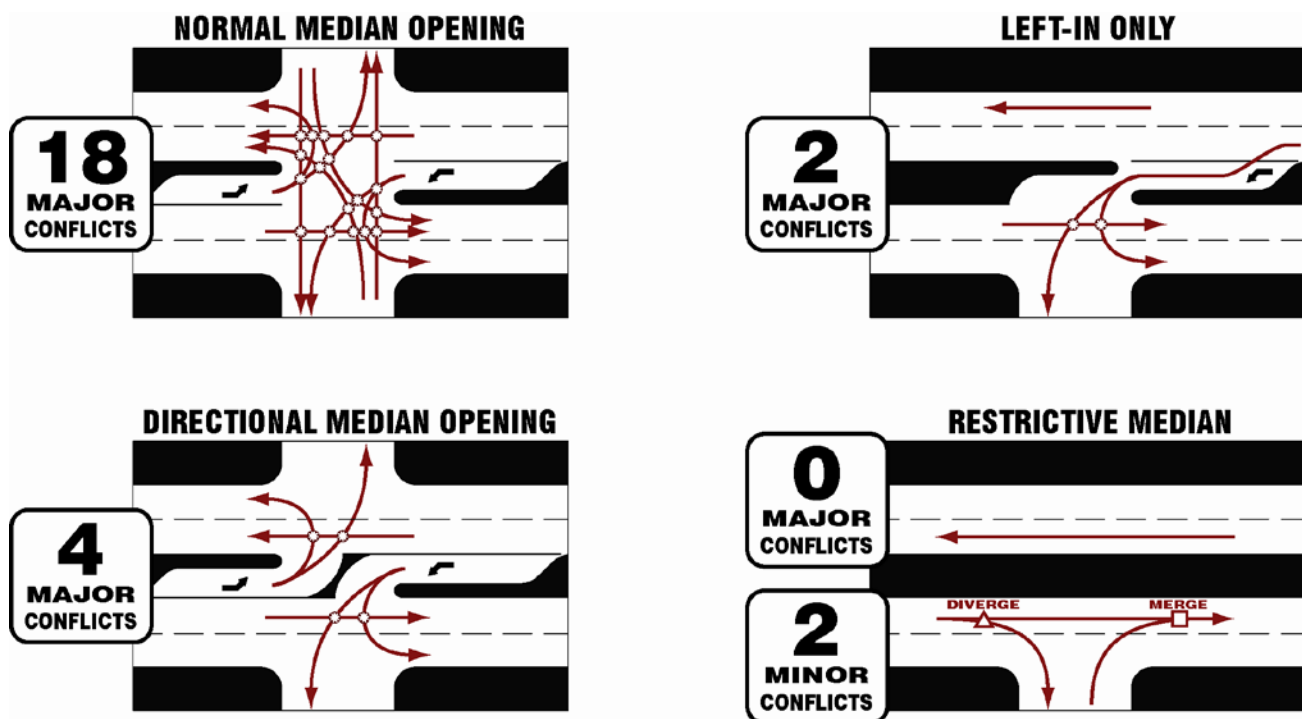
Driveways shall not be permitted to connect with any highway, road, street or frontage road at a location if it does not meet the minimum stopping sight distance requirements outlined in the Department’s Roadway Design Manual (using 3R Criteria), based on vertical or horizontal alignment, terrain or other reasons which will cause an undue hazard to the traveling public. Intersection sight distance requirements (outlined in the Roadway Design Manual) must also be met at all public road intersections, any private access connection designated as a major intersection, or where otherwise deemed necessary by the State Traffic Engineer (or designee) to avoid a safety concern. To provide adequate sight distance in both directions when entering the highway, driveway entrances and exits should be designed at a 90 degree angle. Angles less than 90 degrees will not be allowed unless justified by an engineering analysis and in no case will angles less than 60 degrees be permitted.

## Section 5 – Median Policy

Well designed medians and median openings are an important part of a safe and efficient highway system. The design and placement of these medians is an integral part of a state's access management program. The benefits of medians include:

1. Safety – fewer vehicle crashes and pedestrian accidents due to reduced conflicts and creation of refuge areas.
2. Vehicular Efficiency - reduction of conflicts and removal of turning in the through lanes increases highway speeds and reduces delays.
3. Aesthetics – creates room for landscaping and streetscaping applications.

There are four major types of raised restrictive medians as shown below:



### MEDIAN PLACEMENT

In order to promote safety and preserve capacity, multilane highways with design speeds greater than 40 miles per hour and annual average daily traffic exceeding 30,000 should be designed with a raised or restrictive median. Facilities having a design speed of 40 miles per hour or less and AADT's of less than 30,000 should include restrictive medians where appropriate to improve safety and traffic operations.

## MEDIAN OPENINGS PRIORITY

In keeping with the principles of functional design adopted by the AASHTO "Green Book" <sup>(6)</sup>, the following is a suggested hierarchy of median openings:

1. Intersection of freeway ramps and at-grade arterials.
2. Intersection of major arterial to arterial.
3. Other signalized intersections (public street or private access connection) which conform to the signalized intersection spacing standard.
4. Other intersections on major arterials which conform to the signalized intersection spacing but which are not as yet signalized.
5. Signalized intersections (public street or private access connection) which do not conform to the signalized intersection standard.
6. U-turn or left-turn/u-turn opening serving 2 or more public and/or private connections. U-turn/left turn ingress should normally be given priority over left turn out egress because ingress capacity is higher and produces less conflict than the left turn out movement.

## MEDIAN OPENING PLACEMENT

The unsignalized median opening is essentially an intersection. Under most traffic conditions the median should be designed with auxiliary lanes to allow left turning vehicles to decelerate without interfering with the through movement of the leftmost through lane. To allow for safe operations and based on a queue analysis, the provisions in Table 8 will apply to the construction of new and additional median openings and left turn bays on conventional or partial controlled access highways on which access rights between the median openings were not purchased with the right of way:

**Table 8**  
**Minimum Spacing Criteria for Median Openings**

	MINIMUM MEDIAN OPENING SPACING (DIRECTIONAL)	MINIMUM MEDIAN OPENING SPACING (FULL)
<b>Urban Areas:</b>		
Speed $\geq$ 45 MPH	1760'	1760'
Speed <45 MPH	880'	1760'
<b>Rural Areas</b>	1760'	1760'

If access rights have been purchased between the median openings, no additional median openings shall be considered.

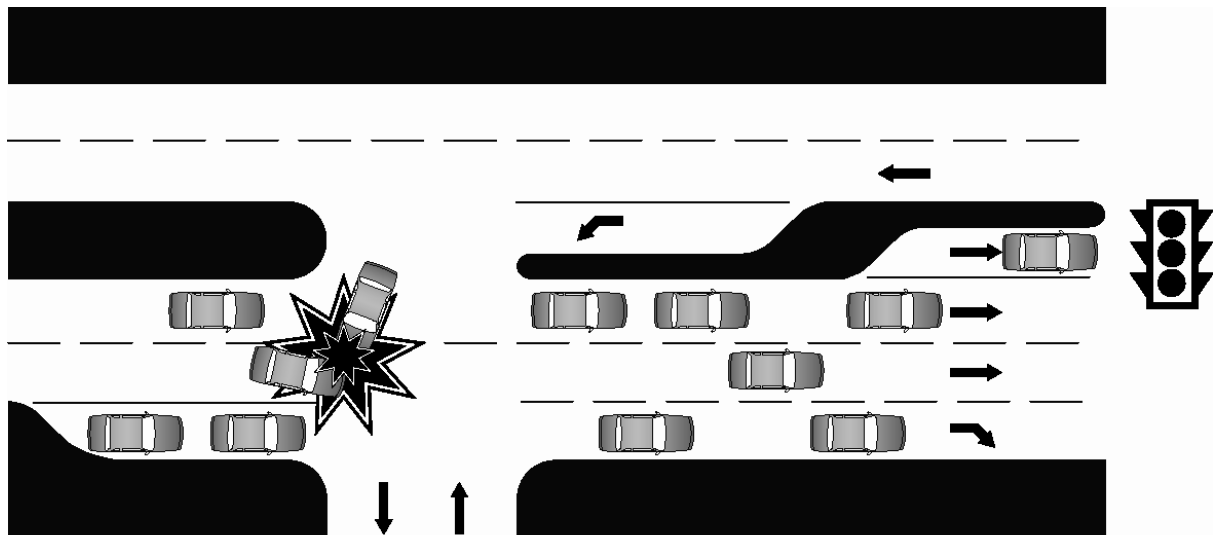
The normal spacing between full median openings will not be less than 1760 feet in rural areas. The minimum spacing for full medians in urban areas will not be less than 1760 feet. Urban areas are defined and shown on maps published by the Department or areas which are urbanized due to heavy strip development. Strip development may be either residences or businesses that are located on either or both sides of the highway and which average 200 feet or less apart for a distance of not less than 1320 feet measured along the highway.



The normal spacing between directional median openings shall not be less than 1760 feet for rural areas. For urban roads with posted speeds equal to or greater than 45 miles per hour the minimum spacing for directional median openings will not be less than 1760 feet and for posted speeds less than 45 miles per hour the minimum spacing is 880 feet.

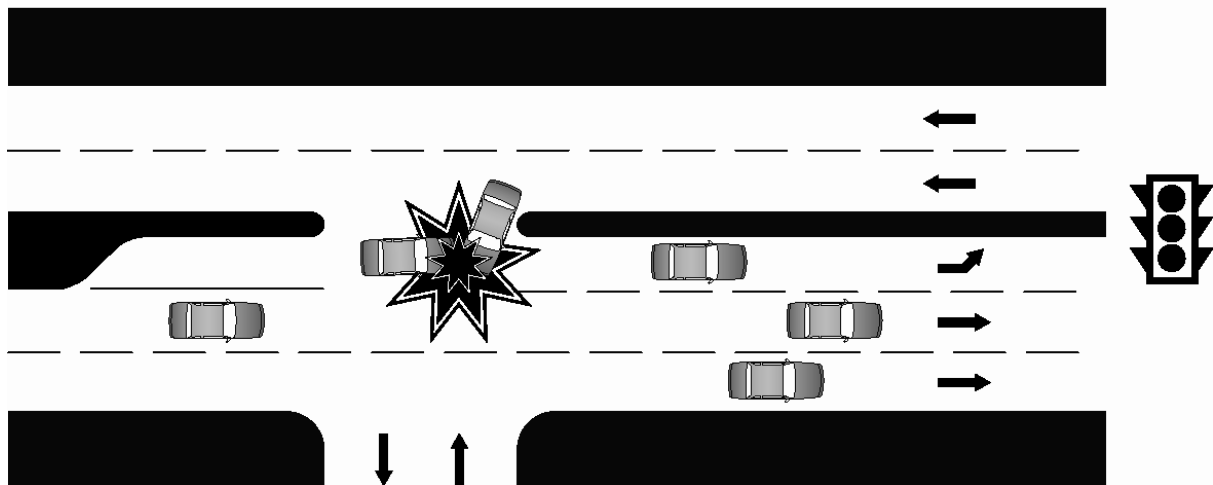
Median openings as shown in Illustration 1 that allow traffic to cross exclusive right turns or across regularly formed queues from a nearby intersection should not be permitted.

Illustration 1



Median openings as shown in Illustration 2 that allow traffic to cross exclusive left turns should not be permitted.

Illustration 2

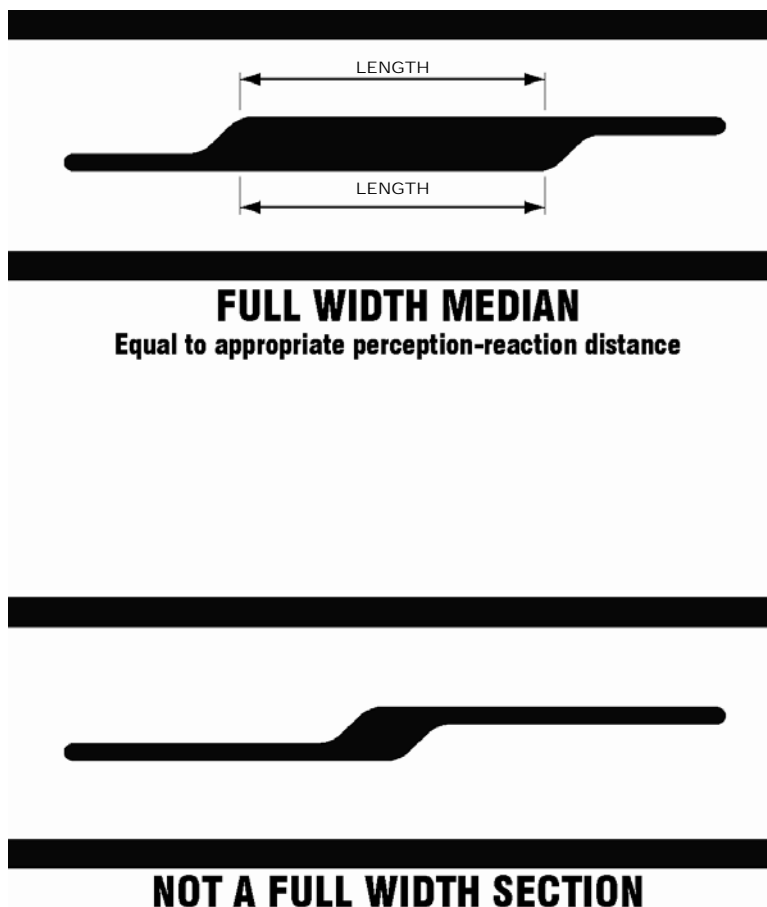


## MEDIAN GEOMETRIC DESIGN

Design criteria for median openings are provided in the Roadway Design Manual.

A full width median is a desirable feature that should be incorporated in the design. The length of the full median width should be equal to the perception-reaction distance. Typical perception-reaction time would be 1.5 seconds. For a 30 mph facility the full width median distance would be equal to 66 feet ( $1.5 \times 44$  fps). Full width medians provide space for signing and greater visibility to drivers. An illustration of a full width median is shown below.

Illustration 3



Left turn lane storage areas shall meet requirements established in the Roadway Design Manual. At a minimum, these areas must satisfy the queue storage requirements for four (4) vehicles in urban/suburban areas and two (2) vehicles in rural areas. Longer left turn storage areas should be provided if needed based on a queue analysis performed in a traffic study. In urban areas turn lane length may be determined by the queue length in the adjacent through lanes to prevent the queue from blocking access to the turn lane(s).

The type and placement of signs and traffic control devices will be based on the guidance provided in the Manual on Uniform Traffic Control Devices.

## Section 6 – General Requirements

### DOUBLE FRONTAGE LOTS

Where an applicant's lot has frontage on more than one public street, access shall be given from the lower functional road to the extent possible.

### JOINT DRIVEWAY USAGE

If an applicant is unable to comply with the access spacing requirements shown in Tables 6 and requests an exception, the applicant must provide documentation of his/her attempt to obtain an access or mutual driveway easement from the adjacent property so as to allow for one egress to serve two properties. If located all or partially on the applicant's property then the adjacent property owner(s) must agree to relocate any existing access to the proposed access and the relocation must be performed in conjunction with the applicant's development of the property.

If the applicant is unable to obtain an access or mutual driveway easement from an adjacent property owner, then the access to the applicant's property shall be located on its property in an area acceptable to MDOT. Documentation of the applicant's attempt to obtain an access or mutual driveway easement from the adjacent property shall be included in the submission of an exception.

### LOCAL COORDINATION

All applications for driveways to sites that will generate more than 100 peak hour trips shall be submitted by the applicant to the appropriate local jurisdiction for review and comment prior to submission to the MDOT.

## Section 7 – Traffic Impact Analysis

A traffic impact study shall be required and submitted by an applicant for any proposed site that would generate 100 or more total trips during the peak hour of the traffic generator or the peak hour of the adjacent street. A change or expansion at an existing site that results in an expected increase of 100 or more trips will require a traffic impact study. A traffic impact study will also be required if the State Traffic Engineer (or his designee) determines that the proposed development will have a significant impact on the roadway operations or safety at the proposed access point. The estimate of the number of trips for the site will be based on the latest edition of the ITE Trip Generation Manual. Listed below in Table 8 are examples of land use size thresholds that will generate 100 peak hour trips.

**Table 8**  
**Typical Land Use Thresholds <sup>(8)</sup>**

LAND USE	100 PEAK HOUR TRIPS
General Light Industrial (GFA)	103,000 sq. ft.
Manufacturing (GFA)	135,000 sq. ft.
Residential:	
Single-Family Detached Housing	99 units
Apartment	161 units
Condominium/Townhouse	192 units
Mobile Home Park	169 units
Hotel	169 rooms
Elementary School (GFA)	83,000 sq. ft.
General Office (GFA)	67,000 sq. ft.
Medical/Dental Office (GFA)	29,000 sq. ft.
Free-Standing Discount Store (GFA)	20,000 sq. ft.
Shopping Center (GLA)	29,600 sq. ft.
Fast Food Restaurant w/ Drive-Thru (GFA)	3,000 sq. ft.
Convenience Market w/ Gas Pumps (GFA)	1,700 sq. ft. or 8 pumps
Pharmacy/Drug Store w/ Drive-Thru (GFA)	9,700 sq. ft.
Bank w/ Drive-Thru (GFA)	3,900 sq. ft.

GLA – GROSS LEASABLE AREA  
GFA – GROSS FLOOR AREA

**NOTE:** For land uses not shown in this table, the applicant will reference the appropriate land use in the ITE Trip Generation Manual.

Before preparing a traffic impact analysis, the applicant shall schedule a meeting with the State Traffic Engineer (or designee) to confirm the scope of the study, establish the design year for analysis (which may be related to the opening year of the proposed land use or at some point further in the future), and review any special requirements.

The traffic impact analysis should contain the following information at a minimum:

1. Description of the site surroundings and study area: Through a narrative and illustrations the characteristics of the site should be described. This would include surrounding land uses and expected development in the vicinity that would influence future traffic conditions.
2. Description of the current and proposed land use: The description would include characteristics such as the number and type of dwelling units, gross and leasable floor area, the number of employees, and schedule for construction of the development.
3. Description of existing traffic conditions: Existing conditions include existing peak-hour traffic volumes adjacent to the site and existing counts and levels of service for intersections in the vicinity which are expected to be impacted. Traffic crash data near the proposed site access point during the most recent 3 year period should be included in the analysis.
4. Estimate of background traffic growth: If the planned completion date for the project or the last phase of the project is beyond 1 year of the study an estimate of background traffic growth for the adjacent street network will be made and included in the analysis.
5. Estimate of trip generation: The site forecasted trips will be based on the most recent edition of the ITE Trip Generation Manual. Any reductions due to internal trip capture and pass-by trips will be justified and documented. Projects that will be developed in phases will calculate the trips generated by phase.
6. Estimate of trip distribution and traffic assignment: The distribution (inbound versus outbound, left turn versus right turn) of the estimated trip generation to the adjacent street network and nearby intersections will be included in the report.
7. Estimate of impact analysis: A level of service will be calculated at the access points, the arterial, and any intersection where the expected traffic generated at the site will comprise at least five percent (5%) of the intersection capacity. The levels of service will be based on the procedures in the latest edition of the Highway Capacity Manual.
8. Access management standards: The report shall include a map and description of the proposed access including any sight distance limitations, adjacent driveways and intersections, and a demonstration that the number of driveways proposed is the fewest necessary and they provide safe and efficient traffic operations.
9. Site circulation plan: A site circulation plan will be included in the report to demonstrate (based on factors such as queuing at driveways that may affect throat lengths) that site circulation and ingress/egress will not disrupt mainline traffic flow.
10. Traffic signalization needs/impacts: If a traffic signal is being proposed, a signal warrant analysis will be included in the study. For properties located on urban or urbanizing corridors, an arterial analysis including the impact the proposed signalization will have on traffic progression will be conducted.
11. Traffic simulation: The applicant may be required to develop a simulation model (using approved micro-simulation software) to verify the proposed access point(s) will not disrupt the operation of traffic signals located in the vicinity.
12. Mitigation and alternatives: The traffic impact study should include proposed improvements or access management techniques that will mitigate any changes in the levels of service for the study design year.

## Section 8 – Administrative Procedures

### APPLICATIONS

For State Highways a permit is required for:

1. New driveways;
2. Alterations to existing drives;
3. Changes of use on the property serviced by the existing driveway/entrance that result in a daily trip increase of 10%, or 100 daily trips, whichever is greater; or
4. Property use changes from non-commercial to commercial.

Application for a driveway permit will follow the procedures as specified in Rule Number 941-7501-04002. If the access to a site is of such a magnitude that it is expected to exceed 100 peak hour trips a traffic impact study must be submitted as described in the Traffic Impact Analysis section of this guide.

Should the land use for the property for which the driveway was originally permitted be changed, the permit shall be revoked and a new permit must be applied for reflecting the new land use. This requirement is applicable to all permits granted by the Department prior to and after approval of this guide.

### APPEALS

If an applicant's permit is denied by the Department, the applicant may submit within 10 days after the receipt of a notification of the denial a written appeal to the District Engineer who will then forward the appeal, along with supporting documentation, to the State Maintenance Engineer. The State Maintenance Engineer will then send the appeal to the Access Management Review Committee. The Committee shall consist of representatives appointed by the Chief Engineer. The Committee shall review the appeal and determine whether any means exist by which the reasons for the decision may be mitigated and an exception approved.

### MAINTENANCE & PERMIT TRANSFER

The access must be maintained according to the standards and specifications at the time the permit was granted.

## APPENDIX 1 – LEVELS OF ACCESS

ACCESS CLASS	AREA TYPE	MEDIAN TREATMENT	MINIMUM MEDIAN OPENING SPACING		SIGNAL SPACING	
			DIRECTIONAL ACCESS			FULL ACCESS
			≥45mph	<45mph		
TYPE 2A	URBAN	RESTRICTIVE	1760'	880'	1760'	1760'
	RURAL	RESTRICTIVE	1760'	1760'	3520'	3520'
TYPE 2B	URBAN	RESTRICTIVE	1760'	880'	1760'	1760'
	RURAL	RESTRICTIVE	1760'	1760'	3520'	3520'
TYPE 3	URBAN	NON-RESTRICTIVE	NA	NA	NA	1760'
		RESTRICTIVE	1760'	880'	1760'	1760'
	RURAL	NON-RESTRICTIVE	NA	NA	NA	3520'
		RESTRICTIVE	1760'	1760'	1760'	3520'

Note: Less than the minimum signal distance is only permitted if there is no reasonable alternative and a weave and queue analysis shows adequate spacing.

## APPENDIX 2 – MINIMUM CONNECTION SPACING

			POSTED SPEED	DISTANCE
COMMERCIAL DRIVEWAY	A	>50 PEAK HOUR TRIPS AND ≥2000 AADT	≤30mph	185'
			35mph	245'
			40mph	300'
			45mph	350'
			≥50mph	425'
	B	≤50 PEAK HOUR TRIPS OR <2000 AADT	NA	100'
NON-COMMERCIAL DRIVEWAY	C	≥2000 AADT	NA	50'
	D	<2000 AADT	NA	25'



## APPENDIX 3 – LAND USE SIZE THRESHOLDS FOR 50 PEAK HOUR TRIPS <sup>(8)</sup>

LAND USE	50 PEAK HOUR TRIPS
General Light Industrial (GFA)	52,000 sq. ft.
Manufacturing (GFA)	67,000 sq. ft.
Residential:	
Single-Family Detached Housing	50 units
Apartment	80 units
Condominium/Townhouse	96 units
Mobile Home Park	84 units
Hotel	84 rooms
Elementary School (GFA)	41,000 sq. ft.
General Office (GFA)	33,500 sq. ft.
Medical/Dental Office (GFA)	14,500 sq. ft.
Free-Standing Discount Store (GFA)	10,000 sq. ft.
Shopping Center (GLA)	14,700 sq. ft.
Fast Food Restaurant w/ Drive-Thru (GFA)	1,500 sq. ft.
Convenience Market w/ Gas Pumps (GFA)	850 sq. ft. or 4 pumps
Pharmacy/Drug Store w/ Drive-Thru (GFA)	4,800 sq. ft.
Bank w/ Drive-Thru (GFA)	1,950 sq. ft.

GLA – GROSS LEASABLE AREA  
GFA – GROSS FLOOR AREA

NOTE: For land uses not shown in this table, the applicant will reference the appropriate land use in the ITE Trip Generation Manual.

## APPENDIX 4 – DRIVEWAY ACCESS REVIEW CHECKLIST <sup>(7)</sup>

The following checklist is intended to be used by MDOT staff for an initial review of access permit requests. Standards to be applied are from the Mississippi Roadway Design Manual, Mississippi's Rules and this guideline.

### Checklist

YES NO

☐ ☐

The distance between driveways and adjacent intersections or other intersections meet corner clearances and spacing standards.

Comment: \_\_\_\_\_

☐ ☐

Sight distance at the proposed location is sufficient. Proposed signs and/or landscaping do not obscure sight distance.

Comment: \_\_\_\_\_

☐ ☐

Driveway grades and widths meet standards.

Comment: \_\_\_\_\_

☐ ☐

The driveway throat length meets standards and is sufficient to provide storage for vehicles waiting to enter or exit without creating conflicts.

Comment: \_\_\_\_\_

☐ ☐

Shared driveways, frontage roads, rear service driveway or connecting driveways have been considered if appropriate.

Comment: \_\_\_\_\_

☐ ☐

Driveway radii for both inbound and outbound are sufficient to accommodate the type of vehicular traffic that is expected to enter the site.

Comment: \_\_\_\_\_

☐ ☐

Pedestrian traffic has been accommodated and ADA requirements have been met.

Comment: \_\_\_\_\_

☐ ☐

Alternative access to a side street has been considered where available.

Comment: \_\_\_\_\_

☐ ☐

Where possible the driveway is aligned with driveways across the street.

Comment: \_\_\_\_\_

☐ ☐

For driveways that meet the trip generation standards a traffic impact analysis was conducted. The need for bypass lanes, turn lanes, deceleration lanes, deceleration tapers, and width and number of ingress/egress lanes has been evaluated.

Comment: \_\_\_\_\_

## REFERENCES

1. *Access Management Manual*, Transportation Research Board, Washington D. C. 2003.
2. Gluck, J., H.S. Levinson, and V. Stover. *NCHRP Report 420: Impacts of Access Management Techniques*. TRB National Research Council, Washington D.C., 1999.
3. S&K Transportation Consultants, Inc. *Access Management, Location and Design*. Participant notebook for NHI Course 133078. Federal Highway Administration April 2000.
4. *Roadway Design Manual*, Mississippi Department of Transportation.
5. *Florida Site Impact Handbook*, Florida Department of Transportation.
6. *AASHTO Green Book, A Policy on Geometric Design of Highways and Streets*.
7. *Evaluating Traffic Impact Studies – A Recommended Practice for Michigan Communities* – Michigan Department of Transportation 1994.
8. *Trip Generation, 8<sup>th</sup> Edition: An ITE Informational Report*, Institute of Transportation Engineers 2008.
9. *NCHRP Report 659 – Guide for the Geometric Design of Driveways*, Transportation Research Board, Washington D. C. 2010.

# What's new in Version 2.0 of the Access Management Manual?

## Section 1 – Introduction

- Enhanced description of the background and purpose for the Access Management Manual.
- Included a discussion of the benefits and advantages businesses typically experience due to proper application of good access management techniques. (Moved from Section 5 – Median Policy)
- Clarified definitions for several key terms and phrases, including:
  - Commercial Driveway
  - Non-Commercial Driveway
  - Major Intersection
  - Planned Development
  - Queuing Analysis

## Section 3 – Levels of Access

- For Type 3 Highways, clarified MDOT's access spacing requirements as applied to the following:
  - Signalized Intersections
  - Commercial Driveways
  - Non-Commercial Driveways
  - Joint Use Driveways
  - Planned Developments

## Section 4 – Geometric Requirements

- Provided additional background and direction concerning the proper geometric design of access connections on state highways, as further outlined in the Department's Roadway Design Manual.
- Established a definition for the term "major intersection" (including a list of typical characteristics).
- Referenced additional requirements applicable to any access point deemed to be a major intersection.
- Clarified discussion of MDOT's requirements for the following:
  - Corner Clearance - *between an access connection and any public road (or private major) intersection*
  - Throat Length Distance - *for driveways serving developments of various sizes*
  - Sight Distance - *to be provided in accordance with the Roadway Design Manual*

## Section 5 – Median Policy

- Referenced the Roadway Design Manual for geometric design criteria for left turn lane storage areas.

## Section 7 – Traffic Impact Analysis

- Revised land use size thresholds in Table 8 to agree with latest edition of the ITE Trip Generation Manual.
- Added note directing the reader to the ITE Trip Generation Manual for land uses not listed in Table 8.
- Updated basic requirements and the necessary information to be provided by any traffic impact study.

## Appendix 3 – Land Use Size Thresholds for 50 Peak Hour Trips

- Revised land use size thresholds in table to agree with latest edition of the ITE Trip Generation Manual.
- Added note directing the reader to the ITE Trip Generation Manual for land uses not listed in the table.

## Multiple Sections

- Clarified meaning of the term "trip" to promote consistent application of certain access policy requirements. Deleted the word "directional" where shown before "trip", and made clear that the peak hour trip thresholds established in the Manual refer to all trips entering and exiting a site (at all driveways) during the peak hour.