



*An Online PDH Course  
brought to you by  
CEDengineering.com*

## **Access Management**

Course No: C04-037

Credit: 4 PDH

---

Debra Kennaugh, P.E.

---



Continuing Education and Development, Inc.

P: (877) 322-5800  
[info@cedengineering.com](mailto:info@cedengineering.com)

**I. Introduction**

- A. History**
- B. Development of Access Management**
- C. Municipality Coordination**
- D. Purpose of Access Management**
- E. Access vs. Movement**
- F. Definition of Terms**

**II. Access Management Classification**

- A. Access Classification and Standards Limited Access Facilities Interchanges**
- B. Controlled Access Facility Classification**
- C. Corner Properties**
- D. Measurements**
- E. Existing Connections**
- F. Modifications of Connections**
- G. Joint Use Connections**
- H. Reasonable Access**

**III. Interchange and Connection Review Process**

- A. Interchange Connection**
- B. Driveway Connection**
- C. Conforming and Non-Conforming Permits**

**IV. Medians**

- A. Median Design**
- B. Bi-Directional Left Turn Lane vs. Raised Median Design**
- C. Conflict Points**

**V. Signal Spacing**

**VI. Turning Vehicle Destination**

**VII. Driveway Design**

- A. Geometrics**
- B. Driveway Placement**
- C. Throat Length**

- D. Crossing Queue**
- E. Positive Offset**
- F. Site Plan Design**

## **VIII. Summary**

## **I. Introduction**

Access management is the practice of managing the location, number and spacing of connections, median openings and traffic signals on the highway system. Research has shown that access management can lead to a significant increase in safety and capacity. Access management is the control and regulation of the spacing and design of:

- Driveways/Intersections
- Medians
- Median Openings
- Traffic Signals
- Interchanges

### **A. History**

The 1988 State Highway System Access Management Act (Florida Statute 335-18) mandated that Florida's access management strategy be based on:

- Rule 14-96 was adopted to implement the State Highway System Access Management Act of 1988 that addresses the regulation and control of vehicular access and connection points of ingress to, and egress from, the State Highway System. This rule chapter describes the connection permit application process and procedures, a voluntary pre-application process, and requirements for modification or closure of connections to the State Highway System. This rule chapter was also adopted to promote close cooperation with local governments in their site planning decisions that increase the safe traffic operations of the State Highway System.
- Rule 14-97 adopted an access classification system and standards to implement the State Highway System Access Management Act of 1988 for the regulation and control of vehicular ingress to, and egress from, the State Highway System. The implementation of the classification system and standard is intended to protect public safety and general welfare, provide for the mobility of people and goods, and preserve the functional integrity of the State Highway System. All segments of the State Highway System shall be assigned an access classification and standard. The standards shall be the basis for connection permitting and the planning and development of Department construction plans.

## **B. Development of Access Management**

Based on the requirements of the 1988 State Highway System Access Management Act, the two mandated rules were developed. The issue of balancing a property owner's rights with the State responsibility for providing and maintaining a safe and efficient highway system considered several sources including:

- Research developed by the Institute of Transportation Engineers and the U.S. DOT.
- Comments from property owners during Public Workshops and Public Hearings during the rule development process.
- Comments from Department Legal and Right-of-Way staff and the results of appropriate court cases.
- Access management experience from the State of Colorado.

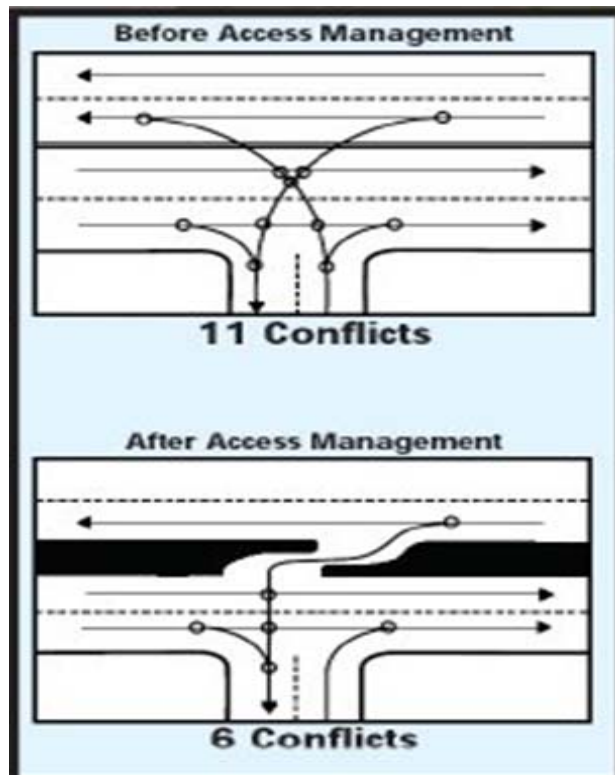
## **C. Municipality Coordination**

It is critical in the permitting process that the Department coordinates with the local municipalities. They can provide information such as local land use plans, zoning and land development regulations as set forth in adopted comprehensive plans. Local land use planning and regulation decisions must be considered in the access management classification process. Such decisions can impact the Department's ability to meet the access standards assigned to a particular segment of highway. Effective access management must not only involve access permitting, but should also be coordinated with local government land use planning, development and subdivision regulation activities. The application of the access management classification system and standards shall be the responsibility of the Department. The Department can assist the local municipalities by requesting uniform modifications to the submitted plans.

### D. Purpose of Access Management

The purpose of access management is to control access points to the mainline roadway. With access management there are less access points which reduces the number of conflict points.

The illustration below shows that a full access connection for a driveway presents 11 possible conflict points. A roadway designed with a raised median and a dedicated left turn lane only presents 6 conflict points.



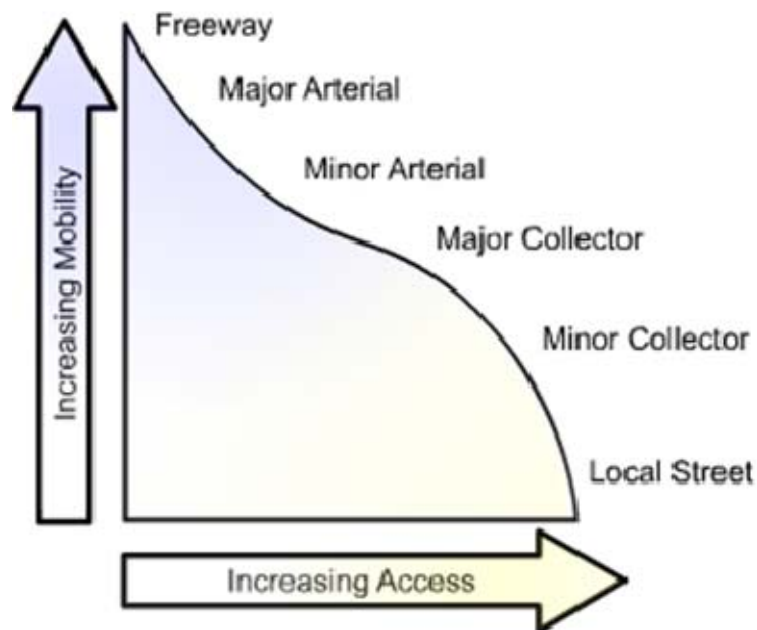
The illustration below shows how access management can be used to reduce five access connections to two access connections to the mainline roadway. This reduces the number of conflict points while providing adequate access to the parcels.



## E. Access vs. Movement

Highway functional classification means classifying highways with respect to the amount of access or movement they are to provide and then designing and managing each facility to perform that function.

It should be noted that as the amount of through traffic increases the access to property decreases (e.g., interstate). Also, as the amount of thru traffic decreases, the access to property increases (e.g., local street). With the addition of connections and/or medians on roadways, the designer must consider the balance between access to property and thru traffic movement.



An example of an Access Class 1 would be a freeway with high mobility and limited access points. An example of an Access Class 7 would be a local street with decreased mobility and greater access. Access Classes 2 through 6 fall in between these two extremes.



## **F. Definition of Terms**

*Area Type* means one of four specific land categories reflecting certain land use and intensity characteristics used in specifying the interchange spacing standards for limited access facilities.

*Central Business District (CBD)* means that portion of a municipality in which the dominant existing and projected land use is for intense business and commercial activity. The term is applicable for access classification 1 (limited access facilities) within Urbanized Areas.

*Connection* means a driveway, street, turn out or other means of providing for the right of access to or from controlled access facilities on the State Highway System. Two one-way connections to a property may constitute a single connection.

*Controlled Access Facility* means a transportation facility to which access is regulated through the use of a permitting process by the governmental entity having jurisdiction over the facility. Owners or occupants of abutting lands and other persons have a right of access to and from such facility at such points only and in such a manner as may be determined by the permitting authorities.

*Corner Clearance* means the distance from an intersection of a public or private road to the nearest connection along a controlled access facility. This distance is measured from the closest edge of pavement of the intersection road to the closest edge of pavement of the connection measured along the traveled way (through lanes).

*Directional Median Opening* means an opening in a restrictive median that provides a U-turn only, and/or left-turn in movements. Directional median openings at two opposing left or “U-turn” movements along one segment of road are considered one directional median opening.

*Full Median Opening* means an opening in a restrictive median designed to allow all turning movements to take place from both the state highway and the adjacent connection.

*Intersection* means an at-grade connection or crossing of a local road or another state highway with a state highway.

*Limited Access Facility* means a street or highway especially designed for through traffic and over, from, or to which owners or occupants of abutting land or other persons have no right or

easement of access, light, air, or view by reason of the fact that their property abuts such limited access facility or for any other reason.

*Minimum Connection Spacing* means the minimum allowable distance between conforming connections, measured from the closes edge of pavement of the first connection to the closest edge of pavement of the second connection along the edge of the traveled way.

*Minimum Median Opening Spacing* means the minimum allowable spacing between openings in a restrictive median to allow for crossing the opposing traffic lanes to access property or for crossing the median to travel in the opposite direct (U-turn). The minimum spacing or distance is measured from centerline to centerline of the openings along the traveled way.

*Minimum Signal Spacing* means the minimum spacing or distance in miles between adjacent traffic signals on a controlled access facility measured from centerline to centerline of the signalized intersections along the traveled way.

*Non-Restrictive Median* means a median or painted centerline which does not provide a physical barrier between center traffic turning lanes or traffic lanes traveling in opposite directions. This includes highways with continuous center turn lane and undivided highways.

*Reasonable Access* means them minimum number of connections, direct or indirect, necessary to provide safe ingress and egress to the State Highway System baaed on the Access Management Classification, projected connection and roadway traffic volumes, and the type and intensity of the land use.

*Restrictive Median* means the portion of a divided highway or divided driveway physically separating vehicular traffic traveling in opposite directions. A restrictive median includes a physical barrier that prohibits movement of traffic across the median such as a concrete barrier, a raised concrete curb and/or island, or a median swale.

*Significant Change* means a change in the use of the property, including land, structures or facilities, or an expansion of the size of the structures or facilities causing an increase in the trip generation of the property, based on the Institute of Transportation Engineers “Trip Generation Manual”, incorporated by reference under Rule 14-96.005, exceeding 25% more trip generation (either peak hour or daily) and exceeding 100 vehicles per day more than the existing use.

*State Highway System (SHS)* means the network of limited access and controlled access highways that have been functionally classified and which are under the jurisdiction of the state.

## II. Access Management Classification

The State Highway Access Management Act required the Department to assign an access classification to every segment of the State Highway System. Freeways are all Classification 1, segmented by Area Type. The Department worked with local governments to classify the State Highway System into the six (6) Arterial classifications (Classes 2-7) described in Administrative Rule 14-97.

### A. Access Classification and Standards Limited Access Facilities Interchanges

Access Class	Segment Location	Applicable Interchange Spacing Standard
1	Area Type 1 CBD & CBD fringe for cities in urbanized areas	1 Mile
1	Area Type 2 Existing urbanized areas other than area type 1	2 Miles
1	Area Type 3 Transitioning urbanized areas and urban areas other than area type 1 or 2	3 Miles
1	Area Type 4 Rural Areas	6 Miles

*Access Class 1* consists of limited access facility; which roadways do not provide direct property connections. These roadways provide for high speed and high volume traffic movements, serving interstate, interregional and intercity travel needs. Interstate highways are typical of this class. The interchange spacing standards, based on the Area Type the highway is passing through, are for the through lanes or main line of the facility.

**B. Controlled Access Facility Classification**

Access Class	Facility Design Features	Minimum Connection Spacing	Minimum Median Opening Spacing		Minimum Signal Spacing (miles)
			Directional (feet)	Full (miles)	
	Median Treatment	>45mph/=45mph or less (feet)	Directional (feet)	Full (miles)	(miles)
2	Restrictive with Service roads	1320/660	1320	0.5	0.5
3	Restrictive	660/440	1320	0.5	0.5
4	Non-Restrictive	660/440	N/A	N/A	0.5
5	Restrictive	440/245	660	0.5/0.25	0.5/0.25
6	Non-Restrictive	440/245	N/A	N/A	0.25
7	Both Median Types	125	330	0.125	0.25

Note:

- Section 14-97.003 and 14-97.004, FAC, contain supplementary and more detailed instructions for the use of these standards. These minimum spacing may not be adequate if auxiliary lanes and storage are required.
- Single properties with frontages exceeding the minimum spacing criteria may not receive permits for the maximum number of possible connections.

It should be noted that the higher the access management class the fewer deviations from standards should be allowed.

*Access Class 2* roadways are highly controlled access facilities distinguished by the ability to serve high speed and high volume traffic over long distances in a safe and efficient manner. This access class is further distinguished by a highly controlled limited number of connections, median openings, and infrequent traffic signals.

*Access Class 3* roadways are controlled access facilities where direct access to abutting land is controlled to maximize the operation of the through traffic movement. The land adjacent to these roadways is generally not extensively developed and/or the probability of significant land use change exists. These roadways are distinguished by existing or planned restrictive medians.

*Access Class 4* roadways are controlled access facilities where direct access to abutting land is controlled to maximize the operation of the through traffic movement. The land adjacent to these roadways is generally not extensively developed and/or the probability of significant land use change exists. These roadways are distinguished by existing or planned non-restrictive median treatments.

*Access Class 5* roadways are controlled access facilities where adjacent land has been extensively developed and where the probability of major lane use change is not high. These roadways are distinguished by existing or planned restrictive medians.

*Access Class 6* roadways are controlled access facilities where adjacent land has been extensively developed, and the probability of major land use change is not high. These roadways are distinguished by existing or planned non-restrictive medians or centerlines.

*Access Class 7* roadways are controlled access facilities where adjacent land is generally developed to the maximum feasible intensity, and roadway widening potential is limited. This classification shall be assigned only to roadway segments where there is little intent or opportunity to provide high speed travel.

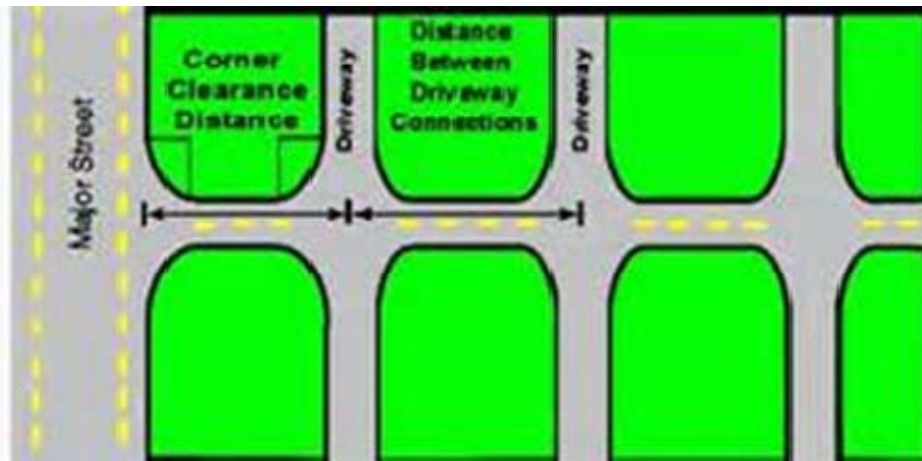
**C. Corner Properties**

The Department realizes that small corner properties are often used for businesses where direct access to the state highway system may be desired. If such a connection to the state highway system is requested by the applicant and is determined to be needed to provide reasonable access, the connection may be permitted. This need for access must be weighted against the safety of the State Highway, the corner clearance standard, neighboring connections and the possibility of a joint use connection. For such properties, special “isolated corner” clearance standards were developed (defined in Rule 14-97.003(1)(i)). These standards contain specific restrictions as to the type of movements allowed (right in or right out only) and may require joint use access with adjacent properties in the future.

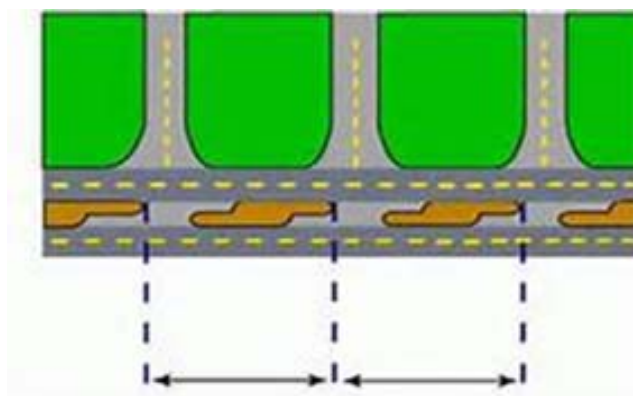
<b>Corner Clearance at Intersections: Isolated Corner Properties Only</b>		
<b>With Restrictive Median</b>		
<b>Position</b>	<b>Access Allowed</b>	<b>Minimum (Feet)</b>
Approaching Intersection	Right In/Out	115
Approaching Intersection	Right In Only	75
Departing Intersection	Right In/Out	230(125)*
Departing Intersection	Right Out Only	100
<b>Without Restrictive Median</b>		
<b>Position</b>	<b>Access Allowed</b>	<b>Minimum (Feet)</b>
Approaching Intersection	Full Access	230(125)*
Approaching Intersection	Right In Only**	100
Departing Intersection	Full Access	230(125)*
Departing Intersection	Right Out Only**	100
* Access Class 7 may use the measurements in parenthesis.		
** Right In/Out, Right In Only and Right Out Only connections on roads without restrictive medians shall, by design of the connection, effectively eliminate unpermitted movements.		

### D. Measurements

The corner clearance distance is measured from the near edge of the street to the near edge of the driveway. The distance between driveways is measured from the near edge of one driveway to the near edge of the next driveway. The following illustration shows how the corner clearance and distance between driveways is calculated.



The distance between median openings is measured from the nose of one median opening to the nose of the next median opening. The following illustration shows how the distance between medians is calculated.





### **E. Existing Connections**

Existing connections that are not permitted but have been in continuous use for at least one year before July 1, 1988 are considered to be “grandfathered in” and will generally be allowed to remain in place without a permit (Section 335.187 F.S. and Rule 14-96.012).

Unpermitted connections constructed after July 1, 1988 are subject to closure by the Department following the process defined in Rule 14-96.

### **F. Modification of Connections**

Changes to existing connections would normally be required under the following circumstances:

- If a significant change (defined in Rule 14-97.002(27)) occurred in the property use, existing connections would be examined to determine if changes in the number, spacing, location or design are necessary to accommodate the additional traffic generated (Rule 14-97.003(1)(b), 14-96). The cost to make such changes is normally the responsibility of the property owner.
- During a major highway reconstruction project initiated by the Department, existing connections would be reviewed. The review shall occur at the 30% plan submittal phase. While it is unlikely that all connections could be brought up to the current spacing standards, the Department will make an effort to bring them into reasonable conformance (Rule 14-97.003(1)(b)). In such actions, the Department must ensure that reasonable access to the property is maintained. Also, all connections will be brought up to current geometric design and material standards. Such changes would normally be done at no expense to the property owner.
- Where a connection was causing a safety problem with the operation on the State Highway, the Department has authority to close or modify the connection to eliminate the problem pursuant to the process as set out in Rule 14-96. In such cases, the Department will work with the property owner to ensure that reasonable access to the property will be maintained.
- Where an existing connection is not permitted or “grandfathered” by law, the Department has the authority to require the owner to obtain a connection permit pursuant to the process as set out in Rule 14-96. The owner may be required, as part of the connection permit process, to close, relocate or redesign existing connections.

### **G. Joint Use Connections**

The Department cannot require two properties with existing connections to combine these connections and have a single joint use connection. There may be benefits to the property owners to do this however, such as in a case where a single joint use connection could share a median opening while individual connections might not have such an opening. The Department may, however, require a joint use connection from another property as a permit condition. A number of possible scenarios exist depending on factors such as the ownership of the properties in question, existing connections and any permit conditions associated with them, the status of development of the properties and the compatibility of the traffic generated by the properties. Direction is provided in Rule 14-97.003(1)(g) and (i) and Rule 14-96.

### **H. Reasonable Access**

There is no single definition of reasonable access that fits all situations. No single standard has emerged from case law on this subject. Court decisions have indicated that reasonable access must be determined on a case-by-case basis considering all pertinent factors. For the purpose of this rule and in keeping with the intent of the State Highway Access Management Act, reasonable access is defined in Rule 14-97.002(25). This definition must, however, be used with caution taking into consideration the site specific conditions of the applicant's parcel and must assure the safety of the driving public.

All property owners adjacent to the state highway system, where limited access rights have not been acquired, have a right to reasonable access to the state highway system as stated in Rule 14-96.

The Department realizes that land may have been previously subdivided such that the frontages are less than the connection spacing standard for the highway. In such cases, where there is a property that cannot meet the spacing standards of the highway and which has no other reasonable means of access to the state highway system, a single conforming connection will be allowed.

### **III. Interchange and Connection Review Process**

#### **A. Interchange Connections**

Applications for new interchanges on limited access facilities shall be examined for consistency with the spacing standards based on the Area Type the segment is located in. The applicant shall prepare an engineering analysis including consideration of Transportation Systems Management techniques and documenting why existing interchanges cannot be used, including consideration of arterial road and interchange improvements, an analysis of the operation and safety of the interchange with respect to adjacent interchanges, and the operation of the mainline and systems analysis of the impact of additional traffic generated by the development using the interchange on the operation of the limited access facility. For additional interchanges on the Interstate Highway System, the interchange must be to a public road only and the applicant must prepare an Interchange Justification Report (IJR) for review and concurrence by the Department and approval by FHWA.

When a freeway has an interchange with an at-grade arterial, the operations of the freeway and the interchange ramps will take precedence over the access issues on the at grade arterial cross street.

**B. Driveway Connections**

No person may construct a connection without first obtaining a connection permit from the Department, as provided in Rule 14-96.003(1). It is the responsibility of applicant to obtain local agency permit approvals prior to obtaining a connection permit from the Department. A non-binding pre-application meeting may be held prior to the connection application submittal to establish submittal requirements.

FDOT Driveway/Connection Applications are subdivided into the following categories by projected average vehicle trips per day of site.

<b>Description/Projected Average Vehicle Trips per Day of Site</b>	
Category A	Uses to 20 VTPD
Category B	Uses with 21 - 600 VTPD
Category C	Uses with 601 - 1,200 VTPD
Category D	Uses with 1,201 - 4,000 VTPD
Category E	Uses with 4,001 - 10,000 VTPD
Category F	Uses with 10,000 - 30,000 VTPD
Category G	Uses with 30,000 + VTPD

The Driveway/Connection Application for All Categories shall be submitted by the property owner or the authorized agent. The connection applications are segmented into categories and the application fees vary depending on the projected average vehicle trips per day. All applications require the following information:

- a. Identification and signature of property owner and applicant.
- b. Notarized letter of authorization to approve a representative for the application.
- c. Responsible officer.
- d. Signatures.
- e. Property use. The existing and proposed property use shall be noted in sufficient detail to determine the appropriate connection category of the application.
- f. Site Plan. Location of all existing and proposed connections on the property.  
This will include a site plan of any physical features that would have an impact on traffic circulation and sight distance on the Public Road System. Examples are walls, fences, trees, etc.

Category C, D, E, F and G require the following additional information:

- a. Trip generation data
- b. Site plan
- c. Transportation facility and neighboring connection information.
- d. Connection location and design information.
- e. Traffic study requirements. Category A, B, and C applications will generally be exempted from traffic study requirements. For Category D, E, F, and G applications a Traffic Study must be signed, dated and sealed by a Professional Engineer registered in the State of Florida qualified in the area of Transportation Engineering. The Traffic Study must include at least:
  1. Critical peak hour turn movements from each proposed connection and abutting public road in graphic form.
  2. Traffic operations analysis of sufficient depth to analyze the impacts of the development on the surrounding transportation system.
  3. The size of the study area as well as the time horizon will depend on the type and size of the development. The specific detail and content of the report will vary depending upon the existing and projected traffic volumes, highway capacity, levels of service and safety concerns.

After the application is submitted, an application completeness review is conducted. The applicant will be notified within 90 days of receipt of a complete application, receipt of all required information, or expiration of the time period for receipt of additional or corrected information. The notification will include important details regarding the analysis and decision on access approval or denial. A Notice of Intent to Permit or a Notice of Intent to Deny may be issued with conditions. Full information regarding application submittal, review, approval and conditions can be found in Rule 14-96.007.

### **C. Conforming and Non-Conforming Permits**

There are two types of connection permits that can be issued for connection to the State Highway System.

A *conforming* connection permit may be issued if all of the connection and spacing requirements of the State Highway System Access Management Act are met.

A *non-conforming* connection permit may be issued for a connection not meeting Department location and spacing criteria standards if it finds that a conforming connection is not attainable at the time of the permit application submittal and that denial would leave the property without a reasonable means of connection to the public road system. Non-conforming connection permits shall specify conditions or limits including:

- The maximum vehicular usage of the connection.
- The construction of a conforming connection when future alternative means can be obtained with removal of the non-conforming connection.
- The properties to be served by the connection and any other conditions as necessary to carry out the provisions of the State Highway System Access Management Act.

## **IV. Medians**

### **A. Median Design**

Restrictive medians and correctly designed median openings are known to be some of the most important features in a safe and efficient highway system. The design and placement of these medians and openings are an integral part of the Access Management practice.

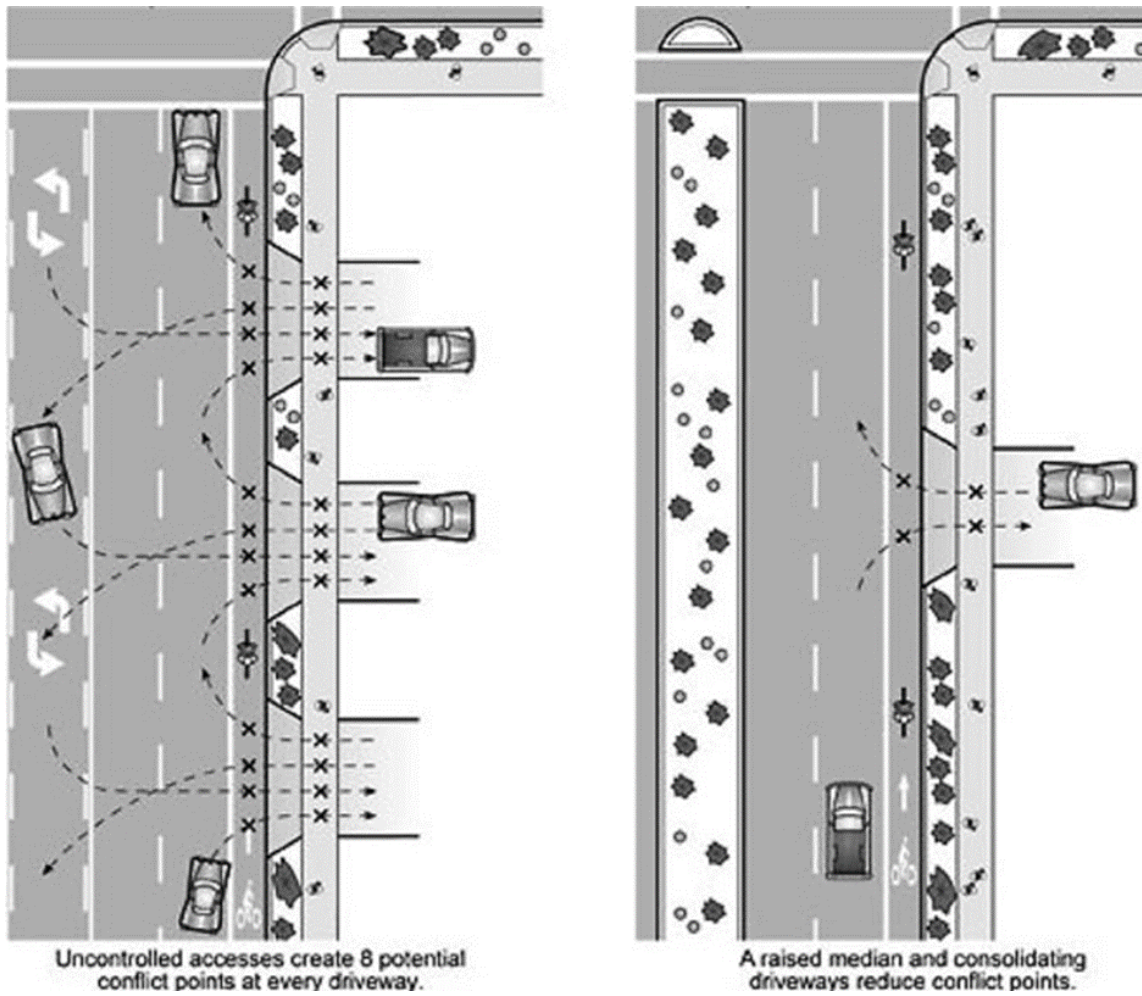
Medians are used for the following:

- Vehicular/pedestrian safety – to prevent accidents caused by crossover traffic, headlight glare distraction and traffic turning left from through lanes. To provide a refuge for pedestrians crossing the highway.
- Vehicular efficiency – to remove turning traffic from through lanes thereby maintaining/increasing highway operating speed. This reduces fuel consumption and emissions which is an environmental benefit.
- Aesthetics – more attractive corridors with less roadway pavement and room for landscaping.

### **B. Bi-Directional Left Turn Lane vs. Raised Median Design**

A roadway designed with a bi-directional left turn lane does provide greater access to a proposed driveway. However, it has significantly more conflict points from the proposed driveway than a roadway designed with a raised median. The additional conflict points are caused by allowing left in and left out movements to and from the proposed driveway. While a raised median provides less access to the proposed driveway, it provides a safer condition by limiting the driveway movements to right in and right out.

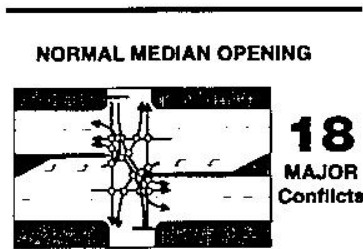
The following illustration shows the difference in conflict points between a roadway with a bi-directional turn lane and a raised median.



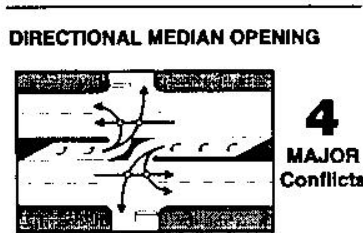


### C. Conflict Points

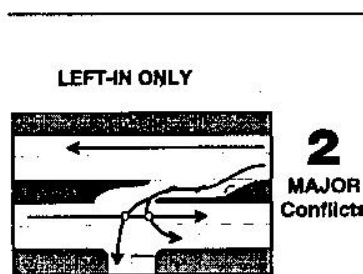
Safety plays a major role in the installation of median openings. The more turning movements allowed at a median opening, the more major conflict points there will be. As seen in the illustrations below, a normal full median opening has 18 major conflict points while the restrictive median openings have 0 to 4 major conflicts. Restrictive median openings can reduce the number of crashes due to the reduction in the number of conflict points.



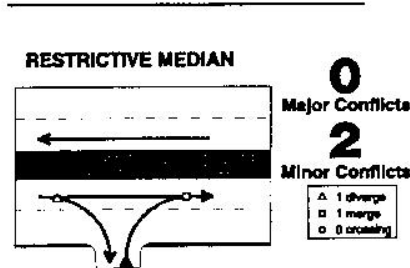
A typical median opening that allows all turns has 18 major conflict points.



One way to limit the number of conflicts is through the design of median openings. This is a “directional” median opening serving a side street, a design which greatly reduces the conflict points by limiting the number of allowed turning movements.



By providing a restrictive median along arterial roads, we can assure that the number of conflict points is kept to the minimum. Through use of restrictive medians, almost every driveway along the corridor essentially becomes a right-in and right-out driveway with only two conflict points.



## **V. Signal Spacing**

The access management classification system defines the spacing of signals to be ½ mile. The ½ mile spacing between signals is optimal because it provides space for:

- Safety
- Operations
- Flexibility
- Signal Progression
- Aesthetics.

This design provides turn lanes with sufficient deceleration distance and queue length without inhibiting the through mainline speed.

## **VI. Turing Vehicle Destination**

The geometric design of all access connections should allow drivers to complete the ingress maneuver (enter the abutting side street or property) with minimum effect on vehicles in the through traffic lane such as:

- Proximity to other access connections and median openings
- Curb return radius and throat width
- Throat length (distance before the first conflict)
- Queue storage
- Traffic control

The combination of curb return radius and throat width should allow drivers to enter and exit an access connection quickly and with minimal interference with through traffic. A narrower entry width can be used on connections that have larger radii.

## VII. Driveway Design

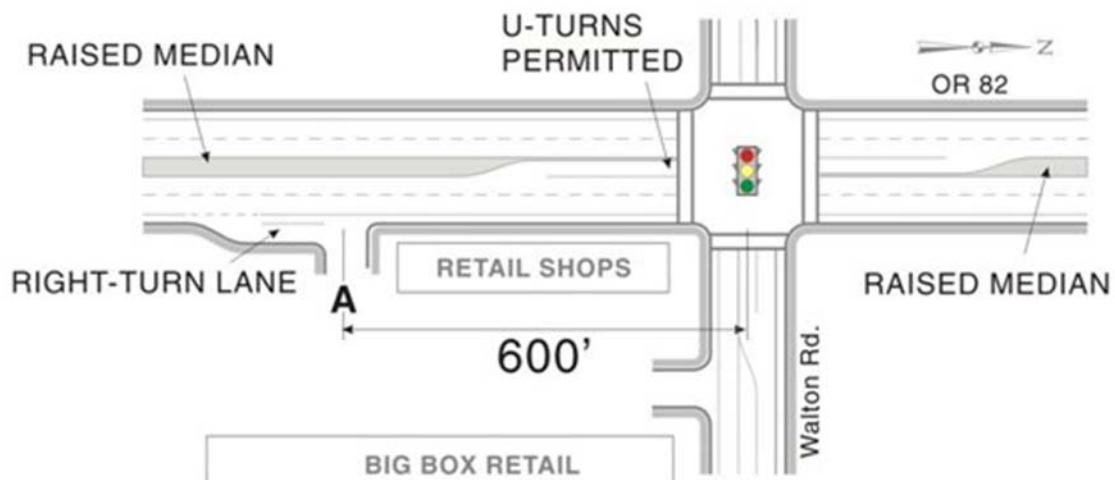
### A. Geometrics

As a vehicle turns left from a median opening and crosses the highway, it enters the driveway or side street. The design of this entrance is critical to the safety and operations of the median opening. The three major areas of concern for access management issues are:

1. Geometric design of driveways.
2. Placement of driveway in relation to the median opening and neighboring streets or connections.
3. Throat length (the distance the driveway should extend before the first conflict).

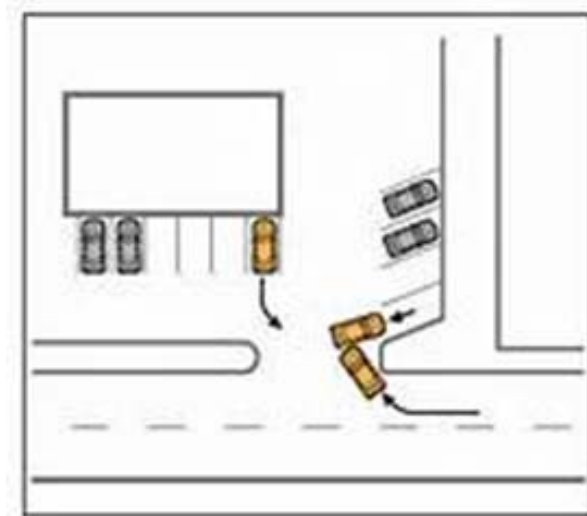
### B. Driveway Placement

Access connections should be located directly opposite or downstream from a median opening as illustrated below. Driveway access should be located more than 100 ft upstream from the median opening to prevent wrong way maneuvers as seen in the illustration.



### C. Throat Length

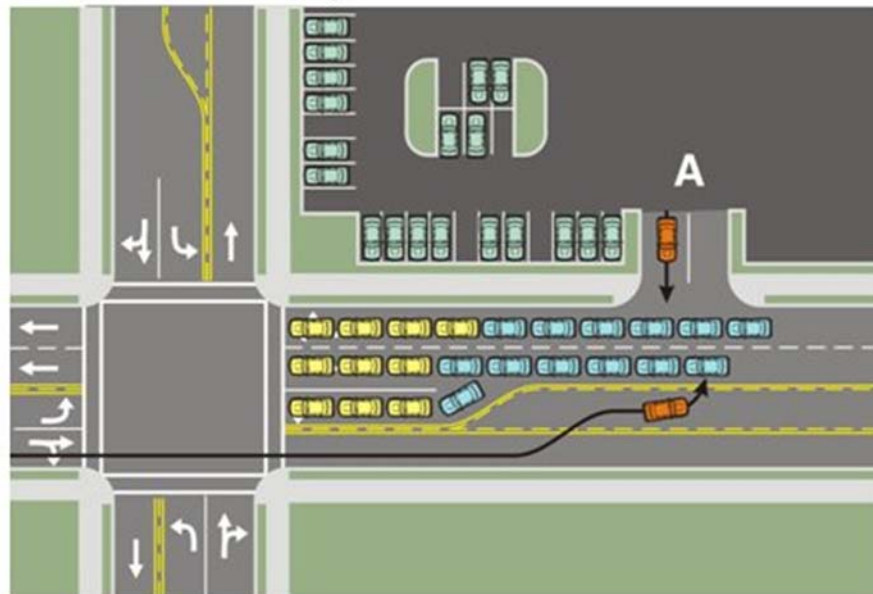
The throat length must be of sufficient length to enable the intersection at the access connection and abutting highway and the on-site circulation to function without interference with each other. Drivers entering the site should first clear the intersection of the highway and access connection before encountering the intersection of the access connection and on-site circulation. The following illustration depicts the problem for entering traffic when the throat length is too short.



### D. Crossing Queue

If possible, driveways should be located far enough from the intersection so the left turning movement does not encroach upon the vehicle queue.

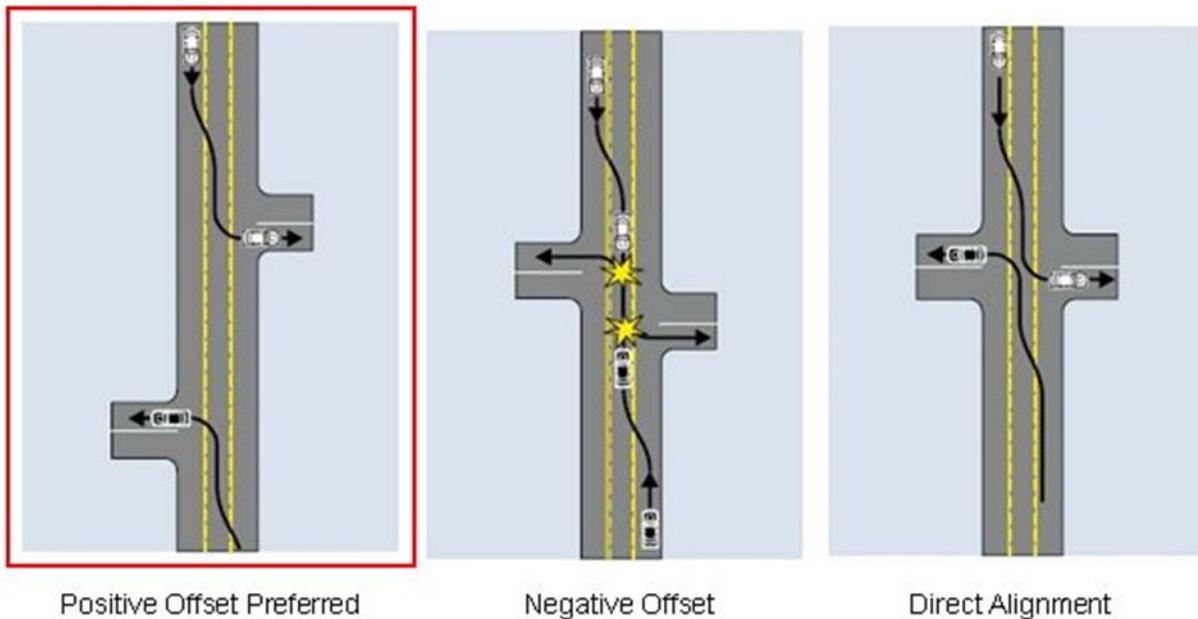
The illustration below shows that the driveway was placed too close to the intersection resulting in left turning vehicles having to cross queued traffic.



## E. Positive Offset

If a bi-directional left turn lane is required in the roadway design, it is preferred to design the driveway connections with a positive offset. This type of design prevents the possibility of vehicles travelling in opposite directions to potentially intersect in the turn lane. A negative offset has a high probability of vehicles colliding in the bi-directional turn lane. A direct alignment design has the potential for a conflict due to vehicles turning from the same location.

The following illustrations show the differences between positive offset, negative offset and direct alignment driveway designs.



A *negative offset* places the left turning vehicles in direct eyesight of each other resulting in an obstruction of the sight triangle. The left turning vehicles are unable to see oncoming through traffic.

*No offset* places the left turning vehicles opposing one another. The left turning vehicles are unable to see oncoming through traffic.

A *positive offset* places the left turning vehicles so that the left turning vehicle can see oncoming traffic without being blocked by the opposing left turning vehicle.





## **VIII. Summary**

Access management is the practice of managing the location, number and spacing of connections, median openings and traffic signals on the highway system. The history, development and purpose of access management are covered. Also included is a definition of terms used in access management.

Access management classification which defines the requirements for median opening spacing is outlined. There is a discussion of existing conditions, modification of connection, joint use connections and reasonable access.

The discussion of driveway connections includes the difference between conforming and non-conforming connections.

There is an overview of median design which includes comparison of conflict points to types of median openings. Signal spacing is also addressed.

Driveway design is covered including geometrics, placement and throat length.

Through this course, you have learned the basic requirements for access management. These requirements should assist an engineer in the design of medians and driveway connections.